MT. SAC
Mt. San Antonio College

1100 North Grand Avenue
Walnut, CA 91789-1399
909-274-7500
www.mtsac.edu

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT AND PUBLIC SCOPING MEETING

Date: September 5, 2018

To: Reviewing Agencies, Organizations and Interested Parties

From: Mt. San Antonio College, Facilities Planning and Management
Gary Nellesen, Director, Facilities Planning and Management

Project Title: Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan

Project Location: The Mt. San Antonio College (Mt. SAC) campus is located in the City of Walnut, in Los Angeles County. The campus encompasses 418.44 acres (comprised of 3 parcels) and is located north and south of Temple Avenue east of Grand Avenue, with the "West Parcel" located west of Grand Avenue and south of Amar Road/Temple Avenue. Mountaineer Road and Edinger Way form the northern boundary of the campus and the eastern boundary is consistent with the City of Walnut's eastern boundary. The California State Polytechnic University (Cal Poly) Pomona is located immediately east of the campus. The Mt. SAC campus is approximately 1.8 miles west of State Route (SR)-57, 1.0 mile south of Interstate (I)-10, and 0.9 mile north of SR-60. Exhibit 1 depicts the regional and local vicinity of the campus.

Project Description: The proposed *Mt. San Antonio College 2018 Educational and Facilities Master Plan* and associated 2017 Parking and Circulation Master Plan (EFMP) is the College's long-range development plan and also serves as the foundation for other components of the College's integrated planning process. Among other purposes, the EFMP projects Mt. SAC's overall growth and the growth of programs and services during the planning horizon and develops recommendations for site and facilities improvements that are informed by educational planning.

It is important to note that the proposed EFMP identifies the framework for the uses and development of land on campus necessary to accommodate an identified level of enrollment and physical development. However, enrollment decisions and the actual implementation of specific capital projects are influenced by multiple factors, including funding decisions, demographics, and other factors external to the EFMP process. Thus, while the proposed EFMP identifies the physical resources necessary to meet Mt. SAC's mission and its long range development plans, it makes no commitments regarding the timing for achieving identified enrollment projections or implementing physical development. Assumptions regarding the rate of growth and potential phasing of the proposed physical development will be included in the Draft EIR for planning and analysis purposes. The proposed EFMP generally has a development and planning horizon of approximately 10 years (through 2027) and anticipates an increase in the campus

BOARD OF TRUSTEES
Dr. Manuel Baca • Rosanne M. Bader • Jay Chen
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headcount from 37,864 students in fall 2017 to between 40,802 and 42,745 students in fall 2027 (based on estimated medium and high growth rates).

With respect to physical development on campus, there are currently 144 buildings at the Mt. SAC campus totaling approximately 1.71 million gross square feet (gsf). Many of these buildings have reached the end of their useful lifespan and the cost to renovate them would approach or exceed replacement costs, or the buildings were initially installed as temporary facilities to meet unanticipated space needs. It is expected that the following proposed EFMP components associated with Phase 1A, Phase 1B and Phase 2 would be implemented during the 10 year horizon period to meet the needs of the existing and projected future campus enrollment (refer to Exhibit 2):

- Construction of approximately 10 new major buildings/facilities ranging in size from 15,000 to 160,000 gross square feet (gsf) and totaling approximately 705,000 gsf;

- Removal/demolition of 33 aged and/or temporary facilities ranging in size from approximately 500 to 43,900 gsf and totaling approximately 207,805 gsf, including some structures that contribute to the Mt. SAC Historic District;

- Major renovations to Buildings 6, Humanities and Social Sciences (26ABD), and Science (7 and 60);

- Various minor new construction and renovation projects on the main campus that are smaller in scope but necessary to provide needed space for athletics (Sand Volleyball Courts and associated facilities), instruction/training, offices, storage, and workspace (3 new buildings totaling approximately 47,000 gsf and 3 building renovation projects); and,

- Campus-wide site and infrastructure improvement projects. Site and infrastructure improvement projects include, but are not limited to: vehicular and non-vehicular parking and circulation improvements that build upon the analyses and recommendations in the 2017 Parking and Circulation Master Plan (PCMP), including the construction of 3-4 parking structures; outdoor open space for instructional/study and gathering purposes, to promote wayfinding and alternative modes of transportation, and to provide enhanced aesthetic character; improvements at the Wildlife Sanctuary, including replacing existing temporary facilities with permanent facilities and urban forest/tree planting; utility infrastructure to serve the increased demand associated with proposed facilities; and, Farm Precinct infrastructure improvements including two new underground water tanks.

In addition, as further discussed below, the proposed EFMP addresses the previously approved West Parcel Site Improvement Project and Physical Education Complex (Phase 2 of the Physical Education Project [PEP), and the Mt. SAC Transit Center that is currently being processed by Mt. SAC and Foothill Transit. The Athletics Complex East (Phase 1 of the PEP) is currently under construction.

Table 1 provides a statistical summary of the proposed EFMP with respect to building development:

TABLE 1
2018 EDUCATIONAL AND FACILITIES MASTER PLAN
DEVELOPMENT STATISTICS
(PHASES 1A, 1B AND 2)

	Development (Gross Square Feet)
Existing Development (2018)	1,707,128
Development Under Construction or Previously Approved • Athletics Complex East • Physical Education Complex	 95,730 127,000
Proposed Development	+752,000
Buildings to be Demolished	-207,805
Total Buildout (2027)	**2,474,053**
Net Increase in GSF on Campus with Proposed Development Under the 2018 EFMP	+544,195

The Draft Environmental Impact Report (EIR) will analyze the phased implementation of the proposed EFMP as a long range planning and development plan at a program-level (Phases 1A, 1B and 2), including components that were included in previous Facilities Master Plans but not yet implemented. It should be noted that it is not anticipated that Phase 3 components of the EFMP would be built during the 10 year horizon period, therefore, they are not being evaluated in the Draft EIR. The EIR will also analyze the construction and operation of certain projects implementing the EFMP at a project-specific level. These projects may include: the Student Center, the Bookstore, Parking Structure R and Tennis Courts, Parking Structure S, Sand Volleyball Courts, and a replacement Communication Tower at Reservoir Hill, which are further described below and are shown on Exhibit 2:

- **Student Center and Central Campus Infrastructure.** The proposed 3-level, approximately 105,000 gsf Student Center building is located in the central portion of the Primary Educational zone of the campus, north of Temple Avenue. Implementation of the proposed Student Center would require demolition or removal of various existing buildings (approximately 72,580 gsf of existing building space). The Student Center would provide space for students to study, gather/interact, and participate in student organizations and student government. The Student Center would also provide much needed indoor and outdoor event space and offices for Mt. SAC Event Services. In addition to the proposed building, the Student Center project would involve completion or enhancement of adjacent outdoor open spaces and pedestrian pathways, including the adjacent Miracle Mile. To accommodate the Student Center and other facilities in the central campus area, existing infrastructure would be removed and new infrastructure installed to accommodate the proposed development in this area and to support campus growth overall.

- **Bookstore.** The proposed Bookstore would be constructed with a maximum of 3-levels, approximately 45,000 gsf and is also located in the central portion of the Primary Educational zone of the campus, south of the proposed Student Center, and would replace the existing 9A Bookstore (21,211 gsf). In addition to the proposed building, the Bookstore project would involve

completion or enhancement of adjacent outdoor open spaces and pedestrian pathways which may include a pedestrian bridge connection to the Student Center and/or the future Library/Learning Resources building.

- **Parking Structure R and Tennis Courts.** The proposed Parking Structure R and Tennis Courts would be constructed generally on existing Student Parking Lot R located south of Temple Avenue, east of Bonita Drive, and west of the Athletics Complex East project currently under construction. The proposed 2-level parking structure would accommodate approximately 709 parking spaces. In addition to parking, the top deck of the parking structure would include 9 tennis courts with lighting.

- **Parking Structure S.** The proposed 4-level (3 structural levels plus one level of rooftop parking) Parking Structure S would be constructed on existing Student Parking Lot S at the southwest corner of Temple Avenue and Bonita Drive. The proposed parking structure would accommodate approximately 829 parking spaces and potentially rooftop solar panels. Parking Structure S would also include a pedestrian bridge that would span Temple Avenue and connect to the future Transit Center and the Miracle Mile pedestrian corridor. This project would also include implementation of proposed Temple Avenue Green Corridor Improvements on the south side of Temple Avenue (e.g., removal of parallel parking, striping for bicycle lanes, sidewalks, trees with filtration planters, and fencing)**.**

- **Sand Volleyball Courts.** This project involves the implementation of five sand volleyball courts, toilet facilities, and concession space within the Athletics Zone south of the existing soccer fields. These facilities would be located where the toilet rooms and concession would also be available to spectators at the adjacent soccer fields, as well as visitors to the Wildlife Sanctuary.

- **Replacement Communication Tower.** The proposed Communications Tower would replace the existing communications tower on Reservoir Hill, at a location slightly to the south of the existing tower which is located generally southwest of buildings 46A, 46, and 47. The existing tower is approximately 40-feet high and would be replaced with an approximately 100-foot high tower with an adjacent equipment cabinet. The proposed tower would support 2-way communication for the campus associated with the Emergency Operations Center (EOC), Alertus (campus mass notification system), and the campus radio station (90.1 FM Mt Rock transmitter).

As identified above, certain projects included in the proposed EFMP have been evaluated in previous project-specific level environmental documents pursuant to CEQA, and do not require further approval from the Mt. San Antonio Community College Board of Trustees. These projects include the Physical Education Project (Phase 1- Athletic Complex East currently under construction, and Phase 2- Physical Education Complex), which was evaluated at a project-specific level in the *Physical Education Project (Phase 1, 2) Final Subsequent Project EIR to 2015 Facilities Master Plan Update and Physical Education Projects Final Program/Project EIR (SCH No. 2002041161)* certified by the Board of Trustees in August 2017. The West Parcel Site Improvements project currently under construction was evaluated in the *West Parcel Solar Project Tiered Project EIR to the 2012 Facilities Master Plan Program EIR (SCH 2002041161*) and certified by the Board of Trustees in October 2017. In April 2018, Mt. SAC and the City of Walnut entered into a *Memorandum of Agreement* that established mutual understanding of the scope of work for both the West Parcel and the Stadium (PEP) Project. Additionally, project-specific level evaluation of the proposed Transit Center and associated circulation improvements is being conducted in a separate environmental document in coordination with Foothill Transit. These projects will be addressed in the Draft EIR to the extent that they are part of the larger “program” being evaluated in the Draft EIR and would contribute to environmental effects from buildout of the EFMP. Additionally, required

mitigation measures for these projects as presented in the respective EIRs will be identified and assumed in the analysis for the proposed EFMP, as applicable.

It is estimated that the projects identified above (i.e., the Student Center, the Bookstore, Parking Structure R and Tennis Courts, Parking Structure S, Sand Volleyball Courts, and a replacement Communication Tower at Reservoir Hill) would be implemented as part of Phases 1A and 1B of the EFMP with construction starting in 2019 and being completed by 2025. Construction activities would overlap with construction of the West Parcel Site Improvements, Transit Center, and the Physical Education Project; and combined construction-related impacts will be addressed in the EIR, as appropriate.

Environmental Review and Comment: In compliance with the California Environmental Quality Act (CEQA) and State CEQA Guidelines, this Notice of Preparation (NOP) is hereby sent to inform you that the Mt. San Antonio Community College District, as the Lead Agency, will prepare a Draft EIR for the proposed EFMP.

The District has determined that an EIR is required for the project, and as allowed by CEQA, no Initial Study will be prepared (refer to State CEQA Guidelines Sections 15060 and 15081). With the exception of agricultural resources (designated farmland), forestry resources, and mineral resources, which do not exist on campus, implementation of the proposed EFMP could have potentially significant impacts for each of the remaining topical environmental issues identified in the environmental checklist included in Appendix G to the State CEQA Guidelines, and these issues will be addressed in the Draft EIR: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Population and Housing, Public Services, Recreation, Transportation/Traffic, Tribal Cultural Resources, and Utilities and Services Systems.

As the Lead Agency, we request the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed EFMP as a long range development plan. Responses to this NOP are requested to identify (1) the significant environmental issues, reasonable alternatives, and mitigation measures that should be explored in the Draft EIR, and (2) whether your agency will be a responsible or trustee agency for the project. Your agency will need to use the Draft EIR prepared by Mt. SAC when considering your permit or other approval for the project.

This NOP has been forwarded to potential responsible and trustee agencies and other interested agencies, organizations and, and is also available at:

http://www.mtsac.edu/construction/reports-and-publications/environmental-impact-reports.html

Due to the time limits mandated by State law, responses to this NOP must be sent at the earliest possible date, but not later than 30 days after receipt of this notice. The NOP's 30-day review period will extend from **September 5, 2018 to October 4, 2018**. Comments regarding the scope of the Draft EIR must be received no later than 5:00 PM on **October 4, 2018.** They may be mailed or emailed to the following address:

Gary Nellesen, Director, Facilities Planning & Management
Facilities Planning & Management
Mt. San Antonio College
1100 N. Grand Avenue
Walnut, California 91789-1399
facilitiesplanning@mtsac.edu

Please designate a contact person in your agency and send responses to the address above.

Public Scoping Meeting: A Public Information and **EIR Scoping Meeting** will be conducted at **Mt. San Antonio College** on **Wednesday, September 19, 2018** at **6:00 PM** in **Building 46, Training Room 1050**. Interested individuals may offer written or oral comments on the proposed scope of the environmental analysis at the public scoping meeting. The Scoping Meeting will be advertised on the Mt. SAC environmental impacts reports webpage listed above and in direct mailings to interested individuals, organizations, and associations. Parking will be available at the surface lots adjacent to Building 46.

If you have any questions about the environmental review for the proposed Mt. SAC EFMP, please contact Mikaela (Mika) Klein at (909) 274-5720.



Aerial Source: ESRI 2017

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Local and Regional Vicinity Map

Exhibit 1

Mt. SAC 2018 Educational and Facilities Master Plan

N W E S

4,000 2,000 0 4,000 Feet

PSOMAS

(Rev: 8-22-2018 MMD) R:\Projects\MTS\3MTS010300\Graphics\NOP\ex_LV_RL.pdf

BUILDING KEY

ID No.	BUILDING NAME
1B/C	Art Center / Gallery
2T/M	Performing Arts Center
4	Administration
6	College Services
6A	Information Kiosk
7	Science South
8	Mountie Café
9B	Student Services
9E	Student Success Center
10	Founders Hall
11	Science North
12	Building 12
12C	Elevator Tower
13	Design Technology
23	College Services
23A	Data Center
26A	Humanities/Social Sciences North
26B	Humanities/Social Sciences East
26C	Planetarium
26D	Humanities/Social Sciences South
28A/B	General Instructional Space
29	Central Plant
40	Building 40
44	Athletics Modular
45	Kinesiology/Athletics/ Dance
46	Emergency Operations Center
47	Facilities Planning + Management / Maintenance + Operations
48	Receiving/Transportation
51	Athletics Storage

ID No.	BUILDING NAME
60	Science Laboratories
61	Math and Science
66	Language Center
67A	Health Careers Center
67B	Health Careers Center
69	Welding, Heating/Air Conditioning
70–73	Child Development Complex
77–79	Business and Computer Technology
80	Agricultural Science
BF	Brackett Field (Off Campus)
AE	Adult Education
AUD	Auditorium
BH	Block House
BK	Bookstore
CS	Campus Safety
CT	Communications Tower
DL	Dry Lot Shade Structure
EHB	Equine Hay Barn
F1	Horticulture Unit
F1A	Sherman Park Restrooms
F2A	Farm Offices
F2B	Horticulture Storage
F2C	Irrigation + Landscape Construction
F3	Equipment Barn
F4A	Swine Market Pens
F4B	Swine Farrowing House
F5A	Vivarium
F5B	Small Animal Care Unit
F6A	Equine Breeding Barn
F6B	Equine Mare Motel
F6C	Equine Hay Barn
F7	Farm Storage
F8	Hay Barn

ID No.	BUILDING NAME
F9	Livestock Pavilion
F10	Building F10
FA	Fine Arts
G1	Greenhouse
G2	Greenhouse
G4	Greenhouse
G5	Greenhouse
G7	Greenhouse/The Conservatory
HH	Heritage Hall
LLR	Library/Learning Resources
MS	Makerspace
NC	Nature Center
PEC	Physical Education Complex
PEP1	Physical Education Projects: Phase 1
PS-B	Parking Structure B
PS-F	Parking Structure F
PS-R	Parking Structure R
PS-S	Parking Structure S
RD	Reuse Depot
SC	Student Center
SCE	School of Continuing Education
SCI	Science
SS	Storage Shed
SSN	Student Services North
TC	Transit Center
TE	Technical Education
TES	Thermal Energy Storage System
TS	Tool Shed
WT	Water Tank

LEGEND

- PROPERTY LINE
- EXISTING FACILITIES
- EXISTING TEMPORARY FACILITIES
- NEW MAJOR BUILDINGS
- PARKING STRUCTURES
- MAJOR RENOVATIONS
- MINOR PROJECTS
- EXISTING UTILITIES INFRASTRUCTURE (UNDERGROUND)
- NEW UTILITIES INFRASTRUCTURE (UNDERGROUND)



Source: HMC Architects 2018

Proposed 2018 Facilities Master Plan

Exhibit 2

Mt. SAC 2018 Educational and Facilities Master Plan

N W E S

0 650 1300 2600 Feet

PSOMAS

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MT. SAC
Mt. San Antonio College

Sign In Form
Public Scoping Meeting for the Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan Environmental Impact Report

September 19, 2018

Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
HASSAN SASSI	hsassi2010@gmail.com	Walnut	2136638927	☒
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
JoelleGuerra	jguerra@cityofwalnut.org	21201 La Puente Rd Walnut	(909)595-7543	☐
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
Tom Holm	tholm@ecorpconsulting.com		(714)648-0630	☐
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
Chris Vasquez/Walnut	cvasquez@cityofwalnut.org	21201 La Puente Rd Walnut CA 91789	909-595-7543 x312	☐
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
				☐
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
				☐
Name/Organization (if applicable)	Email Address	Street Address/City/State/ZIP	Phone Number	Check If Wish to Speak
				☐

DEPARTMENT OF TRANSPORTATION
DISTRICT 7- OFFICE OF REGIONAL PLANNING
100 S. MAIN STREET, SUITE 100
LOS ANGELES, CA 90012
PHONE (213) 897-6536
FAX (213) 897-1337
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

October 4, 2018

Gary Nellesen, Director
Facilities Planning & Management
Mt. San Antonio Community College
1100 N. Grand Avenue
Walnut, CA 91789

RE: Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan
SCH# 2018091004
GTS# 07-LA-2018-01898

Dear Mr. Nellesen:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan proposes the implementation of the Mt. San Antonio College 2018 Educational and Facilities Master Plan (EFMP) and associated 2017 Parking and Circulation Master Plan. This would involve construction of approximately 10 new major buildings/facilities, the removal/demolition of 33 aged or temporary facilities, major renovations, minor new construction and renovation projects, and campus-wide site and infrastructure projects. Additionally, the project will analyze the construction and operation of certain projects implementing the EFMP at a project-specific level. These projects may include: the Student Center, the Bookstore, Parking Structure R and Tennis Courts, Parking Structure S, Sand Volleyball Courts, and a replacement Communication Tower at Reservoir Hill.

We encourage a sufficient allocation of fair share contributions toward multimodal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We support measures to increase sustainable mode shares, thereby reducing VMT. The Lead Agency should also consider fair share fees for shuttles that use the public curb space. Caltrans welcomes the opportunity to work with the Lead Agency and local partners to secure funding for needed mitigation. Traffic mitigation or cooperative agreements are examples of such measures.

Any reduction is vehicle speed benefits pedestrian and bicyclist safety, since there is a direct link between impact speeds and the likelihood of fatality. Methods to reduce pedestrian and bicyclist exposure to vehicles improve safety by lessening the time that the user is in the likely path of a motor vehicle. These methods include the construction of physically separated facilities such as sidewalks, raised medians, refuge islands, and off-road paths and trails, or a reduction in crossing distances through roadway narrowing.

Pedestrian and bicyclist warning signage, flashing beacons, crosswalks, and other signage and striping should be used to indicate to motorists that they should expect to see and yield to pedestrians and bicyclists. Formal information from traffic control devices should be reinforced by informal sources of information such as lane widths, landscaping, street furniture, and other road design features. We support these improvements in addition to those listed in the City of Los Angeles Bicycle Plan.

As a reminder, any transportation of heavy construction equipment and/or materials which requires use of oversized-transport vehicles of State highways will need a Caltrans transportation permit. We recommend large size truck trips be limited to off-peak commute periods.

Also, storm water run-off is a sensitive issue for Los Angeles and Ventura counties. The project need to be designed to discharge clean run-off water. The completed project could incorporate green design elements that can capture storm water. Incorporating measures such as permeable pavement, landscaping, and trees to reduce urban water run-off should be considered.

Caltrans looks forward to reviewing the draft environmental impact report and will provide additional comments at that time, if warranted. If you have any questions, please contact project coordinator Mr. Carlo Ramirez, at carlo.ramirez@dot.ca.gov and refer to GTS# 07-LA-2018-01865.

Sincerely,

MIYA EDMONSON
IGR/CEQA Branch Chief

cc: Scott Morgan, State Clearinghouse

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

RECEIVED
OCT 05 2018
MT SAC FACILITIES

October 2, 2018

Ref. Doc. No.: 4716678

Mr. Gary Nellesen, Director
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

Dear Mr. Nellesen:

NOP Response to the Long Range Development Plan
Mount San Antonio College 2018 Educational and Facilities Master Plan

The Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report (NOP) for the subject project on September 21, 2018. The proposed project is located within the jurisdictional boundaries of District No. 21. We offer the following comments regarding sewerage service:

1. The Districts maintain sewerage facilities within the project area that may be affected by the proposed project. Approval to construct improvements within a Districts' sewer easement and/or over or near a Districts' sewer is required before construction may begin. For a copy of the Districts' buildover procedures and requirements go to www.lacsd.org, Wastewater & Sewer Systems, Will Serve Program, and click on the Buildover Procedures and Requirements link. For more specific information regarding the buildover procedure, please contact Mr. Ed Stewart at (562) 908-4288, extension 2766.

2. The wastewater flow originating from the proposed project will discharge to a local sewer line, which is not maintained by the Districts, for conveyance to the Districts' Mount San Antonio Trunk Sewer, located in Temple Avenue east of Grand Avenue. The Districts' 15-inch diameter trunk sewer has a capacity of 4.3 million gallons per day (mgd) and conveyed a peak flow of 1.7 mgd when last measured in 2014.

3. The wastewater generated by the proposed project will be treated at the San Jose Creek Water Reclamation Plant (WRP) located adjacent to the City of Industry, which has a capacity of 100 mgd and currently processes an average flow of 63.8 mgd. All biosolids and wastewater flows that exceed the capacity of the San Jose Creek WRP are diverted to and treated at the Joint Water Pollution Control Plant in the City of Carson.

4. The expected increase in average wastewater flow from the project, described in the notice as a net increase of 544,195 gross square feet of new structure by 2027, is 108,839 gallons per day. For a copy of the Districts' average wastewater generation factors, go to www.lacsd.org,

Wastewater & Sewer Systems, click on Will Serve Program, and click on the Table 1, Loadings for Each Class of Land Use link.

5. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System for increasing the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is imposed in an amount sufficient to construct an incremental expansion of the Sewerage System to accommodate the proposed project. Payment of a connection fee will be required before a permit to connect to the sewer is issued. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and search for the appropriate link. In determining the impact to the Sewerage System and applicable connection fees, the Districts' Chief Engineer and General Manager will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel or facilities on the parcel. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at (562) 908-4288, extension 2727.

6. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,

Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: E. Stewart
A. Schmidt
A. Howard

GABRIELEÑO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians /Gabrielino Tribal Council
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

City of Walnut
1100 N. Grand Avenue
Walnut, CA 91789-1399

September 12, 2018

Re: AB52 Consultation request for Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan

Dear Gary Nellesen,

Please find this letter as a written request for consultation regarding the above-mentioned project pursuant to Public Resources Code § 21080.3.1, subd. (d). Your project lies within our ancestral tribal territory, meaning belonging to or inherited from, which is a higher degree of kinship than traditional or cultural affiliation. Your project is located within a sensitive area and may cause a substantial adverse change in the significance of our tribal cultural resources. Most often, a records search for our tribal cultural resources will result in a "no records found" for the project area. The Native American Heritage Commission (NAHC), ethnographers, historians, and professional archaeologists can only provide limited information that has been previously documented about California Native Tribes. For this reason, the NAHC will always refer the lead agency to the respective Native American Tribe of the area. The NAHC is only aware of general information and are not the experts on each California Tribe. Our Elder Committee & tribal historians are the experts for our Tribe and can provide a more complete history (both written and oral) regarding the location of historic villages, trade routes, cemeteries and sacred/religious sites in the project area.

Additionally, CEQA now defines Tribal Cultural Resources (TCRs) as their own independent element separate from archaeological resources. Environmental documents shall now address a separate Tribal Cultural Resource section which includes a thorough analysis of the impacts to only Tribal Cultural Resources (TCRs) and includes independent mitigation measures created with Tribal input during AB-52 consultations. As a result, all mitigation measures, conditions of approval and agreements regarding TCRs (i.e. prehistoric resources) shall be handled solely with the Tribal Government and not through an Environmental/Archaeological firm.

In effort to avoid adverse effects to our tribal cultural resources, we would like to consult with you and your staff to provide you with a more complete understanding of the prehistoric use(s) of the project area and the potential risks for causing a substantial adverse change to the significance of our tribal cultural resources.

Consultation appointments are available on Wednesdays and Thursdays at our offices at 910 N. Citrus Ave. Covina, CA 91722 or over the phone. Please call toll free 1-844-390-0787 or email admin@gabrielenoindians.org to schedule an appointment.

*** Prior to the first consultation with our Tribe, we ask all those individuals participating in the consultation to view a video produced and provided by CalEPA and the NAHC for sensitivity and understanding of AB52. You can view their videos at:* http://calepa.ca.gov/Tribal/Training/ *or* http://nahc.ca.gov/2015/12/ab-52-tribal-training/

With Respect,

Andrew Salas, Chairman

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the Council of Elders
PO Box 393, Covina, CA 91723 | www.gabrielenoindians.org | gabrielenoindians@yahoo.com

Original People of Los Angeles County



Map of territories of Orignal Peoples with county boundaries in Southern California.

From: John Larreta <jlarreta@IrwindaleCA.gov>
Sent: Monday, September 17, 2018 8:52 AM
To: Facilities Planning
Subject: (EFMP) Notice of Preparation of DIER & (Transit Center) Notice of Intent of Neg. Dec.

To Gary Nellesen:

The city of Irwindale has no comments.

Thank you,

John Larreta
Planning Technician
jlarreta@IrwindaleCA.gov
Office: (626) 430-2208
Direct: (626) 430-2246

Mailing Address:
5050 N. Irwindale Ave.
Irwindale, CA 91706

Physical Address:
16102 Arrow Highway, 2nd Floor
Irwindale, CA 91706
Office Hours: Monday through Thursday 8 a.m. to 6 p.m.
Closed Fridays

COUNTY OF LOS ANGELES
FIRE DEPARTMENT

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LOS ANGELES, CALIFORNIA 90063-3294
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October 10, 2018

Gary Nellesen, Director
Mt. San Antonio College
Facilities Planning and Management
1100 North Grand Avenue
Walnut, CA 91789

Dear Mr. Nellesen:

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT, "2018 EDUCATIONAL AND FACILITIES MASTER PLAN," PROJECTS MT. SAC'S OVERALL GROWTH AND THE GROWTH OF PROGRAMS AND SERVICES DURING THE PLANNING HORIZON AND DEVELOPS RECOMMENDATIONS FOR SITE AND FACILITIES IMPROVEMENTS THAT ARE INFORMED BY EDUCATIONAL PLANNING, 1100 NORTH GRAND AVENUE, WALNUT, FFER 201800101

The Notice of Preparation of a Draft Environmental Impact Report has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department.

The following are their comments:

PLANNING DIVISION:

We will reserve our comments for the Draft EIR which will have greater detail.

LAND DEVELOPMENT UNIT:

The Land Development Unit is reviewing the proposed "2018 EDUCATIONAL AND FACILITIES MASTER PLAN PROJECT" for access and water system requirements. The Land Development Unit comments are only general requirements. Specific fire and life safety requirements will be addressed during the review for building and fire plan check phases. There may be additional requirements during this time.

The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows, and fire hydrants.

ACCESS REQUIREMENTS:

1. The proposed developments may require multiple ingress/egress access for the circulation of traffic and emergency response issues.

2. All on-site Fire Department vehicular access roads shall be labeled as "Private Driveway and Fire Lane" on the site plan along with the widths clearly depicted on the plan. Labeling is necessary to assure the access availability for Fire Department use. The designation allows for appropriate signage prohibiting parking.

    a. The Fire Apparatus Access Road shall be cross-hatch on the site plan with the width clearly noted on the plan.

3. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways with an all-weather surface of not less than the prescribed width. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

4. Fire Apparatus Access Roads must be installed and maintained in a serviceable manner prior to and during the time of construction.

5. The edge of the Fire Apparatus Access Road shall be located a minimum of 5 feet from the building or any projections there from.

6. The Fire Apparatus Access Roads and designated fire lanes shall be measured from flow line to flow line.

7. The dimensions of the approved Fire Apparatus Access Roads shall be maintained as originally approved by the fire code official.

8. Provide a minimum unobstructed width of 28 feet exclusive of shoulders and an unobstructed vertical clearance "clear to sky" Fire Department vehicular access to within 150 feet of all portions of the exterior walls of the first story of the building, as measured by an approved route around the exterior of the building when the height of the building above the lowest level of the Fire Department vehicular access road is more than 30 feet high, or the building is more than three stories. The access roadway shall be located a minimum of 15 feet and a maximum of 30 feet from the building and shall be positioned parallel to one entire side of the building. The side of the building on which the aerial Fire Apparatus Access Road is positioned shall be approved by the fire code official.

9. If the Fire Apparatus Access Road is separated by island provide a minimum unobstructed width of 20 feet exclusive of shoulders and an unobstructed vertical clearance "clear to sky" Fire Department vehicular access to within 150 feet of all

portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building.

10. Dead-end Fire Apparatus Access Roads in excess of 150 feet in-length shall be provided with an approved Fire Department turnaround. Include the dimensions of the turnaround with the orientation of the turnaround shall be properly placed in the direction of travel of the access roadway.

11. Fire Department Access Roads shall be provided with a 32-foot centerline turning radius. Indicate the centerline, inside, and outside turning radii for each change in direction on the site plan.

12. Fire Apparatus Access Roads shall be designed and maintained to support the imposed load of fire apparatus weighing 75,000 lbs., and shall be surfaced so as to provide all-weather driving capabilities. Fire Apparatus Access Roads having a grade of 10 percent or greater shall have a paved or concrete surface.

13. Provide approved signs or other approved notices or markings that include the words "NO PARKING - FIRE LANE." Signs shall have a minimum dimension of 12 inches wide by 18 inches high and have red letters on a white reflective background. Signs shall be provided for Fire Apparatus Access Roads to clearly indicate the entrance to such road, or prohibit the obstruction thereof and at intervals, as required by the Fire Inspector.

14. A minimum 5-foot wide approved firefighter access walkway leading from the Fire Department Access Road to all required openings in the building's exterior walls shall be provided for firefighting and rescue purposes. Clearly identify firefighter walkway access routes on the site plan. Indicate the slope and walking surface material. Clearly show the required width on the site plan.

15. Fire Apparatus Access Roads shall not be obstructed in any manner, including by the parking of vehicles, or the use of traffic calming devices, including but not limited to, speed bumps or speed humps. The minimum widths and clearances established in Fire Code Section 503.2.1 shall be maintained at all times.

16. Traffic Calming Devices, including but not limited to, speed bumps and speed humps, shall be prohibited unless approved by the fire code official.

17. Security barriers, visual screen barriers, or other obstructions shall not be installed on the roof of any building in such a manner as to obstruct firefighter access or egress in the event of fire or other emergency. Parapets shall not exceed 48 inches from the top of the parapet to the roof surface on more than two sides. Clearly indicate the height of all parapets in a section view.

18. Approved building address numbers, building numbers, or approved building identification shall be provided and maintained so as to be plainly visible and legible from the street fronting the property. The numbers shall contrast with their

background, be Arabic numerals or alphabet letters, and be a minimum of 4 inches high with a minimum stroke width of 0.5 inch.

19. Multiple residential and commercial buildings having entrances to individual units not visible from the street or road shall have unit numbers displayed in groups for all units within each structure. Such numbers may be grouped on the wall of the structure or mounted on a post independent of the structure and shall be positioned to be plainly visible from the street or road as required by Fire Code 505.3 and in accordance with Fire Code 505.1.

PARKING ON PUBLIC FIRE APPARARTUS ACCESS ROADS:

1. Provide a minimum width of 34 feet for parallel parking on one side of the Fire Apparatus Access Road with through access and with one side of the roadway being designated "NO PARKING – FIRE LANE."

2. Provide a minimum width of 34 feet for parallel parking on both sides of the Fire Apparatus Access Road when the street is designed to be a cul-de-sac less than 700 feet in-length.

3. Provide a minimum width of 36 feet for parallel parking on both sides of the Fire Apparatus Access Road and/ or on cul-de-sac design with a length of 701 feet to 1,000 feet.

WATER SYSTEM REQUIRMENTS:

1. All fire hydrants shall measure 6"x 4"x 2-1/2" brass or bronze conforming to current AWWA standard C503 or approved equal and shall be installed in accordance with the County of Los Angeles Fire Department Regulation 8.

2. The developments may require fire flows up to 4,000 gallons per minute at 20 pounds per square inch residual pressure for up to a four-hour duration. Final fire flows will be based on the size of buildings, the installation of an automatic fire sprinkler system, and type(s) of construction used.

3. The fire hydrant spacing shall be every 300 feet for both the public and the on-site hydrants. The fire hydrants shall meet the following requirements:

    a. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

    b. No portion of a building shall exceed 400 feet via vehicular access from a properly spaced public fire hydrant.

    c. Additional hydrants will be required if hydrant spacing exceeds specified distances.

4. All required public fire hydrants shall be installed and tested prior to beginning construction.

5. All private on-site fire hydrants shall be installed, tested, and approved prior to building occupancy.

    a. Plans showing underground piping for private on-site fire hydrants shall be submitted to the Sprinkler Plan Check Unit for review and approval prior to installation.

6. An approved automatic fire sprinkler system is required for the proposed buildings within this development. Submit design plans to the Fire Department Sprinkler Plan Check Unit for review and approval prior to installation.

Additional Department Fire Department requirements will be determined at further development of the Site.

For any questions regarding the report, please contact Inspector Claudia Soiza at (323) 890-4243 or Claudia.soiza@fire.lacounty.gov.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department's Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed.

Under the Los Angeles County Oak tree Ordinance, a permit is required to cut, destroy, remove, relocate, inflict damage or encroach into the protected zone of any tree of the Oak genus which is 25 inches or more in circumference (eight inches in diameter), as measured 4 1/2 feet above mean natural grade.

If Oak trees are known to exist in the proposed project area further field studies should be conducted to determine the presence of this species on the project site.

The County of Los Angeles Fire Department's Forestry Division has no further comments regarding this project.

HEALTH HAZARDOUS MATERIALS DIVISION:

The Health Hazardous Materials Division of the Los Angeles County Fire Department has no comments or requirements for the project at this time.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

Michael Y. Takeshita

MICHAEL Y. TAKESHITA, ACTING CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

MYT:ac

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MENT
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Gary Nellesen, Director
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Facilities Planning and Management Department
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STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

Edmund G. Brown Jr., Governor



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September 19, 2018

Mikaela Klein
Mt. San Antonio Community College
1100 N. Grand Avenue
Walnut, CA 91789

RE: SCH# 2018091004 Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan, Los Angeles County

Dear Ms. Klein:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Frank.Lienert@nahc.ca.gov.

Sincerely,



for

Frank Lienert
Associate Governmental Program Analyst

cc: State Clearinghouse

Original People of Los Angeles County



Map of territories of Orignal Peoples with county boundaries in Southern California.

SCAG
INNOVATING FOR A BETTER TOMORROW

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Curt Hagman, San Bernardino County

October 4, 2018

Mr. Gary Nellesen, Director
Mt. San Antonio College, Facilities Planning and Management
1100 North Grand Avenue
Walnut, California 91789
Phone: (909) 274-5179
E-mail: facilitiesplanning@mtsac.edu

RE: SCAG Comments on the Notice of Preparation of a Draft Environmental Impact Report for the Mt. San Antonio College 2018 Educational and Facilities Master Plan [SCAG NO. IGR9719]

Dear Mr. Nellesen,

Thank you for submitting the Notice of Preparation of a Draft Environmental Impact Report for the Mt. San Antonio College 2018 Educational and Facilities Master Plan ("proposed project") to the Southern California Association of Governments (SCAG) for review and comment. SCAG is the authorized regional agency for Inter-Governmental Review (IGR) of programs proposed for Federal financial assistance and direct Federal development activities, pursuant to Presidential Executive Order 12372. Additionally, SCAG reviews the Environmental Impact Reports of projects of regional significance for consistency with regional plans pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

SCAG is also the designated Regional Transportation Planning Agency under state law, and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS) pursuant to Senate Bill (SB) 375. As the clearinghouse for regionally significant projects per Executive Order 12372, SCAG reviews the consistency of local plans, projects, and programs with regional plans.[1] SCAG's feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Community Strategies (RTP/SCS) goals and align with RTP/SCS policies.

SCAG staff has reviewed the Notice of Preparation of a Draft Environmental Impact Report for the Mt. San Antonio College 2018 Educational and Facilities Master Plan in Los Angeles County. The proposed project includes the development of approximately 705,000 square feet for 10 major buildings, the demolition of 33 aged or temporary buildings, other renovations and minor construction projects, and infrastructure improvements across the 418.44-acre campus to accommodate approximately 3,000-5,000 additional students expected in the 2027 horizon year.

When available, please send environmental documentation to *SCAG's Los Angeles office in Los Angeles (900 Wilshire Boulevard, Ste. 1700, Los Angeles, California 90017) or by email to au@scag.ca.gov* providing, at a minimum, the full public comment period for review.

If you have any questions regarding the attached comments, please contact the Inter-Governmental Review (IGR) Program, attn.: Anita Au, Associate Regional Planner, at (213) 236-1874 or au@scag.ca.gov. Thank you.

Sincerely,

Ping Chang
Acting Manager, Compliance and Performance Monitoring

[1] Lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the 2016 RTP/SCS for the purpose of determining consistency for CEQA. Any "consistency" finding by SCAG pursuant to the IGR process should not be construed as a determination of consistency with the 2016 RTP/SCS for CEQA.

COMMENTS ON THE NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN [SCAG NO. IGR9719]

CONSISTENCY WITH RTP/SCS

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS. For the purpose of determining consistency with CEQA, lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the RTP/SCS.

2016 RTP/SCS GOALS

The SCAG Regional Council adopted the 2016 RTP/SCS in April 2016. The 2016 RTP/SCS seeks to improve mobility, promote sustainability, facilitate economic development and preserve the quality of life for the residents in the region. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health (see http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx). The goals included in the 2016 RTP/SCS may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project within the context of regional goals and policies. Among the relevant goals of the 2016 RTP/SCS are the following:

SCAG 2016 RTP/SCS GOALS	
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*
RTP/SCS G3:	*Ensure travel safety and reliability for all people and goods in the region*
RTP/SCS G4:	*Preserve and ensure a sustainable regional transportation system*
RTP/SCS G5:	*Maximize the productivity of our transportation system*
RTP/SCS G6:	*Protect the environment and health for our residents by improving air quality and encouraging active transportation (e.g., bicycling and walking)*
RTP/SCS G7:	*Actively encourage and create incentives for energy efficiency, where possible*
RTP/SCS G8:	*Encourage land use and growth patterns that facilitate transit and active transportation*
RTP/SCS G9:	*Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies**
	**SCAG does not yet have an agreed-upon security performance measure.*

For ease of review, we encourage the use of a side-by-side comparison of SCAG goals with discussions of the consistency, non-consistency or non-applicability of the goals and supportive analysis in a table format. Suggested format is as follows:

SCAG 2016 RTP/SCS GOALS		
	Goal	Analysis
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*	*Consistent: Statement as to why;* *Not-Consistent: Statement as to why;* *Or* *Not Applicable: Statement as to why;* *DEIR page number reference*
etc.		etc.

2016 RTP/SCS STRATEGIES

To achieve the goals of the 2016 RTP/SCS, a wide range of land use and transportation strategies are included in the 2016 RTP/SCS. Technical appendances of the 2016 RTP/SCS provide additional supporting information in detail. To view the 2016 RTP/SCS, please visit: http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx. The 2016 RTP/SCS builds upon the progress from the 2012 RTP/SCS and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that the SCAG region strives toward a more sustainable region, while the region meets and exceeds in meeting all of applicable statutory requirements pertinent to the 2016 RTP/SCS. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

DEMOGRAPHICS AND GROWTH FORECASTS

Local input plays an important role in developing a reasonable growth forecast for the 2016 RTP/SCS. SCAG used a bottom-up local review and input process and engaged local jurisdictions in establishing the base geographic and socioeconomic projections including population, household and employment. At the time of this letter, the most recently adopted SCAG jurisdictional-level growth forecasts that were developed in accordance with the bottom-up local review and input process consist of the 2020, 2035, and 2040 population, households and employment forecasts. To view them, please visit http://www.scag.ca.gov/Documents/2016GrowthForecastByJurisdiction.pdf. The growth forecasts for the region and applicable jurisdictions are below.

	Adopted SCAG Region Wide Forecasts			Adopted City of Walnut Forecasts		
	Year 2020	Year 2035	Year 2040	Year 2020	Year 2035	Year 2040
Population	19,663,000	22,091,000	22,138,800	31,900	32,900	33,800
Households	6,458,000	7,325,000	7,412,300	9,800	10,100	10,400
Employment	8,414,000	9,441,000	9,871,500	9,100	9,600	9,900

MITIGATION MEASURES

SCAG staff recommends that you review the Final Program Environmental Impact Report (Final PEIR) for the 2016 RTP/SCS for guidance, as appropriate. SCAG's Regional Council certified the Final PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on April 7, 2016 (please see: http://scagrtpscs.net/Pages/FINAL2016PEIR.aspx). The Final PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL:
Facilitiesplanning@mtsac.edu
Gary Nellesen, Director
Mt. San Antonio College
Facilities Planning & Management
1100 N. Grand Avenue
Walnut, California 91789-1399

September 26, 2018

Notice of Preparation of a Draft Environmental Impact Report for the Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan (ERMP)

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the draft Environmental Impact Report (EIR). Please send SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the draft EIR that are submitted to the State Clearinghouse are not forwarded to SCAQMD. Please forward a copy of the draft EIR directly to SCAQMD at the address shown in the letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, SCAQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD staff recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analyses. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). The SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

On March 3, 2017, the SCAQMD's Governing Board adopted the 2016 Air Quality Management Plan (2016 AQMP), which was later approved by the California Air Resources Board on March 23, 2017. Built upon the progress in implementing the 2007 and 2012 AQMPs, the 2016 AQMP provides a regional perspective on air quality and the challenges facing the South Coast Air Basin. The most significant air quality challenge in the Basin is to achieve an additional 45 percent reduction in nitrogen oxide (NOx) emissions in 2023 and an additional 55 percent NOx reduction beyond 2031 levels for ozone attainment. The 2016 AQMP is available on SCAQMD's website at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan.

SCAQMD staff recognizes that there are many factors Lead Agencies must consider when making local planning and land use decisions. To facilitate stronger collaboration between Lead Agencies and the SCAQMD to reduce community exposure to source-specific and cumulative air pollution impacts, the SCAQMD adopted the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning in 2005. This Guidance Document provides suggested policies that local governments can use in their General Plans or through local planning to prevent or reduce potential air pollution impacts and protect public health. SCAQMD staff recommends that the Lead Agency review this Guidance Document as a tool when making local planning and land use decisions. This Guidance Document is available on SCAQMD's website at: http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf. Additional guidance on siting incompatible land uses (such as placing homes near freeways or other polluting sources) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. Guidance[2] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

The SCAQMD has also developed both regional and localized significance thresholds. SCAQMD staff requests that the Lead Agency compare the emission results to the recommended regional significance thresholds found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the Proposed Project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

When specific development is reasonably foreseeable as result of the goals, policies, and guidelines in the Proposed Project, the Lead Agency should identify any potential adverse air quality impacts and sources of air pollution that could occur using its best efforts to find out and a good-faith effort at full disclosure in the Draft EIR. The degree of specificity will correspond to the degree of specificity involved in the underlying activity which is described in the Draft EIR (CEQA Guidelines Section 15146). When quantifying air quality emissions, emissions from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-

[2] In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: https://www.arb.ca.gov/ch/landuse.htm.

road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, for phased projects where there will be an overlap between construction and operation, the air quality impacts from the overlap should be combined and compared to SCAQMD's regional air quality CEQA operational thresholds to determine significance.

In the event that the Proposed Project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the Proposed Project, including:

- Chapter 11 "Mitigating the Impact of a Project" of the SCAQMD *CEQA Air Quality Handbook.*
- SCAQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- SCAG's MMRP for the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy available here: http://scagrtpscs.net/Documents/2016/peir/final/2016fPEIR_ExhibitB_MMRP.pdf
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Alternatives

In the event that the Proposed Project generates significant adverse air quality impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines Section 15126.6(d), the draft EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project.

Permits

In the event that the Proposed Project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the Proposed Project. For more information on permits, please visit

SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to SCAQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the Lead Agency to ensure that project air quality and health risk impacts are accurately evaluated and mitigated where feasible. Please contact Alina Mullins, Assistant Air Quality Specialist, at amullins@aqmd.gov or (909) 396-2402, should you have any questions.

Sincerely,

Daniel Garcia

Daniel Garcia
Program Supervisor
Planning, Rule Development & Area Sources

DG/AM
LAC180905-05
Control Number

P.O. Box 682, Walnut, CA 91788-0682
21201 La Puente Road
Walnut, CA 91789-2018
Telephone (909) 595-7543
FAX (909) 595-6095
www.cityofwalnut.org

Mayor, Nancy Tragarz
Mayor Pro Tem, Andrew Rodriguez
Council Member, Eric Ching
Council Member, Robert Pacheco
Council Member, Mary Su

CITY OF WALNUT

October 3, 2018

VIA EMAIL & USPS

Gary Nellesen, Director - Facilities Planning & Management
Facilities Planning & Management Division
Mt. San Antonio College
1100 N. Grand Avenue
Walnut, California 91789-1399
facilitiesplanning@mtsac.edu

SUBJECT: Comments on the Notice of Preparation Long Range Development Plan - Mt. San Antonio College 2018 Educational and Facilities Master Plan

Dear Mr. Nellesen,

Thank you for the opportunity to review and comment on the Notice of Preparation (NOP) Long Range Development Plan (LRDP) Draft EIR for the Mt. SAC 2018 Educational Facilities Master Plan (EFMP), and attend the September 19, 2018 EIR Scoping Meeting.

Attached are the City's comments for your review and reference. Should you wish to discuss our comments further or have any questions, please contact the Community Development Department (909) 595-7543 ext. 400 or email dwomble@cityofwalnut.org.

Thank you for your consideration!

Respectfully,

Derrick Womble
Senior Management Analyst

Attachment(s):
1. City of Walnut – Comments on the Mt. SAC NOP LRDP Draft EIR 2018 EFMP

cc: Tom Weiner, Assistant City Manager – Development Services
Barbara Leibold, City Attorney
Teresa De Dios, City Clerk

COMMENTS ON NOTICE OF PREPARATION FOR LONG RANGE DEVELOPMENT PLAN MT. SAN ANTONIO COLLEGE 2018 EDUCATIONAL AND FACILITIES MASTER PLAN

General Comments

EIR Approach. The approach to the 2018 Educational and Facilities Master Plan (EFMP) EIR described in the Notice of Preparation (NOP) and presented at the September 19, 2018 EIR Scoping Meeting presents an opportunity for Mt. SAC to establish a stable 2018 environmental baseline for evaluation of near-term and long-range Mt. SAC development program impacts through 2027 (10-year planning and development horizon).

A 'stand-alone' EIR is proposed that would not rely upon use of tiering (CEQA 15152) with subsequent CEQA documents for development activities through 2027.

The NOP describes a logical approach to addressing the project and cumulative impacts of the Long-Range Development Plan and EFMP that is consistent with CEQA requirements for a Program EIR (Sec. 15168).

Specific Comments

Content of NOP. The District's Notice of Preparation (NOP) includes the required contents for an NOP pursuant to CEQA 15082(a). There is no Initial Study attached with the NOP.

2018 Memorandum of Agreement. The NOP briefly mentions the April 12, 2018 Memorandum of Agreement ('Agreement') between the City of Walnut (City) and Mt. SAC in relation to the West Parcel Site Improvement project and Physical Education Project (PEP Phase 1, 2). The EFMP EIR should describe the authority and responsibilities of Mt. SAC and the City of Walnut under the Agreement. There should be explicit recognition in the EIR of the City's grading/drainage plan administrative review and permit authority, as well as other terms of the Agreement regarding notification and consultation for future projects.

West Parcel Site. The NOP indicates that the EFMP addresses the previously approved "West Parcel Site Improvement Project". The West Parcel site is identified on the 2018 EFMP Map, but no projects for the site are identified in the near term (2018-2027) or long-term (post-2027). Pursuant to the Agreement, there is no specific project for this site other than West Parcel "earthwork". A copy of the Agreement should be included in the EIR. Any near-term (2018-2027) or long-term (post-2027) use alternatives that may be proposed by Mt. SAC or the City for this site should be identified and evaluated in the EIR.

Physical Education Complex. The NOP indicates the EFMP addresses the previously approved Physical Education Complex (PEC) (PEP Phase 2). The PEC site is identified on the 2018 EFMP Map as a Major New Building. The construction and operation of the PEC will overlap with other major projects listed in the NOP for the 2018-2027 timeframe. The construction and operational effects of the PEC combined with other major projects proposed during this time frame should be evaluated in the EIR.

New Projects in Phases 1A, 1B and 2 (2018-2027). The NOP indicates that the following planned facilities for Phases 1A, 1B and 2 of the EFMP will be evaluated at a *project-specific level* in the current EIR:

> Student Center and Central Campus Infrastructure; Bookstore; Parking Structure R and Tennis Courts; Parking Structure S; Sand Volleyball Courts; Replacement Communication Tower.

Parking Structures. The Agreement specifies that any parking structure shall maintain a setback of no less than 400 feet from the nearest residential property line and that Mt. SAC will meet and confer with the City to evaluate potential impacts of the parking project on nearby residents. In this regard, we note that Parking Structures R, S and F are proposed near the planned Transit Center and approved Physical Education Complex in a more central location within the campus than the previously proposed peripheral Parking Structure at Lot A along Edinger Way near residential properties. These locations are in conformance with the Parking Structure provisions of the Agreement. We further note that neither Structure B proposed at Grand Avenue and San Jose Hills Road, nor Structure F proposed near the proposed Transit Center are identified as projects within the 2018-2027 timeframe.

It appears that construction activities for Structures R and S may overlap with earthwork construction on the West Parcel Site, Transit Center, and the Physical Education Projects during the 2018-2027 timeframe. Phasing of these projects should be identified. The traffic circulation impacts of construction and operations of these structures in combination with other New Major Buildings must be evaluated in the EFMP EIR and associated 2017 Parking and Circulation Master Plan. Mitigation for potentially significant impacts on Temple Avenue, Bonita Avenue, Grand Avenue, and Valley Boulevard, and other City roadways should be included in the EIR.

Any potential visual impacts of proposed rooftop tennis courts with lighting on Structure R, and potential rooftop solar panels on 4-level Structure S, should be addressed in the EIR.

Replacement Communication Tower. The Proposed Replacement Communication Tower would replace the existing 40 ft. high communications tower on Reservoir Hill with an approximately 100-ft. high tower to provide enhanced emergency operations and response capabilities. The project-level review of this structure should include a visual analysis from surrounding vantage points.

Open Space. There are substantial areas shown in green on the 2018 Facilities Master Plan that serve different open space purposes (e.g. wildlife preserve, buffer, passive and active recreation, and West Parcel.) Consideration should be given to including an Open Space designation on the EFMP legend that encompasses these areas.

Cumulative Impacts

Consistent with CEQA Section 15168 (Program EIR) and the LRDP mandate to take a long-range view, any known projects contemplated under Phase 3 of the LRDP (post-2027) should be identified in the current EIR. The type of cumulative impacts that will result from future projects should be addressed in the current EIR, and the timing and type of CEQA documentation to support future project approvals should be described.

Alternatives

The NOP fails to identify any Alternatives to the proposed EFMP for evaluation in the EIR. It was indicated at the NOP Scoping Meeting that the Medium and High Growth Scenarios in the EFMP would be addressed in the EIR. The facility requirements for these scenarios, and resulting environmental impacts and mitigation measures, should be clearly addressed in the EIR.

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2018091004

Project Title: Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan
Lead Agency: Mt. San Antonio Community College District
Contact Person: Mikaela (Mika) Klein
Mailing Address: 1100 N. Grand Avenue
Phone: (909) 274-5720
City: Walnut
Zip: 91789-1399
County: Los Angeles

Project Location: County: Los Angeles
City/Nearest Community: Walnut
Cross Streets: Grand Avenue and Temple Avenue
Zip Code: 91789
Longitude/Latitude (degrees, minutes and seconds): 34°02'49.37" N/117°50'34.59" W
Total Acres: 418.44
Assessor's Parcel No.: Section: Twp: Range: Base:
Within 2 Miles: State Hwy. #: I-10, SR-57
Waterways:
Airports:
Railways: UPRR
Schools: Cal Poly Pomona

Document Type:

CEQA: ☒ NOP ☐ Draft EIR
☐ Early Cons ☐ Supplement/Subsequent EIR
☐ Neg Dec (Prior SCH No.)
☐ Mit Neg Dec Other:

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other:

Governor's Office of Planning & Research
SEP 05 2018
STATE CLEARINGHOUSE

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☒ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (subdivision, etc.) ☐ Other:

Development Type:

☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees ☐ Transportation: Type
☐ Commercial: Sq.ft. Acres Employees ☐ Mining: Mineral
☐ Industrial: Sq.ft. Acres Employees ☐ Power: Type MW
☒ Educational 544,195 SF Net Increase ☐ Waste Treatment: Type MGD
☐ Recreational ☐ Hazardous Waste: Type
☐ Water Facilities: Type MGD ☐ Other:

Project Issues Discussed in Document:

☐ Aesthetics/Visual ☐ Flood Plain/Flooding ☐ Recreation/Parks ☐ Tribal Cultural Resources
☐ Agricultural Land ☐ Forest Land/Fire Hazard ☐ Schools/Universities ☐ Vegetation
☐ Air Quality ☐ Geologic/Seismic ☐ Septic Systems ☐ Water Quality
☐ Archaeological/Historical ☐ Greenhouse Gas Emissions ☐ Sewer Capacity ☐ Water Supply/Groundwater
☐ Biological Resources ☐ Minerals ☐ Soil Erosion/Compaction/Grading ☐ Wetland/Riparian
☐ Coastal Zone ☐ Noise ☐ Solid Waste ☐ Growth Inducement
☐ Drainage/Absorption ☐ Population/Housing Balance ☐ Toxic/Hazardous ☐ Land Use
☐ Economic/Jobs ☐ Public Services/Facilities ☐ Traffic/Circulation ☐ Cumulative Effects
☐ Fiscal ☐ Other:

Present Land Use/Zoning/General Plan Designation:

Mt. San Antonio College/Residential Planning Development with Civic Center Overlay/Schools and Public Institutional

Project Description: *(please use a separate page if necessary)*

The project involves the implementation of the Mt. San Antonio College 2018 Educational and Facilities Master Plan (EFMP) and associated 2017 Parking and Circulation Master Plan (PCMP). This would involves construction of approximately 10 new major buildings/facilities, removal/demolition of 33 aged or temporary facilities, major renovations, minor new construciton and renovation projects, and campus-wide site and infrastructure projects. Additionally, the project will analyze the construction and operation of certain projects implementing the EFMP at a project-specific level. These projects may include: the Student Center, the Bookstore, Parking Structure R and Tennis Courts, Parking Structure S, Sand Volleyball Courts, and a replacement Communication Tower at Reservoir Hill.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g., Notice of Preparation or previous draft document) please fill in.

NOP Distribution List

County: Los Angeles

SCH# 2018091004

Resources Agency

- [ ] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  Denise Peterson
- [ ] **California Coastal Commission**
  Allyson Hitt
- [ ] **Colorado River Board**
  Elsa Contreras
- [ ] **Dept. of Conservation**
  Crina Chan
- [ ] **Cal Fire**
  Dan Foster
- [ ] **Central Valley Flood Protection Board**
  James Herota
- [ ] **Office of Historic Preservation**
  Ron Parsons
- [ ] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- [ ] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- [ ] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Curt Babcock
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Craig Weightman
- [ ] **Fish & Wildlife Region 4**
  Julie Vance
- [ ] **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- [ ] **California Department of Education**
  Lesley Taylor
- [ ] **OES (Office of Emergency Services)**
  Monique Wilber
- [ ] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Dept. of General Services**
  Cathy Buck
  Environmental Services Section
- [ ] **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Erik Vink
- [ ] **Delta Stewardship Council**
  Anthony Navasero
- [ ] **California Energy Commission**
  Eric Knight
- [ ] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Supervisor
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jennifer Deleong
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans – Planning HQ LD-IGR**
  Christian Bushong
- [ ] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Susan Zanchi - North
- [ ] **Caltrans, District 4**
  Patricia Maurice
- [ ] **Caltrans, District 5**
  Larry Newland
- [ ] **Caltrans, District 6**
  Michael Navarro
- [ ] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Mark Roberts
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [ ] **Airport & Freight**
  Jack Wursten
  - [ ] **Transportation Projects**
    Nesamani Kalandiyur
  - [ ] **Industrial/Energy Projects**
    Mike Tollstrup
- [ ] **California Department of Resources, Recycling & Recovery**
  Kevin Taylor/Jeff Esquivel
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- [ ] **State Water Resources Control Board**
  Div. Drinking Water #_____
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control Reg. #_____**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

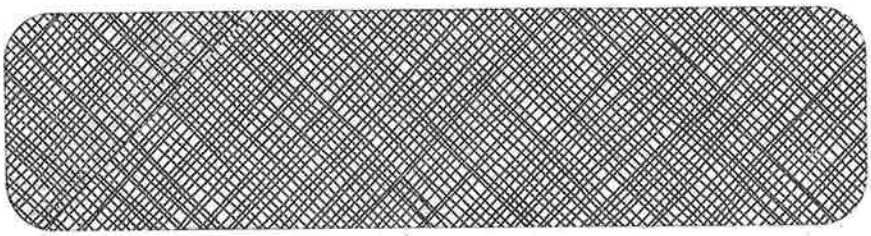
- [ ] **Other** _____
  _____
  _____
- [ ] _____
  Conservancy

Last Updated 5/22/18

State of California
Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
1400 Tenth Street
Sacramento, California 95812-3044

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STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

RECEIVED
OCT 18 2018
MT SAC FACILITIES

Notice of Preparation

September 5, 2018

To: Reviewing Agencies

Re: Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan
SCH# 2018091004

Attached for your review and comment is the Notice of Preparation (NOP) for the Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Mikaela (Mika) Klein
Mt. San Antonio Community College
1100 N. Grand Avenue
Walnut, CA 91789

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
1-916-322-2318 FAX 1-916-558-3184 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2018091004
Project Title Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan
Lead Agency Mt. San Antonio Community College

Type NOP Notice of Preparation

Description The project involves the implementation of the Mt. San Antonio College 2018 Educational and Facilities Master Plan and associated 2017 Parking and Circulation Master Plan. This would involves construction of approx 10 new major buildings/facilities, removal/demolition of 33 aged or temporary facilities, major renovations, minor new construction and renovation projects, and campus-wide site and infrastructure projects. Additionally, the project will analyze the construction and operation of certain projects implementing the EFMP at a project-specific level. These projects may include: the Student Center, the Bookstore, Parking Structure R and Tennis Courts, Parking Structure S, Sand Volleyball Courts, and a replacement Communication Tower at Reservoir Hill.

Lead Agency Contact

Name Mikaela (Mika) Klein
Agency Mt. San Antonio Community College
Phone 909-274-5720 **Fax**
email
Address 1100 N. Grand Avenue
City Walnut **State** CA **Zip** 91789

Project Location

County Los Angeles
City Walnut
Region
Cross Streets Grand Ave and Temple Ave
Lat / Long 34° 02' 49.37" N / 117° 50' 34.59" W
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways I-10, SR 57
Airports
Railways UPRR
Waterways
Schools Cal Poly Pomona
Land Use Mt. San Antonio College/Residential Planning dev with Civic Center Overlay/Schools and public institutional

Project Issues

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 5; California Department of Education; Office of Emergency Services, California; California Highway Patrol; Public Utilities Commission; Native American Heritage Commission; Caltrans, District 7; Regional Water Quality Control Board, Region 4; Resources, Recycling and Recovery; Department of Toxic Substances Control

Date Received 09/05/2018 **Start of Review** 09/05/2018 **End of Review** 10/04/2018

Note: Blanks in data fields result from insufficient information provided by lead agency.

MUTUAL RELEASE AND SETTLEMENT AGREEMENT

This Mutual Release and Settlement Agreement (this "Settlement Agreement") is dated for reference purposes only as of January 1, 2019 (the "Reference Date"), and is entered into by and between Mt. San Antonio Community College District, a community college district duly organized and existing under the Constitution and laws of the State of California ("Mt. SAC") and United Walnut Taxpayers, a California non-profit public benefit corporation ("UWT"), each of which may hereinafter be referred to individually as a "Party" or collectively as the "Parties."

RECITALS

A. On October 12, 2016, the Mt. SAC Board of Trustees (the "Board") took the following official actions: (1) adopted Resolution No. 16-02 Certifying the Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects (the "PEP") and the Program Final Environmental Impact Report, Adopting a Statement of Overriding Considerations, and Adopting a Mitigation Monitoring Program (the "Resolution No. 16-02 Actions") and (2) adopted Resolution No. 16-03 Authorizing Exemption from Local Zoning Ordinances for the Physical Education Projects, and Authorization of Measure RR Bond Funds for the Ordering of Improvements to the Physical Education Projects (the "Resolution No. 16-03 Actions").

B. On November 7, 2016, UWT filed a Verified Complaint for Declaratory and Injunctive Relief; Petition for Writ of Mandate ("Complaint" or "UWT Legal Action") alleging eight causes of action based on Mt. SAC's alleged failure to comply with the California Environmental Quality Act ("CEQA") prior to adopting Resolution No. 16-02 and Mt. SAC's improper expenditure of Measure RR Bond Funds for the PEP, including the Athletic Complex East Phase 1 ("ACE"), under Resolution No. 16-03.

C. On July 12, 2017, the Mt. SAC Board authorized the conditional and non-binding approval of the awards of the Athletics Complex East Project – Phase 2, Bid Packages 3103 – 3126 (the "July 12, 2017 Actions").

D. On August 9, 2017, the Mt. SAC Board adopted Resolution No. 17-01 Certifying the Mt. San Antonio College 2015 Physical Education Projects Draft Subsequent Project Environmental Impact Report, Adopting a Statement of Overriding Considerations, and Adopting a Mitigation Monitoring Program (the "Resolution No. 17-01 Actions").

E. On October 11, 2017, the Mt. SAC Board adopted Resolution No. 17-03 Certifying the Mt. San Antonio College West Parcel Solar Project (the "Approved Solar Project") Tiered Draft Environmental Impact Report, Adopting a Statement of Facts and Findings, and Adopting a Mitigation Monitoring Program; and Authorizing Commencement of Phase 1 Grading Operations on the West Parcel (the "Resolution No. 17-03 Actions").

F. On April 12, 2018, Mt. SAC and the City of Walnut, through their respective governing bodies, reached a conditional settlement agreement (the "Memorandum of Agreement") of the following Los Angeles County Superior Court actions filed by the City of Walnut against Mt. SAC: Case No. BS166152, Case No. BS170683 and Case No. BS171818 (collectively the "City Legal Actions), wherein the City of Walnut challenged the: (i) Resolution No. 16-02 Actions, (ii)

Resolution No. 16-03 Actions, (iii) July 12, 2017 Actions, (iv) Resolution No. 17-01 Actions, and (v) Resolution No. 17-03 Actions. A true and correct copy of the Memorandum of Agreement is attached hereto as Exhibit A. Final settlement and dismissal of the City Legal Actions are subject to the governing bodies of Mt. SAC and the City of Walnut entering into a formal settlement agreement, the City Council of the City of Walnut approving the Earthwork and grading plans, and Mt. SAC recording a restrictive covenant, which have not occurred as of the Reference Date.

G. On July 24, 2018, the Mt. SAC Board adopted Resolution No. 18-01 Ordering an Election and Establishing Specifications of the Election Order for the November 6, 2018 General Election of the Mt. SAC bond measure in the aggregate principal amount of $750,000,000, which the Los Angeles County Registrar of Voters had designated Measure GO (the "Measure GO Bond Election"). On November 6, 2018, Measure GO Bond Election passed by the affirmative vote of 60.82%.

H. UWT has dismissed all causes of action in the UWT Legal Action, other than the Third and Fourth causes of action, which allege that Mt. SAC is improperly using Measure RR Bond funds for the PEP and ACE under Education Code Section 15284 and Code of Civil Procedure Section 526a and seeks restitution of prior expenditures of Measure RR Bond Funds on the PEP and ACE and injunctive relief prohibiting future expenditures of Measure RR Bond Funds on the PEP and ACE; Mt. SAC denies these allegations.

I. Mt. SAC and UWT now desire to settle the UWT Legal Action in accordance with the terms and provisions set forth herein below.

NOW THEREFORE, in consideration of the mutual covenants, agreements, representations, and warranties contained in this Settlement Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. **Effective Date**. This Settlement Agreement shall become effective and binding upon the Parties upon the date each of the following conditions are satisfied: 1) this Settlement Agreement has been approved by the governing bodies of Mt. SAC and UWT at a duly noticed meeting held in compliance with all applicable laws and 2) this Settlement Agreement has been duly executed by the authorized representative of Mt. SAC and UWT. Upon satisfaction of each condition above, this Settlement Agreement shall thereupon become effective and binding upon the Parties, the date of which shall be known as the "Effective Date". This Settlement Agreement shall thereafter continue in full force and effect and be enforceable, according to its terms and conditions, as provided herein.

2. **Mt. SAC Modifications of Earthwork and Grading Operations on the West Parcel**.

a. Mt. SAC Obligations.

i. Mt. SAC agrees it will not deposit approximately 140,000 cubic yards of earth on the "West Parcel" (as defined below) in connection with construction of the PEP. For purposes of this Section 2, the "West Parcel" means an approximately 27.65 acre area of the Mt. SAC campus located west of Grand Avenue and south of Amar Road and Temple Avenue.

ii. Within three (3) days of the Effective Date, Mt. SAC further agrees it will transmit a fully executed copy of this Settlement Agreement to the City of Walnut and will give notice to the City of Walnut that Mt. SAC has formally abandoned the Earthwork and withdraws the grading plans and application to the extent such plans and application relate to the Earthwork.

iii. Mt. SAC further agrees it will not deposit earth from the PEP and/or ACE projects to the West Parcel.

iv. Mt. SAC further agrees that any future earthwork or grading operations at the West Parcel shall require official action of the Board taken at a duly noticed meeting in compliance with all laws; including, but not limited to, CEQA and City of Walnut grading and truck hauling ordinances to the extent applicable.

b. Earthwork and Grading Operations Exclusions. Notwithstanding anything to the contrary above in Section 2.a, Mt. SAC shall be permitted to undertake and complete the following earthwork and grading operations at the West Parcel (collectively the "Excluded Earthwork"):

i. Earthwork and grading operations required under the Declaration of Restrictive Covenants recorded by Mt. SAC, as Declarant, in favor of the State of California, acting by and through the California Department of Fish and Wildlife, a subdivision of the California Natural Resources Agency ("CDFW"), and the United States of America acting by and through the U.S. Army Corps of Engineers ("ACOE"), and the United States Fish and Wildlife Service, an agency within the United States Department of the Interior, ("USFWS")

ii. Earthwork and grading operations required pursuant to the (1) Agreement Regarding Proposed Stream or Lake Alteration (Notification No. 1600-2015-0022-R5) issued to Mt. SAC and the Final Mitigation Plan created thereunder; (2) the ACOE CWA Section 404 Permit No. SPL-2015-00113-PKK and any amendments thereto; (3) the Los Angeles Regional Water Quality Board CWA Section 401 Certification No. 15-021; and (4) USFWS biological opinion No. FWS-LA-14B0243 -15F0556 and any amendments thereto.

iii. Earthwork and grading operations to perform landslide remediation, subject to compliance with all applicable laws.

3. **PEP and ACE Projects.** UWT agrees Mt. SAC shall have the right to use Measure RR Bond Funds for the PEP, ACE and any future modifications to the PEP and/or ACE. UWT further agrees Mt. SAC shall have the right to use Measure GO Bond Funds for the PEP, ACE and any future modifications to the PEP and/or ACE. UWT further agrees it will not oppose the construction of the PEP, the ACE and any future modifications to the PEP and/or ACE.

4. **Mutual General Releases.**

a. Except as set forth in this Settlement Agreement, UWT releases Mt. SAC and its Board, trustees, officers, employees, agents and attorneys from any and all claims, demands, liabilities, obligations, costs, expenses, fees, actions, and/or causes of action that UWT has or may have arising out of, or connected to, the following matters: (i) the Mt. SAC Board Actions, (ii) the UWT Legal Action, (iii) the PEP, (iv) the ACE, (v) the use of Measure RR Bond Funds to construct

the PEP, the ACE and any modifications thereto, (vi) the use of Measure GO Bond Funds to construct the PEP, the ACE and any modifications thereto, (vi) the Excluded Earthwork.

b. Except as set forth in this Settlement Agreement, Mt. SAC releases UWT and its directors, officers, agents and attorneys from any and all claims, demands, liabilities, obligations, costs, expenses, fees, actions, and/or causes of action that Mt. SAC has or may have arising out of, or connected to, the UWT Legal Action.

c. Upon the Effective Date, each of the Parties has read and has otherwise been informed of the meaning of Section 1542 of the California Civil Code, and has consulted with its respective counsel, to the extent that any was desired, and understands the provisions of Section 1542. Each of the Parties hereby expressly waives the rights and benefits conferred upon it by the provisions of Section 1542 of the California Civil Code, which provides:

"A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR."

WJG	LA/MC
Mt. SAC's Initials	UWT's Initials

5. **Court to Retain Jurisdiction; Attorneys' Fees and Costs**. The court in the UWT Legal Action shall have continuing jurisdiction to enforce the terms of this Settlement Agreement pursuant to Section 664.6 of the Code of Civil Procedure. In any dispute or controversy arising out of this Settlement Agreement, the prevailing party shall be entitled to reimbursement of its costs, including cost of the proceeding and attorneys' fees and costs. No action to enforce this Settlement Agreement for breach shall be brought or maintained until: (1) the non-breaching Party provides written notice to the breaching Party which explains with particularity the nature of the claimed breach, and (2) within thirty (30) days after mailing of said notice, the breaching Party fails to cure the claimed breach or, in the case of a claimed breach which cannot be reasonably remedied within a thirty (30) day period, the breaching Party fails to commence to cure the claimed breach within such thirty (30) day period, and thereafter diligently complete the activities reasonably necessary to remedy the claimed breach.

6. **Waiver of Attorneys' Fees and Costs in UWT Legal Action**. The Parties will each bear its own costs and attorneys' fees incurred in the prosecution and defense of the UWT Legal Action, including costs and attorneys' fees incurred in all proceedings related to the appeal of the order denying UWT's motion for preliminary injunction.

7. **Duty to Dismiss with Prejudice**. UWT shall effectuate dismissal with prejudice of the UWT Legal Action by filing a request for dismissal with prejudice within ten (10) court days of the Effective Date.

8. **Notices.** Any notice or request required to be given to a Party under this Settlement Agreement shall be given in writing and shall be personally delivered or mailed by prepaid registered or certified mail to the addresses below:

Mt SAC: Attn: Michael Gregoryk

Vice President, Administrative
Services
Mt. SAC College
1100 North Grand Avenue
Walnut, CA 91789
Tel: (909) 274-5502
Email: mgregoryk@mt.sac.edu

With a copy to:

Attn: Sean B. Absher
Stradling Yocca Carlson & Rauth
Professional Law Corporation
44 Montgomery Street, Suite 4200 |
San Francisco, CA 94104
Tel: (415) 283-2242
Email: sabsher@sycr.com

UWT:

Attn: Layla Abou-Taleb
1608 N. Timber Ridge Lane
Walnut, CA 91789
Email: abousassi@yahoo.com

With a copy to:

Attn: Craig A. Sherman
Craig A. Sherman
Professional Law Corporation
1901 First Avenue, Suite 219
San Diego, CA 92101
Tel: (619) 702-7892
CraigShermanAPC@gmail.com

Any address may be changed by mailing written notice to all Parties.

9. **Miscellaneous.**

a. Parties Bound. This Settlement Agreement shall apply to and be binding upon the Parties and each of them, and their current and future members, officials, officers, directors, agents, trustees, successors, and assigns.

b. No Third Party Beneficiary; Memorandum of Settlement. This Settlement Agreement shall not be construed as creating in favor of UWT the status of a third party beneficiary to the Memorandum of Agreement.

10. Entire Agreement. The Parties acknowledge that this Settlement Agreement is signed and executed without reliance upon any actual or implied promises, warranties or representations made by any of the Parties or by any representative of any of the Parties, other than

those which are expressly contained within this Settlement Agreement. This Settlement Agreement, including the true and correct Recitals above, inclusive of all definitions contained therein, that are incorporated by reference herein as operative covenants and specifically relied upon by the Parties in executing this Settlement Agreement, constitutes the entire agreement and understanding among and between the Parties and supersedes any and all other agreements whether oral or written between the Parties.

11. Amendments and Modifications. This Settlement Agreement may only be amended or modified through writing executed by all the Parties.

12. Settlement, No Admissions by Parties. Each of the Parties acknowledges that this Settlement Agreement relates to the avoidance of litigation and the preclusion of actions described above. Therefore, the Parties agree that this Settlement Agreement is not to be treated or construed, at any time or in any manner whatsoever, as an admission by any Party that any of the allegations in the UWT Legal Action has or lacks merit.

13. Choice of Law and Choice of Forum. This Settlement Agreement shall be deemed to have been executed and delivered within the State of California; the rights and obligations of the Parties hereunder shall be governed, construed and enforced in accordance with the laws of the State of California. The venue for any dispute arising from or related to this Settlement Agreement, its performance, and its interpretation shall be the Superior Court of Los Angeles County.

14. Damages. The Parties agree (i) that the performance of the obligations of this Settlement Agreement are paramount, (ii) that, in the event of a breach, monetary damages will provide inadequate relief, and (iii) that each may seek equitable relief to enforce such obligations.

15. Authorized Signatory; No Assignment of Claims. Each Party represents and warrants to each other that its signature to this Settlement Agreement has the authority to bind the Party, and this Settlement Agreement does in fact bind the Party. The Parties further warrant and represent that they are the sole and lawful owners of all rights, titles and interest in and to all the Claims released herein, and that they have not voluntarily, by operation of law or otherwise, assigned or transferred or purported to assign or transfer to any other person or entity, any Claims, or any part or portion thereof, or any interest therein.

16. Counterparts and Facsimile Signatures. This Settlement Agreement may be executed in counterparts and when so executed by the Parties, shall become binding upon them and each such counterpart will be an original document, and signed signature pages may be transmitted by facsimile, and any such signature shall have the same legal effect as an original.

IN WITNESS WHEREOF, the Parties have executed this Settlement Agreement.

MT. SAN ANTONIO COMMUNITY COLLEGE DISTRICT

3/4/19
Date

By: Wm T. Scroggins
Name: William T. Scroggins

Title: _____

Approved as to form:

_____
Sean B. Absher
Stradling Yocca Carlson & Rauth
Attorneys for Mt. SAC

*UNITED WALNUT TAXPAYERS,
a California non-profit public benefit corporation

February 1, 2019
Date

By: Layla Abou-Taleb
Name: Layla Abou-Taleb
Title: President, United Walnut Taxpayers

February 1, 2019
Date

By: Mansfield Collins
Name: Mansfield Collins
Title: Board Member, United Walnu Taxpayers

*[*Signatures by two (2) UWT officers are required unless UWT has provided Mt. SAC with a corporate resolution authorizing a single officer to sign.]*

EXHIBIT A

MEMORANDUM OF AGREEMENT

[See Attachment]

MEMORANDUM OF AGREEMENT

I. Parking Structure:

1. Remove multi-level Parking Structure location at Lot A by eliminating it from Master Plan, no later than the next Master Plan Update. Surface parking allowed.

2. Mt. SAC agrees that any parking structure shall maintain a setback of no less than 400 feet from the nearest single family residential property line and that Mt. SAC will "meet and confer" with the City to evaluate the potential impacts of the parking project on nearby residents.

3. Mt. SAC agrees it will consider the location of a parking project near the Mt. SAC Transit project. Mt. SAC agrees to evaluate the benefits of prioritizing the siting of future parking structures in proximity to the Transit Center and along Temple Avenue.

4. The City and Mt. SAC will equally share in the cost of completing the sidewalk north of Grand and San Jose. In the event the City elects not to participate in the cost of completing the sidewalk, Mt. SAC will have no obligation under this Section I.4.

II. West Parcel:

1. Mt SAC will agree to remove the current Board approved Solar Project from the Master Plan and record a restrictive covenant against the West Parcel that prohibits use of the West Parcel to construct, build or install ground-mount solar panels or other stand-alone energy project with impacts similar to a ground-mount solar farm. Mt. SAC and the City agree that the restrictive covenant will have provisions for reasonable standards for any other stand-alone energy project or facility with exposed energy-generating components; provided, however, Mt. SAC may conform to applicable DSA code requirements as amended from time to time without City approval.

2. Any future proposed temporary or permanent use or project planned for development on the West Parcel Site shall be reviewed and processed by Mt. SAC in conformance with Section IV below and all applicable law.

3. The City agrees Mt. SAC may deposit approximately 140,000 cubic yards of dirt on the West Parcel Site in connection with the construction of the Stadium PEP project described in Section III below ("Earthwork") no earlier than September 2018 subject to (a), (b), and (c), below.

   a) The West Parcel Earthwork and hauling operations shall be conducted in accordance with City reviewed and approved plans. The City agrees to process the grading plans, including proposed haul route and traffic

control plans for the West Parcel Site and Stadium PEP project consistent with the applicable requirements of the Walnut Municipal Code Title II, Chapter 6. Notwithstanding the foregoing, the City agrees to submit the grading and hauling plans for the West Parcel directly to the City Council with the City Engineer's recommendation concurrent with the City Council's consideration of the complete and final settlement agreement. The complete and final settlement agreement will be conditioned on expiration of the time to appeal the City Council decision approving the grading plans for the Earthwork. Mt. SAC will continue to export the first 140,000 cubic yards of earth from the PEP project to sites in the cities of Chino and/or Ontario. Mt. SAC will submit a revised truck hauling plan.

b) Mt. SAC will incorporate contouring and landscaping elements that create rolling pasture lands that are visually appealing and environmentally friendly. Renderings previously prepared and submitted by Mt. SAC show conceptually how Mt. SAC intends to contour and landscape the pad with swales, mounds, slopes, and trails to create rolling pasture lands. The contouring will result in elevation changes of ± five feet to achieve the desired pasture-like effect.

c) Mt. SAC may build a temporary access road for the West Parcel Site as reasonably necessary for the Earthwork and a secured permanent access road as reasonably necessary for maintenance.

4. Mt. SAC does not intend at this time to undertake any additional CEQA review for the Earthwork and contouring/landscaping work on the West Parcel site.

III. Stadium (PEP) Project:

1. The City agrees to not oppose the construction of the Stadium PEP. The City agrees the grading application submittals for the PEP is complete as of 5:00 pm April 7, 2018 and that the City will exercise its best efforts to complete the plan check review at the earliest possible time. Mt. SAC has paid applicable application fees and will remit payment for engineering fees promptly upon invoice from the City.

2. Mt. SAC will indemnity/reimburse the City for damage to City roads arising from earthmoving truck hauling through identified and adopted mitigation measures supporting the SEIR. City does not waive any claims for additional damages.

3. Mt. SAC will agree to formation of a Stadium task force to include City and Mt. SAC representatives to discuss partnering opportunities.

4. Mt. SAC will agree to process requests by the City to use the Stadium by applying the published policies and procedures for fees and schedules for municipalities located within its geographical boundary.

IV. Future Projects:

1. For commencement and/or implementation of either Master Plan projects or Master Plan Updates (MPU) and adoption of any Government Code section exemption (including but not limited to section 53091 and 53094), written notice to the City shall be given at the earliest time that Mt. SAC issues either its Request for Qualifications (RFQ) or Request for Proposals (RFP) for any architect or design or other consultant or contractor; but in no event later than 30-days prior to Mt. SAC's publication of the agenda for the items listed above.

2. The City and Mt. SAC will "meet and confer" on substantive planning and development projects that impact both parties. These matters include, but are not limited to: (i) Mt SAC projects proposed under the 2018 Facilities Master Plan Update and Facility Master Plan updates; (ii) future Mt. SAC projects; (iii) updates to the City's General Plan; (iv) City zoning changes affecting the Mt. SAC campus, and (v) City long range development plans. The purpose is for Mt. SAC and the City to work together to review planning and projects that affect both parties and to discuss planning and project implementation at the earliest stages. The "meet and confer" process will start with the City's City Manager or his/her designee, and Mt. SAC's President/CEO, or his/her designee, with reasonable follow-up by staff, as the City Manager and the President/CEO, or designee(s), may decide and subject to City Council and Board of Trustees approval.

3. The City agrees that Mt. SAC has its own MS4 permitting authority under a statewide permit. The City further agrees that its authority to review and approve grading plans for all future Mt. SAC exempt educational facilities will be administrative review and approval of grading/drainage plans by the City's Building Official upon the submission of the complete grading application and such review and approval will be pursuant to technical design and construction standards of on-site improvements which affect grading and drainage.

4. Mt. SAC and the City will re-establish the quarterly committee (staff and elected representatives) meetings between Mt. SAC and the City to consult meet and confer on current events, projects, etc. Additional informal consultations/notifications between the City and Mt. SAC staff will be made prior to formal notice and publicity of new projects, events, etc. to allow for improved coordination.

V. Miscellaneous:

1. Mt. SAC and the City agree to issue a joint press release or announcement once this Memorandum of Agreement is approved by its respective governing bodies.

MEMORANDUM OF AGREEMENT

2. Mt. SAC's Board of Trustees is considering placing on the November 2018 general election ballot a Proposition 39 bond measure. The City agrees it will not submit any "argument against" the bond measure for publication in the voter pamphlet.

3. This Memorandum of Agreement shall be memorialized in a full settlement and mutual release agreement that shall include a stipulated judgment to be filed in pending litigation. The written settlement agreement shall contain a provision for judicial enforcement pursuant to CCP 664.6 along with a clause for prevailing party attorneys' fees.

4. Mt. SAC and the City will bear their attorneys' fees and costs with the exception Mt. SAC and the City agree the award of attorneys fees on appeal will be resolved by the appeal process.

5. The City will dismiss its pending lawsuits against Mt. SAC with both sides to bear their own fees and costs except as stated above in Section V.3. above.

6. The above terms are agreed to in principal and subject to approval of a formal and comprehensive written settlement agreement approved by the governing bodies of Mt. SAC and the City at a duly noticed meeting.

Date: _____

_____
Dr. Manuel Baca,
President, Mt. SAC Board of Trustees

Date: _____

_____
Mary Su,
Mayor, City of Walnut

APPROVED AS TO FORM:

Date: April 12, 2018

_____
Sean Absher, Esq.
Counsel for Mt. Sac and President Scroggins

Date: April 12, 2018

_____
Barbara Leibold, Esq.
Counsel for City of Walnut

[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
T1, T4-T5, T8	50'	50'	2	TLC-LED-1150	2.30 kW	A
T2-T3, T6-T7	50'	50'	4	TLC-LED-1150	4.60 kW	A
T9, T12-T13, T16	50'	50'	2	TLC-LED-1150	2.30 kW	B
T10-T11, T14-T15	50'	50'	4	TLC-LED-1150	4.60 kW	B
T17, T20-T21, T24	50'	50'	2	TLC-LED-1150	2.30 kW	C
T18-T19, T22-T23	50'	50'	4	TLC-LED-1150	4.60 kW	C
24			***72***		***82.80 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Tennis 1	27.6 kW	24
B	Tennis 2	27.6 kW	24
C	Tennis 3	27.6 kW	24

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1150	LED 5700K - 75 CRI	1150W	121,000	>51,000	>51,000	>51,000	72

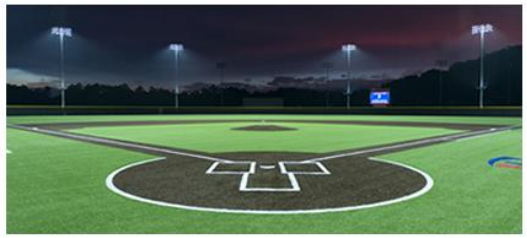
Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Center 1	Horizontal Illuminance	78.6	67	88	1.32	1.17	B	24
Center 2	Horizontal Illuminance	83.1	75	91	1.22	1.11	B	24
Center 3	Horizontal Illuminance	78.9	66	88	1.34	1.20	B	24
Center Tennis 1-3	Horizontal Illuminance	80.2	66	91	1.38	1.22	B	24
Court C 1 Area	Horizontal	71.6	35	91	2.60	2.05	B	24
Court C 2 Area	Horizontal	79.7	52	95	1.83	1.53	B	24
Court C 3 Area	Horizontal	71.9	34	90	2.61	2.11	B	24
Court N 1 Area	Horizontal	71	35	90	2.57	2.03	A	24
Court N 2 Area	Horizontal	82	49	100	2.03	1.67	A	24
Court N 3 Area	Horizontal	71.7	35	91	2.59	2.05	A	24
Court S 1 Area	Horizontal	72.1	33	91	2.75	2.18	C	24
Court S 2 Area	Horizontal	80.7	52	96	1.83	1.55	C	24
Court S 3 Area	Horizontal	71.6	35	88	2.54	2.05	C	24
North 1	Horizontal Illuminance	78.1	66	87	1.31	1.18	A	24
North 2	Horizontal Illuminance	86.7	77	98	1.27	1.13	A	24
North 3	Horizontal Illuminance	78.2	67	89	1.33	1.17	A	24
North Tennis 1-3	Horizontal Illuminance	81	66	98	1.49	1.23	A	24
South 1	Horizontal Illuminance	79.2	65	89	1.37	1.22	C	24
South 2	Horizontal Illuminance	84.4	75	93	1.23	1.12	C	24
South 3	Horizontal Illuminance	78.2	67	87	1.31	1.17	C	24
South Tennis 1-3	Horizontal Illuminance	80.6	65	93	1.44	1.24	C	24

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From Hometown to Professional









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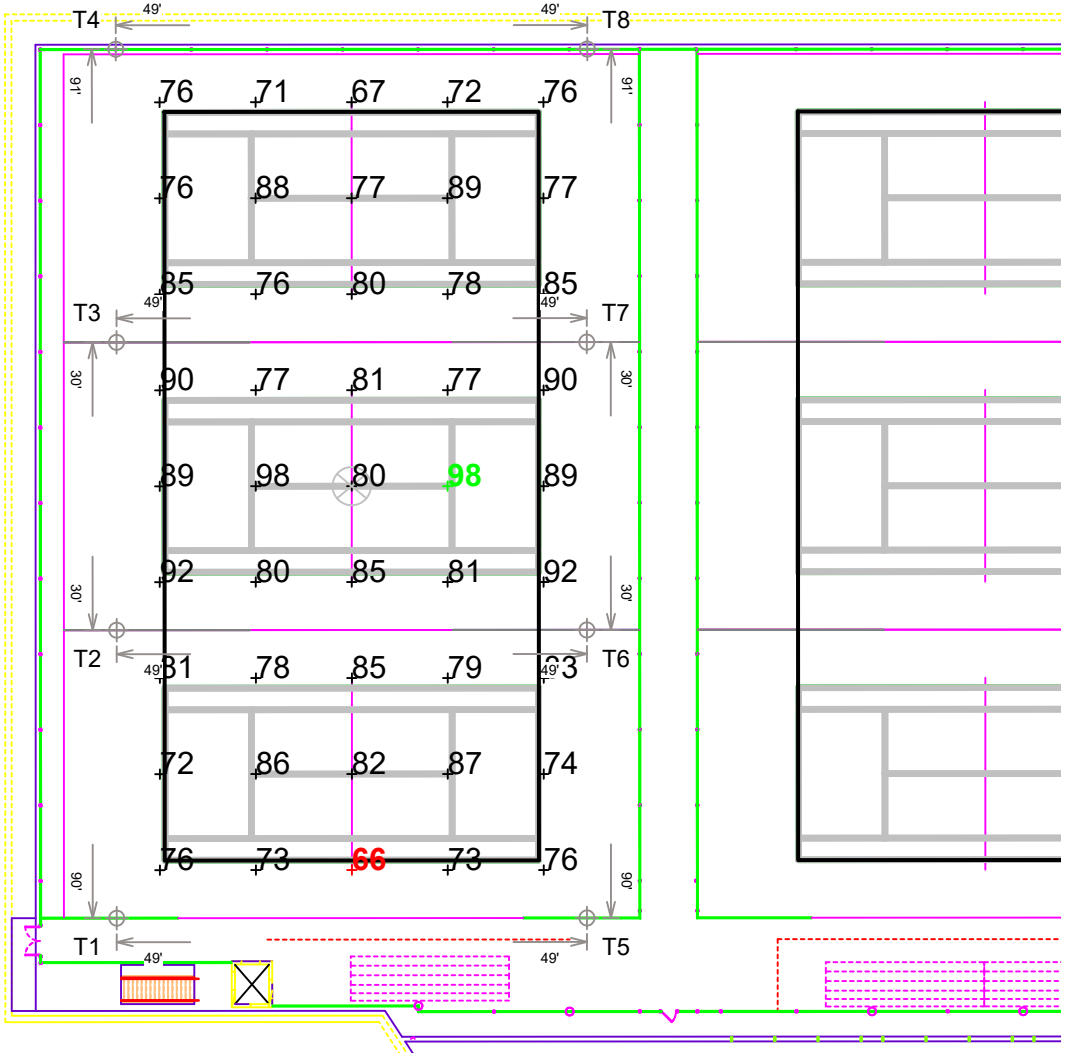
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**North Tennis 1-3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**75**
Scan Average:	80.98
Maximum:	98
Minimum:	66
Avg / Min:	1.23
Guaranteed Max / Min:	**1.7**
Max / Min:	1.49
UG (adjacent pts):	0.00
CU:	0.78
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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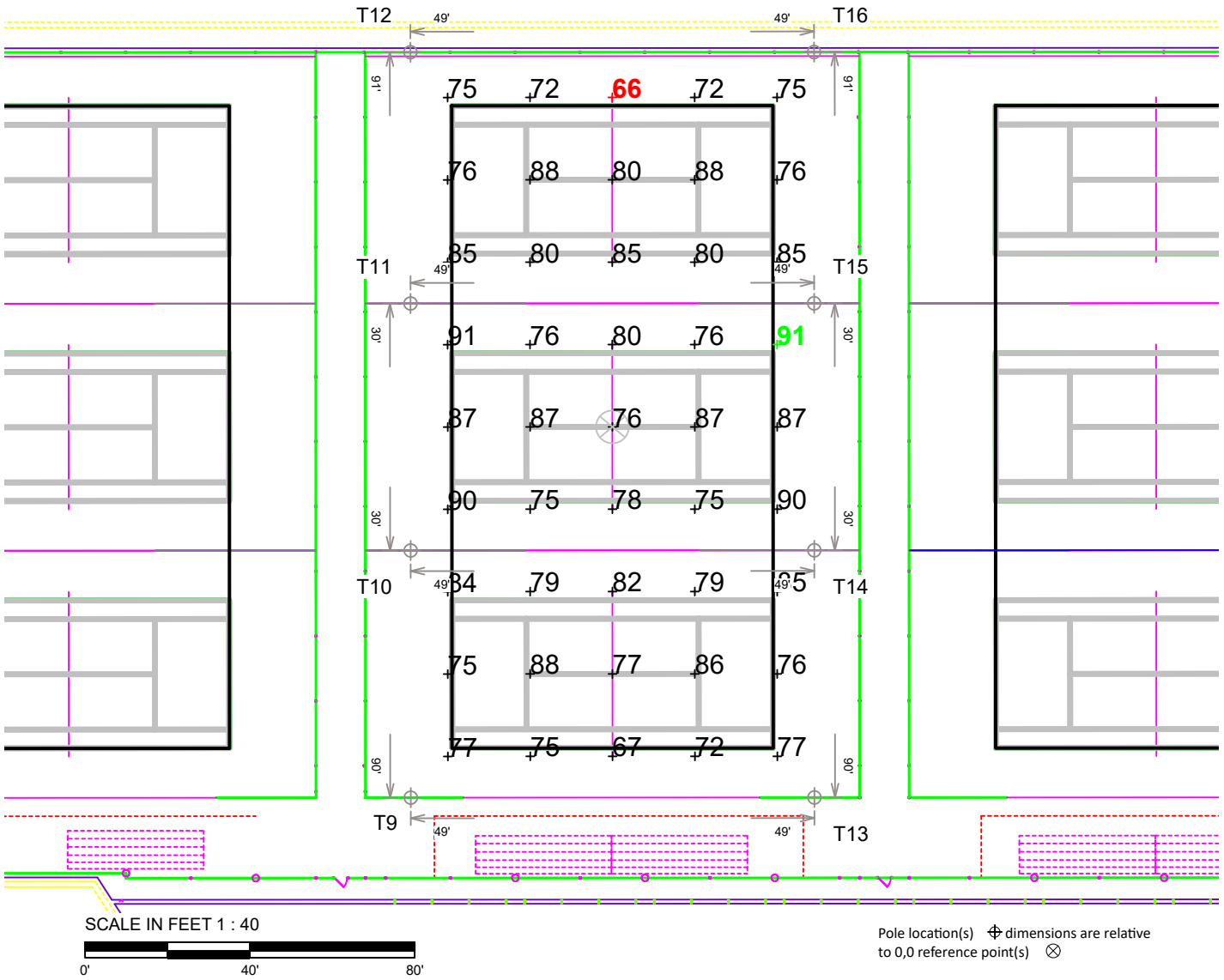
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Center Tennis 1-3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**75**
Scan Average:	80.21
Maximum:	91
Minimum:	66
Avg / Min:	1.22
Guaranteed Max / Min:	**1.7**
Max / Min:	1.38
UG (adjacent pts):	0.00
CU:	0.77
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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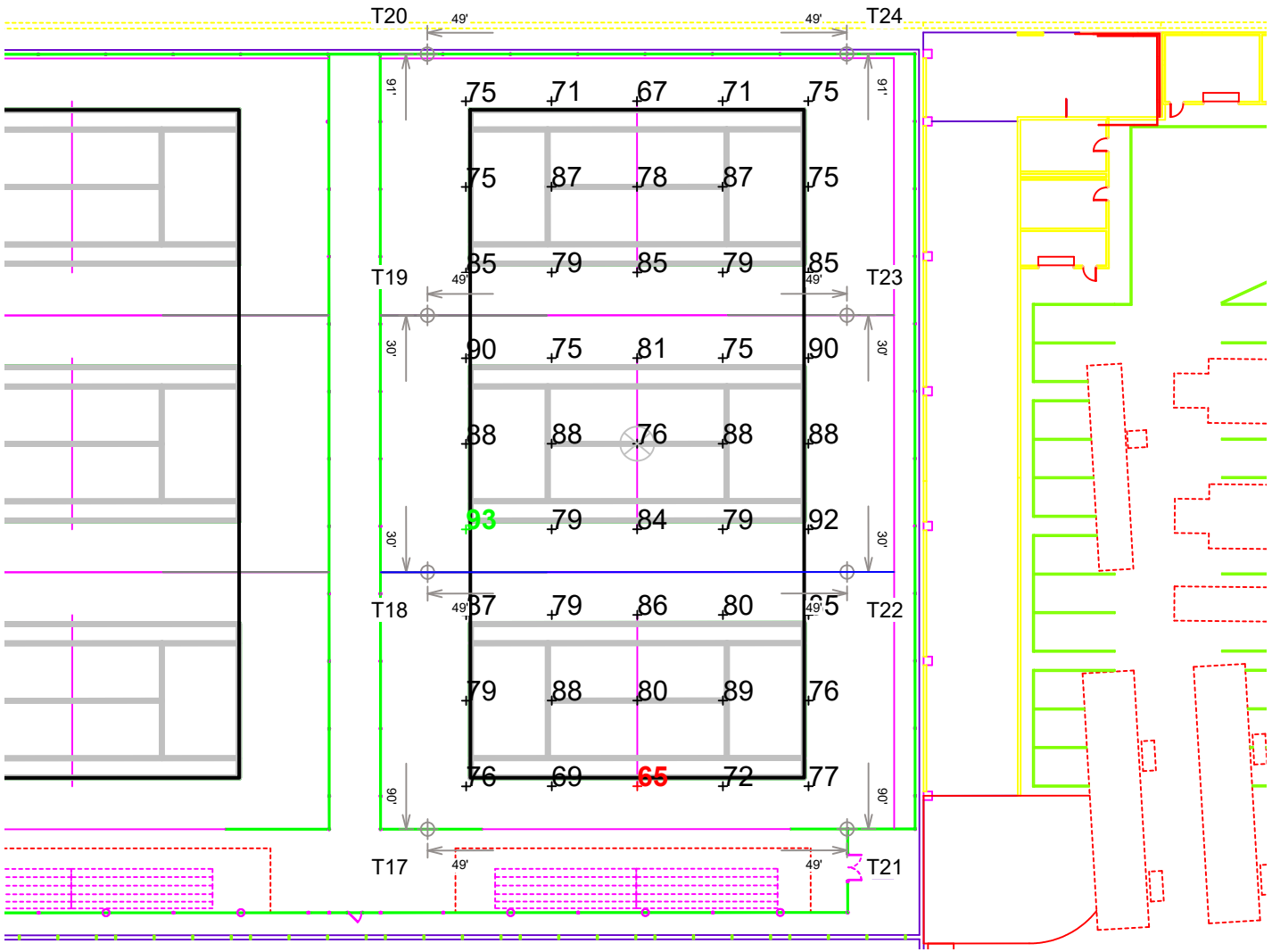
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Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**South Tennis 1-3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**75**
Scan Average:	80.60
Maximum:	93
Minimum:	65
Avg / Min:	1.25
Guaranteed Max / Min:	**1.7**
Max / Min:	1.44
UG (adjacent pts):	0.00
CU:	0.78
No. of Points:	45

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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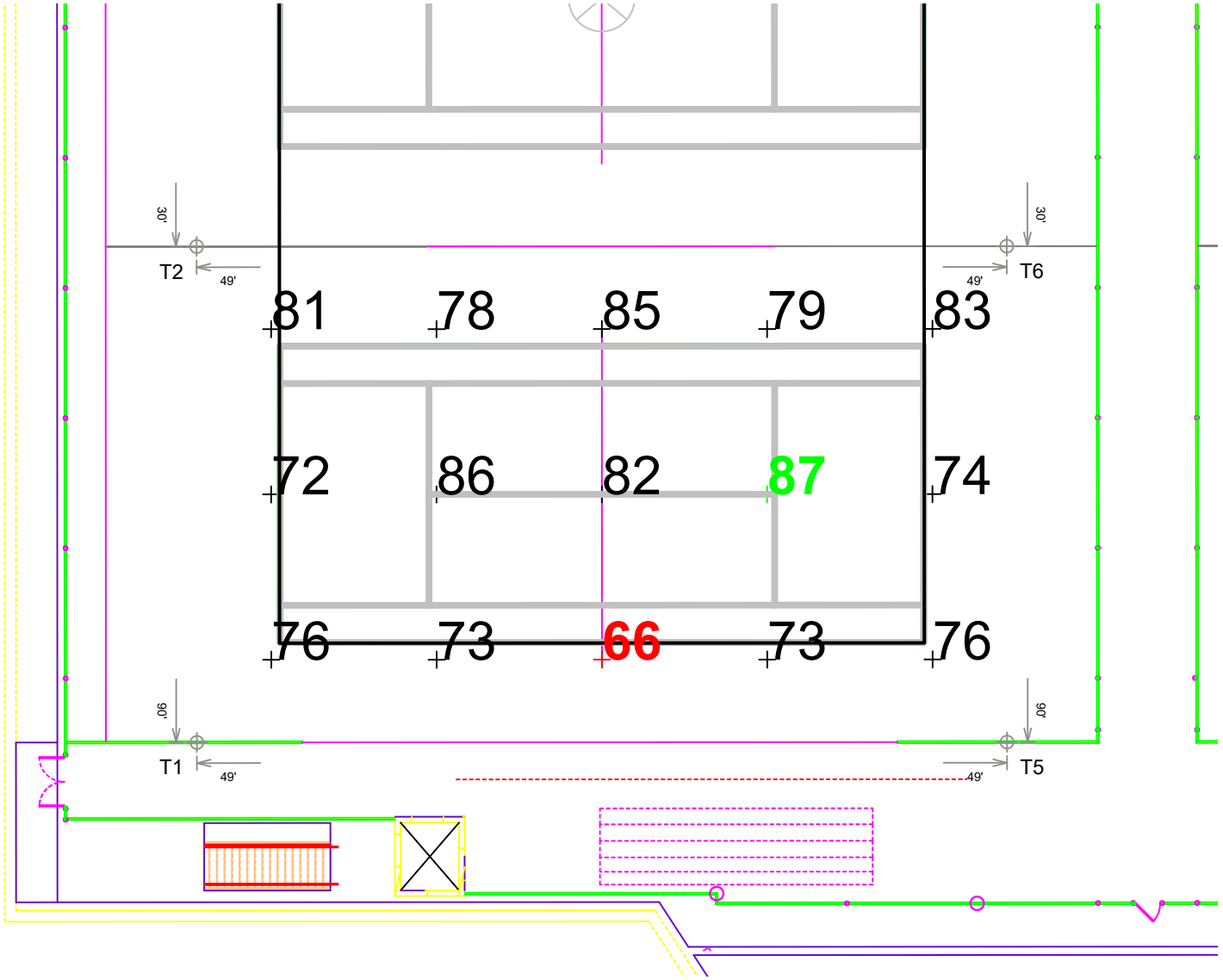
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**North 1**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**78.05**
Maximum:	87
Minimum:	66
Avg / Min:	1.18
Max / Min:	**1.31**
UG (adjacent pts):	1.24
CU:	0.25
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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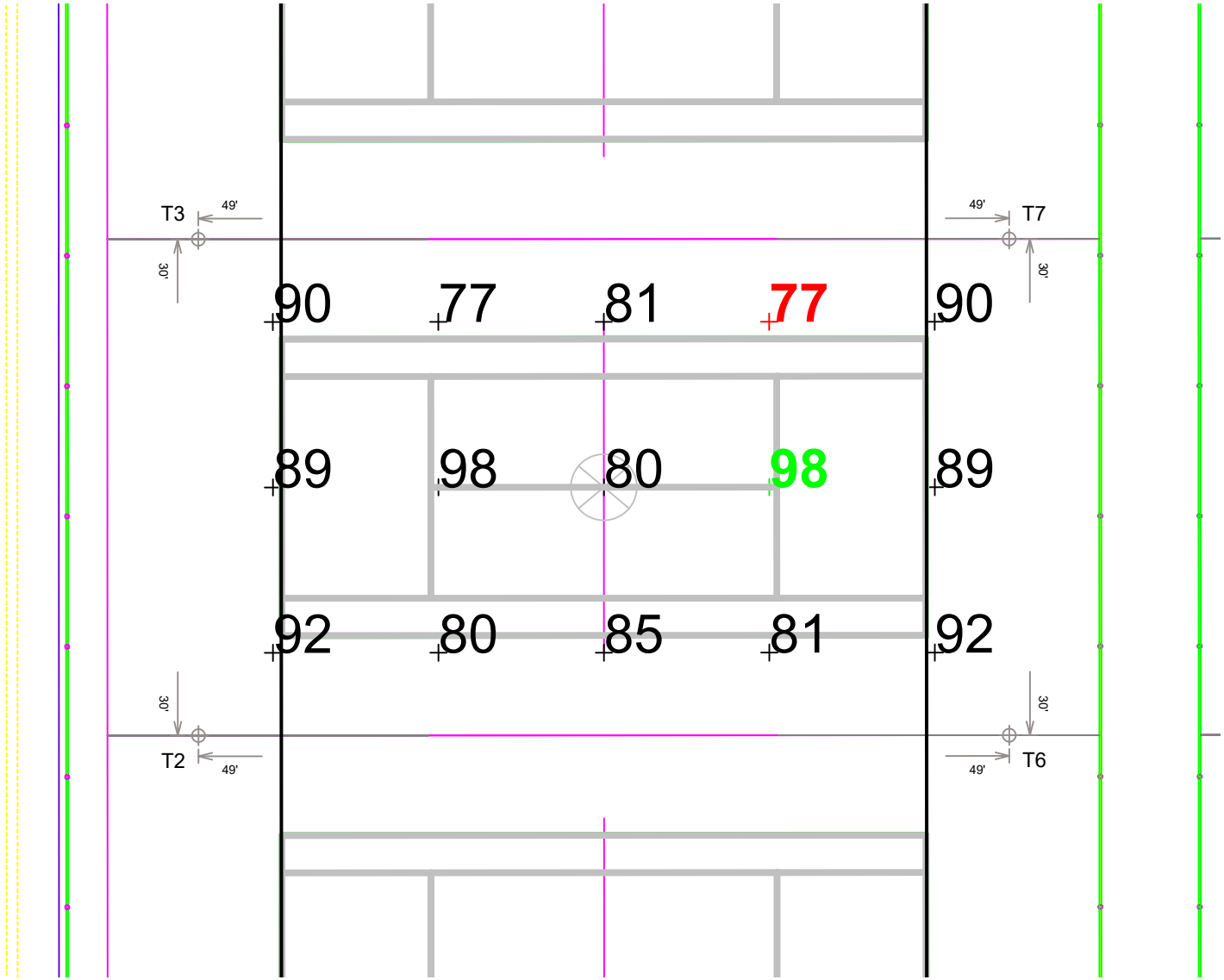
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**North 2**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**86.66**
Maximum:	98
Minimum:	77
Avg / Min:	1.13
Max / Min:	**1.27**
UG (adjacent pts):	1.27
CU:	0.28
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0

GRID SUMMARY

Name:	**North 3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**78.23**
Maximum:	89
Minimum:	67
Avg / Min:	1.17
Max / Min:	**1.33**
UG (adjacent pts):	1.24
CU:	0.25
No. of Points:	15

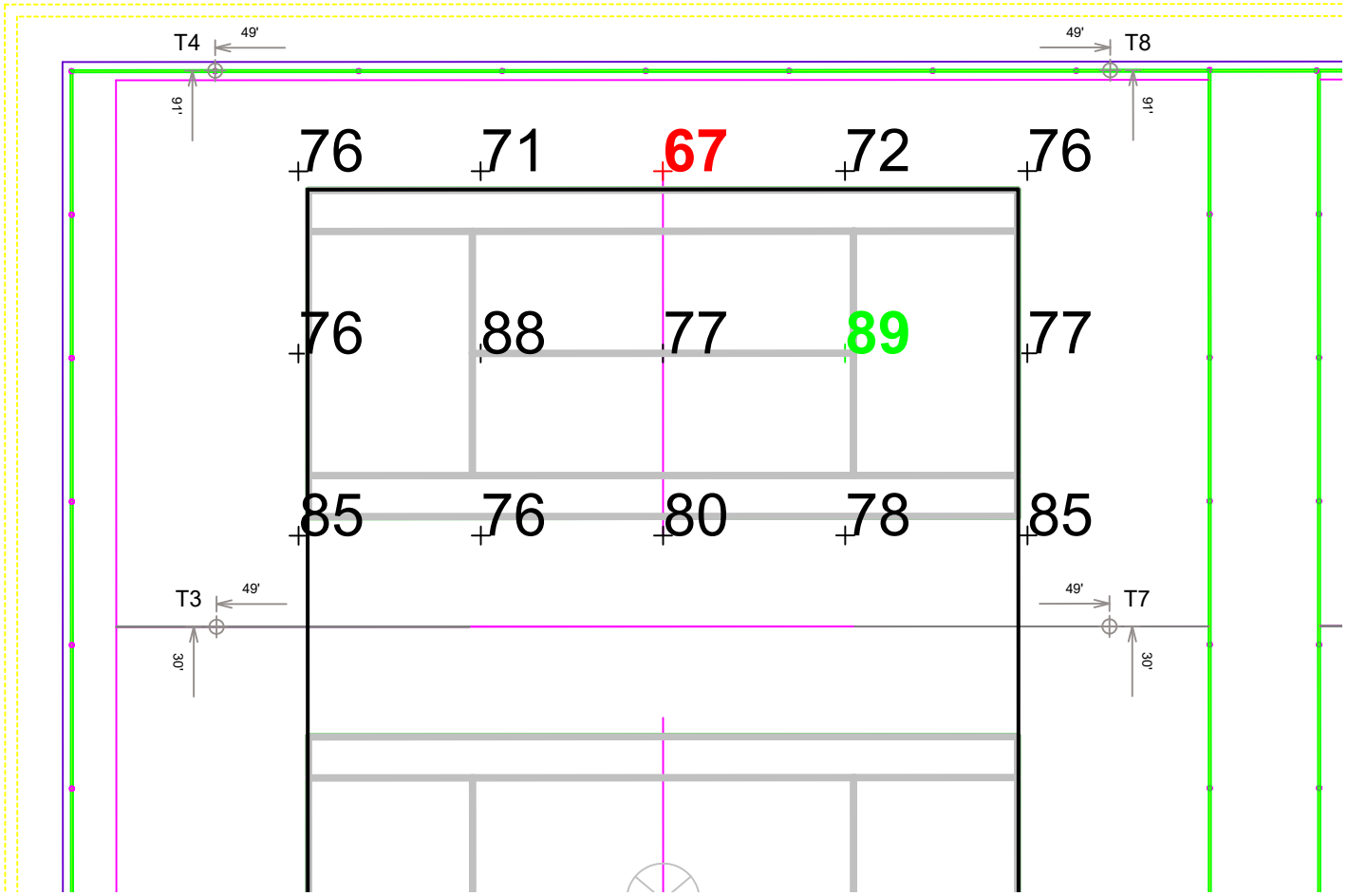
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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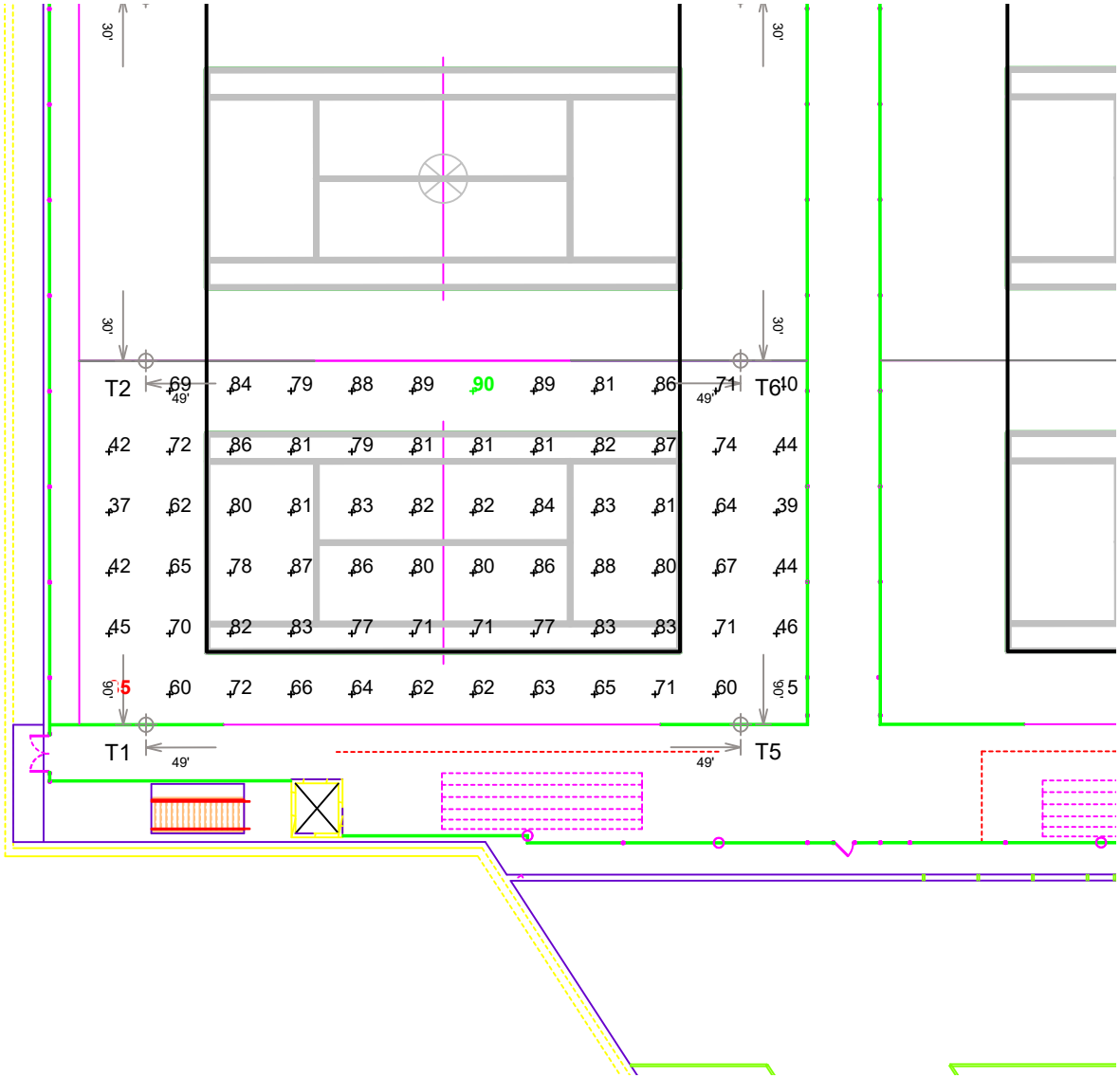
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court N 1 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**70.99**
Maximum:	90
Minimum:	35
Avg / Min:	2.03
Max / Min:	**2.57**
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

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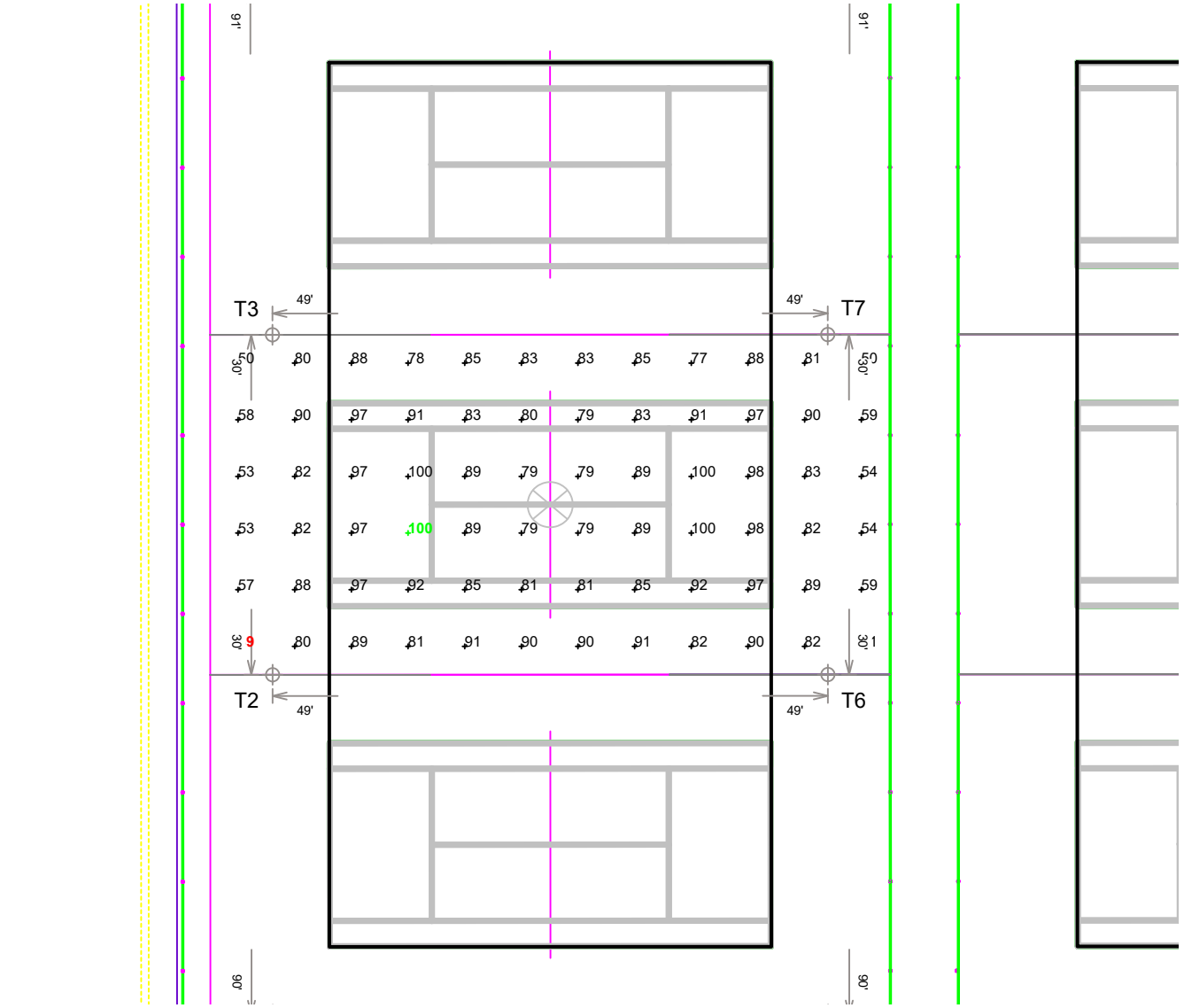
ENGINEERED DESIGN By: • File #189850A • 04-Apr-18

[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court N 2 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**81.95**
Maximum:	100
Minimum:	49
Avg / Min:	1.66
Max / Min:	**2.03**
UG (adjacent pts):	1.62
CU:	0.32
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T1, T4-T5 T8	50'	-	50'	TLC-LED-1150	2	2	0
4	T2-T3 T6-T7	50'	-	50'	TLC-LED-1150	4	4	0
8	TOTALS					24	24	0

GRID SUMMARY

Name:	**Court N 3 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**71.68**
Maximum:	91
Minimum:	35
Avg / Min:	2.05
Max / Min:	**2.59**
UG (adjacent pts):	1.80
CU:	0.28
No. of Points:	72

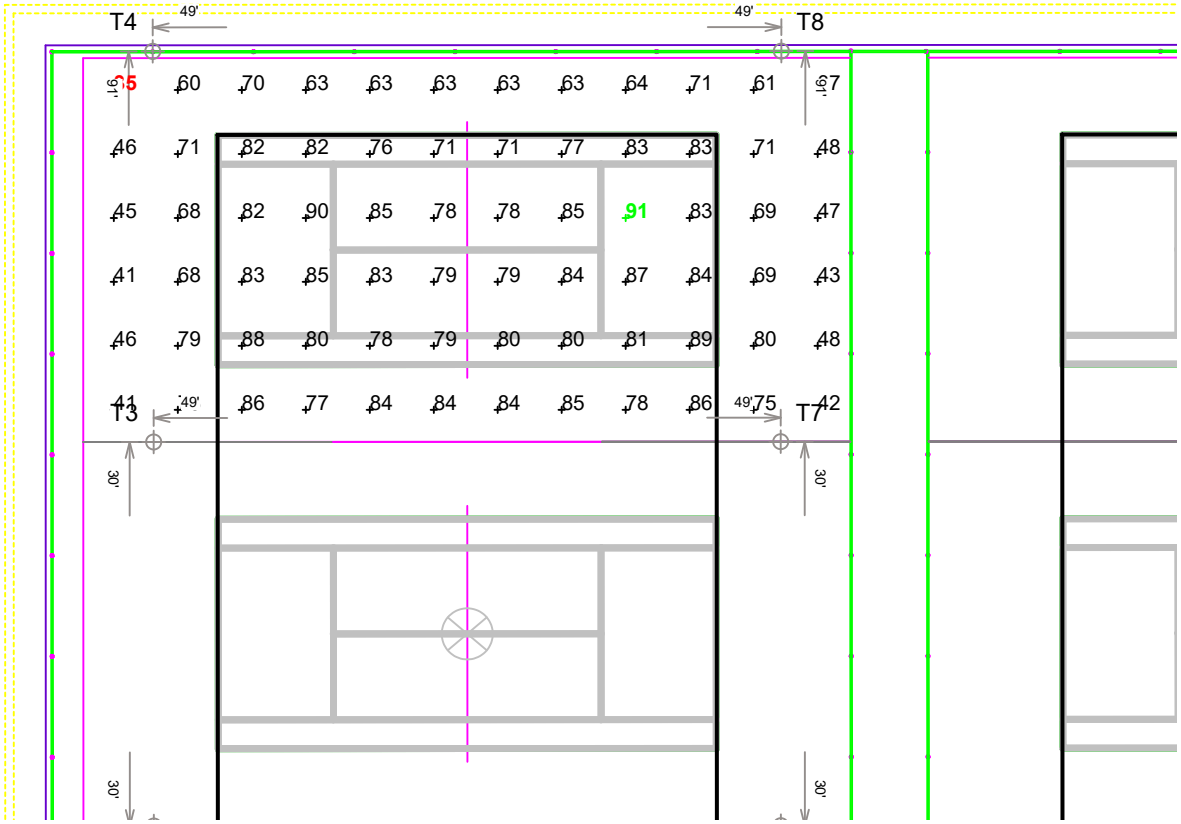
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

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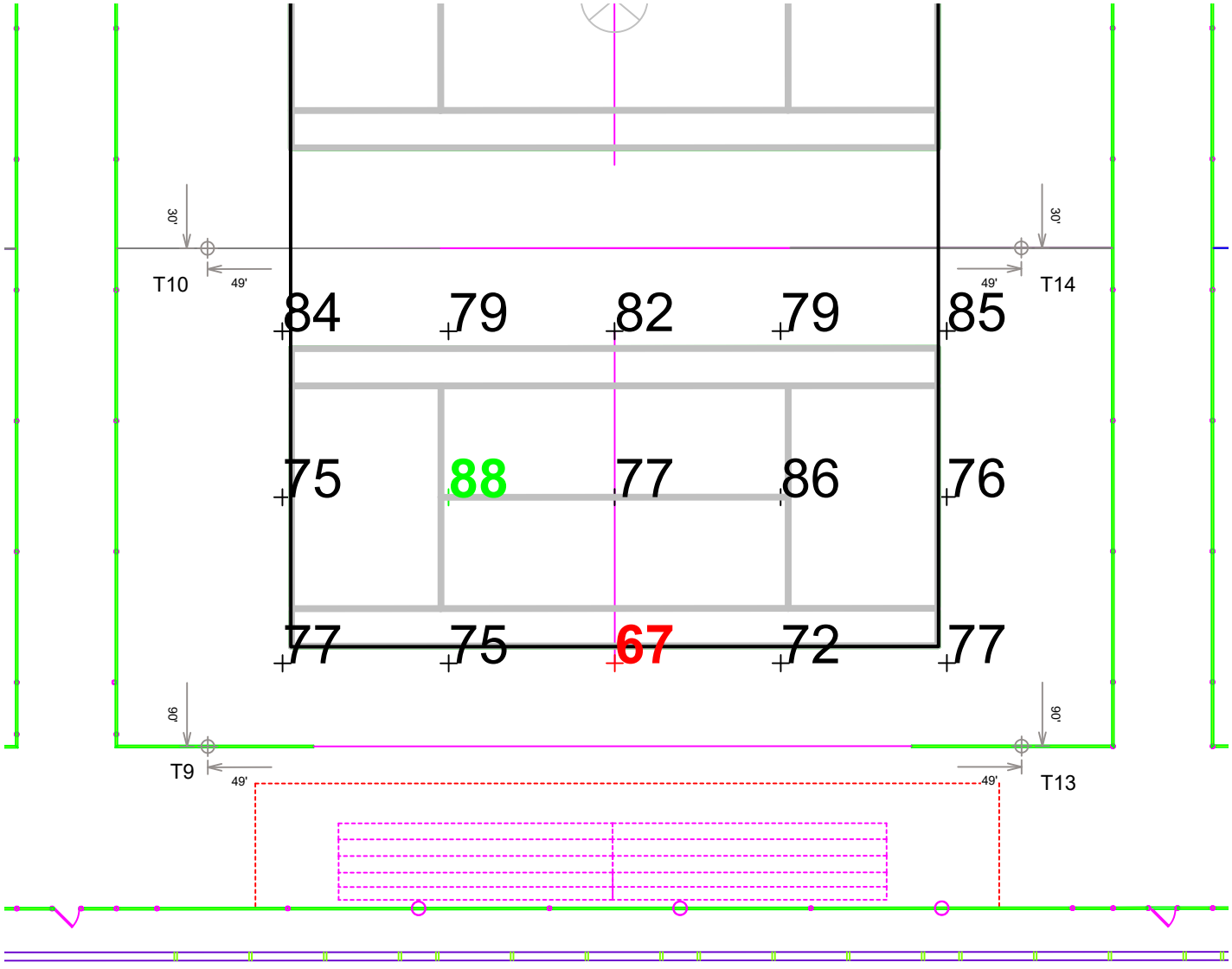
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Center 1**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**78.64**
Maximum:	88
Minimum:	67
Avg / Min:	1.17
Max / Min:	**1.32**
UG (adjacent pts):	1.18
CU:	0.25
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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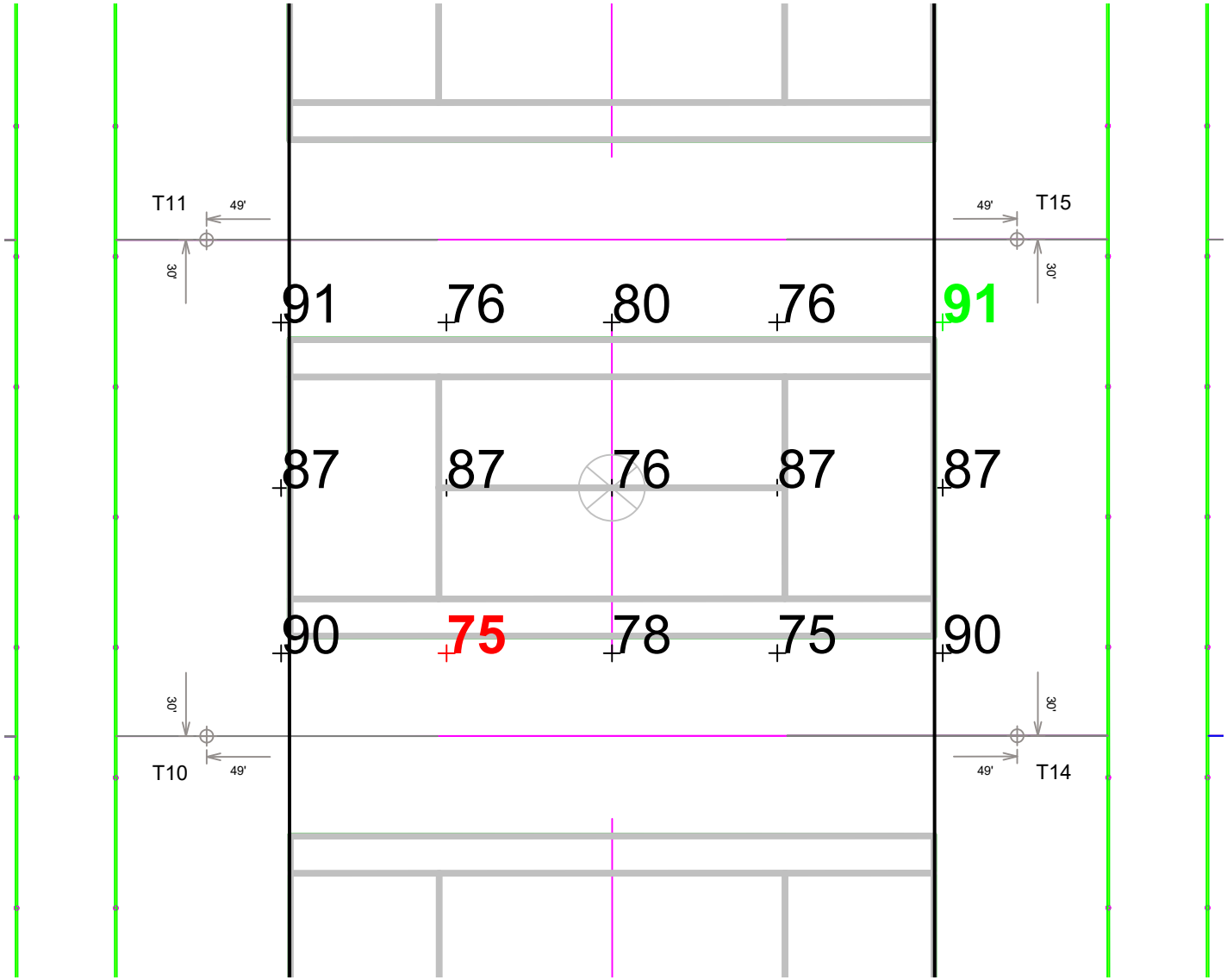
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Center 2**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**83.13**
Maximum:	91
Minimum:	75
Avg / Min:	1.11
Max / Min:	**1.22**
UG (adjacent pts):	1.21
CU:	0.27
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

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Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0

GRID SUMMARY

Name:	**Center 3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**78.88**
Maximum:	88
Minimum:	66
Avg / Min:	1.20
Max / Min:	**1.34**
UG (adjacent pts):	1.23
CU:	0.25
No. of Points:	15

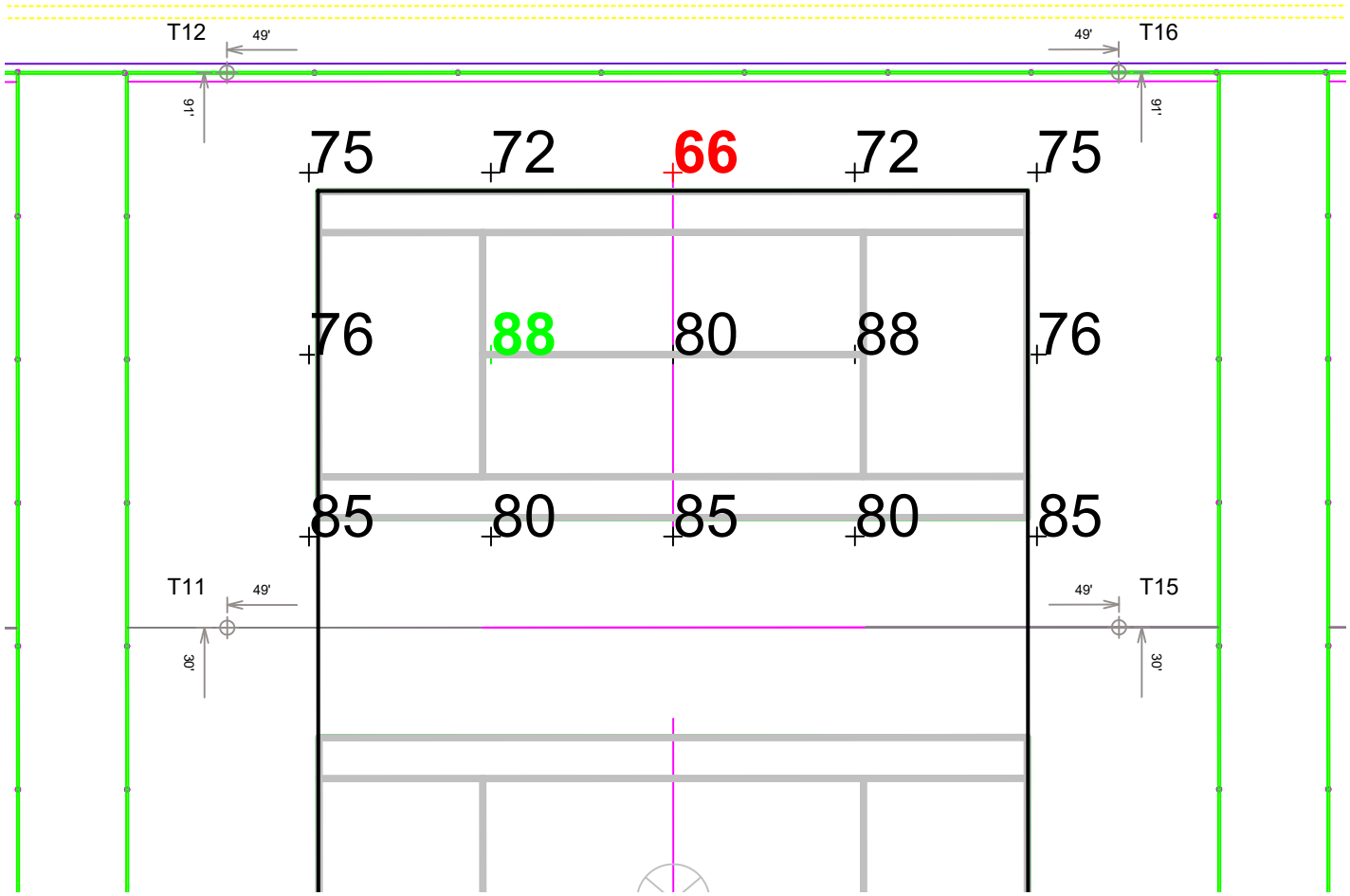
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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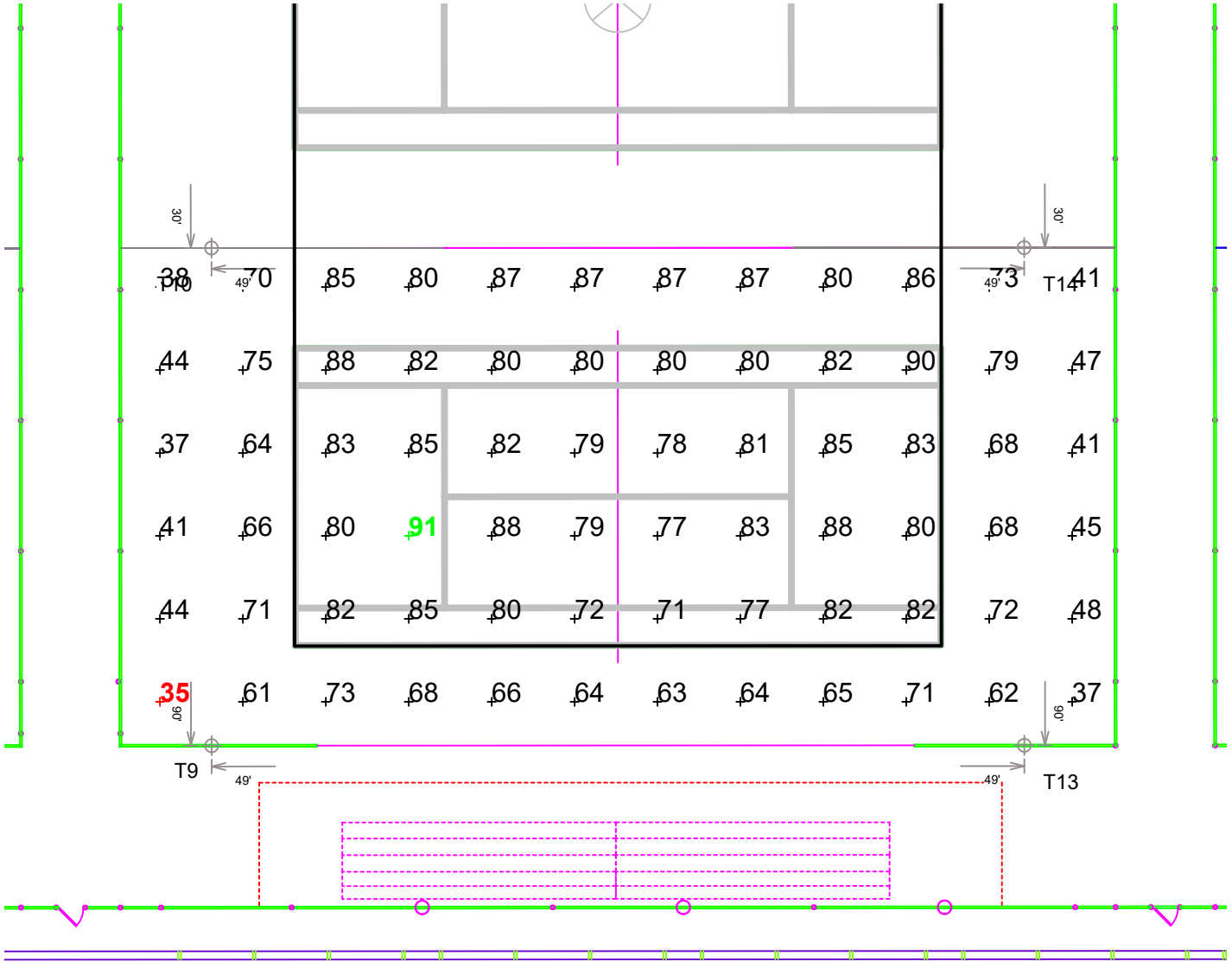
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court C 1 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**71.62**
Maximum:	91
Minimum:	35
Avg / Min:	2.05
Max / Min:	**2.60**
UG (adjacent pts):	1.83
CU:	0.28
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

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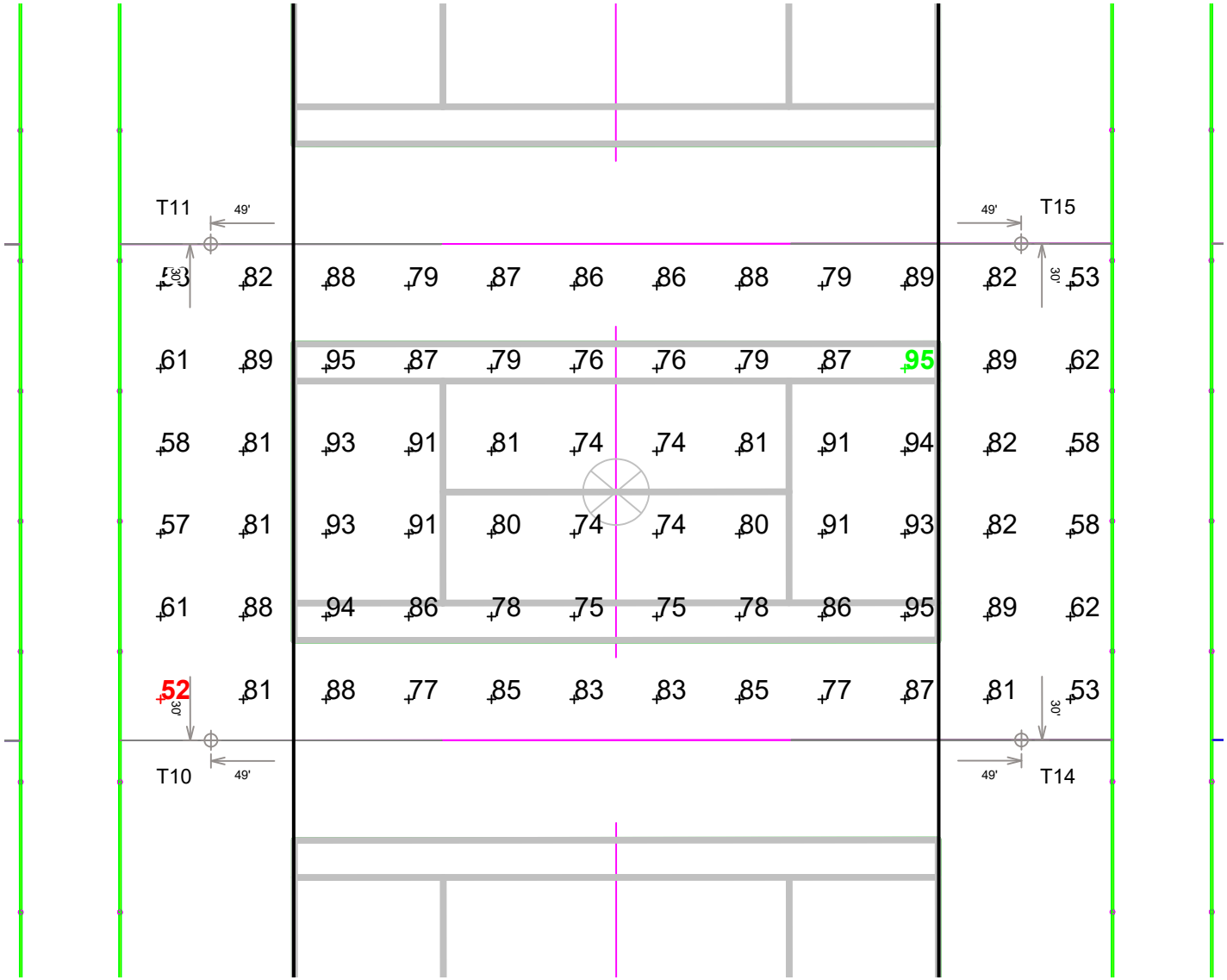
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Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court C 2 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**79.70**
Maximum:	95
Minimum:	52
Avg / Min:	1.53
Max / Min:	**1.83**
UG (adjacent pts):	1.56
CU:	0.31
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
4	T10-T11 T14-T15	50'	-	50'	TLC-LED-1150	4	4	0
4	T16 T9, T12-T13	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0

[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

GRID SUMMARY

Name:	**Court C 3 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**71.86**
Maximum:	90
Minimum:	34
Avg / Min:	2.09
Max / Min:	**2.61**
UG (adjacent pts):	1.78
CU:	0.28
No. of Points:	72

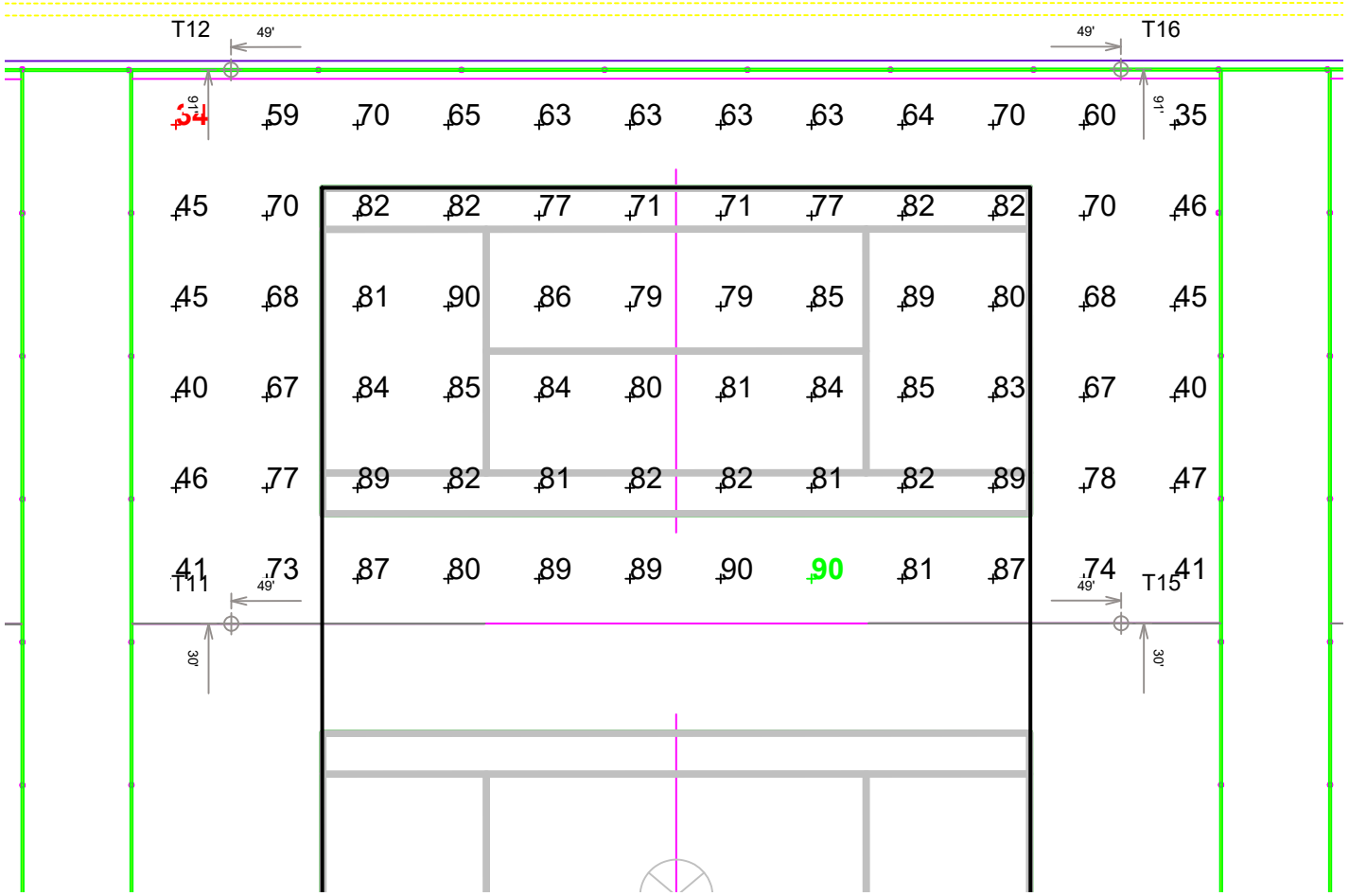
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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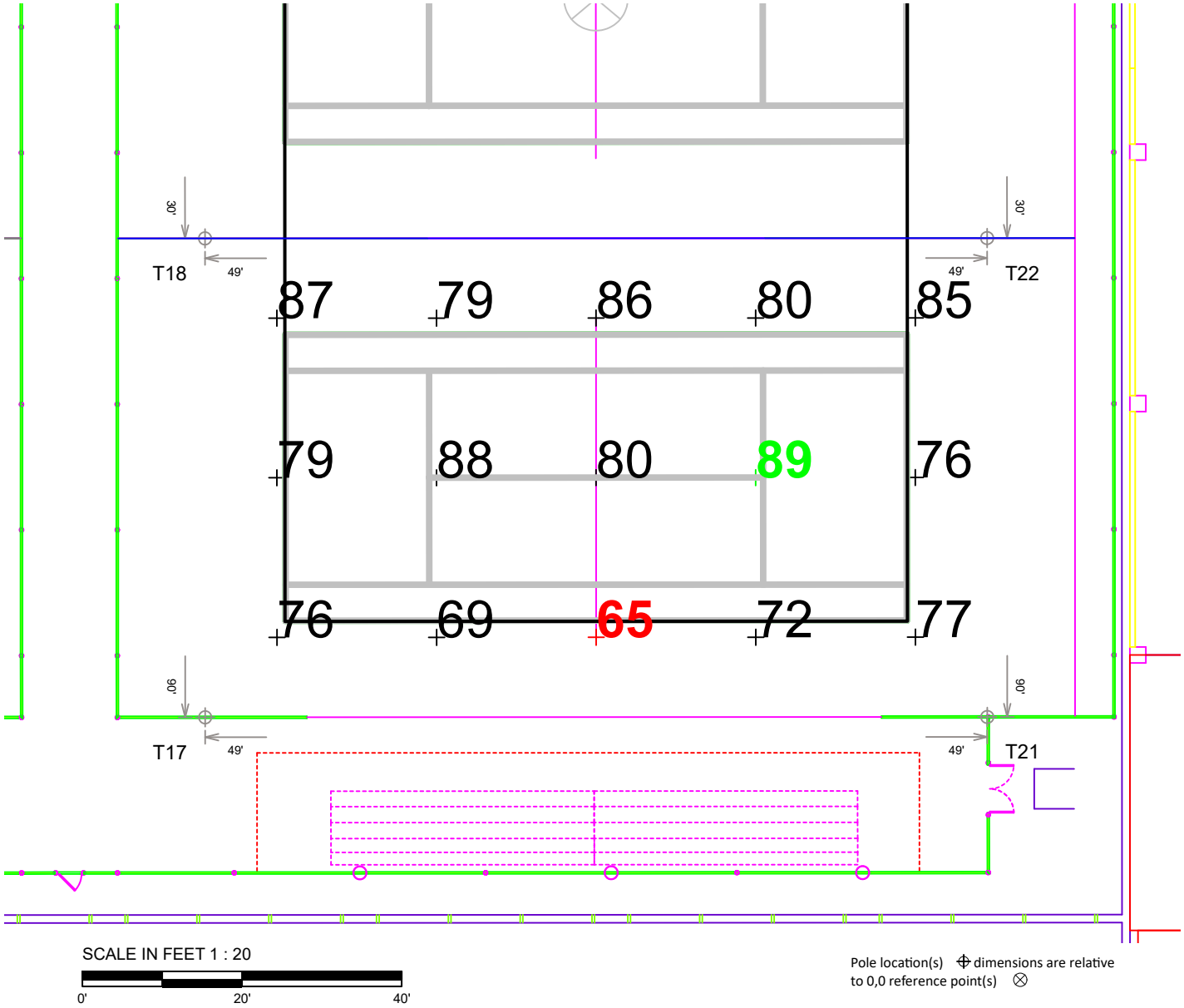
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**South 1**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**79.20**
Maximum:	89
Minimum:	65
Avg / Min:	1.22
Max / Min:	**1.37**
UG (adjacent pts):	1.27
CU:	0.25
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

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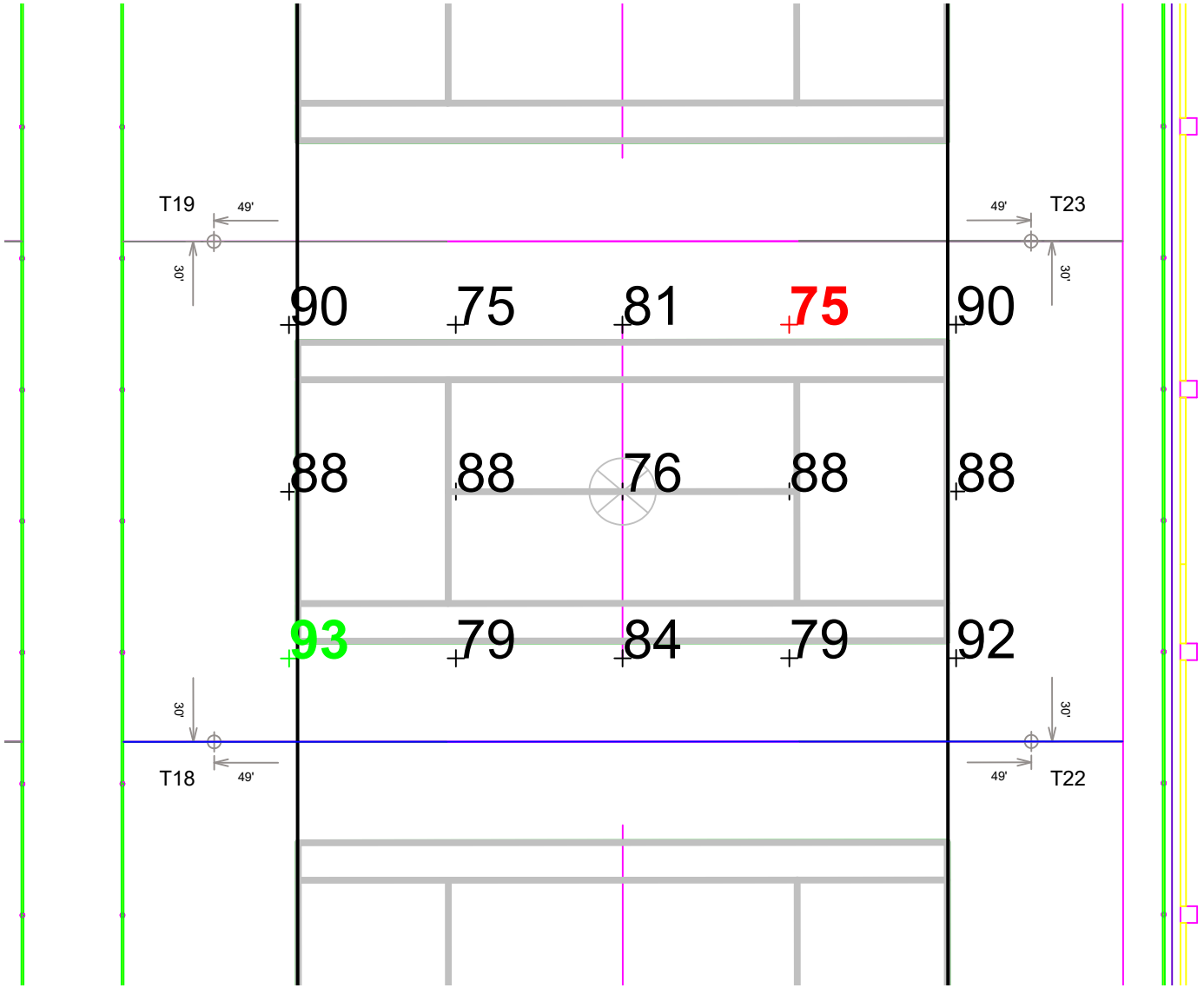
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**South 2**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**84.37**
Maximum:	93
Minimum:	75
Avg / Min:	1.12
Max / Min:	**1.23**
UG (adjacent pts):	1.19
CU:	0.27
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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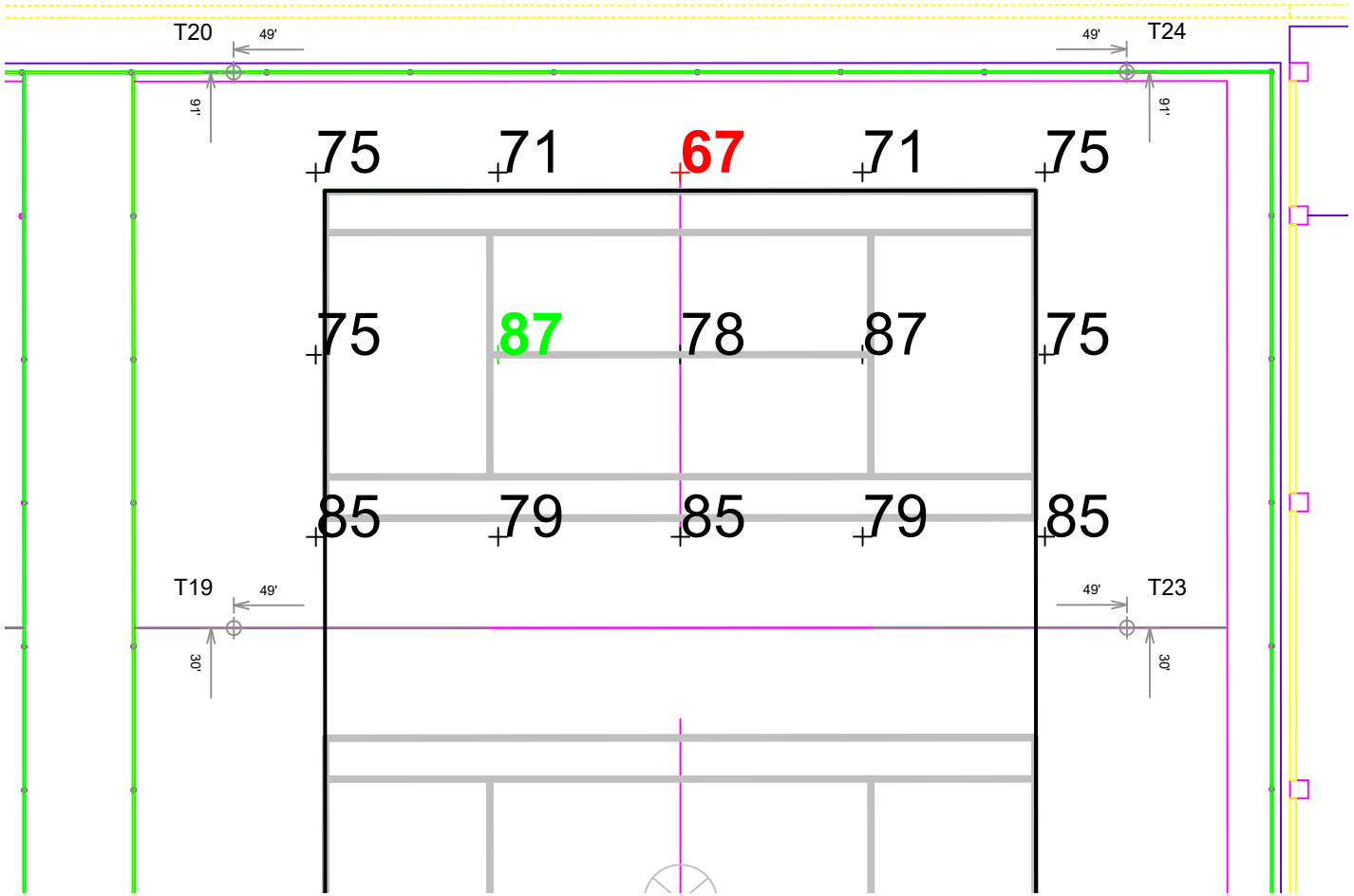
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**South 3**
Size:	3 Court - 24' Spacing
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**78.24**
Maximum:	87
Minimum:	67
Avg / Min:	1.17
Max / Min:	**1.31**
UG (adjacent pts):	1.23
CU:	0.25
No. of Points:	15

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN By: • File #189850A • 04-Apr-18

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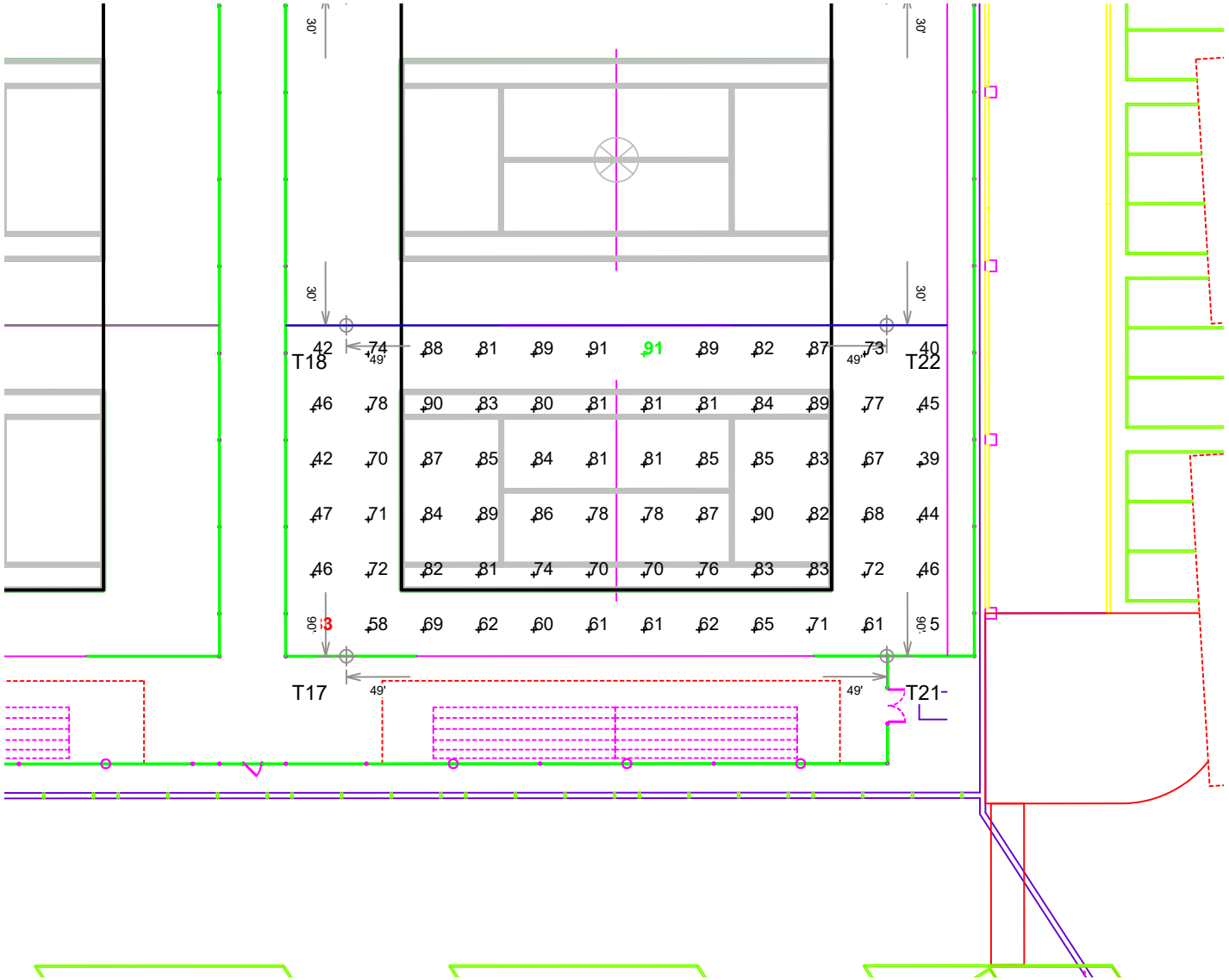
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Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court S 1 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**72.05**
Maximum:	91
Minimum:	33
Avg / Min:	2.17
Max / Min:	**2.75**
UG (adjacent pts):	1.82
CU:	0.28
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

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Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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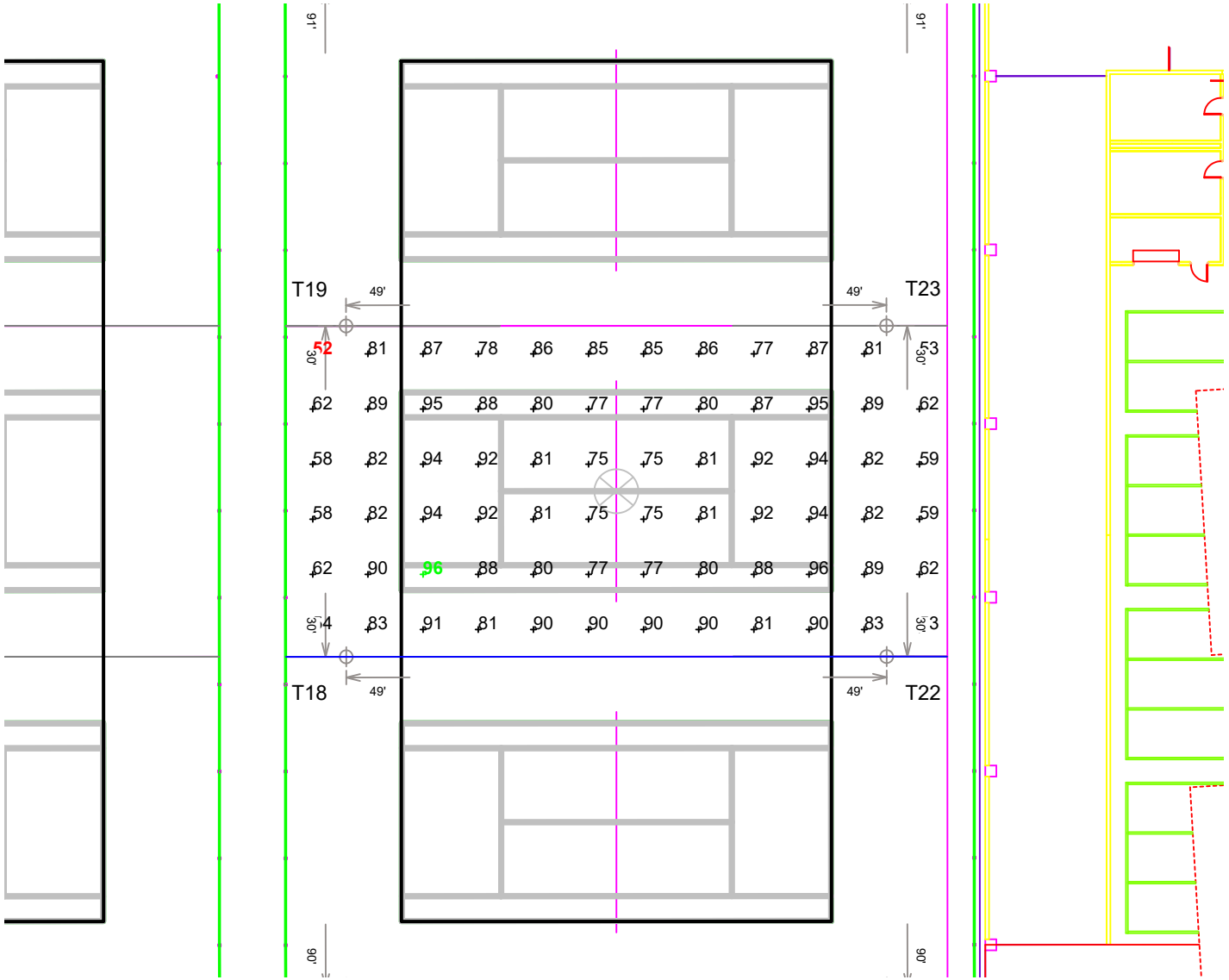
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

GRID SUMMARY

Name:	**Court S 2 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**80.68**
Maximum:	96
Minimum:	52
Avg / Min:	1.54
Max / Min:	**1.83**
UG (adjacent pts):	1.56
CU:	0.31
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	T17, T21	50'	-	50'	TLC-LED-1150	2	2	0
4	T18-T19 T22-T23	50'	-	50'	TLC-LED-1150	4	4	0
2	T20, T24	50'	-	50'	TLC-LED-1150	2	2	0
8	TOTALS					24	24	0

GRID SUMMARY

Name:	**Court S 3 Area**
Size:	3 Court - 24' Spacing
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**71.58**
Maximum:	88
Minimum:	35
Avg / Min:	2.06
Max / Min:	**2.54**
UG (adjacent pts):	1.80
CU:	0.28
No. of Points:	72

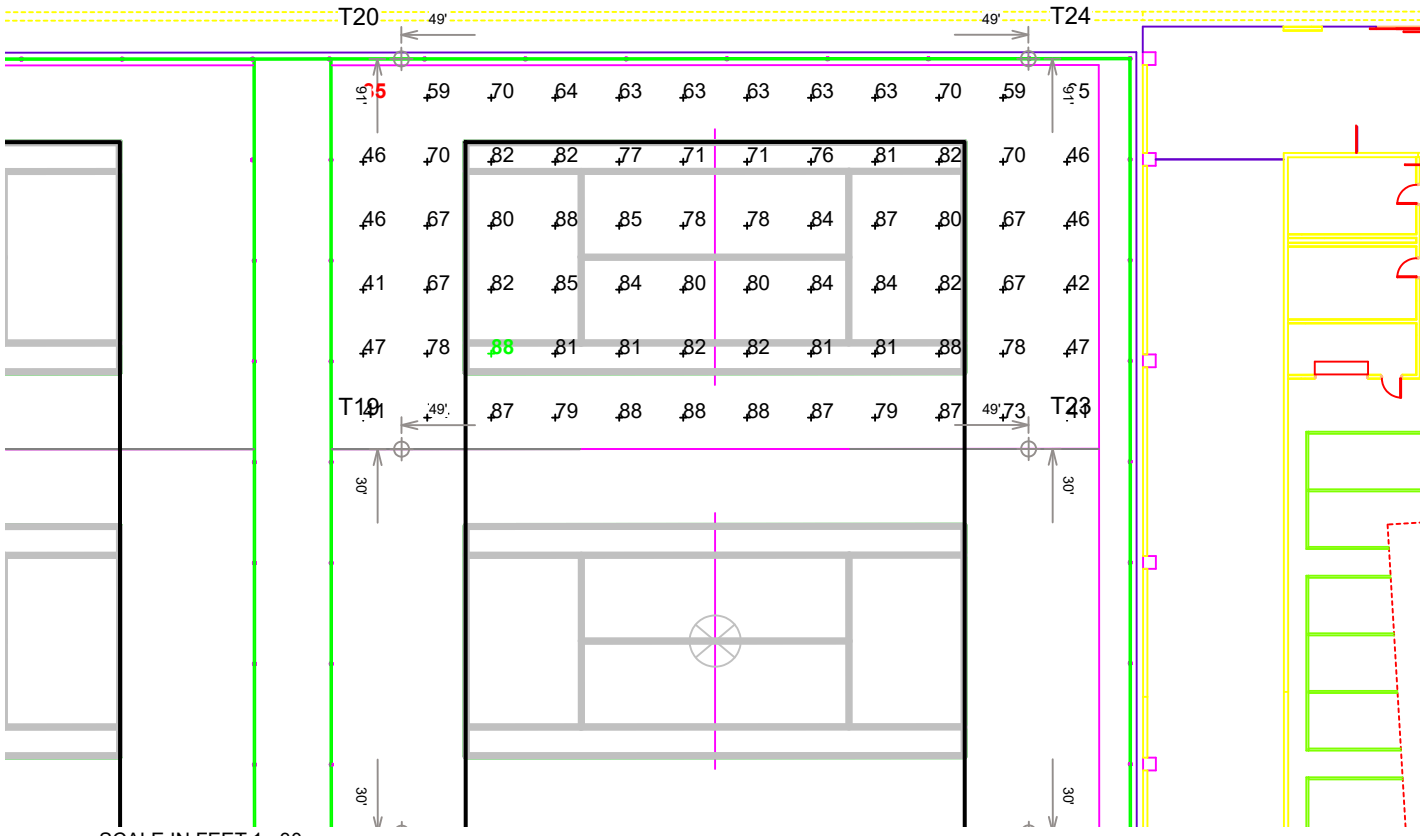
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**24**
Total Load:	27.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>51,000	>51,000	>51,000

Reported per TM-21-11. See luminaire datasheet for details.



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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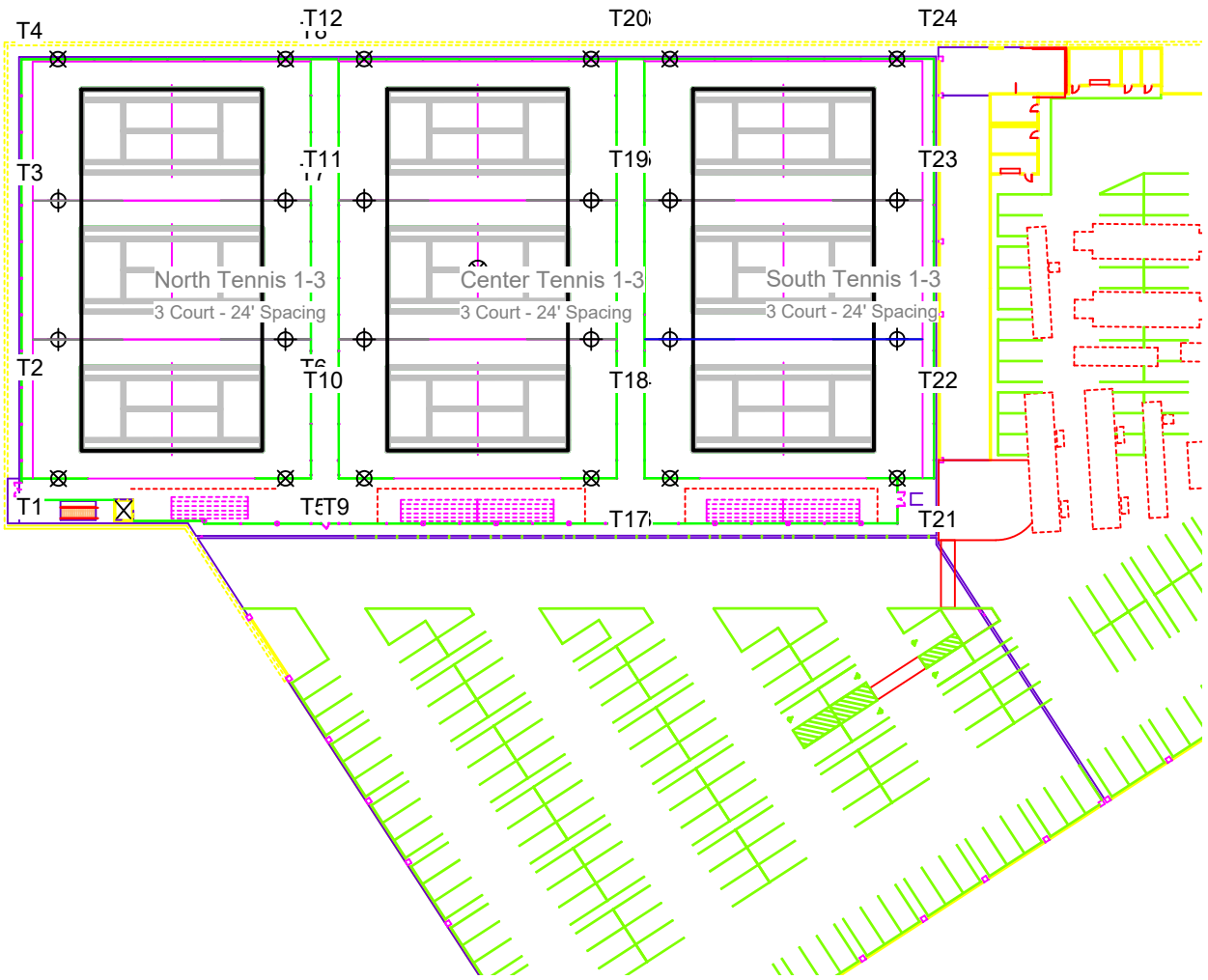
EQUIPMENT LAYOUT

INCLUDES:

· Center Tennis 1-3
· North Tennis 1-3
· South Tennis 1-3

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
12	T1, T4-T5 T12-T13 T16-T17 T20-T21 T24 T8-T9	50'	-	50'	TLC-LED-1150	2
12	T10-T11 T14-T15 T18-T19 T2-T3 T22-T23 T6-T7	50'	-	50'	TLC-LED-1150	4
24	TOTALS					72

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1150	6.8	6.5	5.9	5.1	4.1	3.7	3.0

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Walnut,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
T1, T4-T5, T8	50'	50'	2	TLC-LED-1150	2.30 kW	A
T2-T3, T6-T7	50'	50'	4	TLC-LED-1150	4.60 kW	A
T9, T12-T13, T16	50'	50'	2	TLC-LED-1150	2.30 kW	B
T10-T11, T14-T15	50'	50'	4	TLC-LED-1150	4.60 kW	B
T17, T20-T21, T24	50'	50'	2	TLC-LED-1150	2.30 kW	C
T18-T19, T22-T23	50'	50'	4	TLC-LED-1150	4.60 kW	C
24			***72***		***82.80 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Tennis 1	27.6 kW	24
B	Tennis 2	27.6 kW	24
C	Tennis 3	27.6 kW	24

Fixture Type Summary

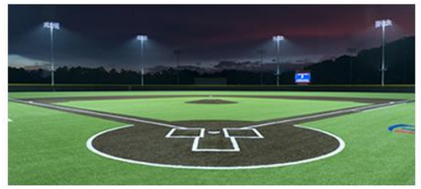
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1150	LED 5700K - 75 CRI	1150W	121,000	>63,500	>63,500	>63,500	72

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Center 1	Horizontal Illuminance	78.2	67	87	1.30	1.17	B	24
Center 2	Horizontal Illuminance	83.8	76	91	1.21	1.10	B	24
Center 3	Horizontal Illuminance	78.9	66	88	1.34	1.20	B	24
Center Tennis 1-3	Horizontal Illuminance	80.3	66	91	1.38	1.22	B	24
Court C 1 Area	Horizontal	71.1	34	89	2.64	2.09	B	24
Court C 2 Area	Horizontal	80.4	52	95	1.83	1.55	B	24
Court C 3 Area	Horizontal	71.9	34	90	2.61	2.11	B	24
Court N 1 Area	Horizontal	71.5	35	96	2.74	2.04	A	24
Court N 2 Area	Horizontal	82.8	49	100	2.03	1.69	A	24
Court N 3 Area	Horizontal	72.2	35	96	2.76	2.06	A	24
Court S 1 Area	Horizontal	72	33	92	2.83	2.18	C	24
Court S 2 Area	Horizontal	80.8	52	96	1.83	1.55	C	24
Court S 3 Area	Horizontal	71.6	35	88	2.54	2.05	C	24
North 1	Horizontal Illuminance	78.8	66	90	1.37	1.19	A	24
North 2	Horizontal Illuminance	88.6	77	98	1.27	1.15	A	24
North 3	Horizontal Illuminance	79	67	93	1.39	1.18	A	24
North Tennis 1-3	Horizontal Illuminance	82.1	66	98	1.49	1.24	A	24
Property Line Spill	Horizontal Illuminance	0	0	0	0.00		A,B,C	72
Property Line Spill	Max Vertical Illuminance Metric	0	0	0	0.00		A,B,C	72
South 1	Horizontal Illuminance	79.2	65	88	1.35	1.22	C	24
South 2	Horizontal Illuminance	84.4	75	92	1.22	1.13	C	24
South 3	Horizontal Illuminance	78.2	67	87	1.31	1.17	C	24
South Tennis 1-3	Horizontal Illuminance	80.6	65	92	1.40	1.24	C	24

From Hometown to Professional









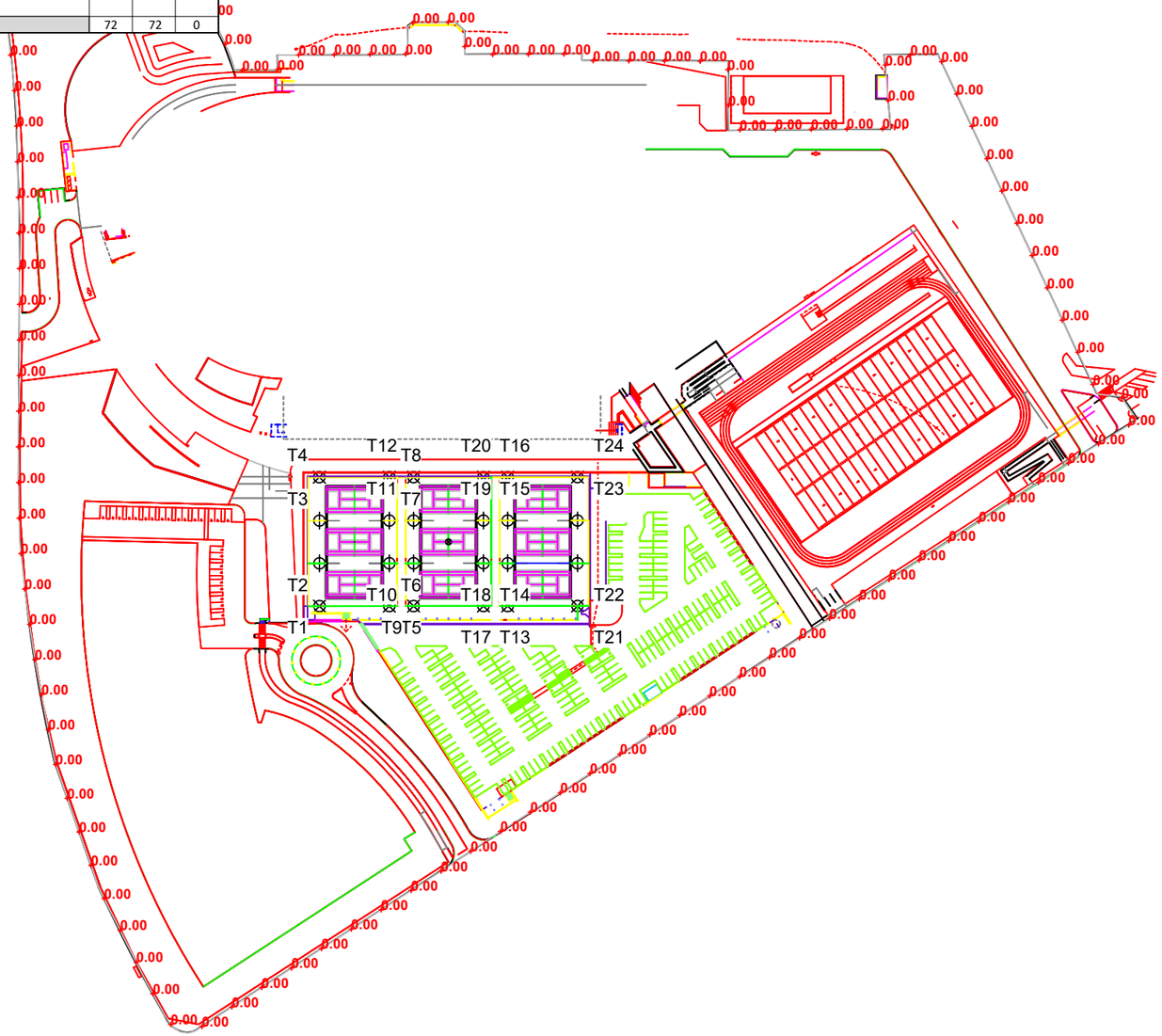
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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
12	T1, T4-T5 T12-T13 T16-T17 T20-T21 T24 T8-T9	50'	12'	62'	TLC-LED-1150	2	2	0
12	T10-T11 T14-T15 T18-T19 T2-T3 T22-T23 T6-T7	50'	12'	62'	TLC-LED-1150	4	4	0
24	TOTALS					72	72	0



SCALE IN FEET 1 : 200

0' 200' 400'

ENGINEERED DESIGN By: Jacob McCrea • File #189850a • 11-May-18

[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

GRID SUMMARY

Name:	**Property Line Spill**
Spacing:	50.0'
Height:	0.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0000**
Maximum:	0.00
Minimum:	0.00
No. of Points:	107

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**72**
Total Load:	82.8 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500

Reported per TM-21-11. See luminaire datasheet for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

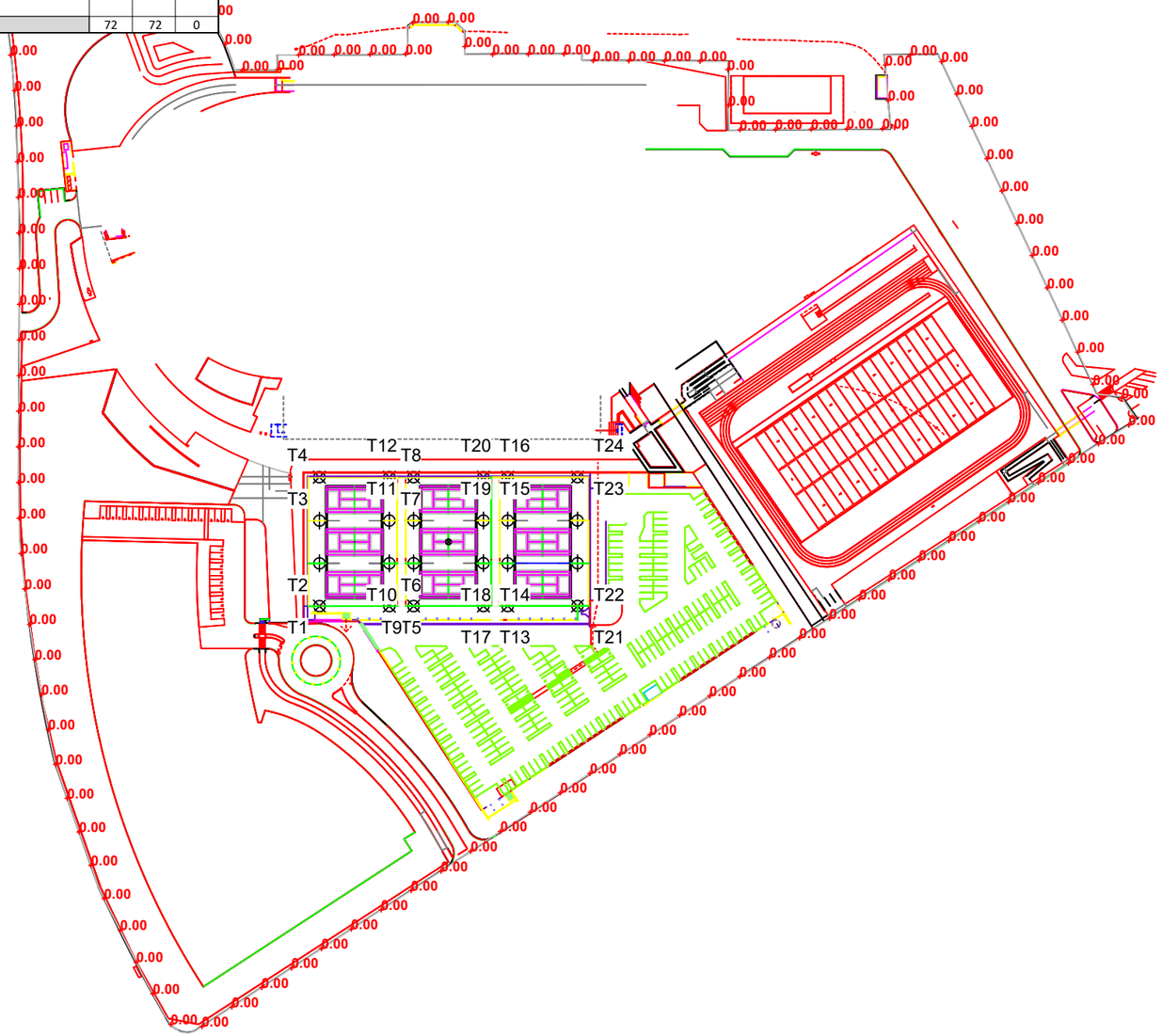
Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
12	T1, T4-T5 T12-T13 T16-T17 T20-T21 T24 T8-T9	50'	12'	62'	TLC-LED-1150	2	2	0
12	T10-T11 T14-T15 T18-T19 T2-T3 T22-T23 T6-T7	50'	12'	62'	TLC-LED-1150	4	4	0
24	TOTALS					72	72	0



SCALE IN FEET 1 : 200

0' 200' 400'

ENGINEERED DESIGN By: Jacob McCrea • File #189850a • 11-May-18

[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

GRID SUMMARY

Name:	**Property Line Spill**
Spacing:	50.0'
Height:	0.0' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.0000**
Maximum:	0.00
Minimum:	0.00
No. of Points:	107

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	121,000 lumens
No. of Luminaires:	**72**
Total Load:	82.8 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
TLC-LED-1150	>63,500	>63,500	>63,500

Reported per TM-21-11. See luminaire datasheet for details.

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Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA

EQUIPMENT LAYOUT

INCLUDES:

· Center Tennis 1-3
· North Tennis 1-3
· South Tennis 1-3

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

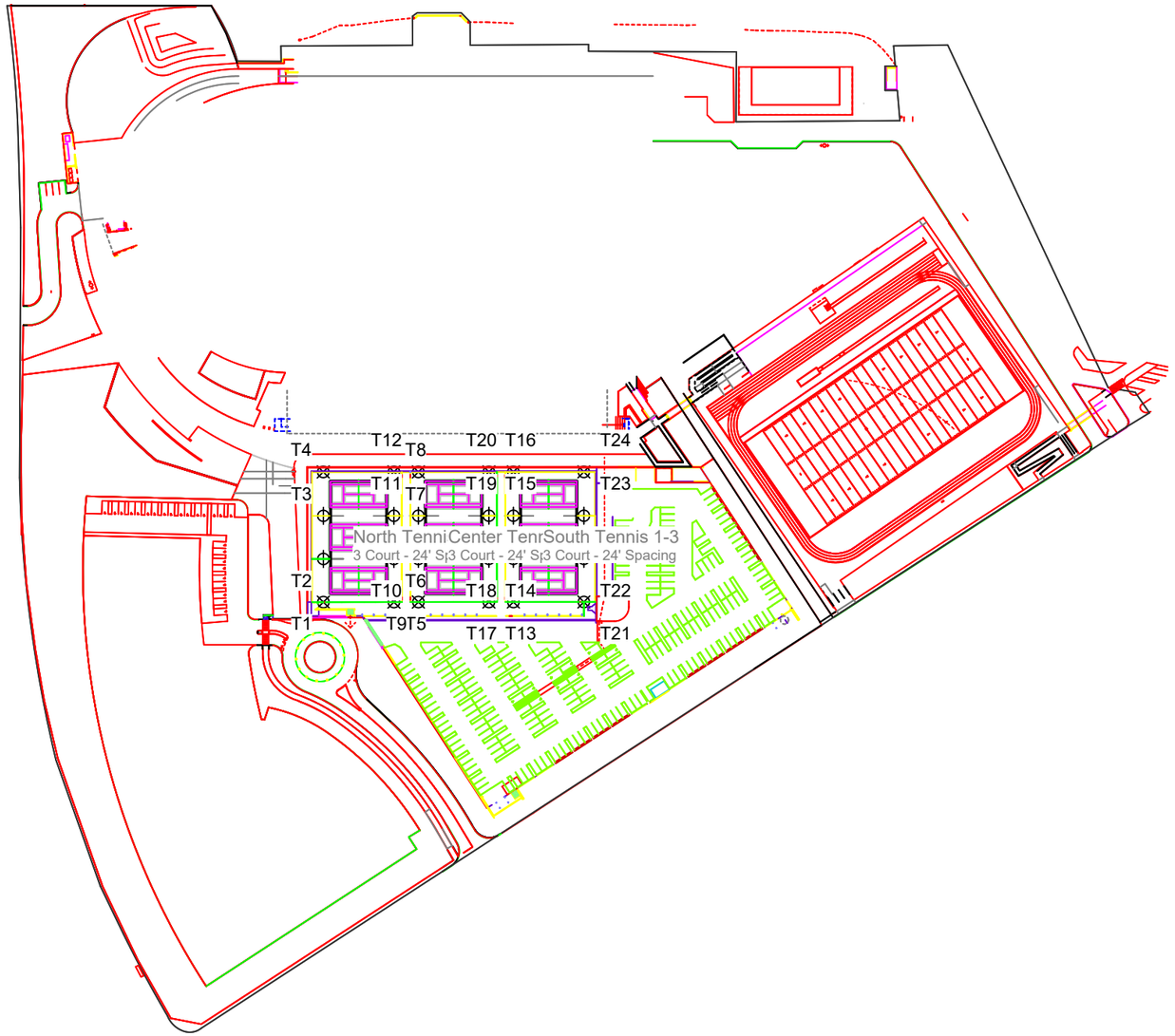
Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

	Pole			Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
12	T1, T4-T5 T12-T13 T16-T17 T20-T21 T24 T8-T9	50'	-	50'	TLC-LED-1150	2
12	T10-T11 T14-T15 T18-T19 T2-T3 T22-T23 T6-T7	50'	-	50'	TLC-LED-1150	4
24	TOTALS					72

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1150	6.8	6.5	5.9	5.1	4.1	3.7	3.0



SCALE IN FEET 1 : 200

0' 200' 400'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

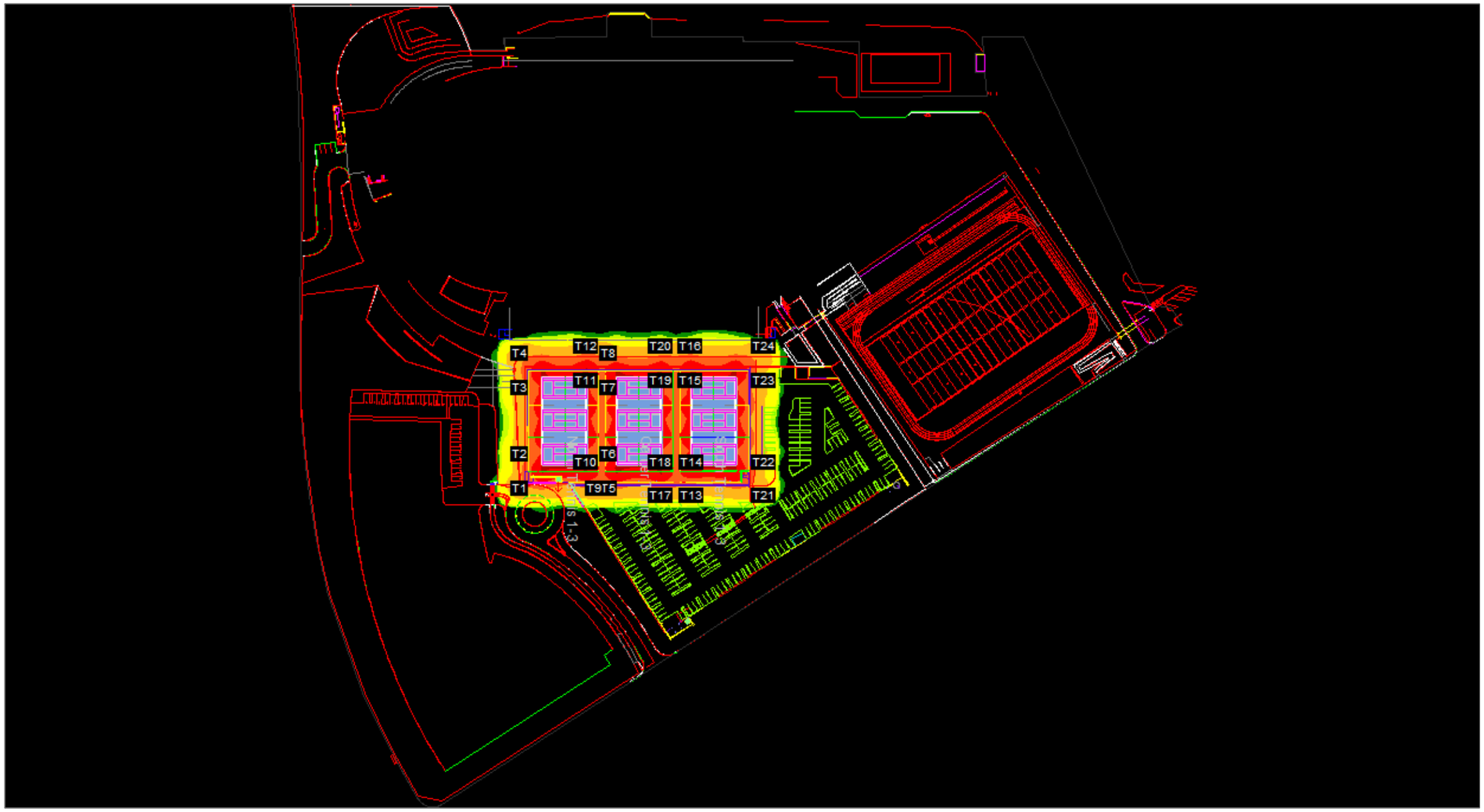
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musco Lighting
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[DSA] Mt SAC Tennis Lot R Project

Walnut,CA



Candelas:

\+ | 150,000 | 100,000 | 50,000 | 5,000 | 1,000 | 500 | 250

GLARE IMPACT

Summary

Map indicates the maximum candela an observer would see when facing the brightest light source from any direction.

A well-designed lighting system controls light to provide maximum useful on-field illumination with minimal destructive off-site glare.

GLARE

Candela Levels

High Glare: 150,000 or more candela
Should only occur on or very near the lit area where the light source is in direct view. Care must be taken to minimize high glare zones.

Significant Glare: 25,000 to 75,000 candela
Equivalent to high beam headlights of a car.

Minimal to No Glare: 500 or less candela
Equivalent to 100W incandescent light bulb.

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Mt. SAC EFMP Phases 1A and 1B

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	340.00	1000sqft	7.81	340,000.00	0
User Defined Industrial	1.00	User Defined Unit	0.02	1,000.00	0
Unenclosed Parking with Elevator	607.82	1000sqft	5.98	607,819.00	0
City Park	0.05	Acre	0.05	2,003.76	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - .

Construction Phase - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

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Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - .

Demolition - .

Grading - .

Architectural Coating - .

Vehicle Trips - Construction Only

Area Coating - No Operational in this run

Construction Off-road Equipment Mitigation - Tier 3

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	95,471.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	134,479.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	35,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	105,000.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	17,184.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	101,314.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	170500	0
tblAreaCoating	Area_Nonresidential_Interior	511500	0
tblAreaCoating	Area_Parking	36469	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	19.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	15.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	20.00	80.00
tblConstructionPhase	NumDays	300.00	523.00
tblConstructionPhase	NumDays	300.00	312.00
tblConstructionPhase	NumDays	300.00	269.00
tblConstructionPhase	NumDays	300.00	260.00
tblConstructionPhase	NumDays	20.00	210.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	158.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	30.00	48.00
tblConstructionPhase	NumDays	30.00	78.00
tblConstructionPhase	NumDays	30.00	27.00
tblConstructionPhase	NumDays	30.00	38.00
tblConstructionPhase	NumDays	30.00	79.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	338.00
tblConstructionPhase	NumDays	20.00	36.00
tblConstructionPhase	NumDays	10.00	48.00

tblConstructionPhase	NumDays	10.00	78.00
tblConstructionPhase	NumDays	10.00	627.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	AcresOfGrading	0.00	10.00
tblGrading	MaterialExported	0.00	20,000.00
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblLandUse	LandUseSquareFeet	607,820.00	607,819.00
tblLandUse	LandUseSquareFeet	2,178.00	2,003.76

tblLandUse	LotAcreage	0.00	0.02
tblLandUse	LotAcreage	13.95	5.98
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	WorkerTripNumber	399.00	100.00
tblTripsAndVMT	WorkerTripNumber	5.00	13.00
tblTripsAndVMT	WorkerTripNumber	399.00	100.00
tblTripsAndVMT	WorkerTripNumber	399.00	100.00
tblTripsAndVMT	WorkerTripNumber	399.00	100.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	11.23	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	1.21	0.00
tblVehicleTrips	WD_TR	1.89	0.00

tblVehicleTrips	WD_TR	27.49	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	23.0011	241.2349	153.5219	0.3265	18.9785	7.4547	30.0339	6.0278	6.9255	16.3029	0.0000	32,770.9551	32,770.9551	7.2819	0.0000	32,928.4379
2020	62.0548	146.0105	93.6775	0.2570	24.7271	5.3552	29.1244	11.6048	4.9790	14.2606	0.0000	25,913.0874	25,913.0874	4.4212	0.0000	26,023.6175
2021	16.5851	100.0136	80.5386	0.2051	25.3972	3.7804	29.0401	11.6048	3.5190	14.9530	0.0000	20,607.2431	20,607.2431	3.3609	0.0000	20,691.2667
2022	15.7035	79.9950	67.8086	0.1904	14.6836	2.6724	17.3560	5.5862	2.5009	8.0871	0.0000	19,195.3761	19,195.3761	2.6499	0.0000	19,261.6236
Maximum	**62.0548**	**241.2349**	**153.5219**	**0.3265**	**25.3972**	**7.4547**	**30.0339**	**11.6048**	**6.9255**	**16.3029**	**0.0000**	**32,770.9551**	**32,770.9551**	**7.2819**	**0.0000**	**32,928.4379**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	6.0811	53.8153	158.6450	0.3265	12.4889	0.6588	13.1212	3.6525	0.6468	4.2778	0.0000	32,770.9551	32,770.9551	7.2819	0.0000	32,928.4379
2020	56.0838	52.7976	96.2699	0.2570	14.7874	0.5812	15.3686	5.5325	0.5713	5.7818	0.0000	25,913.0874	25,913.0874	4.4212	0.0000	26,023.6175
2021	12.0315	39.0388	86.6973	0.2051	13.5719	0.3881	13.7649	5.5325	0.3836	5.7233	0.0000	20,607.2431	20,607.2431	3.3609	0.0000	20,691.2666

2022	11.8331	36.4783	72.2558	0.1904	11.0102	0.3312	11.3414	3.5670	0.3267	3.8937	0.0000	19,195.3761	19,195.3761	2.6499	0.0000	19,261.6236
Maximum	**56.0838**	**53.8153**	**158.6450**	**0.3265**	**14.7874**	**0.6588**	**15.3686**	**5.5325**	**0.6468**	**5.7818**	**0.0000**	**32,770.9551**	**32,770.9551**	**7.2819**	**0.0000**	**32,928.4379**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**26.69**	**67.89**	**-4.63**	**0.00**	**38.11**	**89.83**	**49.22**	**47.49**	**89.24**	**63.29**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Stu Center Demolition	Demolition	4/1/2019	11/30/2019	6	210	
2	Park R and Tennis Fine Grading	Grading	5/15/2019	6/14/2019	6	27	
3	Park R and Tennis Building Construction	Building Construction	6/15/2019	4/23/2020	6	269	
4	Demolition	Demolition	7/1/2019	12/31/2019	6	158	
5	Park S Demolition	Demolition	8/1/2019	9/14/2019	6	39	
6	Park S Grading	Grading	9/16/2019	10/29/2019	6	38	
7	Park S Building Construction	Building Construction	10/30/2019	8/27/2020	6	260	
8	Stu Center Site Preparation	Site Preparation	2/1/2020	2/1/2022	6	627	
9	Stu Center Grading	Grading	3/1/2020	6/1/2020	6	79	
10	Park R and Tennis Paving	Paving	4/24/2020	5/19/2020	6	22	
11	Park R and Tennis Architectural Coating	Architectural Coating	5/20/2020	6/12/2020	6	21	
12	Stu Center Building Construction	Building Construction	6/2/2020	2/1/2022	6	523	
13	Park S Architectural Coating	Architectural Coating	8/28/2020	9/21/2020	6	21	
14	Vball Demolition	Demolition	10/1/2020	11/25/2020	6	48	
15	Vball Site Preparation	Site Preparation	11/26/2020	1/20/2021	6	48	
16	Vball Grading	Grading	1/21/2021	3/17/2021	6	48	
17	Bookstore Site Preparation	Site Preparation	2/1/2021	5/1/2021	6	78	

18	Bookstore Grading	Grading	5/2/2021	7/31/2021	6	78	
19	Stu Center Paving	Paving	7/13/2021	9/2/2021	6	45	
20	Bookstore Building Construction	Building Construction	8/2/2021	7/30/2022	6	312	
21	Bookstore Paving	Paving	8/2/2021	8/30/2022	6	338	
22	Stu Center Architectural Coating	Architectural Coating	11/1/2021	2/1/2022	6	80	
23	Communication Tower Paving	Paving	6/24/2022	8/4/2022	6	36	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 5.98

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 134,479; Striped Parking Area: 101,314

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Stu Center Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Stu Center Demolition	Excavators	3	8.00	158	0.38
Stu Center Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Park R and Tennis Fine Grading	Excavators	2	8.00	158	0.38
Park R and Tennis Fine Grading	Graders	1	8.00	187	0.41
Park R and Tennis Fine Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park R and Tennis Fine Grading	Scrapers	2	8.00	367	0.48
Park R and Tennis Fine Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park R and Tennis Building Construction	Cranes	1	7.00	231	0.29
Park R and Tennis Building Construction	Forklifts	3	8.00	89	0.20
Park R and Tennis Building Construction	Generator Sets	1	8.00	84	0.74
Park R and Tennis Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Park R and Tennis Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Park S Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Park S Demolition	Excavators	3	8.00	158	0.38
Park S Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Park S Grading	Excavators	2	8.00	158	0.38
Park S Grading	Graders	1	8.00	187	0.41
Park S Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park S Grading	Scrapers	2	8.00	367	0.48
Park S Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park S Building Construction	Cranes	1	7.00	231	0.29
Park S Building Construction	Forklifts	3	8.00	89	0.20
Park S Building Construction	Generator Sets	1	8.00	84	0.74
Park S Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Park S Building Construction	Welders	1	8.00	46	0.45
Stu Center Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Stu Center Grading	Excavators	2	8.00	158	0.38
Stu Center Grading	Graders	1	8.00	187	0.41
Stu Center Grading	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Grading	Scrapers	2	8.00	367	0.48
Stu Center Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park R and Tennis Paving	Pavers	2	8.00	130	0.42
Park R and Tennis Paving	Paving Equipment	2	8.00	132	0.36
Park R and Tennis Paving	Rollers	2	8.00	80	0.38
Park R and Tennis Architectural Coating	Air Compressors	1	6.00	78	0.48
Stu Center Building Construction	Cranes	1	7.00	231	0.29
Stu Center Building Construction	Forklifts	3	8.00	89	0.20
Stu Center Building Construction	Generator Sets	1	8.00	84	0.74
Stu Center Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Stu Center Building Construction	Welders	1	8.00	46	0.45
Park S Architectural Coating	Air Compressors	1	6.00	78	0.48

Vball Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Vball Demolition	Excavators	1	8.00	158	0.38
Vball Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Vball Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Vball Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Vball Grading	Excavators	1	8.00	158	0.38
Vball Grading	Graders	1	8.00	187	0.41
Vball Grading	Rubber Tired Dozers	1	8.00	247	0.40
Vball Grading	Scrapers	1	8.00	367	0.48
Vball Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Bookstore Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Bookstore Grading	Excavators	2	8.00	158	0.38
Bookstore Grading	Graders	1	8.00	187	0.41
Bookstore Grading	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Grading	Scrapers	0	8.00	367	0.48
Bookstore Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Stu Center Paving	Pavers	2	8.00	130	0.42
Stu Center Paving	Paving Equipment	2	8.00	132	0.36
Stu Center Paving	Rollers	2	8.00	80	0.38
Bookstore Building Construction	Cranes	1	7.00	231	0.29
Bookstore Building Construction	Forklifts	3	8.00	89	0.20
Bookstore Building Construction	Generator Sets	1	8.00	84	0.74
Bookstore Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Bookstore Building Construction	Welders	1	8.00	46	0.45
Bookstore Paving	Pavers	1	8.00	130	0.42
Bookstore Paving	Paving Equipment	1	8.00	132	0.36
Bookstore Paving	Rollers	2	8.00	80	0.38
Stu Center Architectural Coating	Air Compressors	1	6.00	78	0.48
Communication Tower Paving	Pavers	0	8.00	130	0.42

Communication Tower Paving	Paving Equipment	1	8.00	132	0.36
Communication Tower Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Stu Center Demolition	6	15.00	0.00	344.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Fine Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Demolition	6	15.00	0.00	208.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Grading	8	20.00	0.00	2,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Demolition	3	8.00	0.00	17.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Site Preparation	2	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Paving	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Communication Tower Paving	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Stu Center Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3547	0.0000	0.3547	0.0537	0.0000	0.0537			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.3547**	**1.7949**	**2.1496**	**0.0537**	**1.6697**	**1.7234**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0158	0.5084	0.1142	1.2900e-003	0.0936	1.8800e-003	0.0955	0.0238	1.7900e-003	0.0256		139.2135	139.2135	0.0101		139.4666
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.6050	1.4500e-003	0.6064	0.1518	1.3300e-003	0.1531		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.0989**	**0.5694**	**0.7779**	**3.0100e-003**	**0.6986**	**3.3300e-003**	**0.7019**	**0.1756**	**3.1200e-003**	**0.1787**		**310.5331**	**310.5331**	**0.0160**		**310.9336**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1383	0.0000	0.1383	0.0210	0.0000	0.0210			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.1383**	**0.0616**	**0.2000**	**0.0210**	**0.0616**	**0.0826**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0158	0.5084	0.1142	1.2900e-003	0.0936	1.8800e-003	0.0955	0.0238	1.7900e-003	0.0256		139.2135	139.2135	0.0101		139.4666
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.6050	1.4500e-003	0.6064	0.1518	1.3300e-003	0.1531		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.0989**	**0.5694**	**0.7779**	**3.0100e-003**	**0.6986**	**3.3300e-003**	**0.7019**	**0.1756**	**3.1200e-003**	**0.1787**		**310.5331**	**310.5331**	**0.0160**		**310.9336**

3.3 Park R and Tennis Fine Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		228.4262	228.4262	7.8600e-003		228.6226
Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000

Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3826**	**0.1015**	**3.4841**	**1.4026**	**0.1015**	**1.5042**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		228.4262	228.4262	7.8600e-003		228.6226
Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

3.4 Park R and Tennis Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4485	21.9553	18.0273	0.0281		1.3484	1.3484		1.2666	1.2666		2,706.9084	2,706.9084	0.6678		2,723.6039
Total	**2.4485**	**21.9553**	**18.0273**	**0.0281**		**1.3484**	**1.3484**		**1.2666**	**1.2666**		**2,706.9084**	**2,706.9084**	**0.6678**		**2,723.6039**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6761	18.0780	5.2803	0.0397	2.4218	0.1170	2.5388	0.6369	0.1119	0.7488		4,231.9229	4,231.9229	0.2973		4,239.3551
Worker	0.5538	0.4066	4.4248	0.0115	3.0613	9.6400e-003	3.0709	0.7735	8.8800e-003	0.7824		1,142.1308	1,142.1308	0.0393		1,143.1131
Total	**1.2299**	**18.4846**	**9.7050**	**0.0512**	**5.4831**	**0.1266**	**5.6097**	**1.4103**	**0.1208**	**1.5311**		**5,374.0537**	**5,374.0537**	**0.3366**		**5,382.4682**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6834	2.9167	18.6489	0.0281		0.1394	0.1394		0.1394	0.1394	0.0000	2,706.9084	2,706.9084	0.6678		2,723.6039
Total	**0.6834**	**2.9167**	**18.6489**	**0.0281**		**0.1394**	**0.1394**		**0.1394**	**0.1394**	**0.0000**	**2,706.9084**	**2,706.9084**	**0.6678**		**2,723.6039**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6761	18.0780	5.2803	0.0397	2.4218	0.1170	2.5388	0.6369	0.1119	0.7488		4,231.9229	4,231.9229	0.2973		4,239.3551
Worker	0.5538	0.4066	4.4248	0.0115	3.0613	9.6400e-003	3.0709	0.7735	8.8800e-003	0.7824		1,142.1308	1,142.1308	0.0393		1,143.1131
Total	**1.2299**	**18.4846**	**9.7050**	**0.0512**	**5.4831**	**0.1266**	**5.6097**	**1.4103**	**0.1208**	**1.5311**		**5,374.0537**	**5,374.0537**	**0.3366**		**5,382.4682**

3.4 Park R and Tennis Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	2.1984	19.9755	17.7034	0.0281		1.1670	1.1670		1.0963	1.0963		2,665.8512	2,665.8512	0.6593		2,682.3346
Total	**2.1984**	**19.9755**	**17.7034**	**0.0281**		**1.1670**	**1.1670**		**1.0963**	**1.0963**		**2,665.8512**	**2,665.8512**	**0.6593**		**2,682.3346**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	2.4218	0.0794	2.5012	0.6369	0.0759	0.7128		4,203.4054	4,203.4054	0.2811		4,210.4324

Worker	0.5110	0.3625	4.0101	0.0111	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**5.4831**	**0.0887**	**5.5718**	**1.4103**	**0.0845**	**1.4949**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6403	2.8638	18.6087	0.0281		0.1267	0.1267		0.1267	0.1267	0.0000	2,665.8512	2,665.8512	0.6593		2,682.3346
Total	**0.6403**	**2.8638**	**18.6087**	**0.0281**		**0.1267**	**0.1267**		**0.1267**	**0.1267**	**0.0000**	**2,665.8512**	**2,665.8512**	**0.6593**		**2,682.3346**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	2.4218	0.0794	2.5012	0.6369	0.0759	0.7128		4,203.4054	4,203.4054	0.2811		4,210.4324
Worker	0.5110	0.3625	4.0101	0.0111	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**5.4831**	**0.0887**	**5.5718**	**1.4103**	**0.0845**	**1.4949**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

3.5 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1020	0.0000	0.1020	0.0154	0.0000	0.0154			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.1020**	**1.7949**	**1.8969**	**0.0154**	**1.6697**	**1.6851**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5100e-003	0.1454	0.0327	3.7000e-004	8.1900e-003	5.4000e-004	8.7200e-003	2.2400e-003	5.1000e-004	2.7600e-003		39.8031	39.8031	2.8900e-003		39.8755
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.0876**	**0.2064**	**0.6964**	**2.0900e-003**	**0.1759**	**1.9900e-003**	**0.1778**	**0.0467**	**1.8400e-003**	**0.0486**		**211.1227**	**211.1227**	**8.7800e-003**		**211.3424**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0398	0.0000	0.0398	6.0200e-003	0.0000	6.0200e-003			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0398**	**0.0616**	**0.1014**	**6.0200e-003**	**0.0616**	**0.0677**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5100e-003	0.1454	0.0327	3.7000e-004	8.1900e-003	5.4000e-004	8.7200e-003	2.2400e-003	5.1000e-004	2.7600e-003		39.8031	39.8031	2.8900e-003		39.8755
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.0876**	**0.2064**	**0.6964**	**2.0900e-003**	**0.1759**	**1.9900e-003**	**0.1778**	**0.0467**	**1.8400e-003**	**0.0486**		**211.1227**	**211.1227**	**8.7800e-003**		**211.3424**

3.6 Park S Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1539	0.0000	1.1539	0.1747	0.0000	0.1747			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451

Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**1.1539**	**1.7949**	**2.9488**	**0.1747**	**1.6697**	**1.8444**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0514	1.6553	0.3718	4.1900e-003	0.1638	6.1100e-003	0.1699	0.0429	5.8400e-003	0.0487		453.2532	453.2532	0.0330		454.0773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.3134	1.4500e-003	0.3149	0.0802	1.3300e-003	0.0816		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.1344**	**1.7163**	**1.0355**	**5.9100e-003**	**0.4772**	**7.5600e-003**	**0.4847**	**0.1231**	**7.1700e-003**	**0.1303**		**624.5728**	**624.5728**	**0.0389**		**625.5442**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4500	0.0000	0.4500	0.0681	0.0000	0.0681			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.4500**	**0.0616**	**0.5117**	**0.0681**	**0.0616**	**0.1298**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0514	1.6553	0.3718	4.1900e-003	0.1638	6.1100e-003	0.1699	0.0429	5.8400e-003	0.0487		453.2532	453.2532	0.0330		454.0773
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0831	0.0610	0.6637	1.7200e-003	0.3134	1.4500e-003	0.3149	0.0802	1.3300e-003	0.0816		171.3196	171.3196	5.8900e-003		171.4670
Total	**0.1344**	**1.7163**	**1.0355**	**5.9100e-003**	**0.4772**	**7.5600e-003**	**0.4847**	**0.1231**	**7.1700e-003**	**0.1303**		**624.5728**	**624.5728**	**0.0389**		**625.5442**

3.7 Park S Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.8066	1.9300e-003	0.8085	0.2024	1.7800e-003	0.2042		228.4262	228.4262	7.8600e-003		228.6226
Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.8066**	**1.9300e-003**	**0.8085**	**0.2024**	**1.7800e-003**	**0.2042**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3826**	**0.1015**	**3.4841**	**1.4026**	**0.1015**	**1.5042**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.8066	1.9300e-003	0.8085	0.2024	1.7800e-003	0.2042		228.4262	228.4262	7.8600e-003		228.6226

Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.8066**	**1.9300e-003**	**0.8085**	**0.2024**	**1.7800e-003**	**0.2042**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

3.8 Park S Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6761	18.0780	5.2803	0.0397	0.9987	0.1170	1.1157	0.2875	0.1119	0.3995		4,231.9229	4,231.9229	0.2973		4,239.3551
Worker	0.5538	0.4066	4.4248	0.0115	1.1178	9.6400e-003	1.1274	0.2964	8.8800e-003	0.3053		1,142.1308	1,142.1308	0.0393		1,143.1131
Total	**1.2299**	**18.4846**	**9.7050**	**0.0512**	**2.1165**	**0.1266**	**2.2431**	**0.5840**	**0.1208**	**0.7048**		**5,374.0537**	**5,374.0537**	**0.3366**		**5,382.4682**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6692	2.8550	17.7706	0.0269		0.1375	0.1375		0.1375	0.1375	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**0.6692**	**2.8550**	**17.7706**	**0.0269**		**0.1375**	**0.1375**		**0.1375**	**0.1375**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6761	18.0780	5.2803	0.0397	0.9987	0.1170	1.1157	0.2875	0.1119	0.3995		4,231.9229	4,231.9229	0.2973		4,239.3551
Worker	0.5538	0.4066	4.4248	0.0115	1.1178	9.6400e-003	1.1274	0.2964	8.8800e-003	0.3053		1,142.1308	1,142.1308	0.0393		1,143.1131
Total	**1.2299**	**18.4846**	**9.7050**	**0.0512**	**2.1165**	**0.1266**	**2.2431**	**0.5840**	**0.1208**	**0.7048**		**5,374.0537**	**5,374.0537**	**0.3366**		**5,382.4682**

3.8 Park S Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	0.9987	0.0794	1.0781	0.2876	0.0759	0.3634		4,203.4054	4,203.4054	0.2811		4,210.4324
Worker	0.5110	0.3625	4.0101	0.0111	1.1178	9.3400e-003	1.1271	0.2964	8.6100e-003	0.3050		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**2.1165**	**0.0887**	**2.2052**	**0.5840**	**0.0845**	**0.6685**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6261	2.8021	17.7304	0.0269		0.1248	0.1248		0.1248	0.1248	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**0.6261**	**2.8021**	**17.7304**	**0.0269**		**0.1248**	**0.1248**		**0.1248**	**0.1248**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	0.9987	0.0794	1.0781	0.2876	0.0759	0.3634		4,203.4054	4,203.4054	0.2811		4,210.4324
Worker	0.5110	0.3625	4.0101	0.0111	1.1178	9.3400e-003	1.1271	0.2964	8.6100e-003	0.3050		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**2.1165**	**0.0887**	**2.2052**	**0.5840**	**0.0845**	**0.6685**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

3.9 Stu Center Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2890	13.4374	6.4113	0.0116		0.6881	0.6881		0.6331	0.6331		1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**1.2890**	**13.4374**	**6.4113**	**0.0116**	**6.0221**	**0.6881**	**6.7102**	**3.3102**	**0.6331**	**3.9433**		**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0256	0.0181	0.2005	5.6000e-004	0.0559	4.7000e-004	0.0564	0.0148	4.3000e-004	0.0153		55.3710	55.3710	1.7500e-003		55.4147
Total	**0.0256**	**0.0181**	**0.2005**	**5.6000e-004**	**0.0559**	**4.7000e-004**	**0.0564**	**0.0148**	**4.3000e-004**	**0.0153**		**55.3710**	**55.3710**	**1.7500e-003**		**55.4147**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0256	0.0181	0.2005	5.6000e-004	0.0559	4.7000e-004	0.0564	0.0148	4.3000e-004	0.0153		55.3710	55.3710	1.7500e-003		55.4147
Total	**0.0256**	**0.0181**	**0.2005**	**5.6000e-004**	**0.0559**	**4.7000e-004**	**0.0564**	**0.0148**	**4.3000e-004**	**0.0153**		**55.3710**	**55.3710**	**1.7500e-003**		**55.4147**

3.9 Stu Center Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.0221**	**0.6442**	**6.6663**	**3.3102**	**0.5927**	**3.9029**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0238	0.0163	0.1841	5.4000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		53.6126	53.6126	1.5800e-003		53.6520
Total	**0.0238**	**0.0163**	**0.1841**	**5.4000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**53.6126**	**53.6126**	**1.5800e-003**		**53.6520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0238	0.0163	0.1841	5.4000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		53.6126	53.6126	1.5800e-003		53.6520
Total	**0.0238**	**0.0163**	**0.1841**	**5.4000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**53.6126**	**53.6126**	**1.5800e-003**		**53.6520**

3.9 Stu Center Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.0018	10.4693	5.8199	0.0116		0.5075	0.5075		0.4669	0.4669		1,128.2743	1,128.2743	0.3649		1,137.3970
Total	**1.0018**	**10.4693**	**5.8199**	**0.0116**	**6.0221**	**0.5075**	**6.5296**	**3.3102**	**0.4669**	**3.7771**		**1,128.2743**	**1,128.2743**	**0.3649**		**1,137.3970**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641
Total	**0.0224**	**0.0147**	**0.1696**	**5.2000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**51.7285**	**51.7285**	**1.4200e-003**		**51.7641**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000

Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2743	1,128.2743	0.3649		1,137.3970
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2743**	**1,128.2743**	**0.3649**		**1,137.3970**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641
Total	**0.0224**	**0.0147**	**0.1696**	**5.2000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**51.7285**	**51.7285**	**1.4200e-003**		**51.7641**

3.10 Stu Center Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7020	0.0000	8.7020	3.6008	0.0000	3.6008			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.7020**	**2.1739**	**10.8759**	**3.6008**	**2.0000**	**5.6008**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2831	9.2172	2.1429	0.0246	0.9717	0.0295	1.0012	0.2544	0.0282	0.2826		2,661.6901	2,661.6901	0.1911		2,666.4663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1022	0.0725	0.8020	2.2200e-003	0.4179	1.8700e-003	0.4198	0.1070	1.7200e-003	0.1087		221.4841	221.4841	6.9800e-003		221.6586
Total	**0.3853**	**9.2897**	**2.9449**	**0.0268**	**1.3896**	**0.0314**	**1.4210**	**0.3614**	**0.0299**	**0.3913**		**2,883.1742**	**2,883.1742**	**0.1980**		**2,888.1249**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3938	0.0000	3.3938	1.4043	0.0000	1.4043			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3938**	**0.1015**	**3.4953**	**1.4043**	**0.1015**	**1.5059**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.2831	9.2172	2.1429	0.0246	0.9717	0.0295	1.0012	0.2544	0.0282	0.2826		2,661.6901	2,661.6901	0.1911		2,666.4663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1022	0.0725	0.8020	2.2200e-003	0.4179	1.8700e-003	0.4198	0.1070	1.7200e-003	0.1087		221.4841	221.4841	6.9800e-003		221.6586
Total	**0.3853**	**9.2897**	**2.9449**	**0.0268**	**1.3896**	**0.0314**	**1.4210**	**0.3614**	**0.0299**	**0.3913**		**2,883.1742**	**2,883.1742**	**0.1980**		**2,888.1249**

3.11 Park R and Tennis Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0767	0.0544	0.6015	1.6700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		166.1131	166.1131	5.2400e-003		166.2440
Total	**0.0767**	**0.0544**	**0.6015**	**1.6700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**166.1131**	**166.1131**	**5.2400e-003**		**166.2440**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0767	0.0544	0.6015	1.6700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		166.1131	166.1131	5.2400e-003		166.2440
Total	**0.0767**	**0.0544**	**0.6015**	**1.6700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**166.1131**	**166.1131**	**5.2400e-003**		**166.2440**

3.12 Park R and Tennis Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**52.2851**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4088	0.2900	3.2081	8.9000e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		885.9363	885.9363	0.0279		886.6344
Total	**0.4088**	**0.2900**	**3.2081**	**8.9000e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**885.9363**	**885.9363**	**0.0279**		**886.6344**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Archit. Coating	52.0429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**52.0726**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4088	0.2900	3.2081	8.9000e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		885.9363	885.9363	0.0279		886.6344
Total	**0.4088**	**0.2900**	**3.2081**	**8.9000e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**885.9363**	**885.9363**	**0.0279**		**886.6344**

3.13 Stu Center Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	2.4218	0.0794	2.5012	0.6369	0.0759	0.7128		4,203.4054	4,203.4054	0.2811		4,210.4324
Worker	0.5110	0.3625	4.0101	0.0111	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**5.4831**	**0.0887**	**5.5718**	**1.4103**	**0.0845**	**1.4949**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6261	2.8021	17.7304	0.0269		0.1248	0.1248		0.1248	0.1248	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**0.6261**	**2.8021**	**17.7304**	**0.0269**		**0.1248**	**0.1248**		**0.1248**	**0.1248**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5800	16.5907	4.7952	0.0394	2.4218	0.0794	2.5012	0.6369	0.0759	0.7128		4,203.4054	4,203.4054	0.2811		4,210.4324
Worker	0.5110	0.3625	4.0101	0.0111	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,107.4204	1,107.4204	0.0349		1,108.2930
Total	**1.0911**	**16.9532**	**8.8053**	**0.0505**	**5.4831**	**0.0887**	**5.5718**	**1.4103**	**0.0845**	**1.4949**		**5,310.8258**	**5,310.8258**	**0.3160**		**5,318.7254**

3.13 Stu Center Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4978	15.1146	4.3800	0.0390	2.4219	0.0320	2.4538	0.6369	0.0306	0.6674		4,170.5902	4,170.5902	0.2692		4,177.3212
Worker	0.4768	0.3262	3.6826	0.0108	3.0613	9.0300e-003	3.0703	0.7735	8.3200e-003	0.7818		1,072.2511	1,072.2511	0.0316		1,073.0399
Total	**0.9746**	**15.4408**	**8.0626**	**0.0498**	**5.4831**	**0.0410**	**5.5241**	**1.4103**	**0.0389**	**1.4492**		**5,242.8413**	**5,242.8413**	**0.3008**		**5,250.3611**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5867	2.7396	17.6822	0.0269		0.1120	0.1120		0.1120	0.1120	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.5867**	**2.7396**	**17.6822**	**0.0269**		**0.1120**	**0.1120**		**0.1120**	**0.1120**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4978	15.1146	4.3800	0.0390	2.4219	0.0320	2.4538	0.6369	0.0306	0.6674		4,170.5902	4,170.5902	0.2692		4,177.3212
Worker	0.4768	0.3262	3.6826	0.0108	3.0613	9.0300e-003	3.0703	0.7735	8.3200e-003	0.7818		1,072.2511	1,072.2511	0.0316		1,073.0399

Total	**0.9746**	**15.4408**	**8.0626**	**0.0498**	**5.4831**	**0.0410**	**5.5241**	**1.4103**	**0.0389**	**1.4492**		**5,242.8413**	**5,242.8413**	**0.3008**		**5,250.3611**

3.13 Stu Center Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4673	14.3644	4.1460	0.0387	2.4219	0.0280	2.4498	0.6369	0.0267	0.6636		4,133.5364	4,133.5364	0.2598		4,140.0309
Worker	0.4478	0.2945	3.3918	0.0104	3.0613	8.7500e-003	3.0700	0.7735	8.0600e-003	0.7815		1,034.5695	1,034.5695	0.0285		1,035.2816
Total	**0.9152**	**14.6589**	**7.5378**	**0.0490**	**5.4832**	**0.0367**	**5.5199**	**1.4104**	**0.0348**	**1.4452**		**5,168.1058**	**5,168.1058**	**0.2883**		**5,175.3125**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4673	14.3644	4.1460	0.0387	2.4219	0.0280	2.4498	0.6369	0.0267	0.6636		4,133.5364	4,133.5364	0.2598		4,140.0309
Worker	0.4478	0.2945	3.3918	0.0104	3.0613	8.7500e-003	3.0700	0.7735	8.0600e-003	0.7815		1,034.5695	1,034.5695	0.0285		1,035.2816
Total	**0.9152**	**14.6589**	**7.5378**	**0.0490**	**5.4832**	**0.0367**	**5.5199**	**1.4104**	**0.0348**	**1.4452**		**5,168.1058**	**5,168.1058**	**0.2883**		**5,175.3125**

3.14 Park S Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Archit. Coating	24.8646					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**25.1068**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4088	0.2900	3.2081	8.9000e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		885.9363	885.9363	0.0279		886.6344
Total	**0.4088**	**0.2900**	**3.2081**	**8.9000e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**885.9363**	**885.9363**	**0.0279**		**886.6344**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	24.8646					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**24.8943**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4088	0.2900	3.2081	8.9000e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		885.9363	885.9363	0.0279		886.6344
Total	**0.4088**	**0.2900**	**3.2081**	**8.9000e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**885.9363**	**885.9363**	**0.0279**		**886.6344**

3.15 Vball Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0745	0.0000	0.0745	0.0113	0.0000	0.0113			0.0000			0.0000
Off-Road	1.7427	17.0435	11.0860	0.0200		0.8700	0.8700		0.8162	0.8162		1,920.1256	1,920.1256	0.4669		1,931.7974
Total	**1.7427**	**17.0435**	**11.0860**	**0.0200**	**0.0745**	**0.8700**	**0.9444**	**0.0113**	**0.8162**	**0.8275**		**1,920.1256**	**1,920.1256**	**0.4669**		**1,931.7974**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1700e-003	0.1032	0.0240	2.7000e-004	0.0202	3.3000e-004	0.0206	5.1500e-003	3.2000e-004	5.4600e-003		29.7888	29.7888	2.1400e-003		29.8422
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0290	0.3208	8.9000e-004	0.3226	7.5000e-004	0.3234	0.0810	6.9000e-004	0.0817		88.5936	88.5936	2.7900e-003		88.6634
Total	**0.0441**	**0.1322**	**0.3448**	**1.1600e-003**	**0.3429**	**1.0800e-003**	**0.3440**	**0.0861**	**1.0100e-003**	**0.0871**		**118.3824**	**118.3824**	**4.9300e-003**		**118.5056**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0290	0.0000	0.0290	4.4000e-003	0.0000	4.4000e-003			0.0000			0.0000
Off-Road	0.2307	0.9995	11.6102	0.0200		0.0308	0.0308		0.0308	0.0308	0.0000	1,920.1256	1,920.1256	0.4669		1,931.7974
Total	**0.2307**	**0.9995**	**11.6102**	**0.0200**	**0.0290**	**0.0308**	**0.0598**	**4.4000e-003**	**0.0308**	**0.0352**	**0.0000**	**1,920.1256**	**1,920.1256**	**0.4669**		**1,931.7974**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1700e-003	0.1032	0.0240	2.7000e-004	0.0202	3.3000e-004	0.0206	5.1500e-003	3.2000e-004	5.4600e-003		29.7888	29.7888	2.1400e-003		29.8422

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0290	0.3208	8.9000e-004	0.3226	7.5000e-004	0.3234	0.0810	6.9000e-004	0.0817		88.5936	88.5936	2.7900e-003		88.6634
Total	**0.0441**	**0.1322**	**0.3448**	**1.1600e-003**	**0.3429**	**1.0800e-003**	**0.3440**	**0.0861**	**1.0100e-003**	**0.0871**		**118.3824**	**118.3824**	**4.9300e-003**		**118.5056**

3.16 Vball Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.2651	0.0000	12.2651	6.6443	0.0000	6.6443			0.0000			0.0000
Off-Road	1.2890	13.4374	6.4113	0.0116		0.6881	0.6881		0.6331	0.6331		1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**1.2890**	**13.4374**	**6.4113**	**0.0116**	**12.2651**	**0.6881**	**12.9532**	**6.6443**	**0.6331**	**7.2774**		**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0652	0.7218	2.0000e-003	0.9009	1.6800e-003	0.9025	0.2251	1.5500e-003	0.2266		199.3357	199.3357	6.2800e-003		199.4927
Total	**0.0920**	**0.0652**	**0.7218**	**2.0000e-003**	**0.9009**	**1.6800e-003**	**0.9025**	**0.2251**	**1.5500e-003**	**0.2266**		**199.3357**	**199.3357**	**6.2800e-003**		**199.4927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7834	0.0000	4.7834	2.5913	0.0000	2.5913			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**4.7834**	**0.0190**	**4.8024**	**2.5913**	**0.0190**	**2.6103**	**0.0000**	**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0652	0.7218	2.0000e-003	0.9009	1.6800e-003	0.9025	0.2251	1.5500e-003	0.2266		199.3357	199.3357	6.2800e-003		199.4927
Total	**0.0920**	**0.0652**	**0.7218**	**2.0000e-003**	**0.9009**	**1.6800e-003**	**0.9025**	**0.2251**	**1.5500e-003**	**0.2266**		**199.3357**	**199.3357**	**6.2800e-003**		**199.4927**

3.16 Vball Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.2651	0.0000	12.2651	6.6443	0.0000	6.6443			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**12.2651**	**0.6442**	**12.9093**	**6.6443**	**0.5927**	**7.2370**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.9009	1.6300e-003	0.9025	0.2251	1.5000e-003	0.2266		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.9009**	**1.6300e-003**	**0.9025**	**0.2251**	**1.5000e-003**	**0.2266**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7834	0.0000	4.7834	2.5913	0.0000	2.5913			0.0000			0.0000

Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**4.7834**	**0.0190**	**4.8024**	**2.5913**	**0.0190**	**2.6103**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0858	0.0587	0.6629	1.9400e-003	0.9009	1.6300e-003	0.9025	0.2251	1.5000e-003	0.2266		193.0052	193.0052	5.6800e-003		193.1472
Total	**0.0858**	**0.0587**	**0.6629**	**1.9400e-003**	**0.9009**	**1.6300e-003**	**0.9025**	**0.2251**	**1.5000e-003**	**0.2266**		**193.0052**	**193.0052**	**5.6800e-003**		**193.1472**

3.17 Vball Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	2.8453	31.6479	18.3417	0.0386		1.3527	1.3527		1.2445	1.2445		3,738.0399	3,738.0399	1.2090		3,768.2638
Total	**2.8453**	**31.6479**	**18.3417**	**0.0386**	**7.6128**	**1.3527**	**8.9656**	**3.4820**	**1.2445**	**4.7265**		**3,738.0399**	**3,738.0399**	**1.2090**		**3,768.2638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0620	0.0424	0.4787	1.4000e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		139.3926	139.3926	4.1000e-003		139.4952
Total	**0.0620**	**0.0424**	**0.4787**	**1.4000e-003**	**0.1453**	**1.1700e-003**	**0.1465**	**0.0385**	**1.0800e-003**	**0.0396**		**139.3926**	**139.3926**	**4.1000e-003**		**139.4952**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	0.4736	2.0523	19.9038	0.0386		0.0632	0.0632		0.0632	0.0632	0.0000	3,738.0399	3,738.0399	1.2090		3,768.2638
Total	**0.4736**	**2.0523**	**19.9038**	**0.0386**	**2.9690**	**0.0632**	**3.0322**	**1.3580**	**0.0632**	**1.4211**	**0.0000**	**3,738.0399**	**3,738.0399**	**1.2090**		**3,768.2638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0620	0.0424	0.4787	1.4000e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		139.3926	139.3926	4.1000e-003		139.4952
Total	**0.0620**	**0.0424**	**0.4787**	**1.4000e-003**	**0.1453**	**1.1700e-003**	**0.1465**	**0.0385**	**1.0800e-003**	**0.0396**		**139.3926**	**139.3926**	**4.1000e-003**		**139.4952**

3.18 Bookstore Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.0221**	**0.6442**	**6.6663**	**3.3102**	**0.5927**	**3.9029**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0238	0.0163	0.1841	5.4000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		53.6126	53.6126	1.5800e-003		53.6520
Total	**0.0238**	**0.0163**	**0.1841**	**5.4000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**53.6126**	**53.6126**	**1.5800e-003**		**53.6520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0238	0.0163	0.1841	5.4000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		53.6126	53.6126	1.5800e-003		53.6520
Total	**0.0238**	**0.0163**	**0.1841**	**5.4000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**53.6126**	**53.6126**	**1.5800e-003**		**53.6520**

3.19 Bookstore Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.3323	24.9943	16.8691	0.0317		1.1526	1.1526		1.0604	1.0604		3,071.2204	3,071.2204	0.9933		3,096.0528
Total	**2.3323**	**24.9943**	**16.8691**	**0.0317**	**6.5523**	**1.1526**	**7.7049**	**3.3675**	**1.0604**	**4.4279**		**3,071.2204**	**3,071.2204**	**0.9933**		**3,096.0528**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	0.3887	1.6844	19.3287	0.0317		0.0518	0.0518		0.0518	0.0518	0.0000	3,071.2204	3,071.2204	0.9933		3,096.0528
Total	**0.3887**	**1.6844**	**19.3287**	**0.0317**	**2.5554**	**0.0518**	**2.6072**	**1.3133**	**0.0518**	**1.3652**	**0.0000**	**3,071.2204**	**3,071.2204**	**0.9933**		**3,096.0528**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

3.20 Stu Center Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

3.21 Bookstore Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4978	15.1146	4.3800	0.0390	0.9987	0.0320	1.0307	0.2876	0.0306	0.3181		4,170.5902	4,170.5902	0.2692		4,177.3212
Worker	0.4768	0.3262	3.6826	0.0108	1.1178	9.0300e-003	1.1268	0.2964	8.3200e-003	0.3048		1,072.2511	1,072.2511	0.0316		1,073.0399
Total	**0.9746**	**15.4408**	**8.0626**	**0.0498**	**2.1165**	**0.0410**	**2.1575**	**0.5840**	**0.0389**	**0.6229**		**5,242.8413**	**5,242.8413**	**0.3008**		**5,250.3611**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5867	2.7396	17.6822	0.0269		0.1120	0.1120		0.1120	0.1120	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.5867**	**2.7396**	**17.6822**	**0.0269**		**0.1120**	**0.1120**		**0.1120**	**0.1120**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4978	15.1146	4.3800	0.0390	0.9987	0.0320	1.0307	0.2876	0.0306	0.3181		4,170.5902	4,170.5902	0.2692		4,177.3212
Worker	0.4768	0.3262	3.6826	0.0108	1.1178	9.0300e-003	1.1268	0.2964	8.3200e-003	0.3048		1,072.2511	1,072.2511	0.0316		1,073.0399

Total	**0.9746**	**15.4408**	**8.0626**	**0.0498**	**2.1165**	**0.0410**	**2.1575**	**0.5840**	**0.0389**	**0.6229**		**5,242.8413**	**5,242.8413**	**0.3008**		**5,250.3611**

3.21 Bookstore Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4673	14.3644	4.1460	0.0387	0.9988	0.0280	1.0267	0.2876	0.0267	0.3143		4,133.5364	4,133.5364	0.2598		4,140.0309
Worker	0.4478	0.2945	3.3918	0.0104	1.1178	8.7500e-003	1.1265	0.2964	8.0600e-003	0.3045		1,034.5695	1,034.5695	0.0285		1,035.2816
Total	**0.9152**	**14.6589**	**7.5378**	**0.0490**	**2.1165**	**0.0367**	**2.1532**	**0.5840**	**0.0348**	**0.6188**		**5,168.1058**	**5,168.1058**	**0.2883**		**5,175.3125**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4673	14.3644	4.1460	0.0387	0.9988	0.0280	1.0267	0.2876	0.0267	0.3143		4,133.5364	4,133.5364	0.2598		4,140.0309
Worker	0.4478	0.2945	3.3918	0.0104	1.1178	8.7500e-003	1.1265	0.2964	8.0600e-003	0.3045		1,034.5695	1,034.5695	0.0285		1,035.2816
Total	**0.9152**	**14.6589**	**7.5378**	**0.0490**	**2.1165**	**0.0367**	**2.1532**	**0.5840**	**0.0348**	**0.6188**		**5,168.1058**	**5,168.1058**	**0.2883**		**5,175.3125**

3.22 Bookstore Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.8173	8.3838	9.2071	0.0140		0.4565	0.4565		0.4200	0.4200		1,357.6943	1,357.6943	0.4391		1,368.6720
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8173**	**8.3838**	**9.2071**	**0.0140**		**0.4565**	**0.4565**		**0.4200**	**0.4200**		**1,357.6943**	**1,357.6943**	**0.4391**		**1,368.6720**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0326	0.3683	1.0800e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2251	107.2251	3.1600e-003		107.3040
Total	**0.0477**	**0.0326**	**0.3683**	**1.0800e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**107.2251**	**107.2251**	**3.1600e-003**		**107.3040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1724	0.7471	10.6316	0.0140		0.0230	0.0230		0.0230	0.0230	0.0000	1,357.6943	1,357.6943	0.4391		1,368.6720
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1724**	**0.7471**	**10.6316**	**0.0140**		**0.0230**	**0.0230**		**0.0230**	**0.0230**	**0.0000**	**1,357.6943**	**1,357.6943**	**0.4391**		**1,368.6720**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0326	0.3683	1.0800e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2251	107.2251	3.1600e-003		107.3040
Total	**0.0477**	**0.0326**	**0.3683**	**1.0800e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**107.2251**	**107.2251**	**3.1600e-003**		**107.3040**

3.22 Bookstore Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7177	7.2883	9.1506	0.0140		0.3834	0.3834		0.3527	0.3527		1,357.9340	1,357.9340	0.4392		1,368.9136
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7177**	**7.2883**	**9.1506**	**0.0140**		**0.3834**	**0.3834**		**0.3527**	**0.3527**		**1,357.9340**	**1,357.9340**	**0.4392**		**1,368.9136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		103.4570	103.4570	2.8500e-003		103.5282
Total	**0.0448**	**0.0295**	**0.3392**	**1.0400e-003**	**0.1118**	**8.7000e-004**	**0.1127**	**0.0296**	**8.1000e-004**	**0.0305**		**103.4570**	**103.4570**	**2.8500e-003**		**103.5282**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1724	0.7471	10.6316	0.0140		0.0230	0.0230		0.0230	0.0230	0.0000	1,357.9340	1,357.9340	0.4392		1,368.9136
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1724**	**0.7471**	**10.6316**	**0.0140**		**0.0230**	**0.0230**		**0.0230**	**0.0230**	**0.0000**	**1,357.9340**	**1,357.9340**	**0.4392**		**1,368.9136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0448	0.0295	0.3392	1.0400e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		103.4570	103.4570	2.8500e-003		103.5282
Total	**0.0448**	**0.0295**	**0.3392**	**1.0400e-003**	**0.1118**	**8.7000e-004**	**0.1127**	**0.0296**	**8.1000e-004**	**0.0305**		**103.4570**	**103.4570**	**2.8500e-003**		**103.5282**

3.23 Stu Center Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**8.3302**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3815	0.2609	2.9461	8.6100e-003	0.8942	7.2300e-003	0.9014	0.2372	6.6600e-003	0.2438		857.8009	857.8009	0.0252		858.4319
Total	**0.3815**	**0.2609**	**2.9461**	**8.6100e-003**	**0.8942**	**7.2300e-003**	**0.9014**	**0.2372**	**6.6600e-003**	**0.2438**		**857.8009**	**857.8009**	**0.0252**		**858.4319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**8.1410**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3815	0.2609	2.9461	8.6100e-003	0.8942	7.2300e-003	0.9014	0.2372	6.6600e-003	0.2438		857.8009	857.8009	0.0252		858.4319
Total	**0.3815**	**0.2609**	**2.9461**	**8.6100e-003**	**0.8942**	**7.2300e-003**	**0.9014**	**0.2372**	**6.6600e-003**	**0.2438**		**857.8009**	**857.8009**	**0.0252**		**858.4319**

3.23 Stu Center Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**8.3158**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3583	0.2356	2.7134	8.3000e-003	0.8942	7.0000e-003	0.9012	0.2372	6.4500e-003	0.2436		827.6556	827.6556	0.0228		828.2253
Total	**0.3583**	**0.2356**	**2.7134**	**8.3000e-003**	**0.8942**	**7.0000e-003**	**0.9012**	**0.2372**	**6.4500e-003**	**0.2436**		**827.6556**	**827.6556**	**0.0228**		**828.2253**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**8.1410**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3583	0.2356	2.7134	8.3000e-003	0.8942	7.0000e-003	0.9012	0.2372	6.4500e-003	0.2436		827.6556	827.6556	0.0228		828.2253
Total	**0.3583**	**0.2356**	**2.7134**	**8.3000e-003**	**0.8942**	**7.0000e-003**	**0.9012**	**0.2372**	**6.4500e-003**	**0.2436**		**827.6556**	**827.6556**	**0.0228**		**828.2253**

3.24 Communication Tower Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3445	3.4636	4.4063	6.7000e-003		0.1842	0.1842		0.1695	0.1695		648.5722	648.5722	0.2098		653.8163
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3445**	**3.4636**	**4.4063**	**6.7000e-003**		**0.1842**	**0.1842**		**0.1695**	**0.1695**		**648.5722**	**648.5722**	**0.2098**		**653.8163**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641
Total	**0.0224**	**0.0147**	**0.1696**	**5.2000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**51.7285**	**51.7285**	**1.4200e-003**		**51.7641**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0825	0.3573	5.0848	6.7000e-003		0.0110	0.0110		0.0110	0.0110	0.0000	648.5722	648.5722	0.2098		653.8163
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0825**	**0.3573**	**5.0848**	**6.7000e-003**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**648.5722**	**648.5722**	**0.2098**		**653.8163**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0224	0.0147	0.1696	5.2000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		51.7285	51.7285	1.4200e-003		51.7641
Total	**0.0224**	**0.0147**	**0.1696**	**5.2000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**51.7285**	**51.7285**	**1.4200e-003**		**51.7641**

Mt. SAC EFMP Phases 1A and 1B

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	340.00	1000sqft	7.81	340,000.00	0
User Defined Industrial	1.00	User Defined Unit	0.02	1,000.00	0
Unenclosed Parking with Elevator	607.82	1000sqft	5.98	607,819.00	0
City Park	0.05	Acre	0.05	2,003.76	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - .

Construction Phase - .

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

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Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - .

Demolition - .

Grading - .

Architectural Coating - .

Vehicle Trips - Construction Only

Area Coating - No Operational in this run

Construction Off-road Equipment Mitigation - Tier 3

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	95,471.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	134,479.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	170,500.00	35,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	511,500.00	105,000.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	17,184.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	101,314.00
tblArchitecturalCoating	ConstArea_Parking	36,469.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	170500	0
tblAreaCoating	Area_Nonresidential_Interior	511500	0
tblAreaCoating	Area_Parking	36469	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	19.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	15.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	21.00
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tblConstructionPhase	NumDays	20.00	80.00
tblConstructionPhase	NumDays	300.00	523.00
tblConstructionPhase	NumDays	300.00	312.00
tblConstructionPhase	NumDays	300.00	269.00
tblConstructionPhase	NumDays	300.00	260.00
tblConstructionPhase	NumDays	20.00	210.00
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tblConstructionPhase	NumDays	20.00	158.00
tblConstructionPhase	NumDays	20.00	39.00
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tblConstructionPhase	NumDays	30.00	27.00
tblConstructionPhase	NumDays	30.00	38.00
tblConstructionPhase	NumDays	30.00	79.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	338.00
tblConstructionPhase	NumDays	20.00	36.00
tblConstructionPhase	NumDays	10.00	48.00

tblConstructionPhase	NumDays	10.00	78.00
tblConstructionPhase	NumDays	10.00	627.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblGrading	AcresOfGrading	0.00	10.00
tblGrading	MaterialExported	0.00	20,000.00
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblLandUse	LandUseSquareFeet	607,820.00	607,819.00
tblLandUse	LandUseSquareFeet	2,178.00	2,003.76

tblLandUse	LotAcreage	0.00	0.02
tblLandUse	LotAcreage	13.95	5.98
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
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tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	WorkerTripNumber	399.00	100.00
tblTripsAndVMT	WorkerTripNumber	5.00	13.00
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tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	11.23	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	1.21	0.00
tblVehicleTrips	WD_TR	1.89	0.00

tblVehicleTrips	WD_TR	27.49	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	22.8736	241.1025	153.7064	0.3307	18.9785	7.4528	30.0318	6.0278	6.9236	16.3010	0.0000	33,203.5729	33,203.5729	7.2655	0.0000	33,360.2304
2020	61.9187	145.8207	93.4850	0.2611	24.7271	5.3523	29.1214	11.6048	4.9762	14.2578	0.0000	26,350.6435	26,350.6435	4.3847	0.0000	26,460.2605
2021	16.3958	100.0038	80.4916	0.2088	25.3972	3.7784	29.0391	11.6048	3.5171	14.9520	0.0000	20,995.3316	20,995.3316	3.3323	0.0000	21,078.6395
2022	15.5223	79.9895	67.9659	0.1945	14.6836	2.6706	17.3542	5.5862	2.4992	8.0854	0.0000	19,619.0845	19,619.0845	2.6236	0.0000	19,684.6754
Maximum	**61.9187**	**241.1025**	**153.7064**	**0.3307**	**25.3972**	**7.4528**	**30.0318**	**11.6048**	**6.9236**	**16.3010**	**0.0000**	**33,203.5729**	**33,203.5729**	**7.2655**	**0.0000**	**33,360.2304**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.8823	53.6272	158.8296	0.3307	12.4889	0.6550	13.1191	3.6525	0.6432	4.2759	0.0000	33,203.5728	33,203.5728	7.2655	0.0000	33,360.2303
2020	55.8886	52.6077	96.0774	0.2611	14.7874	0.5782	15.3657	5.5325	0.5685	5.7806	0.0000	26,350.6435	26,350.6435	4.3847	0.0000	26,460.2604
2021	11.8421	39.0289	86.6503	0.2088	13.5719	0.3861	13.7639	5.5325	0.3817	5.7224	0.0000	20,995.3316	20,995.3316	3.3323	0.0000	21,078.6395

2022	11.6520	36.4729	72.4131	0.1945	11.0102	0.3294	11.3396	3.5670	0.3250	3.8920	0.0000	19,619.0845	19,619.0845	2.6236	0.0000	19,684.6754
Maximum	**55.8886**	**53.6272**	**158.8296**	**0.3307**	**14.7874**	**0.6550**	**15.3657**	**5.5325**	**0.6432**	**5.7806**	**0.0000**	**33,203.5728**	**33,203.5728**	**7.2655**	**0.0000**	**33,360.2303**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**26.94**	**67.94**	**-4.63**	**0.00**	**38.11**	**89.88**	**49.23**	**47.49**	**89.29**	**63.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Stu Center Demolition	Demolition	4/1/2019	11/30/2019	6	210	
2	Park R and Tennis Fine Grading	Grading	5/15/2019	6/14/2019	6	27	
3	Park R and Tennis Building Construction	Building Construction	6/15/2019	4/23/2020	6	269	
4	Demolition	Demolition	7/1/2019	12/31/2019	6	158	
5	Park S Demolition	Demolition	8/1/2019	9/14/2019	6	39	
6	Park S Grading	Grading	9/16/2019	10/29/2019	6	38	
7	Park S Building Construction	Building Construction	10/30/2019	8/27/2020	6	260	
8	Stu Center Site Preparation	Site Preparation	2/1/2020	2/1/2022	6	627	
9	Stu Center Grading	Grading	3/1/2020	6/1/2020	6	79	
10	Park R and Tennis Paving	Paving	4/24/2020	5/19/2020	6	22	
11	Park R and Tennis Architectural Coating	Architectural Coating	5/20/2020	6/12/2020	6	21	
12	Stu Center Building Construction	Building Construction	6/2/2020	2/1/2022	6	523	
13	Park S Architectural Coating	Architectural Coating	8/28/2020	9/21/2020	6	21	
14	Vball Demolition	Demolition	10/1/2020	11/25/2020	6	48	
15	Vball Site Preparation	Site Preparation	11/26/2020	1/20/2021	6	48	
16	Vball Grading	Grading	1/21/2021	3/17/2021	6	48	
17	Bookstore Site Preparation	Site Preparation	2/1/2021	5/1/2021	6	78	

18	Bookstore Grading	Grading	5/2/2021	7/31/2021	6	78	
19	Stu Center Paving	Paving	7/13/2021	9/2/2021	6	45	
20	Bookstore Building Construction	Building Construction	8/2/2021	7/30/2022	6	312	
21	Bookstore Paving	Paving	8/2/2021	8/30/2022	6	338	
22	Stu Center Architectural Coating	Architectural Coating	11/1/2021	2/1/2022	6	80	
23	Communication Tower Paving	Paving	6/24/2022	8/4/2022	6	36	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 5.98

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 134,479; Striped Parking Area: 101,314

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Stu Center Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Stu Center Demolition	Excavators	3	8.00	158	0.38
Stu Center Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Park R and Tennis Fine Grading	Excavators	2	8.00	158	0.38
Park R and Tennis Fine Grading	Graders	1	8.00	187	0.41
Park R and Tennis Fine Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park R and Tennis Fine Grading	Scrapers	2	8.00	367	0.48
Park R and Tennis Fine Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park R and Tennis Building Construction	Cranes	1	7.00	231	0.29
Park R and Tennis Building Construction	Forklifts	3	8.00	89	0.20
Park R and Tennis Building Construction	Generator Sets	1	8.00	84	0.74
Park R and Tennis Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Park R and Tennis Building Construction	Welders	1	8.00	46	0.45
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Park S Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Park S Demolition	Excavators	3	8.00	158	0.38
Park S Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Park S Grading	Excavators	2	8.00	158	0.38
Park S Grading	Graders	1	8.00	187	0.41
Park S Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park S Grading	Scrapers	2	8.00	367	0.48
Park S Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park S Building Construction	Cranes	1	7.00	231	0.29
Park S Building Construction	Forklifts	3	8.00	89	0.20
Park S Building Construction	Generator Sets	1	8.00	84	0.74
Park S Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Park S Building Construction	Welders	1	8.00	46	0.45
Stu Center Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Stu Center Grading	Excavators	2	8.00	158	0.38
Stu Center Grading	Graders	1	8.00	187	0.41
Stu Center Grading	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Grading	Scrapers	2	8.00	367	0.48
Stu Center Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park R and Tennis Paving	Pavers	2	8.00	130	0.42
Park R and Tennis Paving	Paving Equipment	2	8.00	132	0.36
Park R and Tennis Paving	Rollers	2	8.00	80	0.38
Park R and Tennis Architectural Coating	Air Compressors	1	6.00	78	0.48
Stu Center Building Construction	Cranes	1	7.00	231	0.29
Stu Center Building Construction	Forklifts	3	8.00	89	0.20
Stu Center Building Construction	Generator Sets	1	8.00	84	0.74
Stu Center Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Stu Center Building Construction	Welders	1	8.00	46	0.45
Park S Architectural Coating	Air Compressors	1	6.00	78	0.48

Vball Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Vball Demolition	Excavators	1	8.00	158	0.38
Vball Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Vball Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Vball Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Vball Grading	Excavators	1	8.00	158	0.38
Vball Grading	Graders	1	8.00	187	0.41
Vball Grading	Rubber Tired Dozers	1	8.00	247	0.40
Vball Grading	Scrapers	1	8.00	367	0.48
Vball Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Bookstore Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Bookstore Grading	Excavators	2	8.00	158	0.38
Bookstore Grading	Graders	1	8.00	187	0.41
Bookstore Grading	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Grading	Scrapers	0	8.00	367	0.48
Bookstore Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Stu Center Paving	Pavers	2	8.00	130	0.42
Stu Center Paving	Paving Equipment	2	8.00	132	0.36
Stu Center Paving	Rollers	2	8.00	80	0.38
Bookstore Building Construction	Cranes	1	7.00	231	0.29
Bookstore Building Construction	Forklifts	3	8.00	89	0.20
Bookstore Building Construction	Generator Sets	1	8.00	84	0.74
Bookstore Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Bookstore Building Construction	Welders	1	8.00	46	0.45
Bookstore Paving	Pavers	1	8.00	130	0.42
Bookstore Paving	Paving Equipment	1	8.00	132	0.36
Bookstore Paving	Rollers	2	8.00	80	0.38
Stu Center Architectural Coating	Air Compressors	1	6.00	78	0.48
Communication Tower Paving	Pavers	0	8.00	130	0.42

Communication Tower Paving	Paving Equipment	1	8.00	132	0.36
Communication Tower Paving	Rollers	1	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Stu Center Demolition	6	15.00	0.00	344.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Fine Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Demolition	6	15.00	0.00	208.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Grading	8	20.00	0.00	2,500.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Demolition	3	8.00	0.00	17.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Site Preparation	2	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Grading	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Paving	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Architectural Coating	1	80.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Communication Tower Paving	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Stu Center Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.3547	0.0000	0.3547	0.0537	0.0000	0.0537			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.3547**	**1.7949**	**2.1496**	**0.0537**	**1.6697**	**1.7234**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0154	0.5017	0.1070	1.3100e-003	0.0936	1.8400e-003	0.0955	0.0238	1.7600e-003	0.0256		141.6153	141.6153	9.7500e-003		141.8591
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.6050	1.4500e-003	0.6064	0.1518	1.3300e-003	0.1531		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0903**	**0.5568**	**0.8302**	**3.1400e-003**	**0.6986**	**3.2900e-003**	**0.7019**	**0.1756**	**3.0900e-003**	**0.1787**		**323.5582**	**323.5582**	**0.0160**		**323.9583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1383	0.0000	0.1383	0.0210	0.0000	0.0210			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.1383**	**0.0616**	**0.2000**	**0.0210**	**0.0616**	**0.0826**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0154	0.5017	0.1070	1.3100e-003	0.0936	1.8400e-003	0.0955	0.0238	1.7600e-003	0.0256		141.6153	141.6153	9.7500e-003		141.8591
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.6050	1.4500e-003	0.6064	0.1518	1.3300e-003	0.1531		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0903**	**0.5568**	**0.8302**	**3.1400e-003**	**0.6986**	**3.2900e-003**	**0.7019**	**0.1756**	**3.0900e-003**	**0.1787**		**323.5582**	**323.5582**	**0.0160**		**323.9583**

3.3 Park R and Tennis Fine Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		242.5906	242.5906	8.3300e-003		242.7989
Total	**0.0999**	**0.0734**	**0.9643**	**2.4400e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**242.5906**	**242.5906**	**8.3300e-003**		**242.7989**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000

Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3826**	**0.1015**	**3.4841**	**1.4026**	**0.1015**	**1.5042**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		242.5906	242.5906	8.3300e-003		242.7989
Total	**0.0999**	**0.0734**	**0.9643**	**2.4400e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**242.5906**	**242.5906**	**8.3300e-003**		**242.7989**

3.4 Park R and Tennis Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4485	21.9553	18.0273	0.0281		1.3484	1.3484		1.2666	1.2666		2,706.9084	2,706.9084	0.6678		2,723.6039
Total	**2.4485**	**21.9553**	**18.0273**	**0.0281**		**1.3484**	**1.3484**		**1.2666**	**1.2666**		**2,706.9084**	**2,706.9084**	**0.6678**		**2,723.6039**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6482	18.0538	4.7904	0.0408	2.4218	0.1151	2.5369	0.6369	0.1101	0.7470		4,349.5081	4,349.5081	0.2787		4,356.4763
Worker	0.4996	0.3672	4.8216	0.0122	3.0613	9.6400e-003	3.0709	0.7735	8.8800e-003	0.7824		1,212.9529	1,212.9529	0.0417		1,213.9945
Total	**1.1478**	**18.4210**	**9.6121**	**0.0530**	**5.4831**	**0.1247**	**5.6078**	**1.4103**	**0.1190**	**1.5293**		**5,562.4609**	**5,562.4609**	**0.3204**		**5,570.4707**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6834	2.9167	18.6489	0.0281		0.1394	0.1394		0.1394	0.1394	0.0000	2,706.9084	2,706.9084	0.6678		2,723.6039
Total	**0.6834**	**2.9167**	**18.6489**	**0.0281**		**0.1394**	**0.1394**		**0.1394**	**0.1394**	**0.0000**	**2,706.9084**	**2,706.9084**	**0.6678**		**2,723.6039**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6482	18.0538	4.7904	0.0408	2.4218	0.1151	2.5369	0.6369	0.1101	0.7470		4,349.5081	4,349.5081	0.2787		4,356.4763
Worker	0.4996	0.3672	4.8216	0.0122	3.0613	9.6400e-003	3.0709	0.7735	8.8800e-003	0.7824		1,212.9529	1,212.9529	0.0417		1,213.9945
Total	**1.1478**	**18.4210**	**9.6121**	**0.0530**	**5.4831**	**0.1247**	**5.6078**	**1.4103**	**0.1190**	**1.5293**		**5,562.4609**	**5,562.4609**	**0.3204**		**5,570.4707**

3.4 Park R and Tennis Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	2.1984	19.9755	17.7034	0.0281		1.1670	1.1670		1.0963	1.0963		2,665.8512	2,665.8512	0.6593		2,682.3346
Total	**2.1984**	**19.9755**	**17.7034**	**0.0281**		**1.1670**	**1.1670**		**1.0963**	**1.0963**		**2,665.8512**	**2,665.8512**	**0.6593**		**2,682.3346**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	2.4218	0.0781	2.4999	0.6369	0.0747	0.7116		4,321.5852	4,321.5852	0.2637		4,328.1782

Worker	0.4602	0.3274	4.3785	0.0118	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**5.4831**	**0.0874**	**5.5705**	**1.4103**	**0.0833**	**1.4937**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6403	2.8638	18.6087	0.0281		0.1267	0.1267		0.1267	0.1267	0.0000	2,665.8512	2,665.8512	0.6593		2,682.3346
Total	**0.6403**	**2.8638**	**18.6087**	**0.0281**		**0.1267**	**0.1267**		**0.1267**	**0.1267**	**0.0000**	**2,665.8512**	**2,665.8512**	**0.6593**		**2,682.3346**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	2.4218	0.0781	2.4999	0.6369	0.0747	0.7116		4,321.5852	4,321.5852	0.2637		4,328.1782
Worker	0.4602	0.3274	4.3785	0.0118	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**5.4831**	**0.0874**	**5.5705**	**1.4103**	**0.0833**	**1.4937**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

3.5 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1020	0.0000	0.1020	0.0154	0.0000	0.0154			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.1020**	**1.7949**	**1.8969**	**0.0154**	**1.6697**	**1.6851**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.4000e-003	0.1435	0.0306	3.7000e-004	8.1900e-003	5.3000e-004	8.7200e-003	2.2400e-003	5.0000e-004	2.7500e-003		40.4898	40.4898	2.7900e-003		40.5595
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0793**	**0.1985**	**0.7538**	**2.2000e-003**	**0.1759**	**1.9800e-003**	**0.1778**	**0.0467**	**1.8300e-003**	**0.0486**		**222.4327**	**222.4327**	**9.0400e-003**		**222.6587**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					0.0398	0.0000	0.0398	6.0200e-003	0.0000	6.0200e-003			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.0398**	**0.0616**	**0.1014**	**6.0200e-003**	**0.0616**	**0.0677**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.4000e-003	0.1435	0.0306	3.7000e-004	8.1900e-003	5.3000e-004	8.7200e-003	2.2400e-003	5.0000e-004	2.7500e-003		40.4898	40.4898	2.7900e-003		40.5595
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.1677	1.4500e-003	0.1691	0.0445	1.3300e-003	0.0458		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.0793**	**0.1985**	**0.7538**	**2.2000e-003**	**0.1759**	**1.9800e-003**	**0.1778**	**0.0467**	**1.8300e-003**	**0.0486**		**222.4327**	**222.4327**	**9.0400e-003**		**222.6587**

3.6 Park S Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.1539	0.0000	1.1539	0.1747	0.0000	0.1747			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451

Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**1.1539**	**1.7949**	**2.9488**	**0.1747**	**1.6697**	**1.8444**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0501	1.6335	0.3483	4.2600e-003	0.1638	5.9900e-003	0.1698	0.0429	5.7300e-003	0.0486		461.0729	461.0729	0.0318		461.8668
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.3134	1.4500e-003	0.3149	0.0802	1.3300e-003	0.0816		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.1251**	**1.6886**	**1.0715**	**6.0900e-003**	**0.4772**	**7.4400e-003**	**0.4846**	**0.1231**	**7.0600e-003**	**0.1302**		**643.0159**	**643.0159**	**0.0380**		**643.9659**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4500	0.0000	0.4500	0.0681	0.0000	0.0681			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.4500**	**0.0616**	**0.5117**	**0.0681**	**0.0616**	**0.1298**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0501	1.6335	0.3483	4.2600e-003	0.1638	5.9900e-003	0.1698	0.0429	5.7300e-003	0.0486		461.0729	461.0729	0.0318		461.8668
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0551	0.7233	1.8300e-003	0.3134	1.4500e-003	0.3149	0.0802	1.3300e-003	0.0816		181.9429	181.9429	6.2500e-003		182.0992
Total	**0.1251**	**1.6886**	**1.0715**	**6.0900e-003**	**0.4772**	**7.4400e-003**	**0.4846**	**0.1231**	**7.0600e-003**	**0.1302**		**643.0159**	**643.0159**	**0.0380**		**643.9659**

3.7 Park S Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.8066	1.9300e-003	0.8085	0.2024	1.7800e-003	0.2042		242.5906	242.5906	8.3300e-003		242.7989
Total	**0.0999**	**0.0734**	**0.9643**	**2.4400e-003**	**0.8066**	**1.9300e-003**	**0.8085**	**0.2024**	**1.7800e-003**	**0.2042**		**242.5906**	**242.5906**	**8.3300e-003**		**242.7989**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3826	0.0000	3.3826	1.4026	0.0000	1.4026			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3826**	**0.1015**	**3.4841**	**1.4026**	**0.1015**	**1.5042**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0999	0.0734	0.9643	2.4400e-003	0.8066	1.9300e-003	0.8085	0.2024	1.7800e-003	0.2042		242.5906	242.5906	8.3300e-003		242.7989

Total	**0.0999**	**0.0734**	**0.9643**	**2.4400e-003**	**0.8066**	**1.9300e-003**	**0.8085**	**0.2024**	**1.7800e-003**	**0.2042**		**242.5906**	**242.5906**	**8.3300e-003**		**242.7989**

3.8 Park S Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6482	18.0538	4.7904	0.0408	0.9987	0.1151	1.1138	0.2875	0.1101	0.3977		4,349.5081	4,349.5081	0.2787		4,356.4763
Worker	0.4996	0.3672	4.8216	0.0122	1.1178	9.6400e-003	1.1274	0.2964	8.8800e-003	0.3053		1,212.9529	1,212.9529	0.0417		1,213.9945
Total	**1.1478**	**18.4210**	**9.6121**	**0.0530**	**2.1165**	**0.1247**	**2.2412**	**0.5840**	**0.1190**	**0.7030**		**5,562.4609**	**5,562.4609**	**0.3204**		**5,570.4707**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6692	2.8550	17.7706	0.0269		0.1375	0.1375		0.1375	0.1375	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**0.6692**	**2.8550**	**17.7706**	**0.0269**		**0.1375**	**0.1375**		**0.1375**	**0.1375**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.6482	18.0538	4.7904	0.0408	0.9987	0.1151	1.1138	0.2875	0.1101	0.3977		4,349.5081	4,349.5081	0.2787		4,356.4763
Worker	0.4996	0.3672	4.8216	0.0122	1.1178	9.6400e-003	1.1274	0.2964	8.8800e-003	0.3053		1,212.9529	1,212.9529	0.0417		1,213.9945
Total	**1.1478**	**18.4210**	**9.6121**	**0.0530**	**2.1165**	**0.1247**	**2.2412**	**0.5840**	**0.1190**	**0.7030**		**5,562.4609**	**5,562.4609**	**0.3204**		**5,570.4707**

3.8 Park S Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	0.9987	0.0781	1.0768	0.2876	0.0747	0.3623		4,321.5852	4,321.5852	0.2637		4,328.1782
Worker	0.4602	0.3274	4.3785	0.0118	1.1178	9.3400e-003	1.1271	0.2964	8.6100e-003	0.3050		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**2.1165**	**0.0874**	**2.2039**	**0.5840**	**0.0833**	**0.6673**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6261	2.8021	17.7304	0.0269		0.1248	0.1248		0.1248	0.1248	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**0.6261**	**2.8021**	**17.7304**	**0.0269**		**0.1248**	**0.1248**		**0.1248**	**0.1248**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	0.9987	0.0781	1.0768	0.2876	0.0747	0.3623		4,321.5852	4,321.5852	0.2637		4,328.1782
Worker	0.4602	0.3274	4.3785	0.0118	1.1178	9.3400e-003	1.1271	0.2964	8.6100e-003	0.3050		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**2.1165**	**0.0874**	**2.2039**	**0.5840**	**0.0833**	**0.6673**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

3.9 Stu Center Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2890	13.4374	6.4113	0.0116		0.6881	0.6881		0.6331	0.6331		1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**1.2890**	**13.4374**	**6.4113**	**0.0116**	**6.0221**	**0.6881**	**6.7102**	**3.3102**	**0.6331**	**3.9433**		**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0230	0.0164	0.2189	5.9000e-004	0.0559	4.7000e-004	0.0564	0.0148	4.3000e-004	0.0153		58.8056	58.8056	1.8500e-003		58.8520
Total	**0.0230**	**0.0164**	**0.2189**	**5.9000e-004**	**0.0559**	**4.7000e-004**	**0.0564**	**0.0148**	**4.3000e-004**	**0.0153**		**58.8056**	**58.8056**	**1.8500e-003**		**58.8520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0230	0.0164	0.2189	5.9000e-004	0.0559	4.7000e-004	0.0564	0.0148	4.3000e-004	0.0153		58.8056	58.8056	1.8500e-003		58.8520
Total	**0.0230**	**0.0164**	**0.2189**	**5.9000e-004**	**0.0559**	**4.7000e-004**	**0.0564**	**0.0148**	**4.3000e-004**	**0.0153**		**58.8056**	**58.8056**	**1.8500e-003**		**58.8520**

3.9 Stu Center Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.0221**	**0.6442**	**6.6663**	**3.3102**	**0.5927**	**3.9029**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0214	0.0147	0.2014	5.7000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		56.9385	56.9385	1.6800e-003		56.9804
Total	**0.0214**	**0.0147**	**0.2014**	**5.7000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**56.9385**	**56.9385**	**1.6800e-003**		**56.9804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0214	0.0147	0.2014	5.7000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		56.9385	56.9385	1.6800e-003		56.9804
Total	**0.0214**	**0.0147**	**0.2014**	**5.7000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**56.9385**	**56.9385**	**1.6800e-003**		**56.9804**

3.9 Stu Center Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.0018	10.4693	5.8199	0.0116		0.5075	0.5075		0.4669	0.4669		1,128.2743	1,128.2743	0.3649		1,137.3970
Total	**1.0018**	**10.4693**	**5.8199**	**0.0116**	**6.0221**	**0.5075**	**6.5296**	**3.3102**	**0.4669**	**3.7771**		**1,128.2743**	**1,128.2743**	**0.3649**		**1,137.3970**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735
Total	**0.0201**	**0.0133**	**0.1858**	**5.5000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**54.9356**	**54.9356**	**1.5200e-003**		**54.9735**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000

Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2743	1,128.2743	0.3649		1,137.3970
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2743**	**1,128.2743**	**0.3649**		**1,137.3970**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735
Total	**0.0201**	**0.0133**	**0.1858**	**5.5000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**54.9356**	**54.9356**	**1.5200e-003**		**54.9735**

3.10 Stu Center Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.7020	0.0000	8.7020	3.6008	0.0000	3.6008			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**8.7020**	**2.1739**	**10.8759**	**3.6008**	**2.0000**	**5.6008**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2764	9.0994	2.0163	0.0250	0.9717	0.0290	1.0007	0.2544	0.0278	0.2822		2,708.3285	2,708.3285	0.1844		2,712.9372
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0655	0.8757	2.3600e-003	0.4179	1.8700e-003	0.4198	0.1070	1.7200e-003	0.1087		235.2226	235.2226	7.4200e-003		235.4080
Total	**0.3685**	**9.1649**	**2.8920**	**0.0274**	**1.3896**	**0.0309**	**1.4205**	**0.3614**	**0.0295**	**0.3909**		**2,943.5511**	**2,943.5511**	**0.1918**		**2,948.3452**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.3938	0.0000	3.3938	1.4043	0.0000	1.4043			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**3.3938**	**0.1015**	**3.4953**	**1.4043**	**0.1015**	**1.5059**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.2764	9.0994	2.0163	0.0250	0.9717	0.0290	1.0007	0.2544	0.0278	0.2822		2,708.3285	2,708.3285	0.1844		2,712.9372
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0920	0.0655	0.8757	2.3600e-003	0.4179	1.8700e-003	0.4198	0.1070	1.7200e-003	0.1087		235.2226	235.2226	7.4200e-003		235.4080
Total	**0.3685**	**9.1649**	**2.8920**	**0.0274**	**1.3896**	**0.0309**	**1.4205**	**0.3614**	**0.0295**	**0.3909**		**2,943.5511**	**2,943.5511**	**0.1918**		**2,948.3452**

3.11 Park R and Tennis Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3566**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0690	0.0491	0.6568	1.7700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		176.4169	176.4169	5.5600e-003		176.5560
Total	**0.0690**	**0.0491**	**0.6568**	**1.7700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**176.4169**	**176.4169**	**5.5600e-003**		**176.5560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0690	0.0491	0.6568	1.7700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		176.4169	176.4169	5.5600e-003		176.5560
Total	**0.0690**	**0.0491**	**0.6568**	**1.7700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**176.4169**	**176.4169**	**5.5600e-003**		**176.5560**

3.12 Park R and Tennis Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	52.0429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**52.2851**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3682	0.2619	3.5028	9.4500e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		940.8903	940.8903	0.0297		941.6319
Total	**0.3682**	**0.2619**	**3.5028**	**9.4500e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**940.8903**	**940.8903**	**0.0297**		**941.6319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Archit. Coating	52.0429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**52.0726**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3682	0.2619	3.5028	9.4500e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		940.8903	940.8903	0.0297		941.6319
Total	**0.3682**	**0.2619**	**3.5028**	**9.4500e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**940.8903**	**940.8903**	**0.0297**		**941.6319**

3.13 Stu Center Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	2.4218	0.0781	2.4999	0.6369	0.0747	0.7116		4,321.5852	4,321.5852	0.2637		4,328.1782
Worker	0.4602	0.3274	4.3785	0.0118	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**5.4831**	**0.0874**	**5.5705**	**1.4103**	**0.0833**	**1.4937**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6261	2.8021	17.7304	0.0269		0.1248	0.1248		0.1248	0.1248	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**0.6261**	**2.8021**	**17.7304**	**0.0269**		**0.1248**	**0.1248**		**0.1248**	**0.1248**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5548	16.5941	4.3478	0.0405	2.4218	0.0781	2.4999	0.6369	0.0747	0.7116		4,321.5852	4,321.5852	0.2637		4,328.1782
Worker	0.4602	0.3274	4.3785	0.0118	3.0613	9.3400e-003	3.0706	0.7735	8.6100e-003	0.7821		1,176.1129	1,176.1129	0.0371		1,177.0399
Total	**1.0150**	**16.9215**	**8.7263**	**0.0523**	**5.4831**	**0.0874**	**5.5705**	**1.4103**	**0.0833**	**1.4937**		**5,497.6981**	**5,497.6981**	**0.3008**		**5,505.2181**

3.13 Stu Center Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4742	15.1460	3.9596	0.0401	2.4219	0.0310	2.4528	0.6369	0.0296	0.6665		4,288.1378	4,288.1378	0.2526		4,294.4535
Worker	0.4287	0.2946	4.0277	0.0114	3.0613	9.0300e-003	3.0703	0.7735	8.3200e-003	0.7818		1,138.7699	1,138.7699	0.0336		1,139.6087
Total	**0.9028**	**15.4406**	**7.9873**	**0.0516**	**5.4831**	**0.0400**	**5.5231**	**1.4103**	**0.0379**	**1.4483**		**5,426.9077**	**5,426.9077**	**0.2862**		**5,434.0622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5867	2.7396	17.6822	0.0269		0.1120	0.1120		0.1120	0.1120	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.5867**	**2.7396**	**17.6822**	**0.0269**		**0.1120**	**0.1120**		**0.1120**	**0.1120**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4742	15.1460	3.9596	0.0401	2.4219	0.0310	2.4528	0.6369	0.0296	0.6665		4,288.1378	4,288.1378	0.2526		4,294.4535
Worker	0.4287	0.2946	4.0277	0.0114	3.0613	9.0300e-003	3.0703	0.7735	8.3200e-003	0.7818		1,138.7699	1,138.7699	0.0336		1,139.6087

Total	**0.9028**	**15.4406**	**7.9873**	**0.0516**	**5.4831**	**0.0400**	**5.5231**	**1.4103**	**0.0379**	**1.4483**		**5,426.9077**	**5,426.9077**	**0.2862**		**5,434.0622**

3.13 Stu Center Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4450	14.4035	3.7463	0.0397	2.4219	0.0271	2.4490	0.6369	0.0259	0.6628		4,250.7799	4,250.7799	0.2439		4,256.8783
Worker	0.4015	0.2661	3.7160	0.0110	3.0613	8.7500e-003	3.0700	0.7735	8.0600e-003	0.7815		1,098.7123	1,098.7123	0.0303		1,099.4704
Total	**0.8466**	**14.6697**	**7.4624**	**0.0508**	**5.4832**	**0.0358**	**5.5190**	**1.4104**	**0.0340**	**1.4443**		**5,349.4922**	**5,349.4922**	**0.2743**		**5,356.3487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4450	14.4035	3.7463	0.0397	2.4219	0.0271	2.4490	0.6369	0.0259	0.6628		4,250.7799	4,250.7799	0.2439		4,256.8783
Worker	0.4015	0.2661	3.7160	0.0110	3.0613	8.7500e-003	3.0700	0.7735	8.0600e-003	0.7815		1,098.7123	1,098.7123	0.0303		1,099.4704
Total	**0.8466**	**14.6697**	**7.4624**	**0.0508**	**5.4832**	**0.0358**	**5.5190**	**1.4104**	**0.0340**	**1.4443**		**5,349.4922**	**5,349.4922**	**0.2743**		**5,356.3487**

3.14 Park S Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Archit. Coating	24.8646					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**25.1068**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3682	0.2619	3.5028	9.4500e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		940.8903	940.8903	0.0297		941.6319
Total	**0.3682**	**0.2619**	**3.5028**	**9.4500e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**940.8903**	**940.8903**	**0.0297**		**941.6319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	24.8646					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**24.8943**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3682	0.2619	3.5028	9.4500e-003	0.8942	7.4700e-003	0.9017	0.2372	6.8900e-003	0.2440		940.8903	940.8903	0.0297		941.6319
Total	**0.3682**	**0.2619**	**3.5028**	**9.4500e-003**	**0.8942**	**7.4700e-003**	**0.9017**	**0.2372**	**6.8900e-003**	**0.2440**		**940.8903**	**940.8903**	**0.0297**		**941.6319**

3.15 Vball Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0745	0.0000	0.0745	0.0113	0.0000	0.0113			0.0000			0.0000
Off-Road	1.7427	17.0435	11.0860	0.0200		0.8700	0.8700		0.8162	0.8162		1,920.1256	1,920.1256	0.4669		1,931.7974
Total	**1.7427**	**17.0435**	**11.0860**	**0.0200**	**0.0745**	**0.8700**	**0.9444**	**0.0113**	**0.8162**	**0.8275**		**1,920.1256**	**1,920.1256**	**0.4669**		**1,931.7974**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.0900e-003	0.1018	0.0226	2.8000e-004	0.0202	3.3000e-004	0.0206	5.1500e-003	3.1000e-004	5.4600e-003		30.3107	30.3107	2.0600e-003		30.3623
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0368	0.0262	0.3503	9.4000e-004	0.3226	7.5000e-004	0.3234	0.0810	6.9000e-004	0.0817		94.0890	94.0890	2.9700e-003		94.1632
Total	**0.0399**	**0.1280**	**0.3729**	**1.2200e-003**	**0.3429**	**1.0800e-003**	**0.3440**	**0.0861**	**1.0000e-003**	**0.0871**		**124.3997**	**124.3997**	**5.0300e-003**		**124.5255**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0290	0.0000	0.0290	4.4000e-003	0.0000	4.4000e-003			0.0000			0.0000
Off-Road	0.2307	0.9995	11.6102	0.0200		0.0308	0.0308		0.0308	0.0308	0.0000	1,920.1256	1,920.1256	0.4669		1,931.7974
Total	**0.2307**	**0.9995**	**11.6102**	**0.0200**	**0.0290**	**0.0308**	**0.0598**	**4.4000e-003**	**0.0308**	**0.0352**	**0.0000**	**1,920.1256**	**1,920.1256**	**0.4669**		**1,931.7974**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.0900e-003	0.1018	0.0226	2.8000e-004	0.0202	3.3000e-004	0.0206	5.1500e-003	3.1000e-004	5.4600e-003		30.3107	30.3107	2.0600e-003		30.3623

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0368	0.0262	0.3503	9.4000e-004	0.3226	7.5000e-004	0.3234	0.0810	6.9000e-004	0.0817		94.0890	94.0890	2.9700e-003		94.1632
Total	**0.0399**	**0.1280**	**0.3729**	**1.2200e-003**	**0.3429**	**1.0800e-003**	**0.3440**	**0.0861**	**1.0000e-003**	**0.0871**		**124.3997**	**124.3997**	**5.0300e-003**		**124.5255**

3.16 Vball Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.2651	0.0000	12.2651	6.6443	0.0000	6.6443			0.0000			0.0000
Off-Road	1.2890	13.4374	6.4113	0.0116		0.6881	0.6881		0.6331	0.6331		1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**1.2890**	**13.4374**	**6.4113**	**0.0116**	**12.2651**	**0.6881**	**12.9532**	**6.6443**	**0.6331**	**7.2774**		**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0828	0.0589	0.7881	2.1300e-003	0.9009	1.6800e-003	0.9025	0.2251	1.5500e-003	0.2266		211.7003	211.7003	6.6700e-003		211.8672
Total	**0.0828**	**0.0589**	**0.7881**	**2.1300e-003**	**0.9009**	**1.6800e-003**	**0.9025**	**0.2251**	**1.5500e-003**	**0.2266**		**211.7003**	**211.7003**	**6.6700e-003**		**211.8672**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7834	0.0000	4.7834	2.5913	0.0000	2.5913			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.1110	1,128.1110	0.3649		1,137.2324
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**4.7834**	**0.0190**	**4.8024**	**2.5913**	**0.0190**	**2.6103**	**0.0000**	**1,128.1110**	**1,128.1110**	**0.3649**		**1,137.2324**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0828	0.0589	0.7881	2.1300e-003	0.9009	1.6800e-003	0.9025	0.2251	1.5500e-003	0.2266		211.7003	211.7003	6.6700e-003		211.8672
Total	**0.0828**	**0.0589**	**0.7881**	**2.1300e-003**	**0.9009**	**1.6800e-003**	**0.9025**	**0.2251**	**1.5500e-003**	**0.2266**		**211.7003**	**211.7003**	**6.6700e-003**		**211.8672**

3.16 Vball Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.2651	0.0000	12.2651	6.6443	0.0000	6.6443			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**12.2651**	**0.6442**	**12.9093**	**6.6443**	**0.5927**	**7.2370**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.9009	1.6300e-003	0.9025	0.2251	1.5000e-003	0.2266		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.9009**	**1.6300e-003**	**0.9025**	**0.2251**	**1.5000e-003**	**0.2266**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7834	0.0000	4.7834	2.5913	0.0000	2.5913			0.0000			0.0000

Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**4.7834**	**0.0190**	**4.8024**	**2.5913**	**0.0190**	**2.6103**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0772	0.0530	0.7250	2.0600e-003	0.9009	1.6300e-003	0.9025	0.2251	1.5000e-003	0.2266		204.9786	204.9786	6.0400e-003		205.1296
Total	**0.0772**	**0.0530**	**0.7250**	**2.0600e-003**	**0.9009**	**1.6300e-003**	**0.9025**	**0.2251**	**1.5000e-003**	**0.2266**		**204.9786**	**204.9786**	**6.0400e-003**		**205.1296**

3.17 Vball Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.6128	0.0000	7.6128	3.4820	0.0000	3.4820			0.0000			0.0000
Off-Road	2.8453	31.6479	18.3417	0.0386		1.3527	1.3527		1.2445	1.2445		3,738.0399	3,738.0399	1.2090		3,768.2638
Total	**2.8453**	**31.6479**	**18.3417**	**0.0386**	**7.6128**	**1.3527**	**8.9656**	**3.4820**	**1.2445**	**4.7265**		**3,738.0399**	**3,738.0399**	**1.2090**		**3,768.2638**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0557	0.0383	0.5236	1.4900e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		148.0401	148.0401	4.3600e-003		148.1491
Total	**0.0557**	**0.0383**	**0.5236**	**1.4900e-003**	**0.1453**	**1.1700e-003**	**0.1465**	**0.0385**	**1.0800e-003**	**0.0396**		**148.0401**	**148.0401**	**4.3600e-003**		**148.1491**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9690	0.0000	2.9690	1.3580	0.0000	1.3580			0.0000			0.0000
Off-Road	0.4736	2.0523	19.9038	0.0386		0.0632	0.0632		0.0632	0.0632	0.0000	3,738.0399	3,738.0399	1.2090		3,768.2638
Total	**0.4736**	**2.0523**	**19.9038**	**0.0386**	**2.9690**	**0.0632**	**3.0322**	**1.3580**	**0.0632**	**1.4211**	**0.0000**	**3,738.0399**	**3,738.0399**	**1.2090**		**3,768.2638**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0557	0.0383	0.5236	1.4900e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		148.0401	148.0401	4.3600e-003		148.1491
Total	**0.0557**	**0.0383**	**0.5236**	**1.4900e-003**	**0.1453**	**1.1700e-003**	**0.1465**	**0.0385**	**1.0800e-003**	**0.0396**		**148.0401**	**148.0401**	**4.3600e-003**		**148.1491**

3.18 Bookstore Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.2336	12.8671	6.2980	0.0116		0.6442	0.6442		0.5927	0.5927		1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**1.2336**	**12.8671**	**6.2980**	**0.0116**	**6.0221**	**0.6442**	**6.6663**	**3.3102**	**0.5927**	**3.9029**		**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0214	0.0147	0.2014	5.7000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		56.9385	56.9385	1.6800e-003		56.9804
Total	**0.0214**	**0.0147**	**0.2014**	**5.7000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**56.9385**	**56.9385**	**1.6800e-003**		**56.9804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3486	0.0000	2.3486	1.2910	0.0000	1.2910			0.0000			0.0000
Off-Road	0.1425	0.6176	6.1756	0.0116		0.0190	0.0190		0.0190	0.0190	0.0000	1,128.2523	1,128.2523	0.3649		1,137.3748
Total	**0.1425**	**0.6176**	**6.1756**	**0.0116**	**2.3486**	**0.0190**	**2.3676**	**1.2910**	**0.0190**	**1.3100**	**0.0000**	**1,128.2523**	**1,128.2523**	**0.3649**		**1,137.3748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0214	0.0147	0.2014	5.7000e-004	0.0559	4.5000e-004	0.0563	0.0148	4.2000e-004	0.0152		56.9385	56.9385	1.6800e-003		56.9804
Total	**0.0214**	**0.0147**	**0.2014**	**5.7000e-004**	**0.0559**	**4.5000e-004**	**0.0563**	**0.0148**	**4.2000e-004**	**0.0152**		**56.9385**	**56.9385**	**1.6800e-003**		**56.9804**

3.19 Bookstore Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.3323	24.9943	16.8691	0.0317		1.1526	1.1526		1.0604	1.0604		3,071.2204	3,071.2204	0.9933		3,096.0528
Total	**2.3323**	**24.9943**	**16.8691**	**0.0317**	**6.5523**	**1.1526**	**7.7049**	**3.3675**	**1.0604**	**4.4279**		**3,071.2204**	**3,071.2204**	**0.9933**		**3,096.0528**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	0.3887	1.6844	19.3287	0.0317		0.0518	0.0518		0.0518	0.0518	0.0000	3,071.2204	3,071.2204	0.9933		3,096.0528
Total	**0.3887**	**1.6844**	**19.3287**	**0.0317**	**2.5554**	**0.0518**	**2.6072**	**1.3133**	**0.0518**	**1.3652**	**0.0000**	**3,071.2204**	**3,071.2204**	**0.9933**		**3,096.0528**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

3.20 Stu Center Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

3.21 Bookstore Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4742	15.1460	3.9596	0.0401	0.9987	0.0310	1.0297	0.2876	0.0296	0.3172		4,288.1378	4,288.1378	0.2526		4,294.4535
Worker	0.4287	0.2946	4.0277	0.0114	1.1178	9.0300e-003	1.1268	0.2964	8.3200e-003	0.3048		1,138.7699	1,138.7699	0.0336		1,139.6087
Total	**0.9028**	**15.4406**	**7.9873**	**0.0516**	**2.1165**	**0.0400**	**2.1565**	**0.5840**	**0.0379**	**0.6219**		**5,426.9077**	**5,426.9077**	**0.2862**		**5,434.0622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5867	2.7396	17.6822	0.0269		0.1120	0.1120		0.1120	0.1120	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**0.5867**	**2.7396**	**17.6822**	**0.0269**		**0.1120**	**0.1120**		**0.1120**	**0.1120**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4742	15.1460	3.9596	0.0401	0.9987	0.0310	1.0297	0.2876	0.0296	0.3172		4,288.1378	4,288.1378	0.2526		4,294.4535
Worker	0.4287	0.2946	4.0277	0.0114	1.1178	9.0300e-003	1.1268	0.2964	8.3200e-003	0.3048		1,138.7699	1,138.7699	0.0336		1,139.6087

Total	**0.9028**	**15.4406**	**7.9873**	**0.0516**	**2.1165**	**0.0400**	**2.1565**	**0.5840**	**0.0379**	**0.6219**		**5,426.9077**	**5,426.9077**	**0.2862**		**5,434.0622**

3.21 Bookstore Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4450	14.4035	3.7463	0.0397	0.9988	0.0271	1.0258	0.2876	0.0259	0.3135		4,250.7799	4,250.7799	0.2439		4,256.8783
Worker	0.4015	0.2661	3.7160	0.0110	1.1178	8.7500e-003	1.1265	0.2964	8.0600e-003	0.3045		1,098.7123	1,098.7123	0.0303		1,099.4704
Total	**0.8466**	**14.6697**	**7.4624**	**0.0508**	**2.1165**	**0.0358**	**2.1523**	**0.5840**	**0.0340**	**0.6180**		**5,349.4922**	**5,349.4922**	**0.2743**		**5,356.3487**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5608	2.6936	17.6592	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.5608**	**2.6936**	**17.6592**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4450	14.4035	3.7463	0.0397	0.9988	0.0271	1.0258	0.2876	0.0259	0.3135		4,250.7799	4,250.7799	0.2439		4,256.8783
Worker	0.4015	0.2661	3.7160	0.0110	1.1178	8.7500e-003	1.1265	0.2964	8.0600e-003	0.3045		1,098.7123	1,098.7123	0.0303		1,099.4704
Total	**0.8466**	**14.6697**	**7.4624**	**0.0508**	**2.1165**	**0.0358**	**2.1523**	**0.5840**	**0.0340**	**0.6180**		**5,349.4922**	**5,349.4922**	**0.2743**		**5,356.3487**

3.22 Bookstore Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	0.8173	8.3838	9.2071	0.0140		0.4565	0.4565		0.4200	0.4200		1,357.6943	1,357.6943	0.4391		1,368.6720
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8173**	**8.3838**	**9.2071**	**0.0140**		**0.4565**	**0.4565**		**0.4200**	**0.4200**		**1,357.6943**	**1,357.6943**	**0.4391**		**1,368.6720**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0429	0.0295	0.4028	1.1400e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		113.8770	113.8770	3.3600e-003		113.9609
Total	**0.0429**	**0.0295**	**0.4028**	**1.1400e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**113.8770**	**113.8770**	**3.3600e-003**		**113.9609**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1724	0.7471	10.6316	0.0140		0.0230	0.0230		0.0230	0.0230	0.0000	1,357.6943	1,357.6943	0.4391		1,368.6720
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1724**	**0.7471**	**10.6316**	**0.0140**		**0.0230**	**0.0230**		**0.0230**	**0.0230**	**0.0000**	**1,357.6943**	**1,357.6943**	**0.4391**		**1,368.6720**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0429	0.0295	0.4028	1.1400e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		113.8770	113.8770	3.3600e-003		113.9609
Total	**0.0429**	**0.0295**	**0.4028**	**1.1400e-003**	**0.1118**	**9.0000e-004**	**0.1127**	**0.0296**	**8.3000e-004**	**0.0305**		**113.8770**	**113.8770**	**3.3600e-003**		**113.9609**

3.22 Bookstore Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7177	7.2883	9.1506	0.0140		0.3834	0.3834		0.3527	0.3527		1,357.9340	1,357.9340	0.4392		1,368.9136
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7177**	**7.2883**	**9.1506**	**0.0140**		**0.3834**	**0.3834**		**0.3527**	**0.3527**		**1,357.9340**	**1,357.9340**	**0.4392**		**1,368.9136**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0402**	**0.0266**	**0.3716**	**1.1000e-003**	**0.1118**	**8.7000e-004**	**0.1127**	**0.0296**	**8.1000e-004**	**0.0305**		**109.8712**	**109.8712**	**3.0300e-003**		**109.9470**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1724	0.7471	10.6316	0.0140		0.0230	0.0230		0.0230	0.0230	0.0000	1,357.9340	1,357.9340	0.4392		1,368.9136
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.1724**	**0.7471**	**10.6316**	**0.0140**		**0.0230**	**0.0230**		**0.0230**	**0.0230**	**0.0000**	**1,357.9340**	**1,357.9340**	**0.4392**		**1,368.9136**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0402	0.0266	0.3716	1.1000e-003	0.1118	8.7000e-004	0.1127	0.0296	8.1000e-004	0.0305		109.8712	109.8712	3.0300e-003		109.9470
Total	**0.0402**	**0.0266**	**0.3716**	**1.1000e-003**	**0.1118**	**8.7000e-004**	**0.1127**	**0.0296**	**8.1000e-004**	**0.0305**		**109.8712**	**109.8712**	**3.0300e-003**		**109.9470**

3.23 Stu Center Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**8.3302**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3429	0.2357	3.2222	9.1500e-003	0.8942	7.2300e-003	0.9014	0.2372	6.6600e-003	0.2438		911.0159	911.0159	0.0268		911.6870
Total	**0.3429**	**0.2357**	**3.2222**	**9.1500e-003**	**0.8942**	**7.2300e-003**	**0.9014**	**0.2372**	**6.6600e-003**	**0.2438**		**911.0159**	**911.0159**	**0.0268**		**911.6870**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**8.1410**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3429	0.2357	3.2222	9.1500e-003	0.8942	7.2300e-003	0.9014	0.2372	6.6600e-003	0.2438		911.0159	911.0159	0.0268		911.6870
Total	**0.3429**	**0.2357**	**3.2222**	**9.1500e-003**	**0.8942**	**7.2300e-003**	**0.9014**	**0.2372**	**6.6600e-003**	**0.2438**		**911.0159**	**911.0159**	**0.0268**		**911.6870**

3.23 Stu Center Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**8.3158**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3212	0.2129	2.9728	8.8200e-003	0.8942	7.0000e-003	0.9012	0.2372	6.4500e-003	0.2436		878.9699	878.9699	0.0243		879.5764
Total	**0.3212**	**0.2129**	**2.9728**	**8.8200e-003**	**0.8942**	**7.0000e-003**	**0.9012**	**0.2372**	**6.4500e-003**	**0.2436**		**878.9699**	**878.9699**	**0.0243**		**879.5764**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.1113					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**8.1410**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3212	0.2129	2.9728	8.8200e-003	0.8942	7.0000e-003	0.9012	0.2372	6.4500e-003	0.2436		878.9699	878.9699	0.0243		879.5764
Total	**0.3212**	**0.2129**	**2.9728**	**8.8200e-003**	**0.8942**	**7.0000e-003**	**0.9012**	**0.2372**	**6.4500e-003**	**0.2436**		**878.9699**	**878.9699**	**0.0243**		**879.5764**

3.24 Communication Tower Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3445	3.4636	4.4063	6.7000e-003		0.1842	0.1842		0.1695	0.1695		648.5722	648.5722	0.2098		653.8163
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3445**	**3.4636**	**4.4063**	**6.7000e-003**		**0.1842**	**0.1842**		**0.1695**	**0.1695**		**648.5722**	**648.5722**	**0.2098**		**653.8163**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735
Total	**0.0201**	**0.0133**	**0.1858**	**5.5000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**54.9356**	**54.9356**	**1.5200e-003**		**54.9735**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0825	0.3573	5.0848	6.7000e-003		0.0110	0.0110		0.0110	0.0110	0.0000	648.5722	648.5722	0.2098		653.8163
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0825**	**0.3573**	**5.0848**	**6.7000e-003**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**648.5722**	**648.5722**	**0.2098**		**653.8163**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0201	0.0133	0.1858	5.5000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		54.9356	54.9356	1.5200e-003		54.9735
Total	**0.0201**	**0.0133**	**0.1858**	**5.5000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**54.9356**	**54.9356**	**1.5200e-003**		**54.9735**

Mt. SAC EFMP Net Operational Full Buildout - Los Angeles-South Coast County, Winter

Mt. SAC EFMP Net Operational Full Buildout

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	544.20	1000sqft	12.49	544,195.00	0
Unenclosed Parking with Elevator	1,215.64	1000sqft	9.43	1,215,638.00	0
City Park	0.05	Acre	0.05	2,003.76	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2027
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Parking Structures B and F (TBD Phase 2- used R and S sf), R, and S. Lot Acreage measured aerially.

Construction Phase - Operations Only

Off-road Equipment -

Trips and VMT - .

Demolition - .

Grading - .

Architectural Coating - .

Vehicle Trips - Net Operational Trips

Area Coating - Defaults- added 82,030 sf to parking for tennis courts

Energy Use - default

Energy Mitigation - Title 24 2019 Standards+ 15% exceedance for Title 24

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	72938	154968
tblFleetMix	HHD	0.03	0.01
tblFleetMix	LDA	0.54	0.90
tblFleetMix	LDT1	0.04	0.01
tblFleetMix	LDT2	0.21	0.01
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD2	6.3160e-003	7.6130e-003
tblFleetMix	MCY	5.2770e-003	6.3610e-003
tblFleetMix	MDV	0.12	1.2050e-003
tblFleetMix	MH	8.2700e-004	9.9700e-004
tblFleetMix	MHD	0.02	0.03
tblFleetMix	OBUS	2.6010e-003	3.1350e-003
tblFleetMix	SBUS	7.0900e-004	8.5500e-004
tblFleetMix	UBUS	1.8620e-003	2.2440e-003
tblLandUse	LandUseSquareFeet	544,200.00	544,195.00
tblLandUse	LandUseSquareFeet	1,215,640.00	1,215,638.00
tblLandUse	LandUseSquareFeet	2,178.00	2,003.76
tblLandUse	LotAcreage	27.91	9.43
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	11.23	4.21
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	1.21	0.45

tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	27.49	10.31

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Energy	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028
Mobile	6.2214	20.5300	74.5284	0.2925	35.9895	0.2580	36.2474	9.6329	0.2393	9.8723		29,777.6245	29,777.6245	1.4227		29,813.1918
Total	**19.4580**	**24.4900**	**78.0326**	**0.3163**	**35.9895**	**0.5594**	**36.5489**	**9.6329**	**0.5408**	**10.1737**		**34,527.9857**	**34,527.9857**	**1.5147**	**0.0871**	**34,591.8048**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Energy	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
Mobile	6.2214	20.5300	74.5284	0.2925	35.9895	0.2580	36.2474	9.6329	0.2393	9.8723		29,777.6245	29,777.6245	1.4227		29,813.1918

Total	**19.2663**	**22.7475**	**76.5690**	**0.3058**	**35.9895**	**0.4270**	**36.4164**	**9.6329**	**0.4084**	**10.0413**		**32,437.0666**	**32,437.0666**	**1.4747**	**0.0488**	**32,488.4604**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.98**	**7.11**	**1.88**	**3.30**	**0.00**	**23.67**	**0.36**	**0.00**	**24.49**	**1.30**	**0.00**	**6.06**	**6.06**	**2.65**	**44.02**	**6.08**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.2214	20.5300	74.5284	0.2925	35.9895	0.2580	36.2474	9.6329	0.2393	9.8723		29,777.6245	29,777.6245	1.4227		29,813.1918
Unmitigated	6.2214	20.5300	74.5284	0.2925	35.9895	0.2580	36.2474	9.6329	0.2393	9.8723		29,777.6245	29,777.6245	1.4227		29,813.1918

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Junior College (2Yr)	5,610.70	2,291.08	244.89	13,198,742	13,198,742
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,610.70	2,291.08	244.89	13,198,742	13,198,742

4.3 Trip Type Information

	Miles	Trip %	Trip Purpose %

Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1
Unenclosed Parking with	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.021040	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827
Junior College (2Yr)	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997
Unenclosed Parking with Elevator	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.021040	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
NaturalGas Unmitigated	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Junior College (2Yr)	40374.8	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4354**	**3.9583**	**3.3250**	**0.0238**		**0.3008**	**0.3008**		**0.3008**	**0.3008**		**4,749.9760**	**4,749.9760**	**0.0910**	**0.0871**	**4,778.2028**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Junior College (2Yr)	22.602	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.2438**	**2.2159**	**1.8613**	**0.0133**		**0.1684**	**0.1684**		**0.1684**	**0.1684**		**2,659.0569**	**2,659.0569**	**0.0510**	**0.0488**	**2,674.8584**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Unmitigated	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.5789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	11.2057					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0165	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Total	**12.8011**	**1.6200e-003**	**0.1792**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**0.3852**	**0.3852**	**1.0000e-003**		**0.4102**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.5789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	11.2057					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0165	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Total	**12.8011**	**1.6200e-003**	**0.1792**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**0.3852**	**0.3852**	**1.0000e-003**		**0.4102**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt. SAC EFMP Net Operational Full Buildout - Los Angeles-South Coast County, Summer

Mt. SAC EFMP Net Operational Full Buildout

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	544.20	1000sqft	12.49	544,195.00	0
Unenclosed Parking with Elevator	1,215.64	1000sqft	9.43	1,215,638.00	0
City Park	0.05	Acre	0.05	2,003.76	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2027
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Parking Structures B and F (TBD Phase 2- used R and S sf), R, and S. Lot Acreage measured aerially.

Construction Phase - Operations Only

Off-road Equipment -

Trips and VMT - .

Demolition - .

Grading - .

Architectural Coating - .

Vehicle Trips - Net Operational Trips

Area Coating - Defaults- added 82,030 sf to parking for tennis courts

Energy Use - default

Construction Off-road Equipment Mitigation -

Energy Mitigation - Title 24 2019 Standards+ 15% exceedance for Title 24

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	72938	154968
tblFleetMix	HHD	0.03	0.01
tblFleetMix	LDA	0.54	0.90
tblFleetMix	LDT1	0.04	0.01
tblFleetMix	LDT2	0.21	0.01
tblFleetMix	LHD1	0.01	0.01
tblFleetMix	LHD2	6.3160e-003	7.6130e-003
tblFleetMix	MCY	5.2770e-003	6.3610e-003
tblFleetMix	MDV	0.12	1.2050e-003
tblFleetMix	MH	8.2700e-004	9.9700e-004
tblFleetMix	MHD	0.02	0.03
tblFleetMix	OBUS	2.6010e-003	3.1350e-003
tblFleetMix	SBUS	7.0900e-004	8.5500e-004
tblFleetMix	UBUS	1.8620e-003	2.2440e-003
tblLandUse	LandUseSquareFeet	544,200.00	544,195.00
tblLandUse	LandUseSquareFeet	1,215,640.00	1,215,638.00
tblLandUse	LandUseSquareFeet	2,178.00	2,003.76
tblLandUse	LotAcreage	27.91	9.43
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	11.23	4.21
tblVehicleTrips	SU_TR	16.74	0.00

tblVehicleTrips	SU_TR	1.21	0.45
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	27.49	10.31

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Energy	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028
Mobile	6.4285	19.9653	78.3765	0.3072	35.9895	0.2576	36.2470	9.6329	0.2390	9.8719		31,253.4687	31,253.4687	1.4272		31,289.1485
Total	**19.6650**	**23.9253**	**81.8807**	**0.3310**	**35.9895**	**0.5590**	**36.5485**	**9.6329**	**0.5404**	**10.1734**		**36,003.8298**	**36,003.8298**	**1.5192**	**0.0871**	**36,067.7614**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Energy	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
Mobile	6.4285	19.9653	78.3765	0.3072	35.9895	0.2576	36.2470	9.6329	0.2390	9.8719		31,253.4687	31,253.4687	1.4272		31,289.1485
Total	**19.4734**	**22.1828**	**80.4171**	**0.3205**	**35.9895**	**0.4266**	**36.4161**	**9.6329**	**0.4080**	**10.0410**		**33,912.9107**	**33,912.9107**	**1.4792**	**0.0488**	**33,964.4170**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.97	7.28	1.79	3.16	0.00	23.69	0.36	0.00	24.50	1.30	0.00	5.81	5.81	2.64	44.02	5.83

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Trenching	Trenching	10/16/2018	10/16/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 9.43

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Trenching			0.00	0.00	14.70	6.90				

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Trenching - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Worker					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Total					**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**			**0.0000**			**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.4285	19.9653	78.3765	0.3072	35.9895	0.2576	36.2470	9.6329	0.2390	9.8719		31,253.4687	31,253.4687	1.4272		31,289.1485
Unmitigated	6.4285	19.9653	78.3765	0.3072	35.9895	0.2576	36.2470	9.6329	0.2390	9.8719		31,253.4687	31,253.4687	1.4272		31,289.1485

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Junior College (2Yr)	5,610.70	2,291.08	244.89	13,198,742	13,198,742
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,610.70	2,291.08	244.89	13,198,742	13,198,742

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1
Unenclosed Parking with	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.021040	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827
Junior College (2Yr)	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997
Unenclosed Parking with Elevator	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.021040	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
NaturalGas Unmitigated	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Junior College (2Yr)	40374.8	0.4354	3.9583	3.3250	0.0238		0.3008	0.3008		0.3008	0.3008		4,749.9760	4,749.9760	0.0910	0.0871	4,778.2028
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.4354**	**3.9583**	**3.3250**	**0.0238**		**0.3008**	**0.3008**		**0.3008**	**0.3008**		**4,749.9760**	**4,749.9760**	**0.0910**	**0.0871**	**4,778.2028**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Junior College (2Yr)	22.602	0.2438	2.2159	1.8613	0.0133		0.1684	0.1684		0.1684	0.1684		2,659.0569	2,659.0569	0.0510	0.0488	2,674.8584
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.2438**	**2.2159**	**1.8613**	**0.0133**		**0.1684**	**0.1684**		**0.1684**	**0.1684**		**2,659.0569**	**2,659.0569**	**0.0510**	**0.0488**	**2,674.8584**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Unmitigated	12.8011	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.5789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	11.2057					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0165	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Total	**12.8011**	**1.6200e-003**	**0.1792**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**0.3852**	**0.3852**	**1.0000e-003**		**0.4102**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.5789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	11.2057					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0165	1.6200e-003	0.1792	1.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		0.3852	0.3852	1.0000e-003		0.4102
Total	**12.8011**	**1.6200e-003**	**0.1792**	**1.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**0.3852**	**0.3852**	**1.0000e-003**		**0.4102**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt SAC Parking Structure R and Tennis Courts - Los Angeles-South Coast County, Annual

Mt SAC Parking Structure R and Tennis Courts

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Racquet Club	82.03	1000sqft	1.88	82,030.00	0
Unenclosed Parking with Elevator	321.41	1000sqft	4.30	321,407.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Parking Structure R and Tennis Court (on top of Parking Lot)

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - Defaults

Architectural Coating - defualt

Construction Off-road Equipment Mitigation - Tier 4 Equipment

Energy Mitigation -

Off-road Equipment -

Vehicle Trips - per Traffic trip gen

Grading - .

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	230.00	269.00
tblConstructionPhase	NumDays	20.00	27.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblFleetMix	HHD	0.03	0.01
tblFleetMix	HHD	0.03	0.01
tblFleetMix	LDA	0.55	0.90
tblFleetMix	LDA	0.55	0.90
tblFleetMix	LDT1	0.05	0.01
tblFleetMix	LDT1	0.05	0.01
tblFleetMix	LDT2	0.20	0.01
tblFleetMix	LDT2	0.20	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD2	6.0900e-003	7.6130e-003
tblFleetMix	LHD2	6.0900e-003	7.6130e-003
tblFleetMix	MCY	5.0050e-003	6.3610e-003
tblFleetMix	MCY	5.0050e-003	6.3610e-003
tblFleetMix	MDV	0.12	1.2050e-003
tblFleetMix	MDV	0.12	1.2050e-003
tblFleetMix	MH	9.0700e-004	9.9700e-004
tblFleetMix	MH	9.0700e-004	9.9700e-004
tblFleetMix	MHD	0.02	0.03

tblFleetMix	MHD	0.02	0.03
tblFleetMix	OBUS	2.4380e-003	3.1350e-003
tblFleetMix	OBUS	2.4380e-003	3.1350e-003
tblFleetMix	SBUS	6.7700e-004	8.5500e-004
tblFleetMix	SBUS	6.7700e-004	8.5500e-004
tblFleetMix	UBUS	2.3590e-003	2.2440e-003
tblFleetMix	UBUS	2.3590e-003	2.2440e-003
tblLandUse	LandUseSquareFeet	321,410.00	321,407.00
tblLandUse	LotAcreage	7.38	4.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblVehicleTrips	ST_TR	21.35	2.26
tblVehicleTrips	SU_TR	17.40	1.85
tblVehicleTrips	WD_TR	14.03	1.49

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.4031	3.6153	3.0930	7.0000e-003	0.3343	0.1658	0.5001	0.1072	0.1552	0.2623	0.0000	634.2930	634.2930	0.0973	0.0000	636.7264
2020	0.5772	1.3142	1.2995	2.9600e-003	0.0974	0.0598	0.1572	0.0263	0.0561	0.0824	0.0000	266.0643	266.0643	0.0389	0.0000	267.0355
Maximum	**0.5772**	**3.6153**	**3.0930**	**7.0000e-003**	**0.3343**	**0.1658**	**0.5001**	**0.1072**	**0.1552**	**0.2623**	**0.0000**	**634.2930**	**634.2930**	**0.0973**	**0.0000**	**636.7264**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.1826	1.1247	3.1466	7.0000e-003	0.2699	0.0208	0.2907	0.0805	0.0204	0.1009	0.0000	634.2926	634.2926	0.0973	0.0000	636.7260
2020	0.4979	0.4446	1.3604	2.9600e-003	0.0974	7.5900e-003	0.1050	0.0263	7.4800e-003	0.0337	0.0000	266.0642	266.0642	0.0389	0.0000	267.0354
Maximum	**0.4979**	**1.1247**	**3.1466**	**7.0000e-003**	**0.2699**	**0.0208**	**0.2907**	**0.0805**	**0.0204**	**0.1009**	**0.0000**	**634.2926**	**634.2926**	**0.0973**	**0.0000**	**636.7260**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**30.58**	**68.17**	**-2.61**	**0.00**	**14.92**	**87.44**	**39.81**	**20.02**	**86.79**	**60.95**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-15-2019**	**8-14-2019**	1.9768	0.5123
2	**8-15-2019**	**11-14-2019**	1.3354	0.5152
3	**11-15-2019**	**2-14-2020**	1.2803	0.5012
4	**2-15-2020**	**5-14-2020**	0.9889	0.4129
5	**5-15-2020**	**8-14-2020**	0.2925	0.2804
		Highest	1.9768	0.5152

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Area	0.3602	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107
Energy	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	568.0168	568.0168	0.0217	5.6300e-003	570.2362
Mobile	0.0346	0.1220	0.3801	1.1200e-003	0.1048	1.3800e-003	0.1061	0.0281	1.3000e-003	0.0294	0.0000	103.0631	103.0631	5.9600e-003	0.0000	103.2122
Waste						0.0000	0.0000		0.0000	0.0000	94.9125	0.0000	94.9125	5.6092	0.0000	235.1417
Water						0.0000	0.0000		0.0000	0.0000	1.5392	30.6537	32.1928	0.1594	3.9900e-003	37.3670
Total	**0.4028**	**0.1948**	**0.4464**	**1.5600e-003**	**0.1048**	**6.9300e-003**	**0.1117**	**0.0281**	**6.8500e-003**	**0.0349**	**96.4516**	**701.7435**	**798.1952**	**5.7962**	**9.6200e-003**	**945.9678**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3602	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107
Energy	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	568.0168	568.0168	0.0217	5.6300e-003	570.2362
Mobile	0.0346	0.1220	0.3801	1.1200e-003	0.1048	1.3800e-003	0.1061	0.0281	1.3000e-003	0.0294	0.0000	103.0631	103.0631	5.9600e-003	0.0000	103.2122
Waste						0.0000	0.0000		0.0000	0.0000	94.9125	0.0000	94.9125	5.6092	0.0000	235.1417
Water						0.0000	0.0000		0.0000	0.0000	1.5392	30.6537	32.1928	0.1594	3.9900e-003	37.3670
Total	**0.4028**	**0.1948**	**0.4464**	**1.5600e-003**	**0.1048**	**6.9300e-003**	**0.1117**	**0.0281**	**6.8500e-003**	**0.0349**	**96.4516**	**701.7435**	**798.1952**	**5.7962**	**9.6200e-003**	**945.9678**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Park R and Tennis Fine Grading	Grading	5/15/2019	6/14/2019	6	27	
2	Park R and Tennis Building Construction	Building Construction	5/25/2019	4/2/2020	6	269	
3	Park R and Tennis Paving	Paving	4/11/2020	5/6/2020	6	22	
4	Park R and Tennis Architectural Coating	Architectural Coating	5/7/2020	5/30/2020	6	21	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 4.3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 123,045; Non-Residential Outdoor: 41,015; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Park R and Tennis Fine Grading	Excavators	2	8.00	158	0.38
Park R and Tennis Fine Grading	Graders	1	8.00	187	0.41
Park R and Tennis Fine Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park R and Tennis Fine Grading	Scrapers	2	8.00	367	0.48
Park R and Tennis Fine Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park R and Tennis Building Construction	Cranes	1	7.00	231	0.29
Park R and Tennis Building Construction	Forklifts	3	8.00	89	0.20
Park R and Tennis Building Construction	Generator Sets	1	8.00	84	0.74
Park R and Tennis Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Park R and Tennis Building Construction	Welders	1	8.00	46	0.45
Park R and Tennis Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Park R and Tennis Paving	Pavers	2	8.00	130	0.42
Park R and Tennis Paving	Paving Equipment	2	8.00	132	0.36
Park R and Tennis Paving	Rollers	2	8.00	80	0.38
Park R and Tennis Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Park R and Tennis Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Park R and Tennis Fine Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Building Construction	9	169.00	66.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Paving	9	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park R and Tennis Architectural Coating	1	34.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Park R and Tennis Fine Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1171	0.0000	0.1171	0.0486	0.0000	0.0486	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0640	0.7360	0.4506	8.4000e-004		0.0322	0.0322		0.0296	0.0296	0.0000	75.1968	75.1968	0.0238	0.0000	75.7916
Total	**0.0640**	**0.7360**	**0.4506**	**8.4000e-004**	**0.1171**	**0.0322**	**0.1493**	**0.0486**	**0.0296**	**0.0781**	**0.0000**	**75.1968**	**75.1968**	**0.0238**	**0.0000**	**75.7916**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3500e-003	1.1300e-003	0.0123	3.0000e-005	2.9600e-003	3.0000e-005	2.9800e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.8441	2.8441	1.0000e-004	0.0000	2.8465
Total	**1.3500e-003**	**1.1300e-003**	**0.0123**	**3.0000e-005**	**2.9600e-003**	**3.0000e-005**	**2.9800e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.8441**	**2.8441**	**1.0000e-004**	**0.0000**	**2.8465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0527	0.0000	0.0527	0.0219	0.0000	0.0219	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0103	0.0446	0.4455	8.4000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	75.1967	75.1967	0.0238	0.0000	75.7915
Total	**0.0103**	**0.0446**	**0.4455**	**8.4000e-004**	**0.0527**	**1.3700e-003**	**0.0541**	**0.0219**	**1.3700e-003**	**0.0232**	**0.0000**	**75.1967**	**75.1967**	**0.0238**	**0.0000**	**75.7915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3500e-003	1.1300e-003	0.0123	3.0000e-005	2.9600e-003	3.0000e-005	2.9800e-003	7.9000e-004	2.0000e-005	8.1000e-004	0.0000	2.8441	2.8441	1.0000e-004	0.0000	2.8465
Total	**1.3500e-003**	**1.1300e-003**	**0.0123**	**3.0000e-005**	**2.9600e-003**	**3.0000e-005**	**2.9800e-003**	**7.9000e-004**	**2.0000e-005**	**8.1000e-004**	**0.0000**	**2.8441**	**2.8441**	**1.0000e-004**	**0.0000**	**2.8465**

3.3 Park R and Tennis Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2314	2.0748	1.7036	2.6500e-003		0.1274	0.1274		0.1197	0.1197	0.0000	232.0604	232.0604	0.0573	0.0000	233.4917
Total	**0.2314**	**2.0748**	**1.7036**	**2.6500e-003**		**0.1274**	**0.1274**		**0.1197**	**0.1197**	**0.0000**	**232.0604**	**232.0604**	**0.0573**	**0.0000**	**233.4917**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0264	0.7367	0.2015	1.6100e-003	0.0393	4.6300e-003	0.0439	0.0113	4.4300e-003	0.0158	0.0000	155.9652	155.9652	0.0104	0.0000	156.2255
Worker	0.0800	0.0667	0.7251	1.8600e-003	0.1750	1.5400e-003	0.1765	0.0465	1.4200e-003	0.0479	0.0000	168.2264	168.2264	5.7800e-003	0.0000	168.3711
Total	**0.1064**	**0.8034**	**0.9265**	**3.4700e-003**	**0.2143**	**6.1700e-003**	**0.2205**	**0.0578**	**5.8500e-003**	**0.0637**	**0.0000**	**324.1917**	**324.1917**	**0.0162**	**0.0000**	**324.5966**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0646	0.2756	1.7623	2.6500e-003		0.0132	0.0132		0.0132	0.0132	0.0000	232.0602	232.0602	0.0573	0.0000	233.4915
Total	**0.0646**	**0.2756**	**1.7623**	**2.6500e-003**		**0.0132**	**0.0132**		**0.0132**	**0.0132**	**0.0000**	**232.0602**	**232.0602**	**0.0573**	**0.0000**	**233.4915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0264	0.7367	0.2015	1.6100e-003	0.0393	4.6300e-003	0.0439	0.0113	4.4300e-003	0.0158	0.0000	155.9652	155.9652	0.0104	0.0000	156.2255
Worker	0.0800	0.0667	0.7251	1.8600e-003	0.1750	1.5400e-003	0.1765	0.0465	1.4200e-003	0.0479	0.0000	168.2264	168.2264	5.7800e-003	0.0000	168.3711
Total	**0.1064**	**0.8034**	**0.9265**	**3.4700e-003**	**0.2143**	**6.1700e-003**	**0.2205**	**0.0578**	**5.8500e-003**	**0.0637**	**0.0000**	**324.1917**	**324.1917**	**0.0162**	**0.0000**	**324.5966**

3.3 Park R and Tennis Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0879	0.7990	0.7081	1.1200e-003		0.0467	0.0467		0.0439	0.0439	0.0000	96.7368	96.7368	0.0239	0.0000	97.3349
Total	**0.0879**	**0.7990**	**0.7081**	**1.1200e-003**		**0.0467**	**0.0467**		**0.0439**	**0.0439**	**0.0000**	**96.7368**	**96.7368**	**0.0239**	**0.0000**	**97.3349**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5700e-003	0.2861	0.0774	6.8000e-004	0.0166	1.3300e-003	0.0180	4.8000e-003	1.2700e-003	6.0700e-003	0.0000	65.5845	65.5845	4.1700e-003	0.0000	65.6887
Worker	0.0312	0.0252	0.2783	7.6000e-004	0.0741	6.3000e-004	0.0747	0.0197	5.8000e-004	0.0203	0.0000	69.0433	69.0433	2.1800e-003	0.0000	69.0977
Total	**0.0408**	**0.3112**	**0.3557**	**1.4400e-003**	**0.0907**	**1.9600e-003**	**0.0927**	**0.0245**	**1.8500e-003**	**0.0263**	**0.0000**	**134.6278**	**134.6278**	**6.3500e-003**	**0.0000**	**134.7864**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0256	0.1146	0.7444	1.1200e-003		5.0700e-003	5.0700e-003		5.0700e-003	5.0700e-003	0.0000	96.7367	96.7367	0.0239	0.0000	97.3348

Total	**0.0256**	**0.1146**	**0.7444**	**1.1200e-003**		**5.0700e-003**	**5.0700e-003**		**5.0700e-003**	**5.0700e-003**	**0.0000**	**96.7367**	**96.7367**	**0.0239**	**0.0000**	**97.3348**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.5700e-003	0.2861	0.0774	6.8000e-004	0.0166	1.3300e-003	0.0180	4.8000e-003	1.2700e-003	6.0700e-003	0.0000	65.5845	65.5845	4.1700e-003	0.0000	65.6887
Worker	0.0312	0.0252	0.2783	7.6000e-004	0.0741	6.3000e-004	0.0747	0.0197	5.8000e-004	0.0203	0.0000	69.0433	69.0433	2.1800e-003	0.0000	69.0977
Total	**0.0408**	**0.3112**	**0.3557**	**1.4400e-003**	**0.0907**	**1.9600e-003**	**0.0927**	**0.0245**	**1.8500e-003**	**0.0263**	**0.0000**	**134.6278**	**134.6278**	**6.3500e-003**	**0.0000**	**134.7864**

3.4 Park R and Tennis Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0182	0.1840	0.1913	3.0000e-004		9.9800e-003	9.9800e-003		9.2000e-003	9.2000e-003	0.0000	25.7886	25.7886	8.1700e-003	0.0000	25.9929
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0182**	**0.1840**	**0.1913**	**3.0000e-004**		**9.9800e-003**	**9.9800e-003**		**9.2000e-003**	**9.2000e-003**	**0.0000**	**25.7886**	**25.7886**	**8.1700e-003**	**0.0000**	**25.9929**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1700e-003	9.4000e-004	0.0104	3.0000e-005	2.7700e-003	2.0000e-005	2.8000e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.5840	2.5840	8.0000e-005	0.0000	2.5861
Total	**1.1700e-003**	**9.4000e-004**	**0.0104**	**3.0000e-005**	**2.7700e-003**	**2.0000e-005**	**2.8000e-003**	**7.4000e-004**	**2.0000e-005**	**7.6000e-004**	**0.0000**	**2.5840**	**2.5840**	**8.0000e-005**	**0.0000**	**2.5861**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5000e-003	0.0152	0.2160	3.0000e-004		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	25.7886	25.7886	8.1700e-003	0.0000	25.9929
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.5000e-003**	**0.0152**	**0.2160**	**3.0000e-004**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**25.7886**	**25.7886**	**8.1700e-003**	**0.0000**	**25.9929**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1700e-003	9.4000e-004	0.0104	3.0000e-005	2.7700e-003	2.0000e-005	2.8000e-003	7.4000e-004	2.0000e-005	7.6000e-004	0.0000	2.5840	2.5840	8.0000e-005	0.0000	2.5861
Total	**1.1700e-003**	**9.4000e-004**	**0.0104**	**3.0000e-005**	**2.7700e-003**	**2.0000e-005**	**2.8000e-003**	**7.4000e-004**	**2.0000e-005**	**7.6000e-004**	**0.0000**	**2.5840**	**2.5840**	**8.0000e-005**	**0.0000**	**2.5861**

3.5 Park R and Tennis Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4249					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5400e-003	0.0177	0.0192	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.6809	2.6809	2.1000e-004	0.0000	2.6861
Total	**0.4274**	**0.0177**	**0.0192**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.6809**	**2.6809**	**2.1000e-004**	**0.0000**	**2.6861**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.6500e-003	1.3300e-003	0.0147	4.0000e-005	3.9100e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.6462	3.6462	1.1000e-004	0.0000	3.6491
Total	**1.6500e-003**	**1.3300e-003**	**0.0147**	**4.0000e-005**	**3.9100e-003**	**3.0000e-005**	**3.9500e-003**	**1.0400e-003**	**3.0000e-005**	**1.0700e-003**	**0.0000**	**3.6462**	**3.6462**	**1.1000e-004**	**0.0000**	**3.6491**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4249					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1000e-004	1.3500e-003	0.0192	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.6809	2.6809	2.1000e-004	0.0000	2.6861
Total	**0.4252**	**1.3500e-003**	**0.0192**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.6809**	**2.6809**	**2.1000e-004**	**0.0000**	**2.6861**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6500e-003	1.3300e-003	0.0147	4.0000e-005	3.9100e-003	3.0000e-005	3.9500e-003	1.0400e-003	3.0000e-005	1.0700e-003	0.0000	3.6462	3.6462	1.1000e-004	0.0000	3.6491
Total	**1.6500e-003**	**1.3300e-003**	**0.0147**	**4.0000e-005**	**3.9100e-003**	**3.0000e-005**	**3.9500e-003**	**1.0400e-003**	**3.0000e-005**	**1.0700e-003**	**0.0000**	**3.6462**	**3.6462**	**1.1000e-004**	**0.0000**	**3.6491**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0346	0.1220	0.3801	1.1200e-003	0.1048	1.3800e-003	0.1061	0.0281	1.3000e-003	0.0294	0.0000	103.0631	103.0631	5.9600e-003	0.0000	103.2122
Unmitigated	0.0346	0.1220	0.3801	1.1200e-003	0.1048	1.3800e-003	0.1061	0.0281	1.3000e-003	0.0294	0.0000	103.0631	103.0631	5.9600e-003	0.0000	103.2122

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Racquet Club	122.22	185.39	151.76	276,249	276,249
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	122.22	185.39	151.76	276,249	276,249

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Racquet Club	16.60	8.40	6.90	11.50	69.50	19.00	52	39	9
Unenclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Racquet Club	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997
Unenclosed Parking with Elevator	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	488.7852	488.7852	0.0202	4.1800e-003	490.5339
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	488.7852	488.7852	0.0202	4.1800e-003	490.5339
NaturalGas Mitigated	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	79.2315	79.2315	1.5200e-003	1.4500e-003	79.7024
NaturalGas Unmitigated	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	79.2315	79.2315	1.5200e-003	1.4500e-003	79.7024

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Racquet Club	1.48474e+006	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	79.2315	79.2315	1.5200e-003	1.4500e-003	79.7024
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0100e-003**	**0.0728**	**0.0611**	**4.4000e-004**		**5.5300e-003**	**5.5300e-003**		**5.5300e-003**	**5.5300e-003**	**0.0000**	**79.2315**	**79.2315**	**1.5200e-003**	**1.4500e-003**	**79.7024**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Racquet Club	1.48474e+006	8.0100e-003	0.0728	0.0611	4.4000e-004		5.5300e-003	5.5300e-003		5.5300e-003	5.5300e-003	0.0000	79.2315	79.2315	1.5200e-003	1.4500e-003	79.7024
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**8.0100e-003**	**0.0728**	**0.0611**	**4.4000e-004**		**5.5300e-003**	**5.5300e-003**		**5.5300e-003**	**5.5300e-003**	**0.0000**	**79.2315**	**79.2315**	**1.5200e-003**	**1.4500e-003**	**79.7024**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Racquet Club	910533	290.1153	0.0120	2.4800e-003	291.1532
Unenclosed Parking with Elevator	623530	198.6699	8.2000e-003	1.7000e-003	199.3806
Total		**488.7852**	**0.0202**	**4.1800e-003**	**490.5339**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
Racquet Club	910533	290.1153	0.0120	2.4800e-003	291.1532
Unenclosed Parking with Elevator	623530	198.6699	8.2000e-003	1.7000e-003	199.3806
Total		**488.7852**	**0.0202**	**4.1800e-003**	**490.5339**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3602	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107
Unmitigated	0.3602	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0425					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Consumer Products	0.3172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.9000e-004	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107
Total	**0.3602**	**5.0000e-005**	**5.1800e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0100**	**0.0100**	**3.0000e-005**	**0.0000**	**0.0107**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0425					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3172					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.9000e-004	5.0000e-005	5.1800e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0100	0.0100	3.0000e-005	0.0000	0.0107
Total	**0.3602**	**5.0000e-005**	**5.1800e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0100**	**0.0100**	**3.0000e-005**	**0.0000**	**0.0107**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	32.1928	0.1594	3.9900e-003	37.3670

Unmitigated	32.1928	0.1594	3.9900e-003	37.3670

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Racquet Club	4.85151 / 2.97351	32.1928	0.1594	3.9900e-003	37.3670
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**32.1928**	**0.1594**	**3.9900e-003**	**37.3670**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Racquet Club	4.85151 / 2.97351	32.1928	0.1594	3.9900e-003	37.3670
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**32.1928**	**0.1594**	**3.9900e-003**	**37.3670**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	94.9125	5.6092	0.0000	235.1417
Unmitigated	94.9125	5.6092	0.0000	235.1417

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Racquet Club	467.57	94.9125	5.6092	0.0000	235.1417
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9125**	**5.6092**	**0.0000**	**235.1417**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Racquet Club	467.57	94.9125	5.6092	0.0000	235.1417
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**94.9125**	**5.6092**	**0.0000**	**235.1417**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt SAC Parking Structure S and Pedestrian Bridge - Los Angeles-South Coast County, Annual

Mt SAC Parking Structure S and Pedestrian Bridge

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unenclosed Parking with Elevator	286.41	1000sqft	6.58	286,412.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Parking Structure S

Construction Phase - .

Off-road Equipment - .

Trips and VMT - .

Architectural Coating - .

Construction Off-road Equipment Mitigation - Tier 4 Equipment

Energy Mitigation -

Off-road Equipment - Added 1 saw, 1 excavator for pedestrian bridge

Off-road Equipment - .

Off-road Equipment - added 1 more crane for pedestrian bridge

Off-road Equipment -

Grading -

Vehicle Trips - No trips

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	21.00
tblConstructionPhase	NumDays	230.00	260.00
tblConstructionPhase	NumDays	20.00	39.00

tblConstructionPhase	NumDays	20.00	38.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	286,410.00	286,412.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2786	2.8047	1.9756	3.9300e-003	0.2400	0.1325	0.3725	0.0859	0.1234	0.2093	0.0000	353.3511	353.3511	0.0805	0.0000	355.3631
2020	0.3922	3.1849	2.7280	6.1500e-003	0.1687	0.1498	0.3185	0.0455	0.1404	0.1859	0.0000	549.8337	549.8337	0.0894	0.0000	552.0677
Maximum	**0.3922**	**3.1849**	**2.7280**	**6.1500e-003**	**0.2400**	**0.1498**	**0.3725**	**0.0859**	**0.1404**	**0.2093**	**0.0000**	**549.8337**	**549.8337**	**0.0894**	**0.0000**	**552.0677**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0979	0.6813	2.0085	3.9300e-003	0.1369	0.0243	0.1612	0.0465	0.0233	0.0698	0.0000	353.3507	353.3507	0.0805	0.0000	355.3628
2020	0.2361	1.4811	2.8188	6.1500e-003	0.1687	0.0465	0.2152	0.0455	0.0439	0.0894	0.0000	549.8334	549.8334	0.0894	0.0000	552.0673
Maximum	**0.2361**	**1.4811**	**2.8188**	**6.1500e-003**	**0.1687**	**0.0465**	**0.2152**	**0.0465**	**0.0439**	**0.0894**	**0.0000**	**549.8334**	**549.8334**	**0.0894**	**0.0000**	**552.0673**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**50.21**	**63.90**	**-2.63**	**0.00**	**25.21**	**74.92**	**45.52**	**30.02**	**74.52**	**59.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	8-1-2019	10-31-2019	2.0808	0.3132
2	11-1-2019	1-31-2020	1.4339	0.6757
3	2-1-2020	4-30-2020	1.3132	0.6237
4	5-1-2020	7-31-2020	1.3395	0.6346
5	8-1-2020	9-30-2020	0.4564	0.2306
		Highest	2.0808	0.6757

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0228	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003

Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	177.0386	177.0386	7.3100e-003	1.5100e-003	177.6719
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**3.0000e-005**	**3.6800e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**177.0457**	**177.0457**	**7.3300e-003**	**1.5100e-003**	**177.6795**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0228	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	177.0386	177.0386	7.3100e-003	1.5100e-003	177.6719
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0228**	**3.0000e-005**	**3.6800e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**177.0457**	**177.0457**	**7.3300e-003**	**1.5100e-003**	**177.6795**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Park S Demolition	Demolition	8/1/2019	9/14/2019	6	39	
2	Park S Grading	Grading	9/16/2019	10/29/2019	6	38	
3	Park S Building Construction	Building Construction	10/30/2019	8/27/2020	6	260	
4	Park S Architectural Coating	Architectural Coating	8/28/2020	9/21/2020	6	21	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 6.58

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 17,185

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Park S Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Park S Demolition	Excavators	4	8.00	158	0.38
Park S Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Park S Grading	Excavators	2	8.00	158	0.38
Park S Grading	Graders	1	8.00	187	0.41
Park S Grading	Rubber Tired Dozers	1	8.00	247	0.40
Park S Grading	Scrapers	2	8.00	367	0.48
Park S Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Park S Building Construction	Cranes	2	7.00	231	0.29
Park S Building Construction	Forklifts	4	8.00	89	0.20
Park S Building Construction	Generator Sets	1	8.00	84	0.74
Park S Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Park S Building Construction	Welders	1	8.00	46	0.45
Park S Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Park S Demolition	8	15.00	0.00	208.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Building Construction	11	120.00	47.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Park S Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Park S Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0225	0.0000	0.0225	3.4100e-003	0.0000	3.4100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0826	0.8200	0.5660	9.8000e-004		0.0420	0.0420		0.0394	0.0394	0.0000	87.0475	87.0475	0.0224	0.0000	87.6071
Total	**0.0826**	**0.8200**	**0.5660**	**9.8000e-004**	**0.0225**	**0.0420**	**0.0645**	**3.4100e-003**	**0.0394**	**0.0428**	**0.0000**	**87.0475**	**87.0475**	**0.0224**	**0.0000**	**87.6071**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	9.9000e-004	0.0329	6.9900e-003	8.0000e-005	1.7900e-003	1.2000e-004	1.9100e-003	4.9000e-004	1.1000e-004	6.0000e-004	0.0000	8.0983	8.0983	5.7000e-004	0.0000	8.1126
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4700e-003	1.2200e-003	0.0133	3.0000e-005	3.2100e-003	3.0000e-005	3.2300e-003	8.5000e-004	3.0000e-005	8.8000e-004	0.0000	3.0811	3.0811	1.1000e-004	0.0000	3.0837
Total	**2.4600e-003**	**0.0341**	**0.0203**	**1.1000e-004**	**5.0000e-003**	**1.5000e-004**	**5.1400e-003**	**1.3400e-003**	**1.4000e-004**	**1.4800e-003**	**0.0000**	**11.1794**	**11.1794**	**6.8000e-004**	**0.0000**	**11.1963**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0101	0.0000	0.0101	1.5300e-003	0.0000	1.5300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0219	0.1463	0.5939	9.8000e-004		7.4400e-003	7.4400e-003		7.3100e-003	7.3100e-003	0.0000	87.0474	87.0474	0.0224	0.0000	87.6070
Total	**0.0219**	**0.1463**	**0.5939**	**9.8000e-004**	**0.0101**	**7.4400e-003**	**0.0176**	**1.5300e-003**	**7.3100e-003**	**8.8400e-003**	**0.0000**	**87.0474**	**87.0474**	**0.0224**	**0.0000**	**87.6070**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.9000e-004	0.0329	6.9900e-003	8.0000e-005	1.7900e-003	1.2000e-004	1.9100e-003	4.9000e-004	1.1000e-004	6.0000e-004	0.0000	8.0983	8.0983	5.7000e-004	0.0000	8.1126
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4700e-003	1.2200e-003	0.0133	3.0000e-005	3.2100e-003	3.0000e-005	3.2300e-003	8.5000e-004	3.0000e-005	8.8000e-004	0.0000	3.0811	3.0811	1.1000e-004	0.0000	3.0837

Total	**2.4600e-003**	**0.0341**	**0.0203**	**1.1000e-004**	**5.0000e-003**	**1.5000e-004**	**5.1400e-003**	**1.3400e-003**	**1.4000e-004**	**1.4800e-003**	**0.0000**	**11.1794**	**11.1794**	**6.8000e-004**	**0.0000**	**11.1963**

3.3 Park S Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1648	0.0000	0.1648	0.0683	0.0000	0.0683	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0900	1.0359	0.6342	1.1800e-003		0.0453	0.0453		0.0417	0.0417	0.0000	105.8325	105.8325	0.0335	0.0000	106.6696
Total	**0.0900**	**1.0359**	**0.6342**	**1.1800e-003**	**0.1648**	**0.0453**	**0.2101**	**0.0683**	**0.0417**	**0.1100**	**0.0000**	**105.8325**	**105.8325**	**0.0335**	**0.0000**	**106.6696**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-003	1.5900e-003	0.0173	4.0000e-005	4.1600e-003	4.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	4.0028	4.0028	1.4000e-004	0.0000	4.0062
Total	**1.9000e-003**	**1.5900e-003**	**0.0173**	**4.0000e-005**	**4.1600e-003**	**4.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**4.0028**	**4.0028**	**1.4000e-004**	**0.0000**	**4.0062**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0742	0.0000	0.0742	0.0308	0.0000	0.0308	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0157	0.0783	0.6228	1.1800e-003		2.7100e-003	2.7100e-003		2.6400e-003	2.6400e-003	0.0000	105.8324	105.8324	0.0335	0.0000	106.6695
Total	**0.0157**	**0.0783**	**0.6228**	**1.1800e-003**	**0.0742**	**2.7100e-003**	**0.0769**	**0.0308**	**2.6400e-003**	**0.0334**	**0.0000**	**105.8324**	**105.8324**	**0.0335**	**0.0000**	**106.6695**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-003	1.5900e-003	0.0173	4.0000e-005	4.1600e-003	4.0000e-005	4.2000e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	4.0028	4.0028	1.4000e-004	0.0000	4.0062
Total	**1.9000e-003**	**1.5900e-003**	**0.0173**	**4.0000e-005**	**4.1600e-003**	**4.0000e-005**	**4.2000e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**4.0028**	**4.0028**	**1.4000e-004**	**0.0000**	**4.0062**

3.4 Park S Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0800	0.7496	0.5498	9.0000e-004		0.0438	0.0438		0.0410	0.0410	0.0000	79.4269	79.4269	0.0205	0.0000	79.9396
Total	**0.0800**	**0.7496**	**0.5498**	**9.0000e-004**		**0.0438**	**0.0438**		**0.0410**	**0.0410**	**0.0000**	**79.4269**	**79.4269**	**0.0205**	**0.0000**	**79.9396**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3700e-003	0.1499	0.0410	3.3000e-004	7.9900e-003	9.4000e-004	8.9400e-003	2.3100e-003	9.0000e-004	3.2100e-003	0.0000	31.7332	31.7332	2.1200e-003	0.0000	31.7861
Worker	0.0162	0.0135	0.1471	3.8000e-004	0.0355	3.1000e-004	0.0358	9.4300e-003	2.9000e-004	9.7200e-003	0.0000	34.1288	34.1288	1.1700e-003	0.0000	34.1581
Total	**0.0216**	**0.1634**	**0.1881**	**7.1000e-004**	**0.0435**	**1.2500e-003**	**0.0448**	**0.0117**	**1.1900e-003**	**0.0129**	**0.0000**	**65.8620**	**65.8620**	**3.2900e-003**	**0.0000**	**65.9443**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0343	0.2576	0.5662	9.0000e-004		0.0127	0.0127		0.0120	0.0120	0.0000	79.4268	79.4268	0.0205	0.0000	79.9396
Total	**0.0343**	**0.2576**	**0.5662**	**9.0000e-004**		**0.0127**	**0.0127**		**0.0120**	**0.0120**	**0.0000**	**79.4268**	**79.4268**	**0.0205**	**0.0000**	**79.9396**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.3700e-003	0.1499	0.0410	3.3000e-004	7.9900e-003	9.4000e-004	8.9400e-003	2.3100e-003	9.0000e-004	3.2100e-003	0.0000	31.7332	31.7332	2.1200e-003	0.0000	31.7861
Worker	0.0162	0.0135	0.1471	3.8000e-004	0.0355	3.1000e-004	0.0358	9.4300e-003	2.9000e-004	9.7200e-003	0.0000	34.1288	34.1288	1.1700e-003	0.0000	34.1581
Total	**0.0216**	**0.1634**	**0.1881**	**7.1000e-004**	**0.0435**	**1.2500e-003**	**0.0448**	**0.0117**	**1.1900e-003**	**0.0129**	**0.0000**	**65.8620**	**65.8620**	**3.2900e-003**	**0.0000**	**65.9443**

3.4 Park S Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2740	2.5957	2.0476	3.4500e-003		0.1450	0.1450		0.1358	0.1358	0.0000	298.0769	298.0769	0.0775	0.0000	300.0132
Total	**0.2740**	**2.5957**	**2.0476**	**3.4500e-003**		**0.1450**	**0.1450**		**0.1358**	**0.1358**	**0.0000**	**298.0769**	**298.0769**	**0.0775**	**0.0000**	**300.0132**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0176	0.5246	0.1420	1.2400e-003	0.0305	2.4400e-003	0.0329	8.8000e-003	2.3300e-003	0.0111	0.0000	120.2631	120.2631	7.6400e-003	0.0000	120.4542
Worker	0.0571	0.0460	0.5088	1.4000e-003	0.1354	1.1500e-003	0.1366	0.0360	1.0600e-003	0.0370	0.0000	126.2389	126.2389	3.9800e-003	0.0000	126.3384
Total	**0.0746**	**0.5706**	**0.6508**	**2.6400e-003**	**0.1659**	**3.5900e-003**	**0.1695**	**0.0448**	**3.3900e-003**	**0.0482**	**0.0000**	**246.5021**	**246.5021**	**0.0116**	**0.0000**	**246.7926**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1202	0.9082	2.1384	3.4500e-003		0.0428	0.0428		0.0404	0.0404	0.0000	298.0766	298.0766	0.0775	0.0000	300.0128
Total	**0.1202**	**0.9082**	**2.1384**	**3.4500e-003**		**0.0428**	**0.0428**		**0.0404**	**0.0404**	**0.0000**	**298.0766**	**298.0766**	**0.0775**	**0.0000**	**300.0128**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0176	0.5246	0.1420	1.2400e-003	0.0305	2.4400e-003	0.0329	8.8000e-003	2.3300e-003	0.0111	0.0000	120.2631	120.2631	7.6400e-003	0.0000	120.4542
Worker	0.0571	0.0460	0.5088	1.4000e-003	0.1354	1.1500e-003	0.1366	0.0360	1.0600e-003	0.0370	0.0000	126.2389	126.2389	3.9800e-003	0.0000	126.3384
Total	**0.0746**	**0.5706**	**0.6508**	**2.6400e-003**	**0.1659**	**3.5900e-003**	**0.1695**	**0.0448**	**3.3900e-003**	**0.0482**	**0.0000**	**246.5021**	**246.5021**	**0.0116**	**0.0000**	**246.7926**

3.5 Park S Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5400e-003	0.0177	0.0192	3.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	2.6809	2.6809	2.1000e-004	0.0000	2.6861
Total	**0.0424**	**0.0177**	**0.0192**	**3.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**2.6809**	**2.6809**	**2.1000e-004**	**0.0000**	**2.6861**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	9.4000e-004	0.0104	3.0000e-005	2.7600e-003	2.0000e-005	2.7800e-003	7.3000e-004	2.0000e-005	7.6000e-004	0.0000	2.5738	2.5738	8.0000e-005	0.0000	2.5758
Total	**1.1600e-003**	**9.4000e-004**	**0.0104**	**3.0000e-005**	**2.7600e-003**	**2.0000e-005**	**2.7800e-003**	**7.3000e-004**	**2.0000e-005**	**7.6000e-004**	**0.0000**	**2.5738**	**2.5738**	**8.0000e-005**	**0.0000**	**2.5758**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0398					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.1000e-004	1.3500e-003	0.0192	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.6809	2.6809	2.1000e-004	0.0000	2.6861
Total	**0.0401**	**1.3500e-003**	**0.0192**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.6809**	**2.6809**	**2.1000e-004**	**0.0000**	**2.6861**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1600e-003	9.4000e-004	0.0104	3.0000e-005	2.7600e-003	2.0000e-005	2.7800e-003	7.3000e-004	2.0000e-005	7.6000e-004	0.0000	2.5738	2.5738	8.0000e-005	0.0000	2.5758
Total	**1.1600e-003**	**9.4000e-004**	**0.0104**	**3.0000e-005**	**2.7600e-003**	**2.0000e-005**	**2.7800e-003**	**7.3000e-004**	**2.0000e-005**	**7.6000e-004**	**0.0000**	**2.5738**	**2.5738**	**8.0000e-005**	**0.0000**	**2.5758**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Unenclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Unenclosed Parking with Elevator	0.547726	0.045437	0.201480	0.122768	0.016614	0.006090	0.019326	0.029174	0.002438	0.002359	0.005005	0.000677	0.000907

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	177.0386	177.0386	7.3100e-003	1.5100e-003	177.6719
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	177.0386	177.0386	7.3100e-003	1.5100e-003	177.6719
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unenclosed Parking with Elevator	555639	177.0386	7.3100e-003	1.5100e-003	177.6719
Total		**177.0386**	**7.3100e-003**	**1.5100e-003**	**177.6719**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Unenclosed Parking with Elevator	555639	177.0386	7.3100e-003	1.5100e-003	177.6719
Total		**177.0386**	**7.3100e-003**	**1.5100e-003**	**177.6719**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0228	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003
Unmitigated	0.0228	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0185					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.5000e-004	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003
Total	**0.0228**	**3.0000e-005**	**3.6800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.1100e-003**	**7.1100e-003**	**2.0000e-005**	**0.0000**	**7.5800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0185					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.5000e-004	3.0000e-005	3.6800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	7.1100e-003	7.1100e-003	2.0000e-005	0.0000	7.5800e-003
Total	**0.0228**	**3.0000e-005**	**3.6800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**7.1100e-003**	**7.1100e-003**	**2.0000e-005**	**0.0000**	**7.5800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt SAC Student Center--GHG

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	150.00	1000sqft	3.44	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Student Center

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - .

Grading - .

Architectural Coating - .

Vehicle Trips - 947 Daily trips

Construction Off-road Equipment Mitigation - tier 4 equipment

Energy Mitigation - Exceed Title 24 2019 Standards by 15%

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	18.00	80.00
tblConstructionPhase	NumDays	230.00	523.00
tblConstructionPhase	NumDays	20.00	210.00
tblConstructionPhase	NumDays	8.00	79.00
tblConstructionPhase	NumDays	18.00	45.00
tblConstructionPhase	NumDays	5.00	627.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblFleetMix	HHD	0.03	0.01
tblFleetMix	LDA	0.55	0.90
tblFleetMix	LDT1	0.04	0.01
tblFleetMix	LDT2	0.20	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD2	6.1960e-003	7.6130e-003
tblFleetMix	MCY	5.1420e-003	6.3610e-003
tblFleetMix	MDV	0.12	1.2050e-003
tblFleetMix	MH	8.7600e-004	9.9700e-004
tblFleetMix	MHD	0.02	0.03
tblFleetMix	OBUS	2.5150e-003	3.1350e-003
tblFleetMix	SBUS	6.8700e-004	8.5500e-004
tblFleetMix	UBUS	2.2010e-003	2.2440e-003

tblGrading	MaterialExported	0.00	20,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	344.00	0.00
tblTripsAndVMT	HaulingTripNumber	2,500.00	0.00
tblVehicleTrips	ST_TR	11.23	2.58
tblVehicleTrips	SU_TR	1.21	0.28
tblVehicleTrips	WD_TR	27.49	6.31

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3768	3.7638	2.3878	4.2600e-003	0.0545	0.1886	0.2431	0.0102	0.1755	0.1857	0.0000	380.1668	380.1668	0.1017	0.0000	382.7097
2020	0.5966	5.9415	4.0905	7.9900e-003	1.3020	0.2887	1.5907	0.6426	0.2677	0.9103	0.0000	705.0948	705.0948	0.1748	0.0000	709.4637
2021	1.0531	5.5527	4.5585	8.9700e-003	1.0932	0.2734	1.3666	0.5587	0.2548	0.8135	0.0000	792.4096	792.4096	0.1657	0.0000	796.5524
2022	0.2794	0.4061	0.3706	7.6000e-004	0.0954	0.0190	0.1144	0.0485	0.0178	0.0663	0.0000	67.2276	67.2276	0.0130	0.0000	67.5518
Maximum	**1.0531**	**5.9415**	**4.5585**	**8.9700e-003**	**1.3020**	**0.2887**	**1.5907**	**0.6426**	**0.2677**	**0.9103**	**0.0000**	**792.4096**	**792.4096**	**0.1748**	**0.0000**	**796.5524**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0564	0.2169	2.5159	4.2600e-003	0.0340	6.6200e-003	0.0406	7.1200e-003	6.6100e-003	0.0137	0.0000	380.1664	380.1664	0.1017	0.0000	382.7093
2020	0.1497	0.7503	4.1784	7.9900e-003	0.6377	0.0200	0.6576	0.3031	0.0199	0.3230	0.0000	705.0942	705.0942	0.1748	0.0000	709.4630
2021	0.6463	0.9970	4.7743	8.9700e-003	0.5748	0.0239	0.5987	0.2737	0.0238	0.2975	0.0000	792.4089	792.4089	0.1657	0.0000	796.5517
2022	0.2499	0.0814	0.3932	7.6000e-004	0.0507	1.8400e-003	0.0525	0.0239	1.8300e-003	0.0257	0.0000	67.2276	67.2276	0.0130	0.0000	67.5518
Maximum	**0.6463**	**0.9970**	**4.7743**	**8.9700e-003**	**0.6377**	**0.0239**	**0.6576**	**0.3031**	**0.0238**	**0.3230**	**0.0000**	**792.4089**	**792.4089**	**0.1748**	**0.0000**	**796.5517**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**52.19**	**86.94**	**-3.98**	**0.00**	**49.03**	**93.20**	**59.29**	**51.76**	**92.73**	**66.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2019**	**6-30-2019**	1.5376	0.1012
2	**7-1-2019**	**9-30-2019**	1.5545	0.1023
3	**10-1-2019**	**12-31-2019**	1.0311	0.0682
4	**1-1-2020**	**3-31-2020**	1.1082	0.0770
5	**4-1-2020**	**6-30-2020**	2.3372	0.2262
6	**7-1-2020**	**9-30-2020**	1.5502	0.2946
7	**10-1-2020**	**12-31-2020**	1.5526	0.2971
8	**1-1-2021**	**3-31-2021**	1.4072	0.2752
9	**4-1-2021**	**6-30-2021**	1.4207	0.2762
10	**7-1-2021**	**9-30-2021**	1.8166	0.3350
11	**10-1-2021**	**12-31-2021**	1.9412	0.7426

12	1-1-2022	3-31-2022	0.6962	0.3364
		Highest	2.3372	0.7426

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6117	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003
Energy	0.0219	0.1991	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	695.6518	695.6518	0.0239	8.0600e-003	698.6531
Mobile	0.1905	0.7089	2.4340	8.3200e-003	0.8444	7.8200e-003	0.8523	0.2264	7.2800e-003	0.2337	0.0000	765.4790	765.4790	0.0401	0.0000	766.4814
Waste						0.0000	0.0000		0.0000	0.0000	39.5832	0.0000	39.5832	2.3393	0.0000	98.0658
Water						0.0000	0.0000		0.0000	0.0000	2.3342	71.2597	73.5939	0.2427	6.2700e-003	81.5292
Total	**0.8241**	**0.9081**	**2.6032**	**9.5100e-003**	**0.8444**	**0.0230**	**0.8674**	**0.2264**	**0.0224**	**0.2489**	**41.9174**	**1,532.3943**	**1,574.3117**	**2.6460**	**0.0143**	**1,644.7335**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6117	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003
Energy	0.0132	0.1202	0.1010	7.2000e-004		9.1400e-003	9.1400e-003		9.1400e-003	9.1400e-003	0.0000	550.9321	550.9321	0.0199	5.9900e-003	553.2127
Mobile	0.1905	0.7089	2.4340	8.3200e-003	0.8444	7.8200e-003	0.8523	0.2264	7.2800e-003	0.2337	0.0000	765.4790	765.4790	0.0401	0.0000	766.4814

Waste						0.0000	0.0000		0.0000	0.0000	39.5832	0.0000	39.5832	2.3393	0.0000	98.0658
Water						0.0000	0.0000		0.0000	0.0000	2.3342	71.2597	73.5939	0.2427	6.2700e-003	81.5292
Total	**0.8154**	**0.8292**	**2.5369**	**9.0400e-003**	**0.8444**	**0.0170**	**0.8614**	**0.2264**	**0.0164**	**0.2429**	**41.9174**	**1,387.6746**	**1,429.5920**	**2.6419**	**0.0123**	**1,499.2931**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.05**	**8.69**	**2.55**	**4.94**	**0.00**	**26.09**	**0.69**	**0.00**	**26.72**	**2.41**	**0.00**	**9.44**	**9.19**	**0.15**	**14.45**	**8.84**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Stu Center Demolition	Demolition	4/1/2019	11/30/2019	6	210	
2	Stu Center Site Preparation	Site Preparation	2/1/2020	2/1/2022	6	627	
3	Stu Center Grading	Grading	3/1/2020	6/1/2020	6	79	
4	Stu Center Building Construction	Building Construction	6/2/2020	2/1/2022	6	523	
5	Stu Center Paving	Paving	7/13/2021	9/2/2021	6	45	
6	Stu Center Architectural Coating	Architectural Coating	11/1/2021	2/1/2022	6	80	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 225,000; Non-Residential Outdoor: 75,000; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Stu Center Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Stu Center Demolition	Excavators	3	8.00	158	0.38
Stu Center Demolition	Rubber Tired Dozers	2	8.00	247	0.40

Stu Center Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Stu Center Grading	Excavators	2	8.00	158	0.38
Stu Center Grading	Graders	1	8.00	187	0.41
Stu Center Grading	Rubber Tired Dozers	1	8.00	247	0.40
Stu Center Grading	Scrapers	2	8.00	367	0.48
Stu Center Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Stu Center Building Construction	Cranes	1	7.00	231	0.29
Stu Center Building Construction	Forklifts	3	8.00	89	0.20
Stu Center Building Construction	Generator Sets	1	8.00	84	0.74
Stu Center Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Stu Center Building Construction	Welders	1	8.00	46	0.45
Stu Center Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Stu Center Paving	Pavers	2	8.00	130	0.42
Stu Center Paving	Paving Equipment	2	8.00	132	0.36
Stu Center Paving	Rollers	2	8.00	80	0.38
Stu Center Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Stu Center Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Stu Center Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Building Construction	9	63.00	25.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Paving	9	23.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Stu Center Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Stu Center Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0372	0.0000	0.0372	5.6400e-003	0.0000	5.6400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3689	3.7572	2.3163	4.0700e-003		0.1885	0.1885		0.1753	0.1753	0.0000	363.5765	363.5765	0.1011	0.0000	366.1051
Total	**0.3689**	**3.7572**	**2.3163**	**4.0700e-003**	**0.0372**	**0.1885**	**0.2257**	**5.6400e-003**	**0.1753**	**0.1810**	**0.0000**	**363.5765**	**363.5765**	**0.1011**	**0.0000**	**366.1051**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8900e-003	6.5800e-003	0.0715	1.8000e-004	0.0173	1.5000e-004	0.0174	4.5800e-003	1.4000e-004	4.7200e-003	0.0000	16.5904	16.5904	5.7000e-004	0.0000	16.6046
Total	**7.8900e-003**	**6.5800e-003**	**0.0715**	**1.8000e-004**	**0.0173**	**1.5000e-004**	**0.0174**	**4.5800e-003**	**1.4000e-004**	**4.7200e-003**	**0.0000**	**16.5904**	**16.5904**	**5.7000e-004**	**0.0000**	**16.6046**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0168	0.0000	0.0168	2.5400e-003	0.0000	2.5400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0485	0.2103	2.4444	4.0700e-003		6.4700e-003	6.4700e-003		6.4700e-003	6.4700e-003	0.0000	363.5760	363.5760	0.1011	0.0000	366.1046
Total	**0.0485**	**0.2103**	**2.4444**	**4.0700e-003**	**0.0168**	**6.4700e-003**	**0.0232**	**2.5400e-003**	**6.4700e-003**	**9.0100e-003**	**0.0000**	**363.5760**	**363.5760**	**0.1011**	**0.0000**	**366.1046**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8900e-003	6.5800e-003	0.0715	1.8000e-004	0.0173	1.5000e-004	0.0174	4.5800e-003	1.4000e-004	4.7200e-003	0.0000	16.5904	16.5904	5.7000e-004	0.0000	16.6046
Total	**7.8900e-003**	**6.5800e-003**	**0.0715**	**1.8000e-004**	**0.0173**	**1.5000e-004**	**0.0174**	**4.5800e-003**	**1.4000e-004**	**4.7200e-003**	**0.0000**	**16.5904**	**16.5904**	**5.7000e-004**	**0.0000**	**16.6046**

3.3 Stu Center Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.8642	0.0000	0.8642	0.4750	0.0000	0.4750	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1850	1.9283	0.9200	1.6700e-003		0.0987	0.0987		0.0908	0.0908	0.0000	146.8586	146.8586	0.0475	0.0000	148.0461
Total	**0.1850**	**1.9283**	**0.9200**	**1.6700e-003**	**0.8642**	**0.0987**	**0.9629**	**0.4750**	**0.0908**	**0.5659**	**0.0000**	**146.8586**	**146.8586**	**0.0475**	**0.0000**	**148.0461**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3100e-003	2.6700e-003	0.0295	8.0000e-005	7.8600e-003	7.0000e-005	7.9300e-003	2.0900e-003	6.0000e-005	2.1500e-003	0.0000	7.3282	7.3282	2.3000e-004	0.0000	7.3340
Total	**3.3100e-003**	**2.6700e-003**	**0.0295**	**8.0000e-005**	**7.8600e-003**	**7.0000e-005**	**7.9300e-003**	**2.0900e-003**	**6.0000e-005**	**2.1500e-003**	**0.0000**	**7.3282**	**7.3282**	**2.3000e-004**	**0.0000**	**7.3340**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3889	0.0000	0.3889	0.2138	0.0000	0.2138	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0205	0.0886	0.8862	1.6700e-003		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003	0.0000	146.8585	146.8585	0.0475	0.0000	148.0459

Total	**0.0205**	**0.0886**	**0.8862**	**1.6700e-003**	**0.3889**	**2.7300e-003**	**0.3916**	**0.2138**	**2.7300e-003**	**0.2165**	**0.0000**	**146.8585**	**146.8585**	**0.0475**	**0.0000**	**148.0459**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3100e-003	2.6700e-003	0.0295	8.0000e-005	7.8600e-003	7.0000e-005	7.9300e-003	2.0900e-003	6.0000e-005	2.1500e-003	0.0000	7.3282	7.3282	2.3000e-004	0.0000	7.3340
Total	**3.3100e-003**	**2.6700e-003**	**0.0295**	**8.0000e-005**	**7.8600e-003**	**7.0000e-005**	**7.9300e-003**	**2.0900e-003**	**6.0000e-005**	**2.1500e-003**	**0.0000**	**7.3282**	**7.3282**	**2.3000e-004**	**0.0000**	**7.3340**

3.3 Stu Center Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.9425	0.0000	0.9425	0.5181	0.0000	0.5181	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1931	2.0137	0.9856	1.8200e-003		0.1008	0.1008		0.0928	0.0928	0.0000	160.1830	160.1830	0.0518	0.0000	161.4781
Total	**0.1931**	**2.0137**	**0.9856**	**1.8200e-003**	**0.9425**	**0.1008**	**1.0433**	**0.5181**	**0.0928**	**0.6108**	**0.0000**	**160.1830**	**160.1830**	**0.0518**	**0.0000**	**161.4781**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3700e-003	2.6200e-003	0.0296	9.0000e-005	8.5700e-003	7.0000e-005	8.6500e-003	2.2800e-003	7.0000e-005	2.3400e-003	0.0000	7.7383	7.7383	2.3000e-004	0.0000	7.7440
Total	**3.3700e-003**	**2.6200e-003**	**0.0296**	**9.0000e-005**	**8.5700e-003**	**7.0000e-005**	**8.6500e-003**	**2.2800e-003**	**7.0000e-005**	**2.3400e-003**	**0.0000**	**7.7383**	**7.7383**	**2.3000e-004**	**0.0000**	**7.7440**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4241	0.0000	0.4241	0.2331	0.0000	0.2331	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.0967	0.9665	1.8200e-003		2.9700e-003	2.9700e-003		2.9700e-003	2.9700e-003	0.0000	160.1828	160.1828	0.0518	0.0000	161.4779
Total	**0.0223**	**0.0967**	**0.9665**	**1.8200e-003**	**0.4241**	**2.9700e-003**	**0.4271**	**0.2331**	**2.9700e-003**	**0.2361**	**0.0000**	**160.1828**	**160.1828**	**0.0518**	**0.0000**	**161.4779**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3700e-003	2.6200e-003	0.0296	9.0000e-005	8.5700e-003	7.0000e-005	8.6500e-003	2.2800e-003	7.0000e-005	2.3400e-003	0.0000	7.7383	7.7383	2.3000e-004	0.0000	7.7440
Total	**3.3700e-003**	**2.6200e-003**	**0.0296**	**9.0000e-005**	**8.5700e-003**	**7.0000e-005**	**8.6500e-003**	**2.2800e-003**	**7.0000e-005**	**2.3400e-003**	**0.0000**	**7.7383**	**7.7383**	**2.3000e-004**	**0.0000**	**7.7440**

3.3 Stu Center Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0813	0.0000	0.0813	0.0447	0.0000	0.0447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1413	0.0786	1.6000e-004		6.8500e-003	6.8500e-003		6.3000e-003	6.3000e-003	0.0000	13.8180	13.8180	4.4700e-003	0.0000	13.9297
Total	**0.0135**	**0.1413**	**0.0786**	**1.6000e-004**	**0.0813**	**6.8500e-003**	**0.0882**	**0.0447**	**6.3000e-003**	**0.0510**	**0.0000**	**13.8180**	**13.8180**	**4.4700e-003**	**0.0000**	**13.9297**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.0000e-004	2.3500e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6441	0.6441	2.0000e-005	0.0000	0.6445

Total	**2.7000e-004**	**2.0000e-004**	**2.3500e-003**	**1.0000e-005**	**7.4000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6441**	**0.6441**	**2.0000e-005**	**0.0000**	**0.6445**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0366	0.0000	0.0366	0.0201	0.0000	0.0201	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	8.3400e-003	0.0834	1.6000e-004		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	13.8180	13.8180	4.4700e-003	0.0000	13.9297
Total	**1.9200e-003**	**8.3400e-003**	**0.0834**	**1.6000e-004**	**0.0366**	**2.6000e-004**	**0.0368**	**0.0201**	**2.6000e-004**	**0.0204**	**0.0000**	**13.8180**	**13.8180**	**4.4700e-003**	**0.0000**	**13.9297**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7000e-004	2.0000e-004	2.3500e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6441	0.6441	2.0000e-005	0.0000	0.6445
Total	**2.7000e-004**	**2.0000e-004**	**2.3500e-003**	**1.0000e-005**	**7.4000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6441**	**0.6441**	**2.0000e-005**	**0.0000**	**0.6445**

3.4 Stu Center Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3437	0.0000	0.3437	0.1422	0.0000	0.1422	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1758	1.9828	1.2624	2.4500e-003		0.0859	0.0859		0.0790	0.0790	0.0000	215.2130	215.2130	0.0696	0.0000	216.9531
Total	**0.1758**	**1.9828**	**1.2624**	**2.4500e-003**	**0.3437**	**0.0859**	**0.4296**	**0.1422**	**0.0790**	**0.2212**	**0.0000**	**215.2130**	**215.2130**	**0.0696**	**0.0000**	**216.9531**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6500e-003	2.9400e-003	0.0325	9.0000e-005	8.6600e-003	7.0000e-005	8.7300e-003	2.3000e-003	7.0000e-005	2.3700e-003	0.0000	8.0687	8.0687	2.5000e-004	0.0000	8.0750
Total	**3.6500e-003**	**2.9400e-003**	**0.0325**	**9.0000e-005**	**8.6600e-003**	**7.0000e-005**	**8.7300e-003**	**2.3000e-003**	**7.0000e-005**	**2.3700e-003**	**0.0000**	**8.0687**	**8.0687**	**2.5000e-004**	**0.0000**	**8.0750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.1547	0.0000	0.1547	0.0640	0.0000	0.0640	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0301	0.1304	1.3035	2.4500e-003		4.0100e-003	4.0100e-003		4.0100e-003	4.0100e-003	0.0000	215.2127	215.2127	0.0696	0.0000	216.9528
Total	**0.0301**	**0.1304**	**1.3035**	**2.4500e-003**	**0.1547**	**4.0100e-003**	**0.1587**	**0.0640**	**4.0100e-003**	**0.0680**	**0.0000**	**215.2127**	**215.2127**	**0.0696**	**0.0000**	**216.9528**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6500e-003	2.9400e-003	0.0325	9.0000e-005	8.6600e-003	7.0000e-005	8.7300e-003	2.3000e-003	7.0000e-005	2.3700e-003	0.0000	8.0687	8.0687	2.5000e-004	0.0000	8.0750
Total	**3.6500e-003**	**2.9400e-003**	**0.0325**	**9.0000e-005**	**8.6600e-003**	**7.0000e-005**	**8.7300e-003**	**2.3000e-003**	**7.0000e-005**	**2.3700e-003**	**0.0000**	**8.0687**	**8.0687**	**2.5000e-004**	**0.0000**	**8.0750**

3.5 Stu Center Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1940	1.7555	1.5416	2.4600e-003		0.1022	0.1022		0.0961	0.0961	0.0000	211.9231	211.9231	0.0517	0.0000	213.2157
Total	**0.1940**	**1.7555**	**1.5416**	**2.4600e-003**		**0.1022**	**0.1022**		**0.0961**	**0.0961**	**0.0000**	**211.9231**	**211.9231**	**0.0517**	**0.0000**	**213.2157**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.3000e-003	0.2479	0.0671	5.9000e-004	0.0144	1.1500e-003	0.0156	4.1600e-003	1.1000e-003	5.2600e-003	0.0000	56.8275	56.8275	3.6100e-003	0.0000	56.9178
Worker	0.0266	0.0215	0.2373	6.5000e-004	0.0632	5.4000e-004	0.0637	0.0168	5.0000e-004	0.0173	0.0000	58.8758	58.8758	1.8600e-003	0.0000	58.9221
Total	**0.0349**	**0.2693**	**0.3044**	**1.2400e-003**	**0.0776**	**1.6900e-003**	**0.0793**	**0.0209**	**1.6000e-003**	**0.0225**	**0.0000**	**115.7032**	**115.7032**	**5.4700e-003**	**0.0000**	**115.8399**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0573	0.2564	1.6223	2.4600e-003		0.0114	0.0114		0.0114	0.0114	0.0000	211.9229	211.9229	0.0517	0.0000	213.2154
Total	**0.0573**	**0.2564**	**1.6223**	**2.4600e-003**		**0.0114**	**0.0114**		**0.0114**	**0.0114**	**0.0000**	**211.9229**	**211.9229**	**0.0517**	**0.0000**	**213.2154**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.3000e-003	0.2479	0.0671	5.9000e-004	0.0144	1.1500e-003	0.0156	4.1600e-003	1.1000e-003	5.2600e-003	0.0000	56.8275	56.8275	3.6100e-003	0.0000	56.9178
Worker	0.0266	0.0215	0.2373	6.5000e-004	0.0632	5.4000e-004	0.0637	0.0168	5.0000e-004	0.0173	0.0000	58.8758	58.8758	1.8600e-003	0.0000	58.9221
Total	**0.0349**	**0.2693**	**0.3044**	**1.2400e-003**	**0.0776**	**1.6900e-003**	**0.0793**	**0.0209**	**1.6000e-003**	**0.0225**	**0.0000**	**115.7032**	**115.7032**	**5.4700e-003**	**0.0000**	**115.8399**

3.5 Stu Center Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2975	2.7281	2.5940	4.2100e-003		0.1500	0.1500		0.1411	0.1411	0.0000	362.5123	362.5123	0.0875	0.0000	364.6988
Total	**0.2975**	**2.7281**	**2.5940**	**4.2100e-003**		**0.1500**	**0.1500**		**0.1411**	**0.1411**	**0.0000**	**362.5123**	**362.5123**	**0.0875**	**0.0000**	**364.6988**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0122	0.3861	0.1047	9.9000e-004	0.0246	7.9000e-004	0.0254	7.1100e-003	7.5000e-004	7.8700e-003	0.0000	96.4418	96.4418	5.9200e-003	0.0000	96.5897
Worker	0.0424	0.0330	0.3729	1.0800e-003	0.1080	8.9000e-004	0.1089	0.0287	8.2000e-004	0.0295	0.0000	97.5023	97.5023	2.8700e-003	0.0000	97.5740
Total	**0.0546**	**0.4192**	**0.4775**	**2.0700e-003**	**0.1327**	**1.6800e-003**	**0.1344**	**0.0358**	**1.5700e-003**	**0.0374**	**0.0000**	**193.9441**	**193.9441**	**8.7900e-003**	**0.0000**	**194.1637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0918	0.4288	2.7673	4.2100e-003		0.0175	0.0175		0.0175	0.0175	0.0000	362.5119	362.5119	0.0875	0.0000	364.6984
Total	**0.0918**	**0.4288**	**2.7673**	**4.2100e-003**		**0.0175**	**0.0175**		**0.0175**	**0.0175**	**0.0000**	**362.5119**	**362.5119**	**0.0875**	**0.0000**	**364.6984**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0122	0.3861	0.1047	9.9000e-004	0.0246	7.9000e-004	0.0254	7.1100e-003	7.5000e-004	7.8700e-003	0.0000	96.4418	96.4418	5.9200e-003	0.0000	96.5897
Worker	0.0424	0.0330	0.3729	1.0800e-003	0.1080	8.9000e-004	0.1089	0.0287	8.2000e-004	0.0295	0.0000	97.5023	97.5023	2.8700e-003	0.0000	97.5740
Total	**0.0546**	**0.4192**	**0.4775**	**2.0700e-003**	**0.1327**	**1.6800e-003**	**0.1344**	**0.0358**	**1.5700e-003**	**0.0374**	**0.0000**	**193.9441**	**193.9441**	**8.7900e-003**	**0.0000**	**194.1637**

3.5 Stu Center Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0230	0.2108	0.2209	3.6000e-004		0.0109	0.0109		0.0103	0.0103	0.0000	31.2829	31.2829	7.4900e-003	0.0000	31.4703
Total	**0.0230**	**0.2108**	**0.2209**	**3.6000e-004**		**0.0109**	**0.0109**		**0.0103**	**0.0103**	**0.0000**	**31.2829**	**31.2829**	**7.4900e-003**	**0.0000**	**31.4703**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.8000e-004	0.0316	8.5400e-003	8.0000e-005	2.1300e-003	6.0000e-005	2.1900e-003	6.1000e-004	6.0000e-005	6.7000e-004	0.0000	8.2462	8.2462	4.9000e-004	0.0000	8.2585
Worker	3.4300e-003	2.5700e-003	0.0296	9.0000e-005	9.3200e-003	7.0000e-005	9.3900e-003	2.4800e-003	7.0000e-005	2.5400e-003	0.0000	8.1151	8.1151	2.2000e-004	0.0000	8.1207
Total	**4.4100e-003**	**0.0342**	**0.0382**	**1.7000e-004**	**0.0115**	**1.3000e-004**	**0.0116**	**3.0900e-003**	**1.3000e-004**	**3.2100e-003**	**0.0000**	**16.3613**	**16.3613**	**7.1000e-004**	**0.0000**	**16.3792**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.5700e-003	0.0364	0.2384	3.6000e-004		1.3700e-003	1.3700e-003		1.3700e-003	1.3700e-003	0.0000	31.2829	31.2829	7.4900e-003	0.0000	31.4702
Total	**7.5700e-003**	**0.0364**	**0.2384**	**3.6000e-004**		**1.3700e-003**	**1.3700e-003**		**1.3700e-003**	**1.3700e-003**	**0.0000**	**31.2829**	**31.2829**	**7.4900e-003**	**0.0000**	**31.4702**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.8000e-004	0.0316	8.5400e-003	8.0000e-005	2.1300e-003	6.0000e-005	2.1900e-003	6.1000e-004	6.0000e-005	6.7000e-004	0.0000	8.2462	8.2462	4.9000e-004	0.0000	8.2585
Worker	3.4300e-003	2.5700e-003	0.0296	9.0000e-005	9.3200e-003	7.0000e-005	9.3900e-003	2.4800e-003	7.0000e-005	2.5400e-003	0.0000	8.1151	8.1151	2.2000e-004	0.0000	8.1207
Total	**4.4100e-003**	**0.0342**	**0.0382**	**1.7000e-004**	**0.0115**	**1.3000e-004**	**0.0116**	**3.0900e-003**	**1.3000e-004**	**3.2100e-003**	**0.0000**	**16.3613**	**16.3613**	**7.1000e-004**	**0.0000**	**16.3792**

3.6 Stu Center Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0345	0.3458	0.3910	6.1000e-004		0.0183	0.0183		0.0168	0.0168	0.0000	52.7414	52.7414	0.0167	0.0000	53.1593

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0345**	**0.3458**	**0.3910**	**6.1000e-004**		**0.0183**	**0.0183**		**0.0168**	**0.0168**	**0.0000**	**52.7414**	**52.7414**	**0.0167**	**0.0000**	**53.1593**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2300e-003	1.7300e-003	0.0196	6.0000e-005	5.6700e-003	5.0000e-005	5.7200e-003	1.5100e-003	4.0000e-005	1.5500e-003	0.0000	5.1177	5.1177	1.5000e-004	0.0000	5.1214
Total	**2.2300e-003**	**1.7300e-003**	**0.0196**	**6.0000e-005**	**5.6700e-003**	**5.0000e-005**	**5.7200e-003**	**1.5100e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**5.1177**	**5.1177**	**1.5000e-004**	**0.0000**	**5.1214**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.1500e-003	0.0435	0.4523	6.1000e-004		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003	0.0000	52.7413	52.7413	0.0167	0.0000	53.1593
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1500e-003**	**0.0435**	**0.4523**	**6.1000e-004**		**1.4400e-003**	**1.4400e-003**		**1.4400e-003**	**1.4400e-003**	**0.0000**	**52.7413**	**52.7413**	**0.0167**	**0.0000**	**53.1593**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2300e-003	1.7300e-003	0.0196	6.0000e-005	5.6700e-003	5.0000e-005	5.7200e-003	1.5100e-003	4.0000e-005	1.5500e-003	0.0000	5.1177	5.1177	1.5000e-004	0.0000	5.1214
Total	**2.2300e-003**	**1.7300e-003**	**0.0196**	**6.0000e-005**	**5.6700e-003**	**5.0000e-005**	**5.7200e-003**	**1.5100e-003**	**4.0000e-005**	**1.5500e-003**	**0.0000**	**5.1177**	**5.1177**	**1.5000e-004**	**0.0000**	**5.1214**

3.7 Stu Center Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4606					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.8000e-003	0.0405	0.0482	8.0000e-005		2.4900e-003	2.4900e-003		2.4900e-003	2.4900e-003	0.0000	6.7661	6.7661	4.6000e-004	0.0000	6.7777
Total	**0.4664**	**0.0405**	**0.0482**	**8.0000e-005**		**2.4900e-003**	**2.4900e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**6.7661**	**6.7661**	**4.6000e-004**	**0.0000**	**6.7777**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4800e-003	1.1500e-003	0.0130	4.0000e-005	3.7800e-003	3.0000e-005	3.8100e-003	1.0000e-003	3.0000e-005	1.0300e-003	0.0000	3.4068	3.4068	1.0000e-004	0.0000	3.4093
Total	**1.4800e-003**	**1.1500e-003**	**0.0130**	**4.0000e-005**	**3.7800e-003**	**3.0000e-005**	**3.8100e-003**	**1.0000e-003**	**3.0000e-005**	**1.0300e-003**	**0.0000**	**3.4068**	**3.4068**	**1.0000e-004**	**0.0000**	**3.4093**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4606					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.9000e-004	3.4100e-003	0.0486	8.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	6.7661	6.7661	4.6000e-004	0.0000	6.7777
Total	**0.4614**	**3.4100e-003**	**0.0486**	**8.0000e-005**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**	**0.0000**	**6.7661**	**6.7661**	**4.6000e-004**	**0.0000**	**6.7777**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.4800e-003	1.1500e-003	0.0130	4.0000e-005	3.7800e-003	3.0000e-005	3.8100e-003	1.0000e-003	3.0000e-005	1.0300e-003	0.0000	3.4068	3.4068	1.0000e-004	0.0000	3.4093
Total	**1.4800e-003**	**1.1500e-003**	**0.0130**	**4.0000e-005**	**3.7800e-003**	**3.0000e-005**	**3.8100e-003**	**1.0000e-003**	**3.0000e-005**	**1.0300e-003**	**0.0000**	**3.4068**	**3.4068**	**1.0000e-004**	**0.0000**	**3.4093**

3.7 Stu Center Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2347					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.7600e-003	0.0190	0.0245	4.0000e-005		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	3.4469	3.4469	2.2000e-004	0.0000	3.4525
Total	**0.2374**	**0.0190**	**0.0245**	**4.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**3.4469**	**3.4469**	**2.2000e-004**	**0.0000**	**3.4525**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	5.3000e-004	6.1100e-003	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6745	1.6745	5.0000e-005	0.0000	1.6757
Total	**7.1000e-004**	**5.3000e-004**	**6.1100e-003**	**2.0000e-005**	**1.9200e-003**	**2.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.6745**	**1.6745**	**5.0000e-005**	**0.0000**	**1.6757**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2347					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0000e-004	1.7400e-003	0.0247	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.4469	3.4469	2.2000e-004	0.0000	3.4525
Total	**0.2351**	**1.7400e-003**	**0.0247**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.4469**	**3.4469**	**2.2000e-004**	**0.0000**	**3.4525**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.1000e-004	5.3000e-004	6.1100e-003	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.6745	1.6745	5.0000e-005	0.0000	1.6757
Total	**7.1000e-004**	**5.3000e-004**	**6.1100e-003**	**2.0000e-005**	**1.9200e-003**	**2.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.6745**	**1.6745**	**5.0000e-005**	**0.0000**	**1.6757**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1905	0.7089	2.4340	8.3200e-003	0.8444	7.8200e-003	0.8523	0.2264	7.2800e-003	0.2337	0.0000	765.4790	765.4790	0.0401	0.0000	766.4814
Unmitigated	0.1905	0.7089	2.4340	8.3200e-003	0.8444	7.8200e-003	0.8523	0.2264	7.2800e-003	0.2337	0.0000	765.4790	765.4790	0.0401	0.0000	766.4814

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	946.50	387.00	42.00	2,227,083	2,227,083
Total	946.50	387.00	42.00	2,227,083	2,227,083

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Junior College (2Yr)	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	420.0450	420.0450	0.0173	3.5900e-003	421.5477
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	478.8880	478.8880	0.0198	4.0900e-003	480.6012
NaturalGas Mitigated	0.0132	0.1202	0.1010	7.2000e-004		9.1400e-003	9.1400e-003		9.1400e-003	9.1400e-003	0.0000	130.8872	130.8872	2.5100e-003	2.4000e-003	131.6649
NaturalGas Unmitigated	0.0219	0.1991	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.7638	216.7638	4.1500e-003	3.9700e-003	218.0519

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	4.062e+006	0.0219	0.1991	0.1673	1.1900e-003		0.0151	0.0151		0.0151	0.0151	0.0000	216.7638	216.7638	4.1500e-003	3.9700e-003	218.0519
Total		**0.0219**	**0.1991**	**0.1673**	**1.1900e-003**		**0.0151**	**0.0151**		**0.0151**	**0.0151**	**0.0000**	**216.7638**	**216.7638**	**4.1500e-003**	**3.9700e-003**	**218.0519**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	2.45273e+006	0.0132	0.1202	0.1010	7.2000e-004		9.1400e-003	9.1400e-003		9.1400e-003	9.1400e-003	0.0000	130.8872	130.8872	2.5100e-003	2.4000e-003	131.6649
Total		**0.0132**	**0.1202**	**0.1010**	**7.2000e-004**		**9.1400e-003**	**9.1400e-003**		**9.1400e-003**	**9.1400e-003**	**0.0000**	**130.8872**	**130.8872**	**2.5100e-003**	**2.4000e-003**	**131.6649**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	1.503e+006	478.8880	0.0198	4.0900e-003	480.6012
Total		**478.8880**	**0.0198**	**4.0900e-003**	**480.6012**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

Junior College (2Yr)	1.31832e+006	420.0450	0.0173	3.5900e-003	421.5477
Total		**420.0450**	**0.0173**	**3.5900e-003**	**421.5477**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6117	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003
Unmitigated	0.6117	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0695					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5420					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	1.8000e-004	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003
Total	**0.6117**	**2.0000e-005**	**1.9200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7200e-003**	**3.7200e-003**	**1.0000e-005**	**0.0000**	**3.9700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0695					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5420					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7200e-003	3.7200e-003	1.0000e-005	0.0000	3.9700e-003
Total	**0.6117**	**2.0000e-005**	**1.9200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7200e-003**	**3.7200e-003**	**1.0000e-005**	**0.0000**	**3.9700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	73.5939	0.2427	6.2700e-003	81.5292
Unmitigated	73.5939	0.2427	6.2700e-003	81.5292

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	7.35735 / 11.5077	73.5939	0.2427	6.2700e-003	81.5292
Total		**73.5939**	**0.2427**	**6.2700e-003**	**81.5292**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	7.35735 / 11.5077	73.5939	0.2427	6.2700e-003	81.5292
Total		**73.5939**	**0.2427**	**6.2700e-003**	**81.5292**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	39.5832	2.3393	0.0000	98.0658
Unmitigated	39.5832	2.3393	0.0000	98.0658

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	195	39.5832	2.3393	0.0000	98.0658
Total		**39.5832**	**2.3393**	**0.0000**	**98.0658**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Junior College (2Yr)	195	39.5832	2.3393	0.0000	98.0658
Total		**39.5832**	**2.3393**	**0.0000**	**98.0658**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt Sac Bookstore- GHG

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	45.00	1000sqft	1.03	45,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - .

Demolition - .

Vehicle Trips - .

Construction Off-road Equipment Mitigation - Tier 4

Energy Mitigation - 15% over Title 24, current (CalEEMod 2016.3.2 uses 2016 standards)

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	200.00	312.00
tblConstructionPhase	NumDays	20.00	158.00

tblConstructionPhase	NumDays	4.00	78.00
tblConstructionPhase	NumDays	10.00	338.00
tblConstructionPhase	NumDays	2.00	78.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblFleetMix	HHD	0.03	0.01
tblFleetMix	LDA	0.55	0.90
tblFleetMix	LDT1	0.04	0.01
tblFleetMix	LDT2	0.20	0.01
tblFleetMix	LHD1	0.02	0.01
tblFleetMix	LHD2	6.1960e-003	7.6130e-003
tblFleetMix	MCY	5.1420e-003	6.3607e-003
tblFleetMix	MDV	0.12	1.2054e-003
tblFleetMix	MH	8.7600e-004	9.9683e-004
tblFleetMix	MHD	0.02	0.03
tblFleetMix	OBUS	2.5150e-003	3.1351e-003
tblFleetMix	SBUS	6.8700e-004	8.5460e-004
tblFleetMix	UBUS	2.2010e-003	2.2444e-003
tblGrading	AcresOfGrading	39.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00

tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	7.00	156.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	5.00
tblTripsAndVMT	WorkerTripNumber	19.00	100.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblVehicleTrips	ST_TR	11.23	3.69
tblVehicleTrips	SU_TR	1.21	0.40
tblVehicleTrips	WD_TR	27.49	9.02

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3390	3.3975	2.3448	3.9700e-003	0.0217	0.1789	0.2006	4.8400e-003	0.1661	0.1709	0.0000	355.0338	355.0338	0.0977	0.0000	357.4751
2021	0.4160	4.5760	3.3997	8.3400e-003	0.6423	0.1809	0.8232	0.3023	0.1678	0.4701	0.0000	754.6447	754.6447	0.1419	0.0000	758.1918
2022	0.3321	3.7238	3.3924	8.8900e-003	0.1994	0.1267	0.3262	0.0550	0.1183	0.1733	0.0000	810.2282	810.2282	0.1243	0.0000	813.3344

Maximum	**0.4160**	**4.5760**	**3.3997**	**8.8900e-003**	**0.6423**	**0.1809**	**0.8232**	**0.3023**	**0.1678**	**0.4701**	**0.0000**	**810.2282**	**810.2282**	**0.1419**	**0.0000**	**813.3344**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0758	0.7035	2.5569	3.9700e-003	0.0173	0.0205	0.0378	4.1700e-003	0.0193	0.0235	0.0000	355.0334	355.0334	0.0977	0.0000	357.4747
2021	0.1835	1.9987	3.7048	8.3400e-003	0.3725	0.0379	0.4104	0.1590	0.0359	0.1949	0.0000	754.6442	754.6442	0.1419	0.0000	758.1912
2022	0.1762	1.9271	3.6595	8.8900e-003	0.1994	0.0282	0.2276	0.0550	0.0270	0.0821	0.0000	810.2278	810.2278	0.1243	0.0000	813.3340
Maximum	**0.1835**	**1.9987**	**3.7048**	**8.8900e-003**	**0.3725**	**0.0379**	**0.4104**	**0.1590**	**0.0359**	**0.1949**	**0.0000**	**810.2278**	**810.2278**	**0.1419**	**0.0000**	**813.3340**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**59.95**	**60.42**	**-8.58**	**0.00**	**31.75**	**82.20**	**49.94**	**39.74**	**81.81**	**63.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2019**	**9-30-2019**	1.8644	0.3884
2	**10-1-2019**	**12-31-2019**	1.8650	0.3891
7	**1-1-2021**	**3-31-2021**	0.5188	0.1716
8	**4-1-2021**	**6-30-2021**	0.9780	0.3084
9	**7-1-2021**	**9-30-2021**	1.5821	0.7276
10	**10-1-2021**	**12-31-2021**	1.8702	0.9459
11	**1-1-2022**	**3-31-2022**	1.6638	0.8763
12	**4-1-2022**	**6-30-2022**	1.6798	0.8835
13	**7-1-2022**	**9-30-2022**	0.6897	0.3200
		Highest	1.8702	0.9459

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1835	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003
Energy	6.5700e-003	0.0597	0.0502	3.6000e-004		4.5400e-003	4.5400e-003		4.5400e-003	4.5400e-003	0.0000	208.6955	208.6955	7.1800e-003	2.4200e-003	209.5959
Mobile	0.0817	0.3040	1.0438	3.5700e-003	0.3621	3.3500e-003	0.3655	0.0971	3.1200e-003	0.1002	0.0000	328.2801	328.2801	0.0172	0.0000	328.7100
Waste						0.0000	0.0000		0.0000	0.0000	11.8750	0.0000	11.8750	0.7018	0.0000	29.4197
Water						0.0000	0.0000		0.0000	0.0000	0.7002	21.3779	22.0782	0.0728	1.8800e-003	24.4588
Total	**0.2718**	**0.3638**	**1.0946**	**3.9300e-003**	**0.3621**	**7.8900e-003**	**0.3700**	**0.0971**	**7.6600e-003**	**0.1048**	**12.5752**	**558.3547**	**570.9299**	**0.7990**	**4.3000e-003**	**592.1857**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1835	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003
Energy	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	165.2796	165.2796	5.9600e-003	1.8000e-003	165.9638
Mobile	0.0817	0.3040	1.0438	3.5700e-003	0.3621	3.3500e-003	0.3655	0.0971	3.1200e-003	0.1002	0.0000	328.2801	328.2801	0.0172	0.0000	328.7100
Waste						0.0000	0.0000		0.0000	0.0000	11.8750	0.0000	11.8750	0.7018	0.0000	29.4197
Water						0.0000	0.0000		0.0000	0.0000	0.7002	21.3779	22.0782	0.0728	1.8800e-003	24.4588

Total	0.2692	0.3401	1.0747	3.7900e-003	0.3621	6.0900e-003	0.3682	0.0971	5.8600e-003	0.1030	12.5752	514.9388	527.5140	0.7978	3.6800e-003	548.5535

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.96	6.51	1.82	3.56	0.00	22.81	0.49	0.00	23.50	1.72	0.00	7.78	7.60	0.15	14.42	7.37

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/1/2019	12/31/2019	6	158	
2	Bookstore Site Preparation	Site Preparation	2/1/2021	5/1/2021	6	78	
3	Bookstore Grading	Grading	5/2/2021	7/31/2021	6	78	
4	Bookstore Building Construction	Building Construction	8/2/2021	7/30/2022	6	312	
5	Bookstore Paving	Paving	8/2/2021	8/30/2022	6	338	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Bookstore Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Bookstore Grading	Excavators	2	8.00	158	0.38
Bookstore Grading	Graders	1	8.00	187	0.41

Bookstore Grading	Rubber Tired Dozers	1	8.00	247	0.40
Bookstore Grading	Scrapers	0	8.00	367	0.48
Bookstore Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Bookstore Building Construction	Cranes	1	7.00	231	0.29
Bookstore Building Construction	Forklifts	3	8.00	89	0.20
Bookstore Building Construction	Generator Sets	1	8.00	84	0.74
Bookstore Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Bookstore Building Construction	Welders	1	8.00	46	0.45
Bookstore Paving	Pavers	1	8.00	130	0.42
Bookstore Paving	Paving Equipment	1	8.00	132	0.36
Bookstore Paving	Rollers	2	8.00	80	0.38
Bookstore Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Bookstore Site Preparation	Graders	1	8.00	187	0.41
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Bookstore Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	9	15.00	0.00	74.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Site Preparation	3	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Building Construction	9	100.00	156.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Bookstore Paving	6	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0600e-003	0.0000	8.0600e-003	1.2200e-003	0.0000	1.2200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3327	3.3808	2.2885	3.8000e-003		0.1788	0.1788		0.1659	0.1659	0.0000	339.6704	339.6704	0.0970	0.0000	342.0958
Total	**0.3327**	**3.3808**	**2.2885**	**3.8000e-003**	**8.0600e-003**	**0.1788**	**0.1868**	**1.2200e-003**	**0.1659**	**0.1672**	**0.0000**	**339.6704**	**339.6704**	**0.0970**	**0.0000**	**342.0958**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0117	2.4900e-003	3.0000e-005	6.4000e-004	4.0000e-005	6.8000e-004	1.7000e-004	4.0000e-005	2.1000e-004	0.0000	2.8811	2.8811	2.0000e-004	0.0000	2.8862
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9400e-003	4.9500e-003	0.0538	1.4000e-004	0.0130	1.1000e-004	0.0131	3.4500e-003	1.1000e-004	3.5500e-003	0.0000	12.4823	12.4823	4.3000e-004	0.0000	12.4930
Total	**6.2900e-003**	**0.0167**	**0.0563**	**1.7000e-004**	**0.0136**	**1.5000e-004**	**0.0138**	**3.6200e-003**	**1.5000e-004**	**3.7600e-003**	**0.0000**	**15.3634**	**15.3634**	**6.3000e-004**	**0.0000**	**15.3792**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					3.6300e-003	0.0000	3.6300e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0695	0.6868	2.5006	3.8000e-003		0.0204	0.0204		0.0192	0.0192	0.0000	339.6700	339.6700	0.0970	0.0000	342.0954
Total	**0.0695**	**0.6868**	**2.5006**	**3.8000e-003**	**3.6300e-003**	**0.0204**	**0.0240**	**5.5000e-004**	**0.0192**	**0.0198**	**0.0000**	**339.6700**	**339.6700**	**0.0970**	**0.0000**	**342.0954**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0117	2.4900e-003	3.0000e-005	6.4000e-004	4.0000e-005	6.8000e-004	1.7000e-004	4.0000e-005	2.1000e-004	0.0000	2.8811	2.8811	2.0000e-004	0.0000	2.8862
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9400e-003	4.9500e-003	0.0538	1.4000e-004	0.0130	1.1000e-004	0.0131	3.4500e-003	1.1000e-004	3.5500e-003	0.0000	12.4823	12.4823	4.3000e-004	0.0000	12.4930
Total	**6.2900e-003**	**0.0167**	**0.0563**	**1.7000e-004**	**0.0136**	**1.5000e-004**	**0.0138**	**3.6200e-003**	**1.5000e-004**	**3.7600e-003**	**0.0000**	**15.3634**	**15.3634**	**6.3000e-004**	**0.0000**	**15.3792**

3.3 Bookstore Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2349	0.0000	0.2349	0.1291	0.0000	0.1291	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0658	0.7329	0.3145	7.1000e-004		0.0325	0.0325		0.0299	0.0299	0.0000	62.6207	62.6207	0.0203	0.0000	63.1270

Total	**0.0658**	**0.7329**	**0.3145**	**7.1000e-004**	**0.2349**	**0.0325**	**0.2673**	**0.1291**	**0.0299**	**0.1590**	**0.0000**	**62.6207**	**62.6207**	**0.0203**	**0.0000**	**63.1270**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	6.5000e-004	7.3700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	2.0000e-005	5.8000e-004	0.0000	1.9284	1.9284	6.0000e-005	0.0000	1.9298
Total	**8.4000e-004**	**6.5000e-004**	**7.3700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**2.0000e-005**	**5.8000e-004**	**0.0000**	**1.9284**	**1.9284**	**6.0000e-005**	**0.0000**	**1.9298**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1057	0.0000	0.1057	0.0581	0.0000	0.0581	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0197	0.2435	0.3592	7.1000e-004		6.2800e-003	6.2800e-003		5.8400e-003	5.8400e-003	0.0000	62.6206	62.6206	0.0203	0.0000	63.1270
Total	**0.0197**	**0.2435**	**0.3592**	**7.1000e-004**	**0.1057**	**6.2800e-003**	**0.1120**	**0.0581**	**5.8400e-003**	**0.0639**	**0.0000**	**62.6206**	**62.6206**	**0.0203**	**0.0000**	**63.1270**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	6.5000e-004	7.3700e-003	2.0000e-005	2.1400e-003	2.0000e-005	2.1500e-003	5.7000e-004	2.0000e-005	5.8000e-004	0.0000	1.9284	1.9284	6.0000e-005	0.0000	1.9298
Total	**8.4000e-004**	**6.5000e-004**	**7.3700e-003**	**2.0000e-005**	**2.1400e-003**	**2.0000e-005**	**2.1500e-003**	**5.7000e-004**	**2.0000e-005**	**5.8000e-004**	**0.0000**	**1.9284**	**1.9284**	**6.0000e-005**	**0.0000**	**1.9298**

3.4 Bookstore Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2555	0.0000	0.2555	0.1313	0.0000	0.1313	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0910	0.9748	0.6579	1.2400e-003		0.0450	0.0450		0.0414	0.0414	0.0000	108.6604	108.6604	0.0351	0.0000	109.5390
Total	**0.0910**	**0.9748**	**0.6579**	**1.2400e-003**	**0.2555**	**0.0450**	**0.3005**	**0.1313**	**0.0414**	**0.1727**	**0.0000**	**108.6604**	**108.6604**	**0.0351**	**0.0000**	**109.5390**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.9600e-003	0.0221	6.0000e-005	6.4100e-003	5.0000e-005	6.4600e-003	1.7000e-003	5.0000e-005	1.7500e-003	0.0000	5.7852	5.7852	1.7000e-004	0.0000	5.7894
Total	**2.5200e-003**	**1.9600e-003**	**0.0221**	**6.0000e-005**	**6.4100e-003**	**5.0000e-005**	**6.4600e-003**	**1.7000e-003**	**5.0000e-005**	**1.7500e-003**	**0.0000**	**5.7852**	**5.7852**	**1.7000e-004**	**0.0000**	**5.7894**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1150	0.0000	0.1150	0.0591	0.0000	0.0591	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0284	0.2984	0.7549	1.2400e-003		8.8000e-003	8.8000e-003		8.2300e-003	8.2300e-003	0.0000	108.6603	108.6603	0.0351	0.0000	109.5389
Total	**0.0284**	**0.2984**	**0.7549**	**1.2400e-003**	**0.1150**	**8.8000e-003**	**0.1238**	**0.0591**	**8.2300e-003**	**0.0673**	**0.0000**	**108.6603**	**108.6603**	**0.0351**	**0.0000**	**109.5389**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5200e-003	1.9600e-003	0.0221	6.0000e-005	6.4100e-003	5.0000e-005	6.4600e-003	1.7000e-003	5.0000e-005	1.7500e-003	0.0000	5.7852	5.7852	1.7000e-004	0.0000	5.7894

Total	**2.5200e-003**	**1.9600e-003**	**0.0221**	**6.0000e-005**	**6.4100e-003**	**5.0000e-005**	**6.4600e-003**	**1.7000e-003**	**5.0000e-005**	**1.7500e-003**	**0.0000**	**5.7852**	**5.7852**	**1.7000e-004**	**0.0000**	**5.7894**

3.5 Bookstore Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1245	1.1418	1.0857	1.7600e-003		0.0628	0.0628		0.0590	0.0590	0.0000	151.7224	151.7224	0.0366	0.0000	152.6375
Total	**0.1245**	**1.1418**	**1.0857**	**1.7600e-003**		**0.0628**	**0.0628**		**0.0590**	**0.0590**	**0.0000**	**151.7224**	**151.7224**	**0.0366**	**0.0000**	**152.6375**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0317	1.0084	0.2734	2.6000e-003	0.0644	2.0600e-003	0.0664	0.0186	1.9700e-003	0.0205	0.0000	251.8702	251.8702	0.0155	0.0000	252.2564
Worker	0.0282	0.0219	0.2477	7.2000e-004	0.0718	5.9000e-004	0.0724	0.0191	5.4000e-004	0.0196	0.0000	64.7741	64.7741	1.9100e-003	0.0000	64.8217
Total	**0.0599**	**1.0304**	**0.5211**	**3.3200e-003**	**0.1361**	**2.6500e-003**	**0.1388**	**0.0376**	**2.5100e-003**	**0.0402**	**0.0000**	**316.6443**	**316.6443**	**0.0174**	**0.0000**	**317.0782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0487	0.2985	1.1526	1.7600e-003		0.0147	0.0147		0.0141	0.0141	0.0000	151.7222	151.7222	0.0366	0.0000	152.6373
Total	**0.0487**	**0.2985**	**1.1526**	**1.7600e-003**		**0.0147**	**0.0147**		**0.0141**	**0.0141**	**0.0000**	**151.7222**	**151.7222**	**0.0366**	**0.0000**	**152.6373**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0317	1.0084	0.2734	2.6000e-003	0.0644	2.0600e-003	0.0664	0.0186	1.9700e-003	0.0205	0.0000	251.8702	251.8702	0.0155	0.0000	252.2564
Worker	0.0282	0.0219	0.2477	7.2000e-004	0.0718	5.9000e-004	0.0724	0.0191	5.4000e-004	0.0196	0.0000	64.7741	64.7741	1.9100e-003	0.0000	64.8217
Total	**0.0599**	**1.0304**	**0.5211**	**3.3200e-003**	**0.1361**	**2.6500e-003**	**0.1388**	**0.0376**	**2.5100e-003**	**0.0402**	**0.0000**	**316.6443**	**316.6443**	**0.0174**	**0.0000**	**317.0782**

3.5 Bookstore Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.1544	1.4132	1.4809	2.4400e-003		0.0732	0.0732		0.0689	0.0689	0.0000	209.7114	209.7114	0.0502	0.0000	210.9674
Total	**0.1544**	**1.4132**	**1.4809**	**2.4400e-003**		**0.0732**	**0.0732**		**0.0689**	**0.0689**	**0.0000**	**209.7114**	**209.7114**	**0.0502**	**0.0000**	**210.9674**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0412	1.3237	0.3574	3.5500e-003	0.0889	2.4800e-003	0.0914	0.0257	2.3800e-003	0.0280	0.0000	344.9473	344.9473	0.0206	0.0000	345.4623
Worker	0.0365	0.0274	0.3153	9.6000e-004	0.0992	7.9000e-004	0.1000	0.0263	7.3000e-004	0.0271	0.0000	86.3510	86.3510	2.3800e-003	0.0000	86.4105
Total	**0.0777**	**1.3511**	**0.6728**	**4.5100e-003**	**0.1881**	**3.2700e-003**	**0.1914**	**0.0520**	**3.1100e-003**	**0.0551**	**0.0000**	**431.2983**	**431.2983**	**0.0230**	**0.0000**	**431.8728**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0628	0.3874	1.5883	2.4400e-003		0.0173	0.0173		0.0166	0.0166	0.0000	209.7111	209.7111	0.0502	0.0000	210.9671
Total	**0.0628**	**0.3874**	**1.5883**	**2.4400e-003**		**0.0173**	**0.0173**		**0.0166**	**0.0166**	**0.0000**	**209.7111**	**209.7111**	**0.0502**	**0.0000**	**210.9671**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0412	1.3237	0.3574	3.5500e-003	0.0889	2.4800e-003	0.0914	0.0257	2.3800e-003	0.0280	0.0000	344.9473	344.9473	0.0206	0.0000	345.4623
Worker	0.0365	0.0274	0.3153	9.6000e-004	0.0992	7.9000e-004	0.1000	0.0263	7.3000e-004	0.0271	0.0000	86.3510	86.3510	2.3800e-003	0.0000	86.4105
Total	**0.0777**	**1.3511**	**0.6728**	**4.5100e-003**	**0.1881**	**3.2700e-003**	**0.1914**	**0.0520**	**3.1100e-003**	**0.0551**	**0.0000**	**431.2983**	**431.2983**	**0.0230**	**0.0000**	**431.8728**

3.6 Bookstore Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0687	0.6914	0.7663	1.1600e-003		0.0379	0.0379		0.0350	0.0350	0.0000	100.8060	100.8060	0.0321	0.0000	101.6087
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0687**	**0.6914**	**0.7663**	**1.1600e-003**		**0.0379**	**0.0379**		**0.0350**	**0.0350**	**0.0000**	**100.8060**	**100.8060**	**0.0321**	**0.0000**	**101.6087**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8200e-003	2.1900e-003	0.0248	7.0000e-005	7.1800e-003	6.0000e-005	7.2400e-003	1.9100e-003	5.0000e-005	1.9600e-003	0.0000	6.4774	6.4774	1.9000e-004	0.0000	6.4822
Total	**2.8200e-003**	**2.1900e-003**	**0.0248**	**7.0000e-005**	**7.1800e-003**	**6.0000e-005**	**7.2400e-003**	**1.9100e-003**	**5.0000e-005**	**1.9600e-003**	**0.0000**	**6.4774**	**6.4774**	**1.9000e-004**	**0.0000**	**6.4822**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0206	0.1232	0.8628	1.1600e-003		5.3400e-003	5.3400e-003		5.1000e-003	5.1000e-003	0.0000	100.8058	100.8058	0.0321	0.0000	101.6085
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1232**	**0.8628**	**1.1600e-003**		**5.3400e-003**	**5.3400e-003**		**5.1000e-003**	**5.1000e-003**	**0.0000**	**100.8058**	**100.8058**	**0.0321**	**0.0000**	**101.6085**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8200e-003	2.1900e-003	0.0248	7.0000e-005	7.1800e-003	6.0000e-005	7.2400e-003	1.9100e-003	5.0000e-005	1.9600e-003	0.0000	6.4774	6.4774	1.9000e-004	0.0000	6.4822
Total	**2.8200e-003**	**2.1900e-003**	**0.0248**	**7.0000e-005**	**7.1800e-003**	**6.0000e-005**	**7.2400e-003**	**1.9100e-003**	**5.0000e-005**	**1.9600e-003**	**0.0000**	**6.4774**	**6.4774**	**1.9000e-004**	**0.0000**	**6.4822**

3.6 Bookstore Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0959	0.9564	1.2027	1.8300e-003		0.0501	0.0501		0.0462	0.0462	0.0000	159.3431	159.3431	0.0508	0.0000	160.6120
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0959**	**0.9564**	**1.2027**	**1.8300e-003**		**0.0501**	**0.0501**		**0.0462**	**0.0462**	**0.0000**	**159.3431**	**159.3431**	**0.0508**	**0.0000**	**160.6120**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1800e-003	3.1300e-003	0.0361	1.1000e-004	0.0113	9.0000e-005	0.0114	3.0100e-003	8.0000e-005	3.1000e-003	0.0000	9.8755	9.8755	2.7000e-004	0.0000	9.8823
Total	**4.1800e-003**	**3.1300e-003**	**0.0361**	**1.1000e-004**	**0.0113**	**9.0000e-005**	**0.0114**	**3.0100e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**9.8755**	**9.8755**	**2.7000e-004**	**0.0000**	**9.8823**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0316	0.1855	1.3624	1.8300e-003		7.5400e-003	7.5400e-003		7.2400e-003	7.2400e-003	0.0000	159.3429	159.3429	0.0508	0.0000	160.6118
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0316**	**0.1855**	**1.3624**	**1.8300e-003**		**7.5400e-003**	**7.5400e-003**		**7.2400e-003**	**7.2400e-003**	**0.0000**	**159.3429**	**159.3429**	**0.0508**	**0.0000**	**160.6118**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1800e-003	3.1300e-003	0.0361	1.1000e-004	0.0113	9.0000e-005	0.0114	3.0100e-003	8.0000e-005	3.1000e-003	0.0000	9.8755	9.8755	2.7000e-004	0.0000	9.8823
Total	**4.1800e-003**	**3.1300e-003**	**0.0361**	**1.1000e-004**	**0.0113**	**9.0000e-005**	**0.0114**	**3.0100e-003**	**8.0000e-005**	**3.1000e-003**	**0.0000**	**9.8755**	**9.8755**	**2.7000e-004**	**0.0000**	**9.8823**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0817	0.3040	1.0438	3.5700e-003	0.3621	3.3500e-003	0.3655	0.0971	3.1200e-003	0.1002	0.0000	328.2801	328.2801	0.0172	0.0000	328.7100
Unmitigated	0.0817	0.3040	1.0438	3.5700e-003	0.3621	3.3500e-003	0.3655	0.0971	3.1200e-003	0.1002	0.0000	328.2801	328.2801	0.0172	0.0000	328.7100

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	405.90	166.05	18.00	955,102	955,102
Total	405.90	166.05	18.00	955,102	955,102

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Junior College (2Yr)	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	126.0135	126.0135	5.2000e-003	1.0800e-003	126.4643
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	143.6664	143.6664	5.9300e-003	1.2300e-003	144.1804
NaturalGas Mitigated	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.2661	39.2661	7.5000e-004	7.2000e-004	39.4995
NaturalGas Unmitigated	6.5700e-003	0.0597	0.0502	3.6000e-004		4.5400e-003	4.5400e-003		4.5400e-003	4.5400e-003	0.0000	65.0291	65.0291	1.2500e-003	1.1900e-003	65.4156

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	1.2186e+006	6.5700e-003	0.0597	0.0502	3.6000e-004		4.5400e-003	4.5400e-003		4.5400e-003	4.5400e-003	0.0000	65.0291	65.0291	1.2500e-003	1.1900e-003	65.4156
Total		**6.5700e-003**	**0.0597**	**0.0502**	**3.6000e-004**		**4.5400e-003**	**4.5400e-003**		**4.5400e-003**	**4.5400e-003**	**0.0000**	**65.0291**	**65.0291**	**1.2500e-003**	**1.1900e-003**	**65.4156**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	735820	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.2661	39.2661	7.5000e-004	7.2000e-004	39.4995
Total		**3.9700e-003**	**0.0361**	**0.0303**	**2.2000e-004**		**2.7400e-003**	**2.7400e-003**		**2.7400e-003**	**2.7400e-003**	**0.0000**	**39.2661**	**39.2661**	**7.5000e-004**	**7.2000e-004**	**39.4995**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	450900	143.6664	5.9300e-003	1.2300e-003	144.1804
Total		**143.6664**	**5.9300e-003**	**1.2300e-003**	**144.1804**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

Junior College (2Yr)	395496	126.0135	5.2000e-003	1.0800e-003	126.4643
Total		**126.0135**	**5.2000e-003**	**1.0800e-003**	**126.4643**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1835	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003
Unmitigated	0.1835	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1626					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	5.0000e-005	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003
Total	**0.1835**	**1.0000e-005**	**5.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.1200e-003**	**1.1200e-003**	**0.0000**	**0.0000**	**1.1900e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1626					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	1.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.1200e-003	1.1200e-003	0.0000	0.0000	1.1900e-003
Total	**0.1835**	**1.0000e-005**	**5.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.1200e-003**	**1.1200e-003**	**0.0000**	**0.0000**	**1.1900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.0782	0.0728	1.8800e-003	24.4588
Unmitigated	22.0782	0.0728	1.8800e-003	24.4588

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	2.20721 / 3.4523	22.0782	0.0728	1.8800e-003	24.4588
Total		**22.0782**	**0.0728**	**1.8800e-003**	**24.4588**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	2.20721 / 3.4523	22.0782	0.0728	1.8800e-003	24.4588
Total		**22.0782**	**0.0728**	**1.8800e-003**	**24.4588**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.8750	0.7018	0.0000	29.4197
Unmitigated	11.8750	0.7018	0.0000	29.4197

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	58.5	11.8750	0.7018	0.0000	29.4197
Total		**11.8750**	**0.7018**	**0.0000**	**29.4197**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Junior College (2Yr)	58.5	11.8750	0.7018	0.0000	29.4197
Total		**11.8750**	**0.7018**	**0.0000**	**29.4197**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mt SAC Sand Volleyball Courts and Parking Lot W - Los Angeles-South Coast County, Annual

Mt SAC Sand Volleyball Courts and Parking Lot W

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	2.00	1000sqft	0.05	2,000.00	0
City Park	0.05	Acre	0.05	2,003.76	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Volleyball Court and Parking Lot (striping only)

Construction Phase - Assigned 1 week to paint parking strips

Off-road Equipment -

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Trips and VMT - .

Demolition -

Grading -

Architectural Coating - .

Construction Off-road Equipment Mitigation - Tier 4 Equipment

Energy Mitigation -

Vehicle Trips - .

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	10.00	48.00
tblConstructionPhase	NumDays	2.00	48.00
tblConstructionPhase	NumDays	1.00	48.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblFleetMix	HHD	0.03	9.7478e-003
tblFleetMix	HHD	0.03	9.7478e-003
tblFleetMix	LDA	0.55	0.78
tblFleetMix	LDA	0.55	0.78
tblFleetMix	LDT1	0.05	0.02
tblFleetMix	LDT1	0.05	0.02
tblFleetMix	LDT2	0.20	0.05
tblFleetMix	LDT2	0.20	0.05
tblFleetMix	LHD1	0.02	0.05
tblFleetMix	LHD1	0.02	0.05
tblFleetMix	LHD2	6.1430e-003	9.7478e-003
tblFleetMix	LHD2	6.1430e-003	9.7478e-003
tblFleetMix	MCY	5.0780e-003	4.7082e-003
tblFleetMix	MCY	5.0780e-003	4.7082e-003
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MDV	0.12	0.05
tblFleetMix	MH	8.9100e-004	1.0147e-003
tblFleetMix	MH	8.9100e-004	1.0147e-003
tblFleetMix	MHD	0.02	9.7478e-003
tblFleetMix	MHD	0.02	9.7478e-003
tblFleetMix	OBUS	2.4790e-003	0.00
tblFleetMix	OBUS	2.4790e-003	0.00
tblFleetMix	SBUS	6.8200e-004	9.7478e-003
tblFleetMix	SBUS	6.8200e-004	9.7478e-003
tblFleetMix	UBUS	2.2700e-003	9.7478e-003
tblFleetMix	UBUS	2.2700e-003	9.7478e-003
tblLandUse	LandUseSquareFeet	2,178.00	2,003.76
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00

tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblTripsAndVMT	HaulingTripNumber	17.00	0.00
tblVehicleTrips	ST_TR	22.75	555.58
tblVehicleTrips	SU_TR	16.74	59.86
tblVehicleTrips	WD_TR	1.89	1,360.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0787	0.7928	0.4936	9.2000e-004	0.1126	0.0395	0.1522	0.0542	0.0367	0.0910	0.0000	80.9819	80.9819	0.0215	0.0000	81.5203
2021	0.0945	0.9982	0.6186	1.2900e-003	0.2513	0.0440	0.2953	0.1143	0.0409	0.1552	0.0000	112.9366	112.9366	0.0317	0.0000	113.7282
Maximum	**0.0945**	**0.9982**	**0.6186**	**1.2900e-003**	**0.2513**	**0.0440**	**0.2953**	**0.1143**	**0.0409**	**0.1552**	**0.0000**	**112.9366**	**112.9366**	**0.0317**	**0.0000**	**113.7282**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.0124	0.0466	0.5227	9.2000e-004	0.0533	1.4200e-003	0.0547	0.0251	1.4200e-003	0.0265	0.0000	80.9818	80.9818	0.0215	0.0000	81.5202

2021	0.0169	0.0658	0.6698	1.2900e-003	0.1157	2.0200e-003	0.1177	0.0521	2.0200e-003	0.0542	0.0000	112.9365	112.9365	0.0317	0.0000	113.7281
Maximum	**0.0169**	**0.0658**	**0.6698**	**1.2900e-003**	**0.1157**	**2.0200e-003**	**0.1177**	**0.0521**	**2.0200e-003**	**0.0542**	**0.0000**	**112.9365**	**112.9365**	**0.0317**	**0.0000**	**113.7281**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**83.12**	**93.73**	**-7.22**	**0.00**	**53.57**	**95.88**	**61.47**	**54.18**	**95.57**	**67.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-1-2020**	**12-31-2020**	0.8701	0.0590
2	**1-1-2021**	**3-31-2021**	1.0944	0.0829
		Highest	1.0944	0.0829

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.8000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.2230	0.2230	1.0000e-005	0.0000	0.2238
Mobile	0.0161	0.0767	0.2050	6.3000e-004	0.0596	8.0000e-004	0.0604	0.0163	7.5000e-004	0.0170	0.0000	58.6518	58.6518	6.2200e-003	0.0000	58.8071
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.2109	0.2109	1.0000e-005	0.0000	0.2116
Total	**0.0163**	**0.0767**	**0.2050**	**6.3000e-004**	**0.0596**	**8.0000e-004**	**0.0604**	**0.0163**	**7.5000e-004**	**0.0170**	**0.0000**	**59.0857**	**59.0857**	**6.2400e-003**	**0.0000**	**59.2427**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.8000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.2230	0.2230	1.0000e-005	0.0000	0.2238
Mobile	0.0161	0.0767	0.2050	6.3000e-004	0.0596	8.0000e-004	0.0604	0.0163	7.5000e-004	0.0170	0.0000	58.6518	58.6518	6.2200e-003	0.0000	58.8071
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.2109	0.2109	1.0000e-005	0.0000	0.2116
Total	**0.0163**	**0.0767**	**0.2050**	**6.3000e-004**	**0.0596**	**8.0000e-004**	**0.0604**	**0.0163**	**7.5000e-004**	**0.0170**	**0.0000**	**59.0857**	**59.0857**	**6.2400e-003**	**0.0000**	**59.2427**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Vball Demolition	Demolition	10/1/2020	11/25/2020	6	48	
2	Vball Site Preparation	Site Preparation	11/26/2020	1/20/2021	6	48	
3	Vball Grading	Grading	1/21/2021	3/17/2021	6	48	
4	Architectural Coating	Architectural Coating	3/18/2021	3/24/2021	6	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.05

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 120

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Vball Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Vball Demolition	Excavators	1	8.00	158	0.38
Vball Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Vball Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Vball Site Preparation	Graders	1	8.00	187	0.41
Vball Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Vball Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Vball Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Vball Grading	Excavators	1	8.00	158	0.38
Vball Grading	Graders	1	8.00	187	0.41
Vball Grading	Rubber Tired Dozers	1	8.00	247	0.40
Vball Grading	Scrapers	1	8.00	367	0.48
Vball Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Vball Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Vball Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Vball Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7900e-003	0.0000	1.7900e-003	2.7000e-004	0.0000	2.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0494	0.4848	0.3481	5.9000e-004		0.0257	0.0257		0.0240	0.0240	0.0000	51.6285	51.6285	0.0133	0.0000	51.9620
Total	**0.0494**	**0.4848**	**0.3481**	**5.9000e-004**	**1.7900e-003**	**0.0257**	**0.0275**	**2.7000e-004**	**0.0240**	**0.0243**	**0.0000**	**51.6285**	**51.6285**	**0.0133**	**0.0000**	**51.9620**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.1600e-003	0.0128	4.0000e-005	3.4200e-003	3.0000e-005	3.4500e-003	9.1000e-004	3.0000e-005	9.3000e-004	0.0000	3.1866	3.1866	1.0000e-004	0.0000	3.1891
Total	**1.4400e-003**	**1.1600e-003**	**0.0128**	**4.0000e-005**	**3.4200e-003**	**3.0000e-005**	**3.4500e-003**	**9.1000e-004**	**3.0000e-005**	**9.3000e-004**	**0.0000**	**3.1866**	**3.1866**	**1.0000e-004**	**0.0000**	**3.1891**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.0000e-004	0.0000	8.0000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9000e-003	0.0299	0.3630	5.9000e-004		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	51.6284	51.6284	0.0133	0.0000	51.9620
Total	**6.9000e-003**	**0.0299**	**0.3630**	**5.9000e-004**	**8.0000e-004**	**9.2000e-004**	**1.7200e-003**	**1.2000e-004**	**9.2000e-004**	**1.0400e-003**	**0.0000**	**51.6284**	**51.6284**	**0.0133**	**0.0000**	**51.9620**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4400e-003	1.1600e-003	0.0128	4.0000e-005	3.4200e-003	3.0000e-005	3.4500e-003	9.1000e-004	3.0000e-005	9.3000e-004	0.0000	3.1866	3.1866	1.0000e-004	0.0000	3.1891
Total	**1.4400e-003**	**1.1600e-003**	**0.0128**	**4.0000e-005**	**3.4200e-003**	**3.0000e-005**	**3.4500e-003**	**9.1000e-004**	**3.0000e-005**	**9.3000e-004**	**0.0000**	**3.1866**	**3.1866**	**1.0000e-004**	**0.0000**	**3.1891**

3.3 Vball Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.1061	0.0000	0.1061	0.0527	0.0000	0.0527	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0274	0.3063	0.1275	2.8000e-004		0.0138	0.0138		0.0127	0.0127	0.0000	24.9003	24.9003	8.0500e-003	0.0000	25.1016
Total	**0.0274**	**0.3063**	**0.1275**	**2.8000e-004**	**0.1061**	**0.0138**	**0.1199**	**0.0527**	**0.0127**	**0.0654**	**0.0000**	**24.9003**	**24.9003**	**8.0500e-003**	**0.0000**	**25.1016**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7000e-004	4.6000e-004	5.1000e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2665	1.2665	4.0000e-005	0.0000	1.2675
Total	**5.7000e-004**	**4.6000e-004**	**5.1000e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2665**	**1.2665**	**4.0000e-005**	**0.0000**	**1.2675**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0477	0.0000	0.0477	0.0237	0.0000	0.0237	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4700e-003	0.0150	0.1418	2.8000e-004		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	24.9003	24.9003	8.0500e-003	0.0000	25.1016
Total	**3.4700e-003**	**0.0150**	**0.1418**	**2.8000e-004**	**0.0477**	**4.6000e-004**	**0.0482**	**0.0237**	**4.6000e-004**	**0.0242**	**0.0000**	**24.9003**	**24.9003**	**8.0500e-003**	**0.0000**	**25.1016**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7000e-004	4.6000e-004	5.1000e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.2665	1.2665	4.0000e-005	0.0000	1.2675
Total	**5.7000e-004**	**4.6000e-004**	**5.1000e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**	**0.0000**	**1.2665**	**1.2665**	**4.0000e-005**	**0.0000**	**1.2675**

3.3 Vball Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0639	0.0000	0.0639	0.0295	0.0000	0.0295	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0143	0.1597	0.0686	1.6000e-004		7.0700e-003	7.0700e-003		6.5100e-003	6.5100e-003	0.0000	13.6481	13.6481	4.4100e-003	0.0000	13.7585
Total	**0.0143**	**0.1597**	**0.0686**	**1.6000e-004**	**0.0639**	**7.0700e-003**	**0.0710**	**0.0295**	**6.5100e-003**	**0.0360**	**0.0000**	**13.6481**	**13.6481**	**4.4100e-003**	**0.0000**	**13.7585**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0288	0.0000	0.0288	0.0133	0.0000	0.0133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9000e-003	8.2400e-003	0.0778	1.6000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.6481	13.6481	4.4100e-003	0.0000	13.7584
Total	**1.9000e-003**	**8.2400e-003**	**0.0778**	**1.6000e-004**	**0.0288**	**2.5000e-004**	**0.0290**	**0.0133**	**2.5000e-004**	**0.0135**	**0.0000**	**13.6481**	**13.6481**	**4.4100e-003**	**0.0000**	**13.7584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

3.4 Vball Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1827	0.0000	0.1827	0.0836	0.0000	0.0836	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0775	0.8325	0.5284	1.0800e-003		0.0366	0.0366		0.0340	0.0340	0.0000	94.2900	94.2900	0.0271	0.0000	94.9668
Total	**0.0775**	**0.8325**	**0.5284**	**1.0800e-003**	**0.1827**	**0.0366**	**0.2193**	**0.0836**	**0.0340**	**0.1176**	**0.0000**	**94.2900**	**94.2900**	**0.0271**	**0.0000**	**94.9668**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.2100e-003	0.0136	4.0000e-005	3.9400e-003	3.0000e-005	3.9800e-003	1.0500e-003	3.0000e-005	1.0800e-003	0.0000	3.5601	3.5601	1.0000e-004	0.0000	3.5627
Total	**1.5500e-003**	**1.2100e-003**	**0.0136**	**4.0000e-005**	**3.9400e-003**	**3.0000e-005**	**3.9800e-003**	**1.0500e-003**	**3.0000e-005**	**1.0800e-003**	**0.0000**	**3.5601**	**3.5601**	**1.0000e-004**	**0.0000**	**3.5627**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0822	0.0000	0.0822	0.0376	0.0000	0.0376	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0129	0.0558	0.5703	1.0800e-003		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	94.2899	94.2899	0.0271	0.0000	94.9667
Total	**0.0129**	**0.0558**	**0.5703**	**1.0800e-003**	**0.0822**	**1.7200e-003**	**0.0839**	**0.0376**	**1.7200e-003**	**0.0393**	**0.0000**	**94.2899**	**94.2899**	**0.0271**	**0.0000**	**94.9667**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.2100e-003	0.0136	4.0000e-005	3.9400e-003	3.0000e-005	3.9800e-003	1.0500e-003	3.0000e-005	1.0800e-003	0.0000	3.5601	3.5601	1.0000e-004	0.0000	3.5627
Total	**1.5500e-003**	**1.2100e-003**	**0.0136**	**4.0000e-005**	**3.9400e-003**	**3.0000e-005**	**3.9800e-003**	**1.0500e-003**	**3.0000e-005**	**1.0800e-003**	**0.0000**	**3.5601**	**3.5601**	**1.0000e-004**	**0.0000**	**3.5627**

3.5 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.6000e-004	4.5800e-003	5.4500e-003	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	0.7660	0.7660	5.0000e-005	0.0000	0.7673
Total	**8.3000e-004**	**4.5800e-003**	**5.4500e-003**	**1.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**0.7660**	**0.7660**	**5.0000e-005**	**0.0000**	**0.7673**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	9.0000e-005	3.9000e-004	5.5000e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.7660	0.7660	5.0000e-005	0.0000	0.7673
Total	**2.6000e-004**	**3.9000e-004**	**5.5000e-003**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.7660**	**0.7660**	**5.0000e-005**	**0.0000**	**0.7673**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0161	0.0767	0.2050	6.3000e-004	0.0596	8.0000e-004	0.0604	0.0163	7.5000e-004	0.0170	0.0000	58.6518	58.6518	6.2200e-003	0.0000	58.8071

Unmitigated	0.0161	0.0767	0.2050	6.3000e-004	0.0596	8.0000e-004	0.0604	0.0163	7.5000e-004	0.0170	0.0000	58.6518	58.6518	6.2200e-003	0.0000	58.8071

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	68.00	27.78	2.99	152,416	152,416
Parking Lot	0.00	0.00	0.00		
Total	68.00	27.78	2.99	152,416	152,416

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.779825	0.019496	0.048739	0.048739	0.048739	0.009748	0.009748	0.009748	0.000000	0.009748	0.004708	0.009748	0.001015
Parking Lot	0.779825	0.019496	0.048739	0.048739	0.048739	0.009748	0.009748	0.009748	0.000000	0.009748	0.004708	0.009748	0.001015

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.2230	0.2230	1.0000e-005	0.0000	0.2238
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.2230	0.2230	1.0000e-005	0.0000	0.2238
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	700	0.2230	1.0000e-005	0.0000	0.2238
Total		**0.2230**	**1.0000e-005**	**0.0000**	**0.2238**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	700	0.2230	1.0000e-005	0.0000	0.2238
Total		**0.2230**	**1.0000e-005**	**0.0000**	**0.2238**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.8000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Unmitigated	1.8000e-004	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Total	**1.8000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	3.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.0000e-005	5.0000e-005	0.0000	0.0000	5.0000e-005
Total	**1.8000e-004**	**0.0000**	**3.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0000**	**5.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.2109	1.0000e-005	0.0000	0.2116
Unmitigated	0.2109	1.0000e-005	0.0000	0.2116

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
City Park	0 / 0.0595741	0.2109	1.0000e-005	0.0000	0.2116
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.2109**	**1.0000e-005**	**0.0000**	**0.2116**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.0595741	0.2109	1.0000e-005	0.0000	0.2116
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.2109**	**1.0000e-005**	**0.0000**	**0.2116**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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October 24, 2018

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Mt. San Antonio College
Facilities Planning & Management
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Re: Impact Assessment for Historic Resources included in the Proposed Mount San Antonio College 2018 Educational and Facilities Master Plan

Dear Ms. Klein

ASM Affiliates, Inc. (ASM) has prepared this cultural resource technical memo for the Draft Environmental Impact Report (EIR) being prepared by Psomas for the Mount San Antonio College *2018 Educational and Facilities Master Plan (EFMP)*. This report was prepared in compliance with federal and state guidelines, Walnut City ordinances, and the California Environmental Quality Act (CEQA). The scope of the proposed Mount San Antonio College 2018 Educational and Facilities Master Plan construction and renovation projects includes the renovation of a number of historical resources in the Mount San Antonio College Historic District. ASM has previously prepared the following cultural resources reports for historic buildings on the Mount San Antonio College (Mt. SAC) campus:

- 2012 *Historic Resources Analysis for Five Buildings at Mount San Antonio College* for 5 contributing buildings in the Mt. SAC Historic District;
- 2016 *Cultural Resource Evaluation Report for Mt. SAC SEIR for 2015 Facilities Master Plan Update and Physical Education Projects* for 33 contributing buildings in the Mt. SAC Historic District (listed in the report's Table 4 and shown in Figure 42);
- 2018 Historic American Buildings Survey (HABS) documentation for 17 of the buildings in the historic district (shown in the HABS report's Table 1) that were expected to be impacted by planned campus construction projects, including the demolition of the National Register of Historic Places (NRHP) individually eligible Hilmer Lodge Stadium.

Subsequent to ASM's preparation of the above cultural resource reports, Mt. SAC distributed a 2018 Notice of Preparation (NOP) of a Draft EIR in relation to the proposed Mt. San Antonio College EFMP. This letter report assesses the potential impacts from the EFMP to the contributing resources to the Mount San Antonio College Historic District identified in ASM's prior comprehensive evaluation report (Davis 2016).

2018 Educational and Facilities Master Plan (EFMP)

The scope of the 2018 EFMP is a 10-year period of development and redevelopment of the Mt. SAC campus, and includes multiple renovation, demolition, and construction projects; the overall project has been ordered as Phase 1A, Phase 1B, Phase 2, and Phase 3. Phases 1A, 1B, and 2 are included in the EFMP and the EIR and will include 17 contributing resources in the Mt. SAC Historic District

(highlighted in Table 1, below). Although Phase 3 is outside of the horizon year for the 2018 EFMP, the buildings that are part of Phase 3 are also addressed in this report to identify those buildings with the potential for adverse impacts.

Building Number	Building Name	Individually Eligibility	CA SHPO Status Code	Included in Prior HABS	Impacts Considered in 2016
1A	Art Center		3CD	Yes	
1B/C	Art Center/Gallery		3CD	**Yes**	
3	Gym		3CD	**Yes**	
4	Administration		3CD	**No**	
6	Library		3CD	**Yes**	**Yes***
7	Science South		3CD	No	
8	Campus Cafe			**Yes**	
9A	SAC Book Rac (Bookstore)		3CD	**Yes**	**Yes***
9C	Student Life Center		3CD	**Yes**	
10	Founder's Hall		3CD	No	
11	Science North		3CD	No	
12A/B	Oden House			**Yes**	**Direct Yes**
17	Building 17		3CD	**Yes**	
18	Building 18		3CD	**Yes**	
19A	Building 19A		3CD	No	
19B	Building 19B		3CD	**Yes**	
20	Building 20		3CD	**Yes**	
26A	Humanities/Social Sciences North		3CD	No	
26B	Humanities/Social Sciences East		3CD	No	
26D	Humanities/Social Sciences South		3CD	No	
26C	Planetarium		3CD	No	
27A	Exercise Science/Wellness Center		3CD	Yes	Yes
27B	Pool Building		3CD	Yes	Yes
27C	Physical Education Center		3CD	Yes	Yes
28A/B	Technology Center	Yes, Criterion 3	3CB	**Yes**	**Yes***
47	Facilities Planning & Management/Maintenance & Operations Center		3CD	No	
48	Receiving/Transport		3CD	No	
F1	Horticulture Unit		3CD	No	
F2A	Farm Offices		3CD	No	
F2B	Horticulture Storage		3CD	No	
F3A	Old Dairy Unit		3CD	No	
F4A	Swine Market Pens		3CD	No	
F5A	Vivarium		3CD	No	
F7	Mountie Makerspace		3CD	No	
G2	Greenhouse			No	
50A-H	Stadium	Yes, Criterion 1	3CB	**Yes**	**Direct Yes**
	Wildlife Sanctuary		3CD	No	Yes

Table 1. Contributing Resources to the Mt. SAC Historic District

* Prior assessment of direct impacts assumed renovations complied w/ the *SOI Standards*
Yellow highlight indicates buildings that are subject to potential impacts as part Phases 1A, 1B, and 2 of the 2018 Master Plan
Blue highlight indicates buildings that are subject to potential impacts as part Phase 3 of the 2018 Master Plan

Renovation Projects

Specific designs for the EFMP project's renovations to contributing resources to the Mt. SAC Historic District have not yet been developed. Some of the buildings/projects in the EFMP were included in an assessment of impacts on cultural resources for the Supplemental Environmental Impact Report (Davis 2016). However, renovations proposed for Buildings 7, 26 A/B/D, 47, and 48 were not previously considered. Because these buildings are contributing resources to the Mt. SAC Historic District, it is recommended that the designs for their renovations comply with the *Secretary of the Interior's Standards for Rehabilitation*. Should the renovations not comply with the *Standards*, the project may result in a significant direct and/or indirect impact to a historical resource pursuant to CEQA Section 15064.5.

Demolition Projects

Buildings 1A and 19A are scheduled to be demolished as part of Phase 1A. Building F3A is scheduled to be demolished as part of Phase 3. In addition, Buildings 3, 9C, 17, 18, 19A, 19B, and 20 will be demolished to allow for new construction. The demolition of the buildings poses the potential to cause an adverse direct impact because the Project results in the complete loss of contributing resources to a historic district (Attachment A). As such, the Project will result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

New Construction

The EFMP also calls for new construction throughout the historic district which poses the potential to cause adverse indirect visual impacts. Visual impacts upon the historic district and individually eligible resources potentially include views to and from the district and buildings. Mid-ground views of the historic district towards and from the contributing resources are character-defining features. Distant views are not a character-defining feature of the historic district, due to the dense concentration of buildings and/or topography of the land. New construction of the following buildings will take place within the boundaries of the Mt. SAC Historic District within the viewsheds of contributing resources to the district:

- Student Center (located in the center of campus)
- Bookstore (located in the center of campus)
- Parking Structure R and Tennis Courts (located in the south portion of campus below Temple)
- Parking Structure S (located in the south portion of campus below Temple)
- Sand Volleyball Courts (located in the south portion of campus below Temple)
- Replacement Communication Tower (located outside the historic district boundary but within viewshed of the eastern portion of the district)

The new parking structures, tennis court, volleyball courts, and communication tower will not result in a visual impact. These buildings/structures will not introduce an element that is incompatible with the criteria under which the property is eligible, nor will they result in obstructive views. Their design will be compatible with the character-defining features of the historic district. The overall impact to the historic district's integrity of setting, feeling, or association as a whole is minimal; there is no impact on the historic district's integrity of location, design, materials, and workmanship. As such, this aspect of the project will not result in any adverse indirect visual impacts pursuant to CEQA Section 15064.5.

The Student Center and Bookstore are located in the center of the historic district and will create a visual interruption of the mid-ground views from contributing resources in the historic district (specifically 10, 11, and 26 A/B/C/D). The new Student Center and Bookstore will also impact the historic district's

integrity of setting, feeling, or association. These new buildings will result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Section 21084.1 and a significant indirect impact pursuant to CEQA Section 15064.5.

Cumulative Impacts

In consideration of cumulative impacts within the APE, several prior Projects have been conducted that resulted in adverse impacts. The 2003 Facilities Master Plan resulted in the demolition of several contributing resources to the Mt. SAC Historic District, as identified by Tim Gregory (Gregory 2003). The 2015 Facilities Master Plan and Physical Education Projects (2016) resulted in the demolition of several additional contributing resources to the Mt. SAC Historic District, as identified by Gregory in 2003 and ASM in 2012 and 2016 (Gregory 2003; Davis 2012; Davis et al. 2016). As the prior two Facilities Master Plans and updates identified adverse impacts, combined with the currently identified adverse impacts, the EFMP will result in adverse cumulative impacts to a CEQA historical resource, specifically, the Mt. SAC Historic District. With the number of contributing resources lost as a result of the EFMP, the Mt. SAC Historic District will no longer be eligible (Attachment A). As such, the EFMP constitutes a substantial adverse change in the significance of a historical resource pursuant to CEQA Section 21084.1 and a significant indirect impact pursuant to CEQA Section 15064.5.

Mitigation Measures

1) **HABS Documentation Addendum for Mt. SAC Historic District**
HABS documentation shall be implemented to reduce the significant impact on contributing resource the Mt. SAC Historic District. An augment to the prior HABS documentation package shall be prepared to include all contributing resources within the district not previously recorded specifically 4, 7, 10, 11, 19A, 26A, 26B, 26D, 26C, 47, 48, F1, F2A, F2B, F3A, F4A, F5A, F7, G2, and the Wildlife Sanctuary:

a) HABS Level II Narrative Historical Report
As HABS documentation has been prepared for the historic district, this report would serve as an addendum to the extant documentation prepared consistent with *Historic American Buildings Survey (HABS) Guidelines for Historical Reports* (National Park Service 2007). Prior to the demolition or renovation of resources contributing to the Mt. SAC Historic District, the college shall enlist the services of a qualified architectural historian to prepare an Addendum HABS Narrative Historical Report as well as CA DPR 523 forms that documents all contributing resources that were not previously documented. Documentation through HABS is an important measure because it allows documentation of the resource before alterations begin. Given the relative historic significance of the resources, Level II HABS is the recommended documentation standard, to be prepared in accordance with the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines (http://www.nps.gov/hdp/standards/habsguidelines.htm). A narrative historical report following the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007) should be prepared for the adversely impacted resources. All historic documents shall be made available to the public in the collection of the College's Learning Technology Center. Facilities Planning & Management shall ensure compliance.

b) HABS Level II Large-format Photographs
A qualified HABS photographer shall provide photo-documentation all the that documents all contributing resources that were not previously documented. As described in Section 7, *Mitigation Measures CRER Mt. SAC SEIR for 2015 FMPU and PEP 71* (Davis 2016), the photo-documentation shall be made available to the public in the collection of the College's Learning

Technology Center. The documentation should be done in accordance with the Guidelines provided in the *Photographic Specifications: Historic American Building Survey, Historic American Engineering Record, Division of National Register Programs, National Park Service, Western Region*. Facilities Planning & Management shall ensure compliance.

c) HABS Level II Reproduction of select existing drawings (if available)
The college shall prepare archivally stable reproduction of original as-built drawings for all contributors that were not previously included in the HABS documentation. Reproductions of drawings shall be done in accordance with the *Secretary of the Interior's Guidelines for Architectural and Engineering Documentation*. Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar or Velum in accordance with the U.S. Copyright Act, as amended. Facilities Planning & Management shall ensure compliance.

d) Monitoring
There is a possibility of unanticipated and accidental archaeological discoveries during ground disturbing activities. For the demolition of Buildings 1A, 19A, and F3A, and ground disturbance for the new construction within the district:

- During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning & Management shall monitor compliance.

- If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the Contractor shall inform the Project Manager, and the County Coroner must be notified according to Section 5097.98 of the PRC and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.

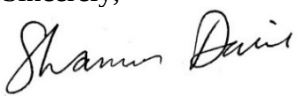
2) Interpretative Display for Mt. SAC Historic District
To recognize the history of Mt. SAC, interpretive sign(s) shall be established in one or adjacent to one of the major buildings in the historical heart of the campus, such as the Library or Student Center. The interpretative panels could utilize information from the HABS Level II Narrative Historical Report and large-format photographic documentation, as well as historical views of the campus. Facilities Planning & Management shall ensure compliance.

Level of Significance After Mitigation

The demolition of buildings in the EFMP results in the loss of eligibility of the Mt. SAC Historic District. This constitutes an adverse direct impact even after undertaking the recommended mitigation. As such, the Project will result in a substantial adverse change in the significance of a historical resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

Although the above recommended mitigation measures are recommended by ASM to lessen the significant adverse impacts, demolition or complete loss of eligibility of a CEQA historical resource cannot be mitigated to less than significant. As such, even after the implementation of the mitigation measures, the Project will still result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

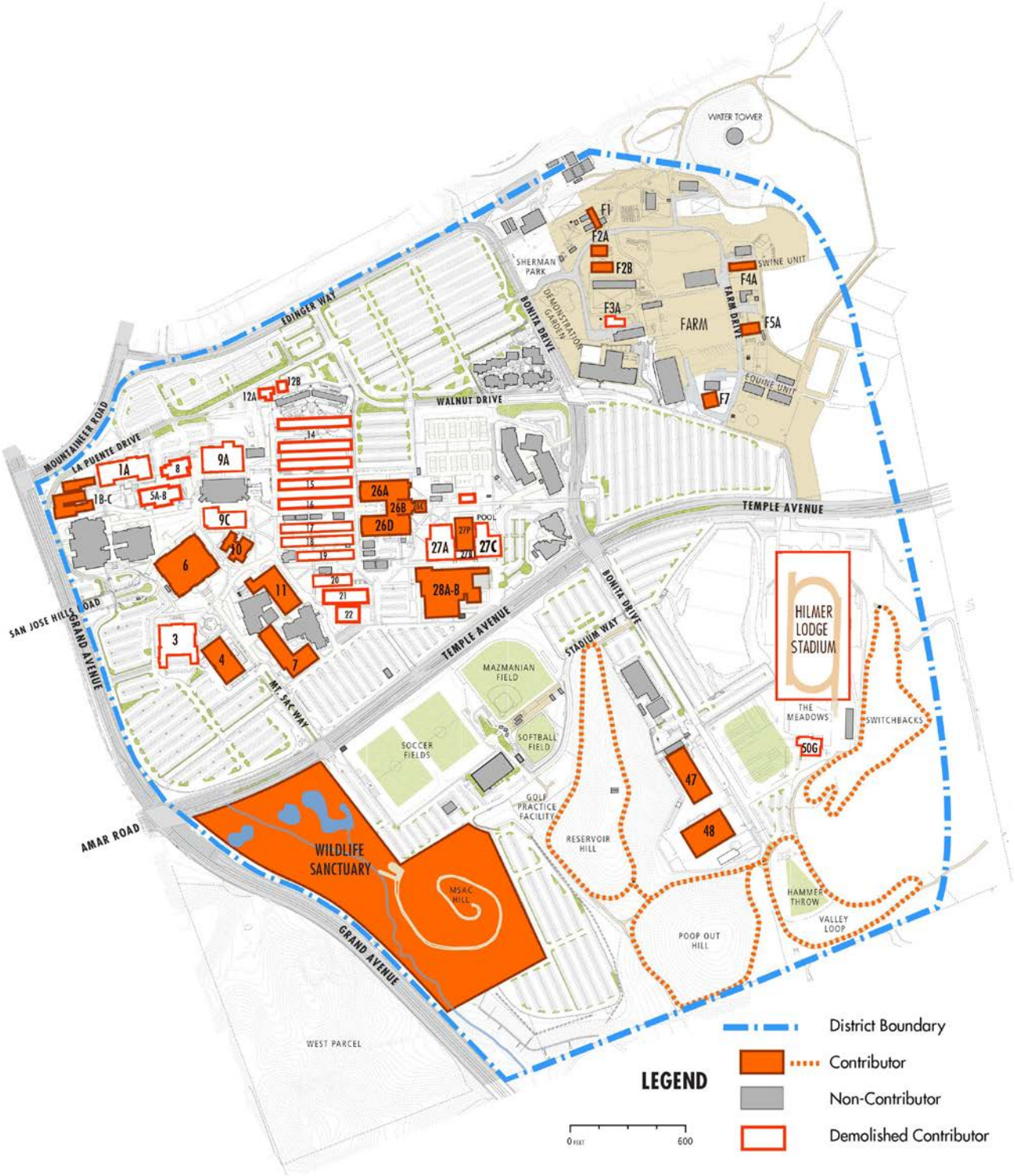
Sincerely,



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Attachment A: Mt. SAC Historic District Contributors Remaining After EFMP

Attachment A: Mt. SAC Historic District Contributors Remaining After EFMP


WATER TOWER
SHERMAN PARK
DEMONSTRATION GARDEN
FARM
SWINE UNIT
EQUINE UNIT
FARM DRIVE
BONITA DRIVE
EDINGER WAY
WALNUT DRIVE
MOUNTAINEER ROAD
LA PUENTE DRIVE
SAN JOSE HILLS ROAD
GRAND AVENUE
TEMPLE AVENUE
STADIUM WAY
MT. SAC WAY
AMAR ROAD
POOL
HILMER LODGE STADIUM
THE MEADOWS
SWITCHBACKS
MAZMANIAN FIELD
SOFTBALL FIELD
SOCCER FIELDS
GOLF PRACTICE FACILITY
RESERVOIR HILL
WILDLIFE SANCTUARY
MSAC HILL
POOP OUT HILL
HAMMER THROW
VALLEY LOOP
WEST PARCEL
LEGEND
District Boundary
Contributor
Non-Contributor
Demolished Contributor
0 FEET
600

Cultural Resource Evaluation Report for Mt. SAC SEIR for 2015 Facilities Master Plan Update and Physical Education Projects, Walnut, Los Angeles County, California

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EXECUTIVE SUMMARY

This cultural resources report has been prepared in support of the Supplemental EIR (SEIR) for the Mount San Antonio College (Mt. SAC) 2015 Facilities Master Plan Update (2015 FMPU) and Physical Education Projects (PEP) (Project). The Project includes several construction and renovation projects for the Mt SAC community college campus located at 1100 North Grand Avenue, in Walnut, California. The California Environmental Quality Act (CEQA) applies to discretionary projects undertaken, approved, or funded by a public agency. As such, the proposed 2015 FMPU and PEP are subject to CEQA. The Mt. San Antonio Community College District is the "lead agency" under CEQA and is responsible for the 2015 FMPU and PEP.

ASM Affiliates, Inc. (ASM), under contract to Mt. SAC, has prepared this report to evaluate whether the proposed Project would impact any historic resources within the Project's Area of Potential Effects (APE). This assessment of impacts was conducted in compliance with CEQA and guided by the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (SOI Standards). CEQA Guidelines Section 15064.5 define significant impacts as a substantial adverse change to a historic resource, encompassing "demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

The Mount San Antonio College Historic District (Mt. SAC Historic District) is located within the Project APE. As such, the Project poses the potential to cause significant direct and/or indirect impacts to a CEQA historic resource. The Project entails multiple construction projects, including demolition and reconstruction of the Hilmer Lodge Stadium (50A-H), demolition of Oden House (12A/B), expansion of the Wildlife Sanctuary, and renovation of buildings 6, 9A, and 28A/B.

As a result of this cultural resources report, ASM surveyed 22 potentially new contributing resources to the Mt. SAC Historic District. Twenty of those are recommended as eligible contributing resources (3CD) to Mt. SAC Historic District. Ten buildings previously identified as eligible contributing resources were found to have been demolished; one additional resource (12A/B) was found to have lost integrity and is now recommended as a non-contributing resource. As the district retains approximately 75 percent of its eligible contributing resources, ASM recommends that the Mt. SAC Historic District continues to be eligible for the CRHR under Criterion 1, for the Theme of Education, with a period of significance of 1948-1972. ASM also identified two individually eligible properties: Hilmer Lodge Stadium (50A-H) eligible under Criterion 1, for the Themes of Education and Recreation, with a period of significance of 1948-1972; and the Technology Center (28A/B) under Criterion 3, for the Theme of Architecture, with a period of significance of 1971.

The Project will result in adverse direct and indirect visual impacts to the Mt. SAC Historic District, and to the individually eligible Hilmer Lodge Stadium. ASM recommends Mt. SAC implement the mitigation measures detailed in Chapter 7 to reduce the significant adverse impacts in accordance with CEQA. However, those mitigation measures will not result in less than significant impacts, and the Project will result in a substantial adverse change to a historic resource pursuant to CEQA Section 21084.1.

1. INTRODUCTION

This report describes the goals, methods, and findings of the impacts analysis conducted by ASM Affiliates, Inc. (ASM), for the Mount San Antonio College (Mt. SAC) 2015 Facilities Master Plan Update (2015 FMPU) and Physical Education Projects (PEP) (Project). The Project includes several construction and renovation projects for the Mt SAC community college campus located at 1100 North Grand Avenue, in Walnut, California. The California Environmental Quality Act (CEQA) applies to discretionary projects undertaken, approved, or funded by a public agency. As such, the proposed 2015 FMPU and PEP are subject to CEQA. The Mt. San Antonio Community College District is the "lead agency" under CEQA and is responsible for the 2015 FMPU and PEP.

ASM Affiliates, Inc. (ASM), under contract to Mt. SAC, has prepared this report to evaluate whether the proposed Project would impact any historic resources within the project's Area of Potential Effects (APE). This report provides an assessment and evaluation of direct and indirect impacts on those historic resources as a result of the proposed Project. This report is divided into the following sections: Introduction, Regulatory Framework, Historic Context, Identification of Historic Resources, Impacts Assessment, and Conclusion. Several appendices are included, specifically: California Department of Parks and Recreation (DPR) forms (Appendix A), records search (Appendix B), Native American Heritage Commission (NAHC) and Tribal correspondence (Appendix C), original architectural drawings (Appendix D), and structural description and assessment of the Stadium (Appendix E).

The Mount San Antonio College Historic District (Mt. SAC Historic District) is located within the APE, and the project specifically has the potential to impact contributing resources to the district: the Hilmer Lodge Stadium (50A-H), Oden House (12A/B), Wildlife Sanctuary, and buildings 6, 9A, and 28A/B. The historic district and of its potential contributors are evaluated for their eligibility for designation on the local, state, and national level as individual resources and potential contributors to a historic district, in accordance with CEQA and California Register of Historical Resources (CRHR) guidelines. Section 21084.1 of CEQA defines a historical resource as any resource listed in, or eligible for listing in, the CRHR. Mt. SAC Historic District has previously been evaluated and identified as a CEQA historical resource.

1.1 PROJECT LOCATION AND SETTING

The proposed Project is located in the City of Walnut, Los Angeles County, California. Walnut is located approximately 20 miles (mi.) east of the City of Los Angeles within eastern Los Angeles County (Figures 1 and 2). The Mt. SAC campus occupies 421 acres at 1100 North Grand Avenue situated in a flat valley between the Puente and San Jose hills in the San Gabriel Valley. Mount San Antonio is the dominant landscape feature of the setting to the north. The Project is located on the campus of Mt. SAC owned by the Mt. San Antonio Community College District. The direct APE constitutes those areas where specific projects have been identified in the FMUP and PEP, and includes all areas of ground disturbance (Figure 3). The Mt. SAC Historic District is located within the APE and includes buildings proposed for demolition and/or renovation. As such, the Project constitutes potential direct impacts to a CEQA historic resource. The indirect APE is defined as the boundaries of the entire historic district to ensure consideration of indirect impacts on all contributing resources of the historic district (see Figure 3). The Mt. SAC Historic District contains buildings and structures constructed between 1946 and 1972 that are associated with the theme of Education. The buildings were constructed in varying architectural styles such as Spanish Colonial Revival, neo-Romanesque, and Mid-Century Modern. In between the buildings are concrete walkways and landscaped courtyards of grass lawns, low-scale vegetation, and trees.

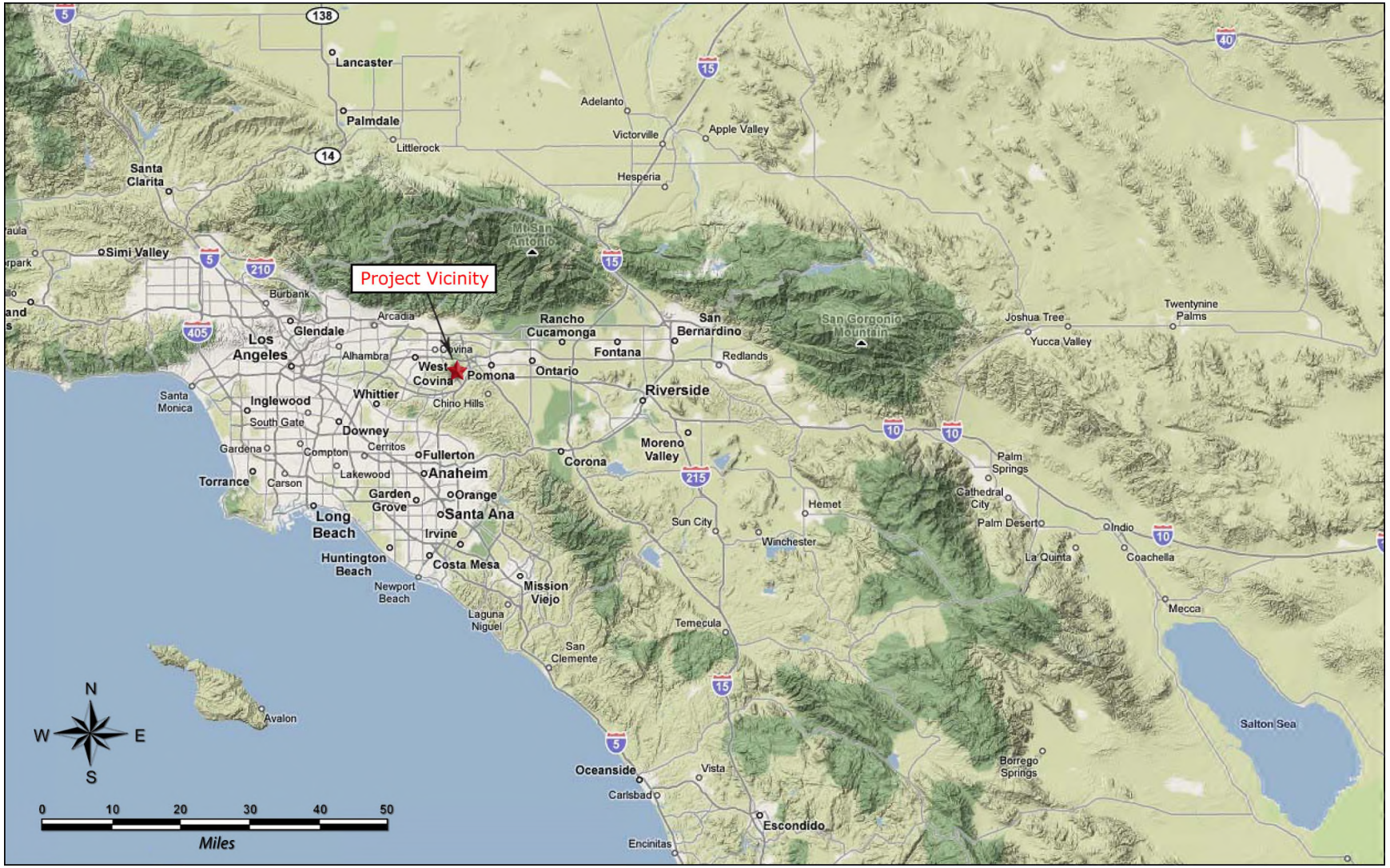


Figure 1. Project vicinity map.

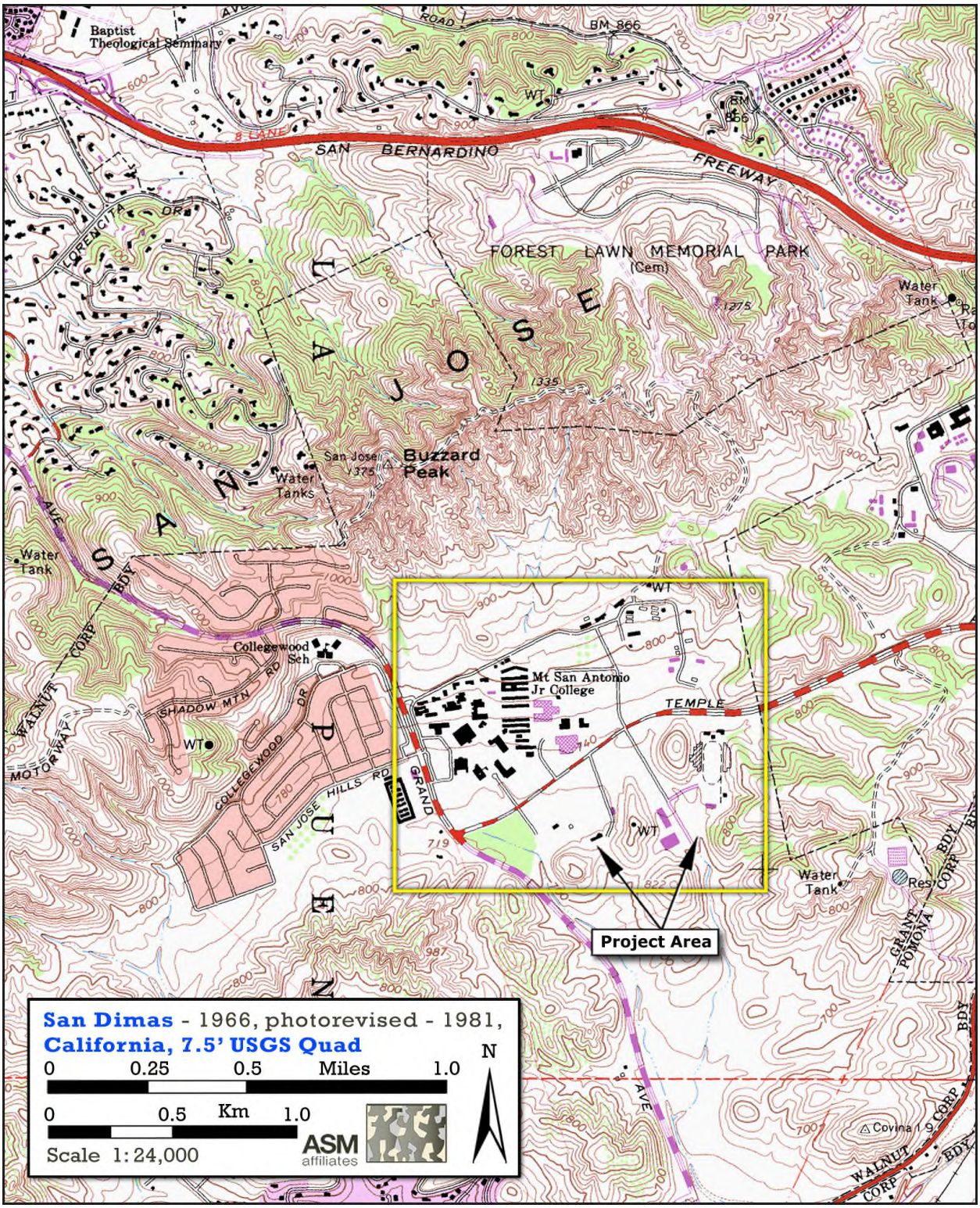


Figure 2. Project location map on USGS topographic map.

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Figure 3. Project area map with Area of Potential Effect (direct and indirect) highlighted.

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1.2 PROJECT DESCRIPTION

Mt. San Antonio Community College District has proposed a 2015 FMPU and the corresponding Land Use Plan is shown as Figure 3. The major change from the 2012 FMP is the re-design of the athletic facilities/Hilmer Lodge Stadium (50A-H) south of Temple Avenue and east of Bonita Avenue. The existing stadium will be demolished and a new stadium built at the same location. Other changes for the 2015 FMPU include the demolition of the Oden House (12A/B), relocation of the Public Transportation Center to Lot D3, an expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks Relays and the Mt. SAC Cross-Country Invitational (XC Invite). The District is also filing an application to host the eight-day 2020 Olympic Track & Field Trials in late July or August 2020.

1.3 METHODOLOGY

ASM reviewed previous documentation and architectural drawings of the buildings and landscapes that required survey and evaluation for this report. Previous documentation included the *Historic Resources on the Campus of Mt. San Antonio College* report by Tim Gregory (Gregory 2003). In 2012, ASM prepared a letter report, *Historic Resources Analysis for Five Buildings at Mount San Antonio College*, in which the following buildings were evaluated: Student Life Center (9C), Marie T. Mills Aquatic Facility (Aquatic Facility) (27B), Locker Rooms (formerly the Women's Locker Facilities) (27C), Exercise Science/Wellness Center (formerly the Men's Locker Facilities) (27A), and Mount San Antonio College Snack Bar (19C) (Davis 2012). In this report, ASM utilized the 2003 Gregory report to define district boundaries and identify district contributors. The result was a list of contributors that included 24 buildings; however, by 2012 only 16 were extant. Since 2012, two more buildings have been demolished, resulting in 14 documented contributors that remained as of November 2015.

ASM performed an on-site survey of the Project APE overall a period of several days (November 17, 2015, and January 21 and March 11-25, 2016). The intensive level survey included the extant 14 contributing resources to the Mt. SAC Historic District (with a focus on those proposed for demolition: Oden House and the Stadium). Previous evaluation of the historic district did not include all buildings and structures that could be contributing resources to the historic district that were constructed or utilized by the college during the district's period of significance (1946-1972). As such, this survey included all potential contributors to the historic district that have not previously been documented or evaluated: the Art Center (1A), Administration (4), Library (6), Science South (7), Bookstore (9A), Science North (11), Counseling Support (12), Humanities North/East/South (26A/B/D), Planetarium (26C), Technology Center (28A/B), Maintenance/Facilities (47), Receiving/Transport (48), Horticulture Unit (F1), Farm Offices (F2A), Horticulture Storage (F2B), Old Dairy Unit (F3A), Swine Market Pens (F4A), Vivarium (F5), Breeding Barn (F6A), Equipment Tech Unit (F7), Greenhouse (G2), and the Wildlife Sanctuary. Twenty-two new potential contributing resources were documented during the survey; the 14 previously determined contributing resources were also documented to determine if they are still eligible as contributing resources and/or individually eligible historic resources. During the site visits, all of the resources were photographed and detailed field notes were recorded.

An intensive pedestrian archaeological survey was also conducted, encompassing all accessible areas of the Project APE where ground disturbance is proposed. All visible ground surface was surveyed.

As part of the current study, ASM reviewed archival documents located in Mt. SAC library "Vault" specific to the history of the buildings and landscapes surveyed. Documents reviewed included newspaper and memorabilia scrapbooks, yearbooks, college newspapers, and coursebooks (Scrapbook 2016). ASM also

reviewed historic aerial photographs to confirm construction dates of the buildings surveyed, as well as recent demolition projects (historicaerials.com 1948, 1953, 2003, 2004, 2012).

1.4 RECORDS SEARCH RESULTS

An archival records search was conducted by personnel of the South Central Coastal Information Center (SCCIC), located at California State University, Fullerton. The records search included a 1/2-mi. radius around the Project area (Appendix B).

As a result of this records search, it was determined that nine cultural resource inventories and/or research projects have occurred within a 1/2-mi. radius of the Project (Table 1). These have resulted in the documentation of a single resource within that radius, which is the college itself (Table 2). No reports were found at the SCCIC that directly address the Project area. However, reports that previously addressed eligibility of the Mt. SAC Historic District (Gregory 2003; Davis 2012) were consulted for this study and supplied by Mt. SAC.

Table 1. Previously Conducted Cultural Resource Projects within 1/2-Mile Radius of the SEIR Project Area

NADB Number	Author(s)	Date	Report Title
LA-00342	Taylor, Thomas T.	1978	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District
LA-00481	Van Horn, David M.	1979	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California
LA-01268	Mason, Roger D., and Nancy Whitney-Desautels	1983	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca
LA-01346	Brock, James P.	1984	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)
LA-02679	Cottrell, Marie G.	1979	Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract
LA-03835	Cottrell, Marie G.	1979	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California
LA-05644	Duke, Curt	2002	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California
LA-05646	Duke, Curt	2001	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California
LA-06262	Duke, Curt	2002	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California

Table 2. Previously Documented Resources within 1/2-Mile Radius of the SEIR Project Area

Primary #	Site Type	Description	Construction Date	California Status Code
P-19-186869	HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)	Mt San Antonio College 1100 N. Grand Ave.	1946	5S1*

**In 2003, the California Status Code for 5S1 was defined as "Not eligible for the National Register, but of local interest and eligible for listing in a local historic resources survey." The California status codes have since been re-categorized. As of 2016, this definition is listed under the code "5S3."*

1.5 NATIVE AMERICAN HERITAGE COMMISSION

ASM submitted a request to the California Native American Heritage Commission (NAHC) for a search of their Sacred Lands File (SLF) to inquire if they have registered any cultural resources, traditional cultural properties, or areas of heritage sensitivity within the proposed Project APE. A response was provided by the NAHC on February 10, 2016, stating that the SLF search failed to indicate the presence of Native American traditional cultural places/sites in the Project area. However, the NAHC also stresses that the absence of specific site information in the SLF does not indicate the absence of Native American cultural resources in any APE. The NAHC also provided a list of nine Native American Tribes and individuals to contact for more information. ASM sent letters to each of the contacts provided by the NAHC to solicit their input regarding any information or concerns that they may have about the proposed Project. To date, two tribal representatives have responded. One requested additional information regarding the ground-disturbing impacts of the proposed construction activities. Both felt that the Project area should be treated as sensitive and request the presence of Native American monitors during construction-related ground-disturbance. All related correspondence received to date is provided in Appendix C; responses received after the finalization of this report will be forwarded to the lead agency.

1.6 PROJECT PERSONNEL

ASM Senior Architectural Historian, Shannon Davis, M.A., was the Project Manager and team leader conducting the field survey, archival research, and impacts analysis. Ms. Davis exceeds the professional qualification standards for Architectural Historian and Historian as identified in the *Secretary of the Interior's Standards for Archeology and Historic Preservation* (36 CFR 61). As an Architectural Historian at ASM, Ms. Davis has documented and evaluated numerous cultural resources for California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA) compliance, impacts/effects analysis, Historic Structures Reports (HSRs), Historic American Building Survey (HABS), and NRHP nominations. Ms. Davis additionally has past professional experience with the cultural resources programs of the National Park Service (NPS) including eight years as an Historian with the NRHP.

ASM Senior Archaeologist, Sherri Andrews, M.A., RPA, conducted the archaeological survey. Ms. Andrews exceeds the professional qualification standards for Archaeology as identified in the *Secretary of the Interior's Standards for Archeology and Historic Preservation* (36 CFR 61). As an Archaeologist at ASM, Ms. Andrews has served as Principal Investigator, Co-Principal Investigator, and Field Director. Ms. Andrews has experience in all aspects of project management, ranging from records searches and fieldwork to report writing and preparation. She also has experience in laboratory management, including artifact analysis, cataloging and curation, and has served as laboratory director for three university-run field schools, including the San Clemente Island Eel Point field school run by California State University, Northridge, and the San Elijo Lagoon project run by ASM and University of California, San Diego.

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2. REGULATORY FRAMEWORK

2.1 CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA. The criteria established for eligibility for the CRHR are directly comparable to the national criteria established for the NRHP.

In order to be eligible for listing in the CRHR, a resource must satisfy at least one of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Archaeologists assess sites based on all four of the above criteria but usually focus on the fourth criterion provided above. Historical resources eligible for listing in the CRHR must also retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. For the purposes of eligibility for the CRHR, integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance" (California Office of Historic Preservation 2001). This general definition is generally strengthened by the more specific definition offered by the NRHP—the criteria and guidelines upon which the CRHR criteria and guidelines are based.

2.1.1 Integrity

In order to be eligible for listing in the CRHR, a property must retain sufficient integrity to convey its significance. The NRHP publication *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, establishes how to evaluate the integrity of a property: "Integrity is the ability of a property to convey its significance" (National Park Service, National Register of Historic Places 1998). The evaluation of integrity must be grounded in an understanding of a property's physical features, and how they relate to the concept of integrity. Determining which of these aspects are most important to a property requires knowing why, where, and when a property is significant. To retain historic integrity, a property must possess several, and usually most, aspects of integrity:

1. **Location** is the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** is the physical environment of a historic property, and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a property was built and the functions it was

intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.

4. **Materials** are the physical elements that were combined or deposited during a particular period or time, and in a particular pattern or configuration to form a historic property.
5. **Workmanship** is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory, and can be applied to the property as a whole, or to individual components.
6. **Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, when taken together, convey the property's historic character.
7. **Association** is the direct link between the important historic event or person and a historic property.

2.2 CEQA HISTORIC RESOURCES

CEQA Guidelines 15064.5 *Determining the Significance of Impacts to Archeological and Historical Resources* requires that all private and public activities not specifically exempted be evaluated for potential environmental impacts, including impacts to historical resources. CEQA (PRC Section 21084.1) states that significant impacts may occur if a project "may cause a substantial adverse change in the significance of an historic resource." CEQA defines historical resources as "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

Lead agencies have a responsibility to evaluate a Project's impacts to historical resources (including archaeological resources) and to determine whether those impacts are significant. Mitigation of significant impacts is required if the proposed Project will cause substantial adverse change to a historical resource. Substantial adverse change includes "demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired." While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a Project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance.

For purposes of CEQA, a "historical resource" is a resource listed in or eligible for listing in the CRHR. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory, may be eligible for listing in the CRHR and are presumed to be historic resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be a "historical resource" if it:

1. Is listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR (PRC Section 5024.1, Title 14 CCR, Section 4850 et seq.).
2. Is included in a local register of historical resources, or is identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC.

3. Is a building or structure determined to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered "historically significant" if it meets the criteria for listing in the CRHR.

CEQA also requires the lead agency to consider whether a project would have a significant effect on unique archaeological resources, and to avoid these resources when feasible or mitigate any effects to less-than-significant levels (PRC Section 21083.2 and Section 21084.1). These are defined as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability of meeting any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person [PRC Section 21083.2(g)].

No further consideration need be given to a non-unique archaeological resource, "other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2(h)).

2.3 SECRETARY OF THE INTERIOR'S STANDARDS

The SOI *Standards* were codified in 1995 (36 CFR 68) to establish professional standards that apply to all proposed development grant-in-aid projects assisted through the National Historic Preservation Fund and serve as general guidance for work on any other historic building (Weeks et al. 2001). The *Standards* apply to historic properties of all periods, styles, types, materials, and sizes. The *Standards* also encompass related landscape features, the site, and environment as well as attached, adjacent, or related new construction. The SOI *Standards* for *Rehabilitation* are the appropriate approach to apply to this project, and are identified below (Weeks et al. 2001).

1) A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2) The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3) Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4) Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5) Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6) Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8) Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9) New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Weeks et al. (2001) references new construction within historic districts as part of the guidelines for "Setting." The section pertaining to "Alterations/Additions for the New Use" were considered in the analysis of direct impacts. Below are the "recommended" and "not recommended" treatments applicable to the project.

Recommended

- Designing and constructing new additions to historic buildings when required by the new use. New work should be compatible with the historic character of the setting in terms of size, scale design, material, color, and texture.

Not Recommended

- Introducing new construction into historic districts that is visually incompatible or that destroys historic relationships within the setting.

2.4 CRITERIA FOR ASSESSING VISUAL IMPACTS

Because there is no universally accepted yardstick for measuring visual impacts, and because those impacts do not always damage the defining characteristics of an historic property in any physical manner, assessing them can be difficult and complicated. If we are to consider that an historic property is affected when its historic significance and integrity have been diminished, determining how a Project harms a resource's historical significance and integrity is essential to any assessment. In assessing the indirect impacts for historic resources, the criteria for significance and the aspects of integrity are factors that require careful evaluation and can provide a defensible qualitative method for determining visual impacts on historic resources.

To ensure a thorough and complete analysis of visual impacts, ASM augmented the nationally recognized guidance of Section 106 (36 CFR 800) regulations of the NHPA and SOI Standards with more specific guidance that has been developed by two state agencies—the Delaware State Historic Preservation Office (Delaware SHPO 2003) and the Wyoming Bureau of Land Management and Wyoming State Historic Preservation Office (Wyoming BLM 2006).

2.4.1 Definitions

For purposes of this analysis, the following definitions have been employed:

Historic Property or Historic Resource: a historic site, district, building, structure, or object that is either eligible for inclusion in the NRHP, or listed therein.

Adverse Visual Impact: an impact that negatively affects the integrity of the setting or feeling of an historic property, to the extent that significance and eligibility for listing in the NRHP are compromised. In particular, adverse visual impacts can be seen as negatively affecting the following characteristics of integrity: setting, feeling, or association.

Obstructive Visual Impacts: any visual impact that carries the potential to obstruct any part of the view of an historic property, or the scenic view from such a resource. Adverse obtrusive impacts can obstruct all or a portion of an historic property and/or its viewshed, in turn negatively affecting the property's historic character.

Scenic Views: any scenic resources or resources that are visually and aesthetically important and that contribute to an historic property's significance.

Viewsheds: those areas visible from a specified location or locations.

Visual Impacts: any aspect of a proposed undertaking that will be seen from or will be in the view of an historic property. A visual impact may be beneficial or adverse and may affect the historic property in an aesthetic or obstructive manner. The determination that a visual impact exists does not automatically imply that the impact is adverse.

2.4.2 Adverse Visual Impacts

Adverse visual impacts may be created when an undertaking is visible within the viewshed of the historic property, when it blocks a view toward the historic property, or when it introduces an element that is incompatible with the criteria under which the property is eligible.

Simply because an undertaking will be visible from an historic property does not mean it automatically will create an adverse visual impact. Therefore, it is necessary to evaluate the visual changes and alterations the undertaking will introduce to the resource. In assessing adverse visual impacts on a historic property, it is necessary to identify the criterion or criteria under which the resource is eligible and what qualities or characteristics of the resource contribute to its significance or eligibility. For example, if a resource is eligible for its innovative engineering qualities, visual impacts on the property may not be adverse, whereas if the property is eligible on the basis of its architectural significance, an adverse impact very well may be created.

An adverse visual impact may be obstructive, which is to say it may block the view to or from an historic property; it may also not be obstructive and still create an adverse visual impact in that it introduces elements so incompatible with the criterion or criteria under which the property is eligible for listing that it diminishes the property's significance to a substantial degree. For example, a highway proposed to run alongside an historic rural church, while it would not directly obstruct the view to or from the building, might still introduce an element so incompatible with the rural setting of the property that it would have a diminishing impact upon the integrity of the property's setting.

Adverse visual impacts should be determined on a case-by-case basis, weighing the following factors:

- **Significance.** An historic built-environment resource's historical significance and its key aspects of integrity must be taken into account in order to evaluate the Project's impacts on the property's eligibility for listing in the NRHP.

- **Character-Defining Features.** The alteration of character-defining features at the Project location (including open space) can affect the view from the historic built-environment resource and possibly the location, feeling, setting, and association of that resource.

- **Compatibility.** Whether in an open space or a developed area, the compatibility of the Project with the character of the Project's location and surrounding area, including historic resources, is important. The character of the historic property's site and architectural

features should be the basis for determining the appropriate characteristics of the proposed Project. The compatibility of the Project is determined by:

- Mass—the arrangement of the Project's spaces;
- Scale and proportion—the size and the proportion of the Project to the surrounding structures and features;
- Height—sometimes it may be necessary that a Project height extend beyond that of the surrounding buildings and other features within view of the Project; it is important that the height of the Project not cause the line of sight to move so far up that the surrounding features are out of view, thereby detracting from the original view;
- Shadows;
- Color;
- The degree to which the Project would contribute to the area's aesthetic value;
- The degree of contrast, or lack thereof, between the Project and the background, surrounding scenery, or neighborhood; and
- The amount of open space.

2.4.3 Obstructive Impacts

Whether a Project is on or near an historic property, it can block the resource from being viewed, or block a view seen from that resource, thereby possibly diminishing its integrity. Determination of adverse obstructive impacts should be made on a case-by-case basis, considering the following factors:

- The historic property's significance. It is necessary to understand the resource's historic significance and its key aspects of integrity in order to evaluate the Project's impacts on the resource's eligibility for listing in the NRHP.
- Nature and quality of the view from the historic property. This includes such features as natural topography, settings, man-made or natural features of visual interest, and other historic property seen from the historic built-environment resource, any of which would contribute to its significance and integrity.
- Extent of obstruction. This includes total blockage, partial interruption, or interference with a person's enjoyment and appreciation of a scenic view or historic property viewed from the historic property, to the extent it affects the integrity of the historic property.
- Obstruction of an historic property. The Project might obstruct the historic property from being viewed from the Project site or other area. If the historic property is visually appreciated from surrounding viewpoints, obstructing its view may affect its feeling, setting, location, or association.

3. HISTORIC CONTEXT

3.1 BRIEF HISTORY OF THE SAN GABRIEL VALLEY AND WALNUT, CALIFORNIA

The first occupants of the San Gabriel Valley were the Gabrielino Indians of Shoshonean origin. After the arrival of the Spanish in the late 1700s, large ranches, extensive agricultural development occurred and residences were constructed. The first land grants included the Rancho de San Jose, established in 1837 by Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales, presented in 1840 to Jose de la Cruz Linares; and La Puente Rancho, issued to John Rowland and William Workman in 1842. Prior to the establishment of these land grants, the land had been used for cattle and sheep grazing by the San Gabriel Mission (Gregory 2003).

Walnut originally obtained its name from Rancho de los Nogales (*nogal* is the Spanish word for "walnut tree"), the land the city came to occupy. The Rancho obtained its name from the black walnut trees located along the hillsides. The name of the town was originally Lemon, due to the many citrus trees in the area and the name of the town's station (Lemon Station) for the Southern Pacific Railroad. The name "Walnut" was adopted as the community's official name in 1912 with the construction of the new post office (Gregory 2003).

From the 1880s to just after World War II, the area was used predominantly for cattle-raising and farming, well-known particularly for its walnut and citrus groves. Walnut as well as the surrounding communities remained primarily rural, Pomona being the only major city (Gregory 2003).

After World War II, returning veterans created an increasing demand for housing across southern California, including the city of Walnut. The small rural town developed quickly and, fearing that they might be annexed by their faster-growing neighbors, the residents of Walnut decided to incorporate with approximately 7.5 mi.^{2} of territory and about 1,000 residents in January 1959 (Gregory 2003).

Between 1980 and 1990, Walnut grew by 133 percent, to a population of 29,105, and became the second-fastest-growing city in Los Angeles County (Gregory 2003). Today, Walnut has a population of 29,661. Four elementary schools, three middle schools, two high schools, and Mt. SAC are located within the city boundaries (City of Walnut 2012).

3.2 EARLY EDUCATIONAL FACILITIES IN WALNUT AND SAN GABRIEL VALLEY

Walnut's first school was constructed ca. 1876. After the schoolhouse burned in 1892, students transferred to Spadra School. The Lemon School District, of which Walnut was a part, was established in 1893. High school students traveled to Pomona and El Monte until 1915, when La Puente High School was constructed (Gregory 2003).

When the first junior colleges were established in California at the beginning of the twentieth century, most (two-thirds) were begun either on high school campuses or as parts of high school districts. Citrus College, located in Glendora and founded in 1915, is the oldest junior college in Los Angeles County and the fifth oldest in the state. One of the first junior colleges in the San Gabriel Valley was Pomona Junior College, planned in 1916 and established on the Pomona High School campus in 1917. Oscar H. Edinger was the director of the college (Hall and Pietzsch 1996). Chaffey, located in Rancho Cucamonga, was first established as a private college in 1883 and became public in 1916. Pasadena City College was established in 1924, and Glendale Community College was founded in 1927.

With the return of young men and women after World War II, the San Gabriel Valley, along with much of the state, increasingly recognized the limitations of having colleges set on high school campuses, and pushed for the establishment of junior colleges independent from high schools. Pomona Junior College was seen as inadequate to accommodate the many veterans seeking higher education. Thus, in October 1945, the California State Board of Education was petitioned by the school districts of Pomona, Covina, Puente, and Bonita for a junior college to serve the combined communities (Pomona, La Verne, San Dimas, Covina, Baldwin Park, West Covina, Puente, Otterbein, Walnut, and Spadra). Edgar Rothrock, chairman of the Board of Trustees for Bonita High School, and Carl L. Lorbeer, president of the Pomona Board of Education, were particularly influential in encouraging community members to support the creation of the college. In his 1945 statement as candidate to be president of the Pomona Board of Education, Mr. Lorbeer advocated for "the formation of a junior college not only for general relief of the school system but to separate the high school and junior college activities. It would be my intention, if elected, to immediately have a representative committee appointed to make a thorough study of the entire junior college situation" (*Mt. SACourier* 1966). Voters approved the formation of a new college by a 7-to-1 vote margin, and the first Board of Trustees was formed (Hall and Pietzsch 1996). The new college was to replace Pomona Junior College, and Mt. SAC became one of the first junior colleges to be established as independent from a high school campus at the time of its foundation.

A few different locations were considered for the new college, including Kellogg Ranch in Pomona, the Voorhis School in San Dimas, and the Naval Hospital located in Walnut. The Naval Hospital was eventually chosen as the location for the school, as it was considered an ideal location at the center of the proposed college district. The Kellogg Ranch and the Voorhis School were soon after acquired by California Polytechnic School for their southern California branch (Cal Poly Pomona 2012; Hall and Pietzsch 1996).

3.3 MT. SAC PROPERTY HISTORY

In 1920, the State of California purchased lots 6 and 7 of the C. M. Wright Tract on the eastern edge of the original La Puente Rancho, consisting of 800 acres. The land had previously been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and later became the site of the California Polytechnic University, Pomona Campus. Lot 6, the location of the current Mt. SAC, was used to establish the Pacific Colony, an institution for the insane, founded in 1921. The Pacific Colony only operated briefly at this location, as it closed in 1923 due to an inadequate water supply, later reopening in 1927 on Pomona Boulevard (Gregory 2003).

In the early 1930s, lot 6 was occupied by the State Narcotic Hospital, and during World War II, the United States Government leased the property for a U.S. Army Hospital and later a U.S. Naval Hospital. In February 1945, the Pomona Chamber of Commerce requested the state to make the hospital site (which was scheduled to close in 1946) the temporary location for a new junior college which eventually became Mt. SAC (Gregory 2003).

The first staff of the new junior college included several members of surrounding educational facilities: Dr. George H. Bell, superintendent of education for Bonita High School District, became president; Oscar H. Edinger, former director of Pomona Junior College, became director of instruction; Ernest W. Carl, an officer in the Navy, became director of business; and Marie T. Mills, physical education teacher for Covina High School, became dean of women. Additionally, a small group of support staff and 23 faculty members were selected (Hall and Pietzsch 1996).

The new staff and faculty were faced with the almost impossible task of preparing the buildings of the old Naval Hospital for college classes in only a matter of months. (The property was authorized in July 1946, and the college was to open in September that same year.) Community members as well as prospective

students contributed countless hours as well as small sums of money to prepare the campus for opening day (Hall and Pietzsch 1996).

The temporary name for the college was the East Los Angeles County Junior College. A contest was held to choose the official name for the college, resulting in its official name being changed to Mt. SAC, named after the most visible snow-capped mountain north of the college (Hall and Pietzsch 1996).

When Mt. SAC opened in 1946, nine permanent buildings and 99 temporary barrack buildings from the site's previous uses were utilized as classrooms and faculty housing. A two-story building used by the director of the hospital became the home of President Bell and his family (Hall and Pietzsch 1996).

When registration began in August 1946, the college advertised seven divisions and 12 departments, including art, commerce, English and speech arts, foreign languages, homemaking, math and engineering, music, physical education and hygiene, science, social sciences, vocational agriculture, and trades and industries. There were 682 students the first year. Over half the students were veterans, and the average age was 25 (Hall and Pietzsch 1996).

In March 1947, the college Advisory Committee requested a $1,750,000 bond to aid in the construction of new classrooms and service buildings. The bond issue received an overwhelming approval ratio of 11 to 1. On June 14, 1947, the day of the first commencement, Governor Earl Warren approved Assembly Bill 1904 to allow the college to acquire the former hospital site as their permanent home (Hall and Pietzsch 1996). The first campus master plan, known as Building Plan "M", was designed by President Bell and Pasadena architect Frederick H. Kennedy, Jr. The first buildings designed and approved were the stadium, field houses, shops, gymnasium, and library (Hall and Pietzsch 1996).

Enrollment continued to increase and the college grew, with construction of new buildings ongoing until the early 1970s, when the development of the college was complete and its growth reached a plateau. With a Walnut city population increase of 133 percent between 1980 and 1990, the college experienced a new period of growth and construction, and become one of the largest community colleges in the state; additional buildings were added to the campus in the 1990s and early 2000s. Today, Mt. SAC is the largest of six community colleges located in the San Gabriel Valley (including Glendale Community College, Chaffey College, Pasadena City College, Citrus College, and Rio Hondo College), and one of the largest of California's 112 junior colleges. The college serves approximately 20 communities and one million residents in the San Gabriel Valley, and offers more than 200 degree and certificate programs. More than 35,000 students are currently enrolled for credit at the junior college (Mt. San Antonio College 2012).

3.3.1 Mount San Antonio Athletic Facilities

From the time the college was established, physical education and athletics have been an integral part of campus life. Two of the first buildings constructed for the college were the stadium and the gymnasium, further exemplifying the campus's commitment to athletic activities. Sports quickly drew attention from the students as well as the community. When the college opened, Archie Nisbet was the only full-time instructor for physical education; however, several faculty members, including Marie T. Mills, assisted in teaching physical education and coaching various sporting activities (Hall and Pietzsch 1996).

During the 1950s and 1960s, major changes occurred in the physical education arena, as interest in and participation in physical education grew tremendously. Women in particular were deeply affected by this change in outlook, and they began to play a much more active role in physical activity. Campus programs began to reflect these changes in attitudes, and in 1971, Linda Garrison started the community fitness program (Hall and Pietzsch 1996).

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4. IDENTIFICATION OF HISTORIC RESOURCES

4.1 ARCHITECTURAL HISTORY SURVEY

During the field survey of the APE, ASM identified the previously documented Mt. SAC Historic District, as well as an additional 20 buildings that were never before documented.

4.1.1 Mt. SAC Historic District

As of November 2015, the Mt. SAC Historic District contained 14 contributing resources (Davis 2012; Gregory 2003). Table 3 and Figure 4 illustrate those buildings that have been previously identified as contributors to the historic district. Of the 24 buildings previously identified within the historic district, 8 have been demolished between 2003 and 2012, and two from 2012 to November 2015 for a total loss of 10 contributing resources (FMPU 213).

Table 3. Contributing Resources to the Mt. SAC Historic District, November 2015

Building Number	Building Name	Current Status
1B/C	Art Center/Gallery	Extant
3	Gym	Extant
5/5A	Information Educational Technology	Demolished (Sept. 2009)
8	Campus Café	Demolished (Nov. 2015)
9C	Student Life Center	Extant
10	Founder's Hall	Extant
12A/B	Oden House	Extant
13	Design Technology	Demolished (Sept. 2009)
14N	Biology	Demolished (Sept. 2009)
14S	History/Geography/Political Science	Demolished (Sept. 2009)
15	Modern Languages	Demolished (Sept. 2009)
16	Building 16	Demolished (Dec. 2013)
17	Building 17	Extant
18	Building 18	Extant
19A	Building 19A	Extant
19B	Building 19B	Extant
20	Building 20	Extant
21	Building 21	Demolished (Feb. 2013)
22	Welding	Demolished (2007?)
27A	Exercise Science/Wellness Center	Extant
27B	Pool	Extant
27C	Physical Education Center	Extant
F-9	Livestock Pavilion	Demolished (2003?)
50A-H	Stadium	Extant



Figure 4. Mt. SAC Historic District identifying contributing resources and demolished contributors, as of November 2015.

The district was previously recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of Education, for its association with the development of Walnut, California, and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mt. SAC was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mt. SAC is the largest of six junior colleges in the San Gabriel Valley, with more than 35,000 students enrolled. The Student Life Center, Aquatic Facility, Women's Locker Facilities, and the Exercise Science/Wellness Center each reflect the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. Each building/structure contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resources maintain good integrity in all seven aspects.

The historic district was not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. The district was also recommended as not eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five herein evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

The district was not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

4.1.2 Hilmer Lodge Stadium (Buildings 50A-H)

In 1947, the Mt. SAC administration began to plan a new football stadium to be constructed southeast of the campus as part of the larger master plan for the campus. The location was chosen based on the flatness of the terrain situated between two hills, which reduced construction costs (Scrapbook 2016). It was designed by Frederick H. Kennedy, Jr. and was finished in 1948 (Figures 5-10). The builder was the West-Douglas Company, a firm from Los Angeles.

In October of 1948, the stadium was dedicated "To Those Who Served Their Country." Then-State representative Richard M. Nixon was presiding speaker (Gregory 2003; Scrapbook 2016). The stadium was later renamed the Hilmer Lodge Stadium after the college's first track coach, Hilmer Lodge. He is known for founding the Mt. SAC track relays in 1959. These relays soon became one of the world's largest track and field meets, held annually in April. Mr. Lodge retired in 1963 and passed away in 1977 (Mt. SAC Relays 2016). The stadium has been the venue for the 1962, 1979, and 1980 U.S. National Track & Field Championships. It is also the host of the Mt. SAC Cross Country Invitational, the world's largest cross-country event (LA Sports 2016; Mt. SAC Relays 2016).

The stadium is situated between two hills in the southeast portion of Mt. SAC's campus. The stadium consists of several elements including the press box (50F), concession stand (50H), Physical Education Center Field House (50G), ticket booth (50A), four restrooms (50B-E), running track, football field, two

sections of bleachers, and scoreboard. The cross-country track runs west and south of the stadium. A fitness course runs south and east of the stadium.

The stadium holds a maximum of 15,000 spectators between the two sections of concrete bleachers on either side of the track and field. The seating consists of both wood board benches and metal benches, all with back supports. Seating is accessed by concrete steps with metal railings at various areas along the bleachers. On the rear peak of each side of bleachers are two elevated metal structures that hold the arena lighting fixtures. The football field is natural grass. The track is 400 meters of polyurethane athletic surface with nine lanes. The scoreboard is located to the north of the field and is free-standing.

At the peak of the west bleachers sits the stadium press box, Building 50F. This building is rectangular in form and faces east toward the track and field. It consists of a concrete foundation, vertical wood boards, and a flat roof. The building is single story with a bottom level that is accessed on the west façade; the bottom level is enclosed with doors that lead to the mezzanine level. The mezzanine consists of an unenclosed recessed deck that has seating and a metal and glass-enclosed press box. There are rectangular fluorescent light fixtures on the ceiling and an open metal grid-pattern wall on either end of the building within this level. On top of the mezzanine is an open upper deck with a metal railing. The east façade of the building reads “Mt. San Antonio College” on the fascia between the upper deck and the mezzanine level, and “Home of the Mounties” on the fascia between the mezzanine level and lower level.

At the north end of the track and field is Building 50H, the stadium concession stand. This is a single-story brick building with a shed roof. The footprint is rectangular and the foundation is concrete. It has boarded-over concession stand openings on the north and east façades. The roof has exposed rafter tails and overhanging eaves. On the south façade are three doors, two with metal security doors and one flush wood. The interior of the building consists of a concrete floor and a metal industrial sink.

The Physical Education Center Field House, Building 50G is located south of the track and field and was constructed in 1972. This building contains the men’s and women’s locker rooms, and track and field and other offices. The building is composed of a single-story concrete building, irregular in footprint with a concrete foundation. The exterior siding is scored concrete. The roof is flat with a concrete canopy surrounding the roofline. The windows are primarily aluminum fixed and awning. The primary entrance is on the north façade and consists of a partial-width recessed porch with a concrete breeze block wing wall to the east of the entrance. The primary door is metal and surrounded by aluminum sidelights and transoms. The interior of the building has glass and metal enclosed offices, linoleum tile and carpeted floors, flush wood doors, and drop tile ceilings.

Other buildings associated with the stadium include two sets of men’s and women’s restroom buildings. The earlier set are single-story concrete buildings located to the southwest and southeast of the track and field on the south ends of the bleachers. These buildings consist of rectangular footprints, concrete foundations, scored concrete exterior walls, and flat roofs with an overhang on the primary façades. The buildings are divided into two rooms, each with an entrance on either end of the primary façade, with one leading to the women’s restrooms and the other leading to the men’s. The buildings appear to have been constructed c. 1970 (historicaerials.com 1966, 1972).

To the north of the track and field are ticket sales and general admission buildings with concrete walls and metal gates. There is another restroom building as well. These buildings are similar in style with concrete brick siding, single-story, metal flush doors with metal pent roofs. They appear to have been built c. 1985 and replaced the original 1948 ticket sales and general admission buildings (historicaerials.com 1980, 1995; Mt. SAC 1948).

Hilmer Lodge Stadium (consisting of Buildings 50A-H as well as other related elements built prior to 1973) is a contributor to the Mt. SAC Historic District.



Figure 5. View looking southwest at Hilmer Lodge Stadium, including the track, western bleachers, and press box (50D).



Figure 6. View looking east from western bleachers toward eastern bleachers.



Figure 7. Press box (50F), view looking west of east façade.



Figure 8. Field House (50G), view looking southeast of east and north façades.



Figure 9. Concessions building (50H), view looking west of east and north façades.



Figure 10. Detail view of track, view looking southeast of southwest section.

4.1.3 Oden House (Buildings 12A/B)

Buildings 12A/B were constructed in 1947 as a single-family residence in the Spanish Colonial Revival style (Figure 11). They served as the residence for the college's first campus maintenance supervisor. According to the 2003 Gregory DPR form, the building is referred to as the "Oden House," presumably named after the first college maintenance supervisor; however, no other documentation or mention of this name is given in the report or DPR (Gregory 2003). Building 12A is the residence. Building 12B is believed to have served as a garage for the residence, but unusually contains a vented cupola at the top of the hipped roof that housed a siren.



Figure 11. Oden House (12A) and garage (12B) to the right, view looking north at south façade.

Oden House is located in the northwest part of the campus, south of Edinger Way and Walnut Drive. At the time of the survey, the building was vacant and in a partial state of demolition. The single-story building has a concrete foundation and a T-shaped footprint. It was covered in stucco prior to partial demolition. The exterior siding at the time of the survey consisted of diagonal wood boards that were originally used as lathing for the stucco exterior. The roof is cross-gable with shallow eaves and is clad in red clay tiles. Concrete steps with an iron railing lead to the primary entrance which is located within the northeast corner of the south façade and consists of a recessed entrance with a wood door. Since demolition began, the windows have been removed. Originally they consisted of wood casements. Other features of the building include bird's nest vents made of red clay tiles located under the apex of the gable end projections. The building has a chimney on the west gable end lateral interior. The interior of the building consists of wood floors, plaster walls, arched entryways, pocket doors, and exposed beams on the ceiling. The building plan consists of eight rooms (Oden House 1999).

Extensive modifications to the building include the removal of the stucco, windows, chimney cap, as well as the addition of the ramp that is on the south façade. This ramp does not appear in a 2003 photo of the building, only the concrete steps that lead to an open stoop in front of the primary entrance door (Gregory 2003). As a result, there has been a significant loss of integrity of materials, design, workmanship, feeling, and association.

The detached garage building (12B) is located east of the residence. The garage consists of a single-story building clad in textured stucco with overhanging eaves and exposed rafters. The roof is pyramidal and clad in red clay tiles. There is a metal vented cupola at the peak of the roof housing a siren. The garage also has paired aluminum sash windows and two pedestrian doors on the east and west façades, and a metal roll top garage door on the south façade.

4.1.4 Building 1A

Building 1A, the Art Center, was constructed in 1972 (Figure 12). The Modern single-story building has a rectangular floor plan and concrete foundation. The educational building has brick and poured concrete siding and a flat roof. The windows are primarily fixed steel and are located on the north façade. Concrete steps with metal railings lead to the primary entrance on the south façade that consists of a partial-width arcade with rectangular concrete columns. At the center of the walkway within the arcade is a large glass display case flanked by walls of built-in lockers. In between the columns of the arcade are large concrete bulkheads adorned with geometric mosaics facing south; the north sides of the bulkheads have built-in lockers. Within the arcade are five entrances consisting of flush metal doors, some with partial glazing.



Figure 12. View of the south façade of Building 1A.

On the north, the façade consists of a poured concrete exterior with squared pilasters. In between the pilasters are boarded-over window openings with small partitions in between. Above the row of boarded-over windows are rows of steel-framed windows. Some classroom entrances are located on this façade, as well as a recessed porch entrance with mechanical equipment within. There is a kiln for the ceramics department located on the east façade within a walled partition. Secondary entrances are located on the east and west façades.

Modifications to the building include the boarding-over of windows on the north façade. Landscape features include walled-in garden beds on the south façade, and grass lawns between concrete walkways. The interior of the building consists of concrete tile floors, locker partitions, drop tile ceilings, and classroom tables and chairs. The integrity of the building is good as the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was designed by the architectural firm Austin, Field, & Fry.

4.1.5 Building 4

Building 4, the Administration building, was constructed in 1965 in the Modern style (Figure 13). It is a two-story building located on the northeast of Temple and Grand avenues on the southwest side of the Mt. SAC campus. The administration building has a rectangular footprint with a concrete foundation. The upper portion of the building's exterior is clad in brick with scored concrete siding on the lower portion of the building. The brick is laid in three sections of running bond with a single sailor course in between each section. The concrete on the lower portion of the building is scored in a grid pattern. The roof is flat and has a poured concrete parapet cap. There is a penthouse on the roof that houses mechanical equipment. The primary entrance is located on the east façade and consists of a centrally-located recessed aluminum and glass entryway with a steel canopy over the double doors that have steel beams and screens to shade the entrance. The recessed entrance has been framed-in with steel posts and beams and accommodates lighting fixtures at the ceiling of the entryway. A secondary entrance is located on the north façade where a non-original steel canopy has also been installed. The south and west façades also have secondary entrances located within the lower portion of the building that has scored concrete siding. These entrances, like the east and north, consist of aluminum-framed glass entryways.



Figure 13. View of the primary (west) façade of Building 4.

Modifications to the building include two additional fixed windows on the north façade, four additional fixed windows on the east façade, the steel post and beam framing and canopy on the east entrance, the canopy on the north façade's entrance, and the addition of five windows on south façade. According to original building plans, the narrow paired windows on the north and south façades were originally filled in with colored glass block windows, and have since been replaced with fixed metal windows. The interior of the building consists of carpet and tile floors, squared columns and a designed angular, cut-out ceiling. The building retains high integrity of material, location, setting, and association. The building has lost some integrity of design and workmanship with the installation of a number of additional windows that change the fenestration of the building. The building retains sufficient overall integrity.

Building 4 was originally constructed to function as the administration center for registration, admission counseling, and other auxiliary services. The architectural firm Austin, Field, & Fry designed the building and the Steed Brothers Construction Company of Alhambra were the building contractors.



Figure 14. Oblique view of the north and west façades of Building 6.

4.1.6 Building 6

Building 6, the Library, was constructed in 1963 in the Modern style (Figure 14, above). It is a three-story building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The educational building has a rectangular footprint with a concrete foundation. The exterior is clad in brick and scored concrete siding. The brick is laid in three sections of running bond with a single

sailor course in between each section. Precast concrete panels are located in groupings of three, creating projecting bays along the upper-stories' exterior plane. The roof is flat and has a screened projection that holds mechanical equipment. The primary entrance is located on the south façade and consists of a glass and metal entryway underneath a partial-width porch with a canopy projection that is supported by two perforated brick walls. A secondary entrance is located on the north façade and consists of a recessed entryway with two electronic sliding doors surmounted by scored concrete siding. Windows are located on the side of the bay projections and are fixed glass. There are louvered vent openings along the lower portion of the building. The interior of the building includes large linoleum tile floors and drop-tile ceilings with a large cut-out on the ceiling at the south entrance that leads to a rotunda on the second floor.

Modifications to the building include the redesigning of the concrete bays. According to original building plans, the concrete bays were precast in a Mid-Century Modern geometric design. Other modifications include replacement doors, the addition of windows along the bay projections, and the replacement of the south façade's porch canopy. The building has experienced some loss of integrity of materials, design, workmanship, and feeling.

The building was designed by the architectural firm Austin, Field, & Fry; the building contractors were the Steed Bros. of Alhambra, California. It was originally constructed to house a library with four sections: biological-applied sciences and physical sciences, technical trades, social science, and the humanities.

4.1.7 Building 7

Building 7, the Science South building, was constructed in 1960 in the Modern style (Figure 15). It is a two-story building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC College campus. The educational building has an L-shaped floor plan with a concrete foundation. The exterior is clad in scored concrete siding with a brick bulkhead along the east. The roof is flat and has a screened projection that holds mechanical equipment. The primary entrance is located on the southwest corner of the building and consists of concrete steps and a concrete ramp that lead to three metal and glass double-doors located within a recessed entryway covered by a flat canopy porch roof. On the south section of the L, the building is single-story. There is a secondary entrance on the east end of this section which consists of a recessed entryway with a metal canopy. This section has no windows, but there are louvered vents on the south façade. On the north façade the exterior siding is flush concrete with the brick bulkhead. The north section of the L consists of two stories. On the inside of the L on the east façade of the north section, there are two rows of fixed metal windows that line the façade. These rows of windows are interrupted by vertical projections that create bays along the façade. On the north façade of the north section is another entrance to the building that has a metal canopy over a recessed entryway. Above this entryway are two columns of windows. The west façade of the north section of the building consists of another entrance that is within a brick and concrete entrance on the northwest corner of the building. The west façade is also lined with two rows of fixed metal windows. The interior of the building includes linoleum tile floors, a floating brick wall within the south entrance, and plaster ceilings.

Modifications to the building include the additional door on the south façade, addition of the canopy on the entrance on the south section of the L's east façade, the replacement of all the windows, the removal of the louvered shade projections over the windows, the canopy over the entrance on north façade, and the new entryway projection on the northwest corner of the building. These modifications have resulted in some loss of integrity of materials, design, workmanship, feeling, and association.

The building was designed by the architectural firm Austin, Field, & Fry.



Figure 15. Oblique view of the west and south façades of Building 7.



Figure 16. Oblique view of the south and east façades of Building 9A.

4.1.8 Building 9A

Building 9A, the Bookstore, was constructed in 1969 in the Modern style (Figure 16, previous page). It is a single-story educational building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The bookstore has a rectangular plan with a concrete foundation. The exterior is clad in brick siding with vertical concrete post inlays. The roof is flat with concrete parapet caps. The primary entrance is located south façade and consists of a full-width porch canopy made of a poured concrete roof and squared posts. Within this arcade are three recessed entrances surrounded by sidelights and transom windows. There are also two illuminated display cases built into the wall plane as well as two pass-thru counter windows on this façade. There is a secondary entrance located on the west façade that has a metal canopy and a mosaic tile wing wall covering part of the recessed entrance. On the north façade is a sloped driveway that leads to a loading dock. Modifications to the building include replacement doors. The building retains integrity of materials, design, workmanship, feeling, association, setting, and location.

The building was designed as the Student Union and Activity Facility by the architectural firm Austin, Field, & Fry.



Figure 17. Oblique view of the east and south façades of Building 11.

4.1.9 Building 11

Building 11 was constructed in 1960 as the second unit in a new physical science complex on the Mt. San Antonio College campus (Figure 17, above). Building 11 is a generally L-shaped one-story Modern educational building with a basement. A lower, windowless addition at the southwest tip of the building is clad in smooth stucco. The building primarily has brick and smooth stucco cladding and a flat roof with no eaves. A wing wall at the southeast façade of the main wing is clad in smooth stucco with widely spaced scoring. Deep, flat metal-clad cantilevered roofs shelter the open passageways extending across the

northeast and southwest façades of the main wing. A series of stucco-clad pylons support the roof at the south end of the southwest façade of the main wing. A metal pergola extends across the northwest façade. Back-to-back classrooms are accessed from open corridors on both sides of the building, and breezeways provide access through the two wings of the building. Fixed-pane windows and flat metal doors mark the locations of the classrooms. Lecture halls are located in the southwest wing, with a metal pergola and corrugated metal canopies over the doors.

Modifications to the building include the addition to the secondary wing at the western terminus of the original building, the metal pergolas at the northwest façade and at the southwest façade of the secondary wing, and a series of concrete ramps, stairs, and paths with steel tubular railings. These modifications have resulted in some loss of integrity of materials, design, workmanship, feeling, and association.

4.1.10 Building 12

Building 12, the Counseling Support or North Hall building, was constructed in 1963 in the Modern style (Figure 18). It is a single-story educational building located on the located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The building has a V-shaped plan with a concrete foundation. The exterior is clad in brick siding. The roof is a low-pitched hipped roof with overhanging eaves and clad in metal. The primary entrance is located within a full-width recessed arcade on the south façade and consists of several doors that lead to offices and classrooms. The porch arcade is supported by large rectangular columns of scored concrete. The doors and windows have been replaced since the building's original construction and consist of metal-framed opaque windows and doors. There is a central breezeway that leads to the rear of the building, which has a parking lot. The north façade of the building consists of multi-light fixed metal-framed windows. There is a chimney near the center of the building along the rear of the ridgeline along the roof. Modifications to the building include the replacement of doors and windows and roofing material. According to original building plans, the roof was made of tile, and the north façade did not have windows. Landscape features include a concrete central courtyard to the south of the building with planting beds and a central walkway. These modifications have resulted in significant loss of integrity of materials, design, workmanship, feeling, and association.

The building was designed as the Agricultural Science Building and originally had animal labs, offices, and classroom space. It was designed by the architectural firm Austin, Field, & Fry.

4.1.11 Buildings 26A/B/D

Buildings 26A, B, and D (Humanities North, Humanities East, and Humanities South, respectively) were constructed in 1967 as a complex of educational buildings for the humanities (Figures 19-21). The Modern-style buildings have flat roofs and are clad in red brick with a wide band of poured concrete at the top and base of the buildings. Because of the grade of the site, the complex is three stories in height at the north and four stories at the south. The three buildings are arranged in an H shape, forming a courtyard at the west and an area to accommodate Building 26C (the Planetarium) at the east. The buildings are connected by continuous open passageways. A series of regularly spaced rectangular concrete columns extend from the ground level to the roof, and metal railings span the distance between the columns. The floor of each passageway provides a shelter for the passageway below, and a wide, deep roof provides shelter for the passageway at the highest level. The complex has interior staircases at each end of the two larger buildings; at the west façades, elevators are housed in scored-concrete elements that project from the brick façade of the building.

The focal point of the complex is the spacious landscaped courtyard. At the east end of the courtyard is a three-story suspended concrete staircase anchored by a multi-story curved brick-clad pylon. At the center of the concave side of the pylon is a dramatic modern clock with stylized numbers and hands separately mounted on the façade.



Figure 18. View of the south façade of Building 12.



Figure 19. View of the east façade of Building 26A.



Figure 20. View of the breezeway between Buildings 26A and B.



Figure 21. View of the second story corridor of Building 26D.

The buildings have back-to-back classrooms accessed from the open corridors. Classrooms have flat metal doors, generally with a single large light. Windows are sparse throughout the complex, consisting of one or two fixed-pane windows for each classroom.

The complex was designed by campus architects Austin, Field & Fry. The contract for the "social science center" for $3,053,000 was awarded to Steed Bros. Construction Co. of Alhambra in March 1966. At the time, the project was said to be the largest construction project in Mt. SAC's history. The complex was planned for 102,000 square feet, including 63 classrooms, five laboratories, 50 offices, and a lecture room in the connecting building. It was to house the sociology, psychology and philosophy, historic and political science, and public service and safety departments (*Progress-Bulletin* 1966).

Modifications to Buildings 26A/B/D include addition of elevators to the west façades of Buildings 26A and 26C and a pedestrian bridge from the second floor of Building 26A north to the parking lot. As a result, there are minor losses of integrity of materials, design, and workmanship. The interiors were not accessible at the time of the survey.



Figure 22. View of the south façade entrance of Building 26C.

4.1.12 Building 26C

Building 26C, constructed in 1967, houses the Planetarium (Figure 22, above). It is associated with the Humanities complex (Buildings 26A/B/D) and is stylistically similar. Building 26C is a Modern one-and-a-half-story building with an irregular floor plan. The nearly flat roof of the building extends slightly upward toward the east. At the west end, it is physically connected to Building 26B, and it intrudes on the space between Buildings 26A and 26D without touching.

Building 26C is clad in red brick with a wide band of poured concrete at the top and base. The exterior walls are vertically scored. Two identical primary entrances are aligned with each other at the north and south façades. The primary entrances are inset into the main mass of the building and are defined by a projecting one-story poured-concrete frame with two square cut-outs on one side and a concrete planter box below. Individually mounted aluminum letters reading "Jim and Eleanor Randall Planetarium" is mounted on a wall of rectangular, vertically laid brown glazed ceramic tile to the side of each door. Each entrance has a double aluminum-framed glass door with a glass transom above and side lights. A series of three bubble-style acrylic skylights is above each entrance. Two secondary entrances consisting of flat metal doors are at the north façade. Other than the lights near the primary entrances, the building has no windows.

Building 26C was built as part of the new social science center (now called Humanities). Constructed at a cost of $88,000, it housed a 50-seat planetarium (*Valley Tribune* 1966). It was designed by campus architects Austin, Field and Fry and built by Steed Brothers Construction Co. of Alhambra (*Progress-Bulletin* 1966).

Exterior modifications to Building 26C appear to be minimal, and it retains high integrity in all seven aspects. Architectural plans show renovations in about 2001. The interior of the Planetarium was not accessible at the time of the survey.

4.1.13 Buildings 28A/B

Buildings 28A and 28B were constructed in 1971 as a single complex to house the Technology Center (Figure 23). The complex has an irregular plan with sections of varying heights. The Modern complex has a flat roof and is clad in red brick with poured concrete with scoring. The east portion of Building 28A is clad in aggregate poured concrete with vertical scoring. There are no eaves, with the exception of the four-story Building 28B to the south, which has a dramatic flat, deep overhang on all four sides. At the west and east façades of Building 28B, a poured concrete slab with a scored grid extends the full height of the building. It is offset from the brick façade, and a door and a vertical row of windows is tucked behind each side of the projection. In contrast, the north and south façades are simple brick-clad walls with squared projecting concrete pilasters extending the full height of the building.

A one-story wing connects Building 28B to Building 26A to the north and east. The primary entrance recessed below a heavy horizontal concrete shelter consists of a double set of aluminum-framed glass doors set in a wall of glazing. A row of evenly spaced vertical windows extends along to the façade to the south of the entrance at the west façade, and a one-and-a-half-story windowless wing housing a large lecture hall is to the north. There is a secondary entrance with a small canopy at the north façade.

The interiors of the west and south sections of the complex consist of double-loaded interior corridors with classrooms accessible on both sides. The ceilings are acoustical tile with recessed fluorescent lighting, the walls are painted brick and plaster, and the floors are asphalt tile. There is an elevator and two staircases. The staircases have mosaic tile wainscoting, an ornamental feature that is repeated in the first-floor hallways.

The Technology Center opened in the fall of 1971, although the shop-laboratory was in use by fall of 1969 It housed space for aeronautics, machine tool, drafting, electronics, and other technical vocational programs (*Progress-Bulletin* 1971). It was designed by architects Austin, Field & Fry, who were responsible for the redevelopment plan of the campus in the late 1950s and who designed several of the individual buildings added to the campus in the postwar period and into the 1970s.

Buildings 28A and 28B appear to be minimally altered, although some of the corrugated concrete sections toward the northeast appear to have been added later. The buildings retain high integrity in all seven aspects.



Figure 23. Oblique view of south and east facades of Building 28 A/B.

4.1.14 Building 47

Building 47, the Maintenance and Facilities building, was constructed in 1968 in the Modern style (Figure 24). It is a single-story maintenance building located on the southwest side of Temple Avenue and Service Road on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in baked enamel finished galvanized steel siding with a concrete block bulkhead. The roof is a low-pitched side gable roof with overhanging eaves and clad in metal. The primary entrance is located on the north façade. The windows are primarily aluminum sliding windows. There are also roll-top metal garage doors for maintenance equipment and vehicles. On the gable ends are large steel frames that sit over the steel siding. There is no ornamentation on the building. The interior of the building includes tile and carpet floors with garage spaces and offices.

Constructed as the Maintenance and Operations building, it was designed to house five offices and shops for carpenters, electricians, plumbers, general maintenance, painters, and gardeners. It was part of a larger complex which included Building 48 to consolidate facilities, maintenance, operations, receiving-distribution, and transportation departments in a single modern complex called the College Service Center. The cost was $1.1 million, including outdoor storage areas and the construction of Bonita Drive. The complex was designed by Mt. SAC campus architects Austin, Field & Fry as an element of the college master plan, with Hartman Construction Company of San Bernardino as contractor. The modern concrete block-and-steel buildings are Type V-N construction. Groundbreaking for the center was August 1967, with completion on August 2, 1968 (Mt. SAC c. 1948).



Figure 24. Oblique view toward the west of the northeast and southeast façades of Building 47.

The center originally included two buildings, as well as parking lots and storage yards. Building 47, with an area of 21,000 square feet, was dedicated to maintenance and operations and included air-conditioned offices, locker rooms, and custodian, grounds, plumbing, heating-ventilating, electrical, paint, and carpenter shops. Building 48, with an area of 34,450 square feet, was dedicated to transportation and receiving-distribution. It included offices, a large warehouse, hydraulic dock levels, and a three-bay garage with two hoists.

Modifications to Building 47 include the replacement metal-framed windows on the northeast corner of the building. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

4.1.15 Building 48

Building 48, the Warehouse and Transportation building, was constructed in 1968 in no particular architectural style (Figure 25). It is a single-story maintenance building located on the southwest side of Temple Avenue and Service Road on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in vertically-oriented steel siding with a concrete block bulkhead. The roof is a low-pitched side gable roof with overhanging eaves and clad in metal. The primary entrance is located on the north façade. The windows are primarily multi-light steel security windows. The building also has metal louvered vents under the roofline and over the roll-top metal garage doors. There is no ornamentation on the building. The interior of the building includes bays for equipment and vehicles as well as a large warehouse space with a concrete floor, a tall exposed metal frame ceiling, and metal shelving for storage.



Figure 25. Oblique view toward the south of the northwest and northeast façades of Building 48.

The building was constructed as the Maintenance and Operations building and was designed to house three offices and warehouse storage space as well as an adjustable dock by the architectural firm Austin, Field & Fry.

There appear to be no major modifications to the building. As such, the building retains integrity of design, materials, workmanship, feeling, association, location, and setting.

4.1.16 Farm Buildings History

The Mt. SAC School Farm has been an integral part of the campus since at least the postwar era. In the 1950s, there were areas dedicated to horticulture, turkeys, chickens, pigs, and cattle. There were orchards of citrus and avocados, as well as vineyards. During the 1950s, a beef barn and corrals, an agricultural engineering building, and tractor storage buildings were constructed. In the 1970s, the animal sciences curriculum was expanded, and a veterinary laboratory and small animal vivarium (F5) were built (Hall and Pietzsch 1996:77). The buildings on the farm were simple utilitarian structures that were initially considered temporary. The first permanent agricultural facility to be built at the college was the agricultural sciences building (Building 12), which is on the main campus and not a part of the farm per se. In 1969, campus architects Austin, Field & Fry reported on campus buildings that did not conform to the earthquake specifications of the Field Act. Among the 13 buildings slated to the replaced or remodeled during the 1969-1970 school year, most were in the agricultural sciences area (Mt. SAC archives, "SAC Accepts Campus Architectural Report," no source, n.d.).

Building F1

Building F1, the Horticulture Unit/G3, was constructed in 1959 in no particular architectural style (Figure 26). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. It has a rectangular, open plan sitting on a poured-concrete foundation. The moderately pitched front-gabled roof is covered in asphalt shingles. Three turban-style aluminum ventilation units sit at the ridgeline of the roof. The walls consist of horizontal wood boards on the lower portion and screens or aluminum slider windows on the upper portion. A Greenhouse (G3) is connected to the north end of the building. The entrance is a flat double metal door at the south façade.

At the interior a wall of glazing with a central door separates Building F1 from Building G3. The ceiling is exposed wood beams with plywood in between. The major beams are supposed by round steel poles. The floor is poured concrete. Lighting is rows of hanging fluorescent fixtures. Modifications to the building include the replacement windows on the east façade. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Horticulture Head House by the architectural firm Austin, Field & Fry.

Building F2A

Building F2A, the Horticultural Offices, was constructed in 1971 in no particular architectural style (Figure 27). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. It has a rectangular plan. The front-gabled roof has a small clerestory at the ridgeline and is covered in corrugated metal. Wide eaves at the north and south façades have exposed rafters. There are large centrally located barn-style doors at the west and east façades. The walls and doors are constructed of corrugated metal. Horizontal openings at the top of the south wall are covered in wire screen. The interior is a single open space. It has exposed wood beam ceilings and poured concrete and dirt flooring. Lighting consists of strings of bare lightbulbs. Modifications to the building include the boarding over of windows on the east and west façades with wood paneling, and replacement of the primary entrance door. The building has undergone loss of integrity of materials, design, workmanship, and association.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.

Building F2B

Building F2B, the Horticultural Offices, was constructed in 1960 in no specific architectural style (Figure 28). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a front gable roof clad in standing seam metal sheets. Wide eaves at the north and south façades have exposed rafters. The primary entrance is located on the west façade and consists of a top hinged sliding metal door. A row of metal-framed windows line the south façade and sit underneath the overhanging eaves. There are no windows on the north façade. The interior is a single open space. It has exposed wood beam ceilings and poured concrete and dirt flooring. Modifications to the building include the boarding over of the north façade with wood paneling, and replacement of the east façade door. The building has undergone loss of integrity of materials, design, workmanship, and association.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.



Figure 26. View of the south façade of Building F1.



Figure 27. View of the west façade of Building F2A.



Figure 28. View of the west façade of Building F2B.

Building F3A

Building F3A, the Old Dairy Unit, was constructed in 1960 in no particular architectural style (Figure 29). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in cement plaster siding. The roof is a front gable roof clad in standing seam metal sheets. The primary entrance is located on the west façade and consists of two metal-framed glass door. A row of metal-framed windows line the south façade and sit underneath the overhanging eaves. There are also galvanized metal vertical louvers on the south end of the building that is on the south and north façades. There is a breezeway on the south and north façades that is connected by the continuation of the front gable roof and has a sliding metal door. Modifications to the building include the removal of a concrete wall on the north façade. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Dairy Unit by the architectural firm Austin, Field & Fry.

Building F4A

Building F4A, the Swine Market Pens, was constructed in 1971 in no specific architectural style (Figure 30). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in galvanized metal siding on the west end of the building. The building is mostly unenclosed on the east part of the building, and has no exterior walls. There are concrete curbs along the east, north, and south façades. There appear to be no modifications to the building. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Swine Unit by the architectural firm Austin, Field & Fry.



Figure 29. Oblique view of the north and west façades of Building F3A.



Figure 30. Oblique view of the north and west façades of Building F4A.

Building F5

Building F5, the Vivarium, was constructed in 1971 in no particular architectural style (Figure 31). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The primary entrance is located on the west façade and consists of a single flush wood door. There is a secondary entrance on the south façade and consists of a single flush wood door next to double partially-vented doors. The east end of the building is open on the south façade. Modifications include replacement siding and possible alterations in fenestration. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.



Figure 31. View of the west façade of Building F5.

Building F6A

Building F6A, the Breeding Barn, was constructed c. 2000 in no specific architectural style (Figure 32). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in metal shed siding. The roof is a front gable roof with shed roof extensions that are clad in standing seam metal sheets. The primary entrance is located on the east façade and consists of a top-hinged sliding metal door. A row of metal-framed windows line the south and north façades that sit underneath the overhanging eaves of the front gable roof. There are secondary entrances on the north and south façades and a corral on the south end of the building. The interior is made of metal-framed horse stalls with a concrete tile floor.



Figure 32. Oblique view of the east and north façades of Building F6A.

Building F7

Building F7, the Equipment Tech Unit, was constructed in 1971 in no specific architectural style (Figure 33). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a front gable roof clad in standing seam metal sheets. The primary entrance is located on the east façade and consists of a top-hinged sliding metal door. The windows are metal industrial jalousie windows. Modifications to the building include the boarding over of the north façade with wood paneling and replacement of the east façade door. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed by the architectural firm Austin, Field & Fry.

Building G2

Building G2, the Greenhouse, was constructed in 1963 in no particular architectural style (Figure 34). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a curved semicircular roof clad in vinyl sheets. The primary entrance is located on the south façade and consists of a top-hinged sliding metal door. There are no windows on the building. The building appears to be completely remodeled from its original construction.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.



Figure 33. View of the east façade of Building F7.



Figure 34. View of the south façade of Building G2.

4.1.17 Wildlife Sanctuary

In 1965, Mt. SAC college officials began to make plans for the Wildlife Sanctuary to the east of the intersection of Temple and Grand avenues, at a corner where a gas station had been considered (*Los Angeles Times* 1965). Located on an 18-acre triangular site, the proposed sanctuary was organized around an existing flood channel, which had been a naturally flowing creek until the 1960s (historicaerials.com 1953, 1964). In addition to extensive planting, landscaping included a lake, marshes, a meadow, a pond, an amphitheater, and a network of bridges and paths (Figure 35). The main goal was to use the landscaped area for educational purposes, but it was also intended for wildlife observation and recreation by the public. Paul Shaddle, chair of the biological sciences department, and Professor Bill Hawkins developed the plan for the Wildlife Sanctuary (*Valley Tribune* 1965), which was designed by Santa Barbara landscape architect John R. Russell and constructed by contractor Roy C. Barnett. The Sanctuary was completed in March 1967, but did not open until later that year to allow native animals displaced by construction to return and give vegetation a chance to grow (*Walnut Valley Bulletin* 1967). Biology students were trained to conduct tours for faculty, students, and the public.



Figure 35. View of a dirt path and field within the Wildlife Sanctuary.

The current Wildlife Sanctuary is a landscaped area situated on a fenced 10-acre site to the east of the intersection of Temple and Grand avenues. To the northeast of the Sanctuary are the campus soccer fields and a parking lot. The primarily heavily wooded Sanctuary includes a Walnut Woodland, a Native Plant Exhibit, a Lake Shelter, Sycamore Woodland, as well as open grassy areas. Vegetation consists of a wide variety of both native and non-indigenous species, including sumac, toyon, bay trees, live oak, sycamore, and black walnut. Within the Sanctuary are water features including a lake, a swamp, and a pond, with a central stream running through the site in a northwest to southeast direction. A system of bridges, paths, and walkways provides pedestrian circulation throughout. Several small amphitheaters, shelters, and

seating areas are scattered throughout the site. At the time of the survey, construction was under way to expand the Sanctuary by continuing the creek to the southeast.

A hill to the southeast of the Sanctuary displays lettering reading "MSAC" in white-painted concrete on the north and south flanks. According to Sanctuary personnel, the hill was added to the Sanctuary as a mitigation for the widening of Grand Avenue, which meant a loss of acreage to the Sanctuary (personal communication, Janine Petersen, March 25, 2016).

4.1.18 Previously Documented Contributing Resources

Buildings documented as contributing resources to the historic district in 2002 had not been surveyed for more than five years. As such, during the current survey effort, those buildings were re-documented and included Buildings 1B/C, 3, 10, 17, 18, 19, and 20 (Figures 36-40). All buildings were found to still be extant and that no major alterations had taken place since they were recommended eligible in 2002.

Buildings 27A, B, and C and Building 9C had been documented in 2012, and in accordance with guidelines from the California State Historic Preservation Office, did not require resurvey as that survey look place within five years. However, the prior survey report was reviewed (Davis 2012), and the buildings were visually inspected during this effort to confirm that no major alterations had taken place.



Figure 36. Detail of mosaic on east façade of Building 1B/C.



Figure 37. Primary (north façade) of Building 3.



Figure 38. View of the west façade of Building 10.



Figure 39. Oblique of east and north façades of Buildings 17, 18, 19.



Figure 40. Oblique view of the west and south façades of Building 20. Building 18 is to the left of the photo.

4.2 ARCHAEOLOGICAL SURVEY

Intensive pedestrian archaeological survey was conducted by ASM Senior Archaeologist Sherri Andrews. Survey was undertaken primarily within the area of the Stadium and the Mt. SAC Wildlife Sanctuary, as the other Project areas are currently developed with ground surfaces obscured by buildings, sidewalks, parking lots, and introduced landscaping.

The Stadium area survey was conducted on January 21, 2016. This entire area has been heavily modified by construction of the Stadium and its surrounding facilities, as well as additional sports fields, parking lots, etc. (Figure 41). There was little evidence of extant original landforms or ground surfaces in the area. Only areas of exposed soils within and surrounding the structures were available to be examined for evidence of the presence of prehistoric or historic artifacts or deposits.



Figure 41. View looking southeast of disturbed ground west of Stadium's press box (50F).

As some modifications in the form of additions to the Mt. SAC Wildlife Sanctuary are also part of the Project, the Sanctuary was surveyed on March 26, 2016. Descriptions of the history of the Sanctuary (see above) indicate that its creation included extensive landscaping within its 10-acre boundaries. As such, while this represents one of the last open spaces on the campus, it is unclear the degree to which the ground surface and original features and topography were modified at that time or since. As in the Stadium area, all accessible areas within the Sanctuary were examined for the presence of archaeological artifacts or deposits. Accessible areas were primarily found along the edges of the maintained paths that have been constructed throughout the Sanctuary and around areas cleared for use as teaching locales. In fact, on the date of the survey, a large group of school children was present in the Sanctuary for a day-long teaching experience about Native American lifeways. Additionally, it was observed that significant ground disturbance was already underway in the area to the south of the Sanctuary where its expansion will be taking place. That area was under active construction and as such, not accessible for survey.

4.3 SUMMARY

No previously undocumented archaeological artifacts, features, or deposits were encountered or identified within the Project area as a result of the archaeological surveys.

Twenty-two potential contributing resources to the Mt. SAC Historic District were documented as a result of this survey from November 2015-March 2016. Of those 22, one was determined to not be old enough to be a potential contributor (F6), and one was found to not retain sufficient integrity (12). Of the 24 buildings previously identified as contributing resources to the historic district, 10 were found to have been demolished, and one additional resource was documented as having lost integrity (12A/B).

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5. EVALUATION OF HISTORIC RESOURCES

5.1 MT. SAC HISTORIC DISTRICT

ASM concurs with our prior recommendation of eligibility of the Mt. SAC Historic District, with the addition of 20 additional contributing resources, and a boundary expansion as indicated on Table 4 and Figure 42. Consistent with our prior recommendation, the district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of Education, for its association with the development of Walnut, California, and its surrounding communities. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). Each eligible building/structure contributes to the educational theme of the historic district, was built during the period of significance, and is located within the boundaries of the historic district. All contributing resources also maintain good individual integrity in all seven aspects.

ASM seriously considered whether the historic district as a whole retains sufficient overall integrity, given the new construction and demolition that has taken place within the district since it was first identified in 2003 (Figure 43). Four major permanent buildings have been constructed since 2003. Buildings 60 and 61 were built in 2006 and 2009, respectively. More recently, the Design Technology Center, Building 13 (2012) and the New Food Services building (2015) have been constructed. A few other buildings have been constructed in the south and east area of campus. Building 9B, built in 1994, was significantly expanded in 2009. Additionally, 10 buildings originally identified as contributing resources in 2003 have since been demolished, and one more has lost integrity. As a result of this evaluation, 44 contributing resources to the Mt. SAC Historic District have now been identified. Of those 44 contributing resources, 33 (75 percent) remain as eligible contributing resources. The NRHP bulletin *How to Apply the National Register Criteria for Evaluation* discussion on integrity for historic districts notes "[f]or a district to retain integrity as a whole, the majority of the components that make up the district's historic character must possess integrity even if they are individually undistinguished" (National Park Service 1991:46). The Mt. SAC Historic District retains significantly more than a majority of its contributing resources, and despite the four major buildings added to the historic center of campus, the district still retains sufficient continuity and cohesion to convey the sense of its historic environment from the end of its period of significance. A comparison of its appearance in 1972 to a contemporary aerial photograph is a good illustration of the similarities and differences (Figures 44 and 45).

Furthermore, NRHP bulletin *How to Apply the National Register Criteria for Evaluation* states that for properties eligible for association under Criterion A (comparable to CRHR Criterion 1), "integrity of design and workmanship might not be as important to the significance of the property" as the other aspects of integrity (National Park Service 1991:48). Although the Mt. SAC Historic District retains sufficient integrity in all seven aspects, it especially retains those most important aspects of integrity for associational significance: location, setting, materials, feeling, and association. Finally, it passes the "basic integrity test" as defined by the NRHP: "whether a historical contemporary would recognize the property as it exists today" (National Park Service 1991:48).

The historic district is not recommended as eligible under CRHR Criterion 2 or Criterion 3. The district is also not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

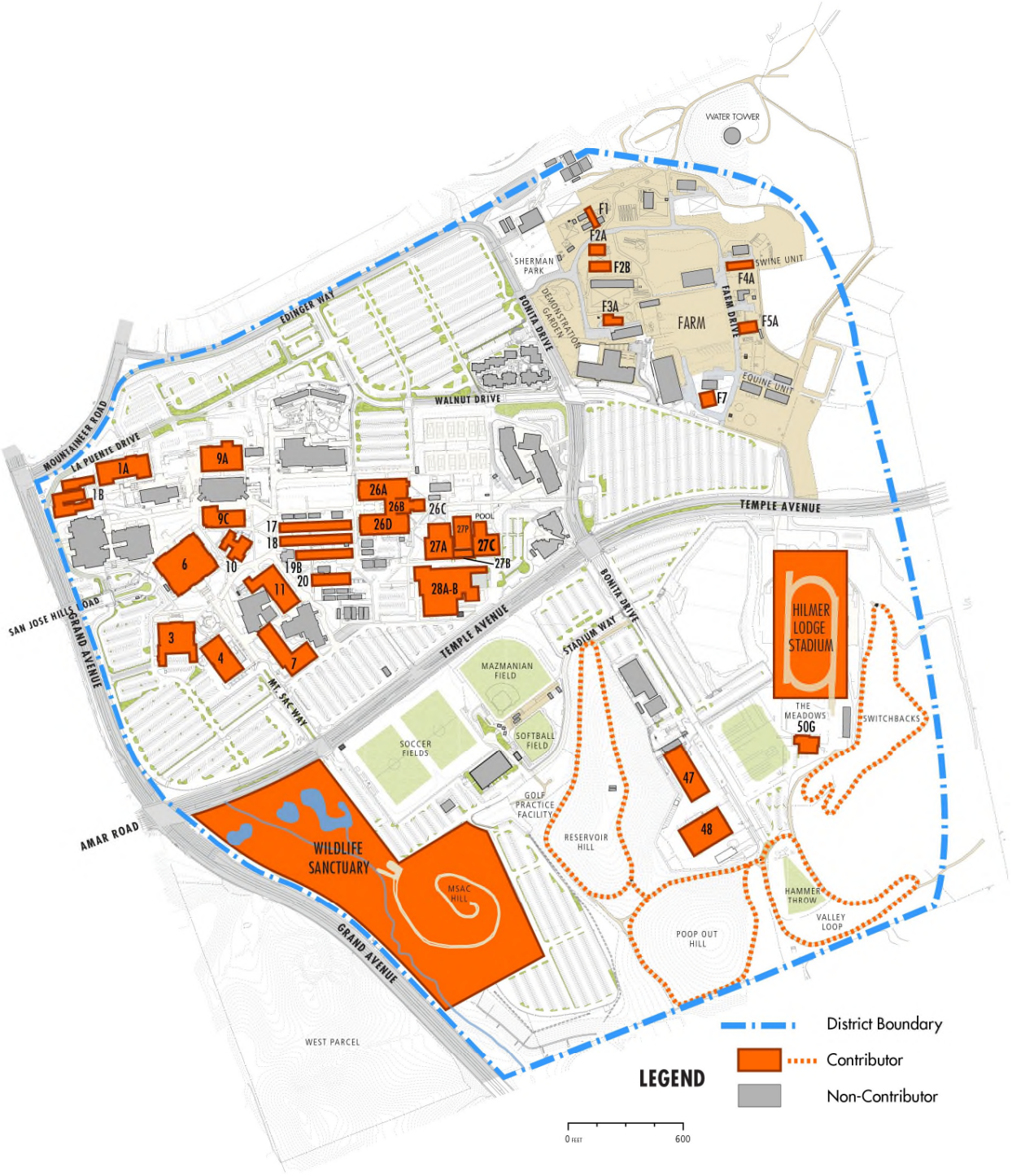


Figure 42. Mt. SAC Historic District identifying contributing resources for comprehensively surveyed campus, April 2016.



Figure 43. Historic aerial photograph of the Mt. SAC campus at the end of the period of significance, 1972.

(*Courtesy of Historicaerials.com*)



Figure 44. Current aerial photograph of the Mt. SAC campus.

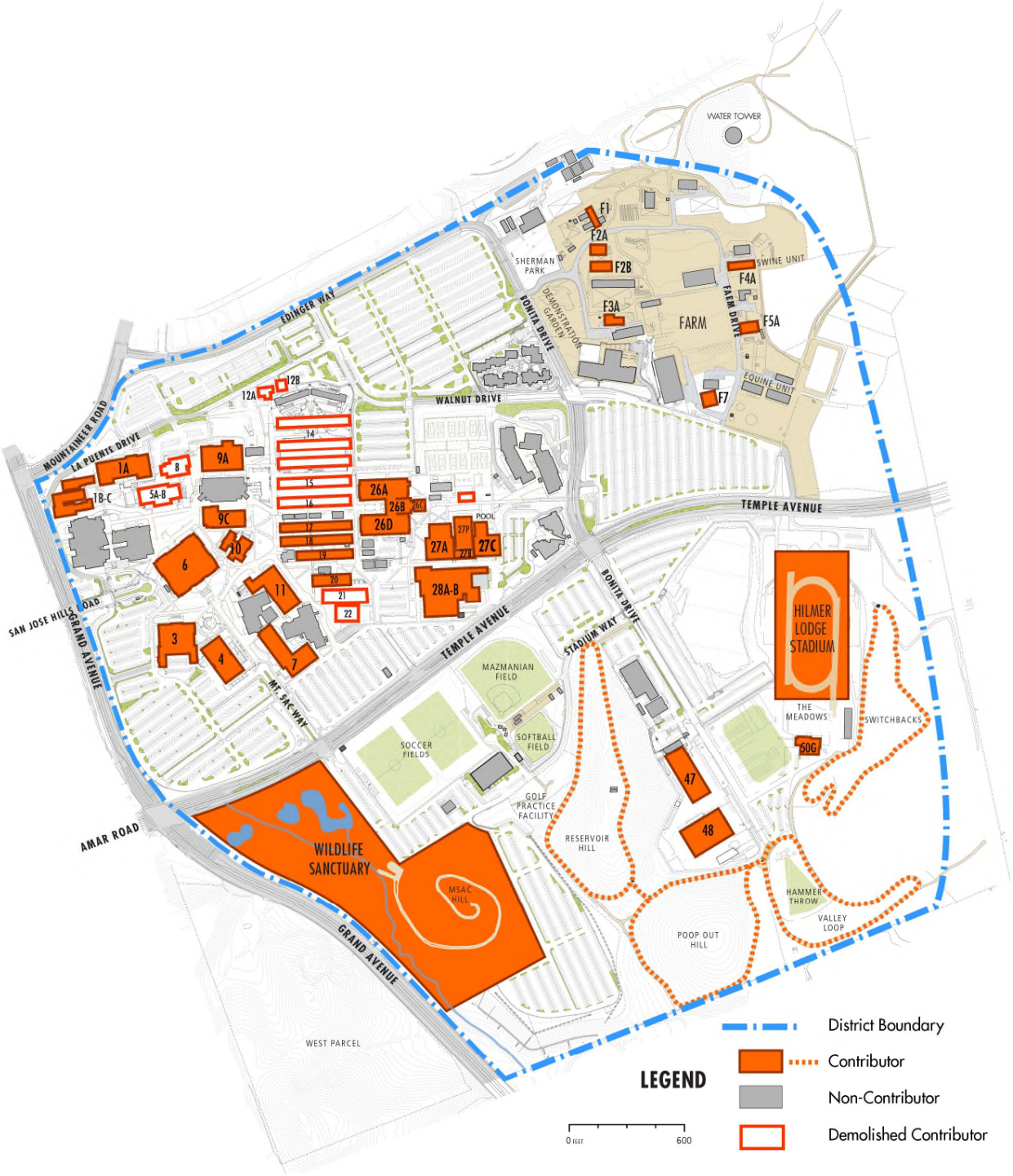


Figure 45. Mt. SAC Historic District illustrating extant contributing resources and demolished contributing resources since 2003 establishment of historic district, April 2016.

Several buildings are non-contributing resources. Counseling Support (12) and Oden House (12A/B) no longer retain sufficient integrity to the period of significance—as such, they are not recommended as contributors. ASM concurs with our prior recommendation that the Mountie Grill (19C) is not directly associated with the theme of Education, and therefore is a non-contributing resource. Finally, although Mt. SAC's current records indicate that the Breeding Barn (F6A/B) was constructed in 1971, the building is not evident on aerial photographs until 2002. It is likely that the date of construction on record is incorrect. As the Breeding Barn (F6A/B) was not constructed during the period of significance, it is also a non-contributing resource. All new buildings constructed within the historic district are also non-contributing resources, as illustrated on Figure 42.

Table 4. Contributing and Non-Contributing Resources to the Mt. SAC Historic District, April 2016*

Building Number	Building Name	Current Status	Contributing Resource	Individually Eligibility	CA SHPO Status Code
1A	Art Center	Extant	Yes		3CD
1B/C	Art Center/Gallery	Extant	**Yes**		**3CD**
3	Gym	Extant	**Yes**		**3CD**
4	Administration	Extant	**Yes**		**3CD**
5/5A	Information Educational Technology	Demolished	No longer		
6	Library	Extant	**Yes**		**3CD**
7	Science South	Extant	**Yes**		**3CD**
8	Campus Café	Demolished	No longer		
9A	Bookstore/Auxiliary Services	Extant	**Yes**		**3CD**
9C	Student Life Center	Extant	**Yes**		**3CD**
10	Founder's Hall	Extant	**Yes**		**3CD**
11	Science North	Extant	**Yes**		**3CD**
12	Counseling Support	Extant	**No**		6Z
12A/B	Oden House	Extant	**No longer**		6Z
13	Design Technology	Demolished	No longer		
14N	Biology	Demolished	**No longer**		
14S	History/Geography/Political Science	Demolished	No longer		
15	Modern Languages	Demolished	No longer		
16	Building 16	Demolished	No longer		
17	Building 17	Extant	**Yes**		**3CD**
18	Building 18	Extant	**Yes**		**3CD**
19A	Building 19A	Extant	**Yes**		**3CD**
19B	Building 19B	Extant	**Yes**		**3CD**
19C	Mountie Grill	Extant	No (Davis 2012)		6Z
20	Building 20	Extant	**Yes**		**3CD**

21	Building 21	Demolished	No longer		
22	Welding	Demolished	No longer		
26A/B/D	Technology Center	Extant	**Yes**		**3CD**
26C	Planetarium	Extant	**Yes**		**3CD**
27A	Exercise Science/Wellness Center	Extant	**Yes**		**3CD**
27B	Pool	Extant	**Yes**		**3CD**
27C	Physical Education Center	Extant	**Yes**		**3CD**
28A/B	Technology Center	Extant	**Yes**	Yes, Criterion 3	3CB
47	Maintenance/Facilities	Extant	**Yes**		**3CD**
48	Receiving/Transport	Extant	**Yes**		**3CD**
F1	Horticulture Unit/G3	Extant	**Yes**		**3CD**
F2A	Farm Offices	Extant	**Yes**		**3CD**
F2B	Horticulture Storage	Extant	**Yes**		**3CD**
F3A	Old Dairy Unit	Extant	**Yes**		**3CD**
F4A	Swine Market Pens	Extant	**Yes**		**3CD**
F5	Vivarium	Extant	**Yes**		**3CD**
F6	Breeding Barn	Extant	**No**		6Z
F7	Equipment Tech Unit	Extant	**Yes**		**3CD**
F9	Livestock Pavilion	Demolished	**No longer**		
G2	Greenhouse	Extant	**Yes**		
50A-H	Stadium	Extant	**Yes**	Yes, Criterion 1	3CB
	Wildlife Sanctuary	Extant	**Yes**		**3CD**

*Recommendations date to April 2016. Status of each building surveyed is based on date of survey of that specific building, conducted between November 2015 and March 2016.

5.2 INDIVIDUAL ELIGIBILITY

ASM carefully considered each of the contributors to the historic district to determine whether they are individually eligible for the CRHR under Criteria 1, 2, 3, or 4. With the exception of the Hilmer Lodge Stadium (50A-H) and the Technology Center (28A/B), none of the contributors meet these criteria, as described below.

ASM considered whether any of the contributors are eligible under CRHR Criterion 1 for association with the themes of Education, Recreation, or other any other broad historical theme. However, with the exception of the Hilmer Lodge Stadium (50A-H), none of the contributors were found to be good representations of any of these themes on a larger regional level, and therefore none are recommended individually eligible under Criterion 1. ASM also considered whether any of the contributors are eligible under CRHR Criterion 2 for association with the lives of any person of historical significance. As no evidence of such association was found, none of the contributors are recommended individually eligible under Criterion 2.

Additionally, ASM considered whether any of the contributors are eligible under CRHR Criterion 3 for architectural significance. ASM considered each of the contributors as examples of the Spanish Colonial Revival or Modern architectural styles, or a vernacular property types. However, with the exception of Buildings 28A/B, none of the contributors individually embody the distinctive characteristics of these architectural style or method of construction. The original design of Building 6 was a good representation of Modernism, however, it has experienced too many alterations and does not retain sufficient to be individually eligible. Mt. SAC campus architects Austin, Field & Fry, designers of the [1959] master plan and of several of the college's buildings addressed in this report, were prominent architects in Los Angeles County. However, their works were not important or influential enough for them to be considered master architects. Therefore, none of the contributors are recommended individually eligible under Criterion 3.

Finally, ASM considered whether any of the contributors are eligible under CRHR Criterion 4. They are all common property types that do not have the potential to provide information about history or prehistory that is not available through historic research. Therefore, none of the contributors are recommended individually eligible under Criterion 4.

5.2.1 Technology Center (28A/B)

The Technology Center (28A/B) embodies the distinctive characteristics of the Modern architectural style. The building exhibits this style through its character-defining features, which include exterior materials of concrete and brick veneer, the wide cantilevered overhanging flat roof, the heavy rectangular Neoclassical pilasters on Building 28B, the full-height stepped-out concrete plane at the east and west façades of Building 28B, the irregular massing, and the lack of emphasis on entrances in the recessed central entrance between buildings 28A and 28B and the doors at the sides of the concrete planes. The building has not experienced any significant alterations and as such retains a high degree of integrity of materials, design, and workmanship–the most important aspects of integrity under Criterion 3 (National Park Service 1991:48). In comparison with other local examples of the Modern style in Walnut, specifically with other examples found on the Mt. SAC campus, the building is a relatively good local representation of Modernism (National Park Service 1991:47). Therefore, the Technology Center (28A/B) is recommended individually eligible for the CRHR under Criterion 3 under the Theme of Architecture, with a period of significance of 1971.

5.2.2 Hilmer Lodge Stadium (50A-H)

Hilmer Lodge Stadium (50A-H) played a prominent role at the school's early athletic program and reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities. The Stadium was one of the first buildings constructed for the new college in 1948. Mt. SAC has since hosted several national and international track and field events. The Mt. SAC relays soon became one of the world's largest track and field meets, held annually in April. As a result of the events that took place at Hilmer Lodge Stadium, Mt. SAC garnered a worldwide reputation in the third quarter of the twentieth century as one of the largest venues for track and field relays. Historically, athletic and /recreation has been a major influence in the educational focus of the college, which has played a strong role regionally as well at the community college level. Therefore, Hilmer Lodge Stadium (50A-H) is recommended individually eligible for the CRHR under Criterion 1 under the Themes of Education and Recreation, with a period of significance of 1948-1972.

6. IMPACTS ASSESSMENT

6.1 DIRECT IMPACTS

6.1.1 Demolition

Because of the demolition proposed, the Project poses the potential to cause an adverse direct impact (Figure 46). The Project will result in the demolition of two contributors within the Mt. SAC Historic District: the Stadium (50A-H) and Oden House (12A/B). Additionally, the Stadium is an individually eligible CEQA historical resource. In 2010, IDS Group conducted a structural assessment to identify necessary repairs to make the Stadium (excluding the Press Box) safer and more functional and to minimize future damage. IDS Group estimated the cost of those repairs at $560,225 (Appendix E).

The demolition of the Stadium constitutes an adverse effect because the Project results in the complete loss of contributing resources to a historic district, as well as an individually eligible resource. As such, the Project will result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

As Oden House (12A/B) is no longer a contributing resource to the historic district, its demolition will not result in a direct adverse impact on a CEQA historical resource.

6.1.2 Renovation

Because the FMP proposes renovation of the Library (6), Bookstore (9A), and Technology Center (28A/B) the Project poses the potential to cause an adverse direct impact to those buildings (Figure 46). Specific designs for the renovations and/or additions have not yet been developed. As long as the designs for the renovations and/or additions to those buildings comply with the SOI *Standards for Rehabilitation* (see Section 2.3), those aspects of the Project will not result in a significant direct impact pursuant to CEQA Section 15064.5.

An architectural historian or historic architect who meets the SOI *Professional Qualification Standards* (https://www.nps.gov/history/local-law/arch_stnds_9.htm) for either of those two disciplines must review the proposed architectural drawings and renderings to ensure compliance with the *Standards for Rehabilitation.* It is preferable that this qualified individual be involved with the project from its earliest conception to ensure adherence to the Standards for Rehabilitation and to minimize alterations to plans later in the design process.

6.2 INDIRECT IMPACTS

The new construction proposed as part of the Project poses the potential to cause adverse indirect visual impacts. Visual impacts upon the historic district and individually eligible resources potentially include views to and from the district and buildings. Mid-ground views of the historic district towards and from the contributing resources are character-defining features. Distant views are not a character-defining feature of the historic district, due to the dense concentration of buildings and/or topography of the land.

Traveling west on Temple Avenue, the Stadium is the first building or area of the campus that is visible upon approaching the school. The Stadium is a visual demarcation of the campus at this location, and of the eastern edge of the campus and historic district. As a prominently sited building, demolition of the Stadium will result in a significant change to the historic district's integrity of location, setting, design, materials, workmanship, feeling, and association. As such, its demolition constitutes not just a direct impact, but an adverse visual impact on the historic district as a whole. At the time of this analysis, plans have not yet been drawn for the proposed new stadium, so it is not possible to assess whether the new Stadium would be a beneficial or adverse visual impact.

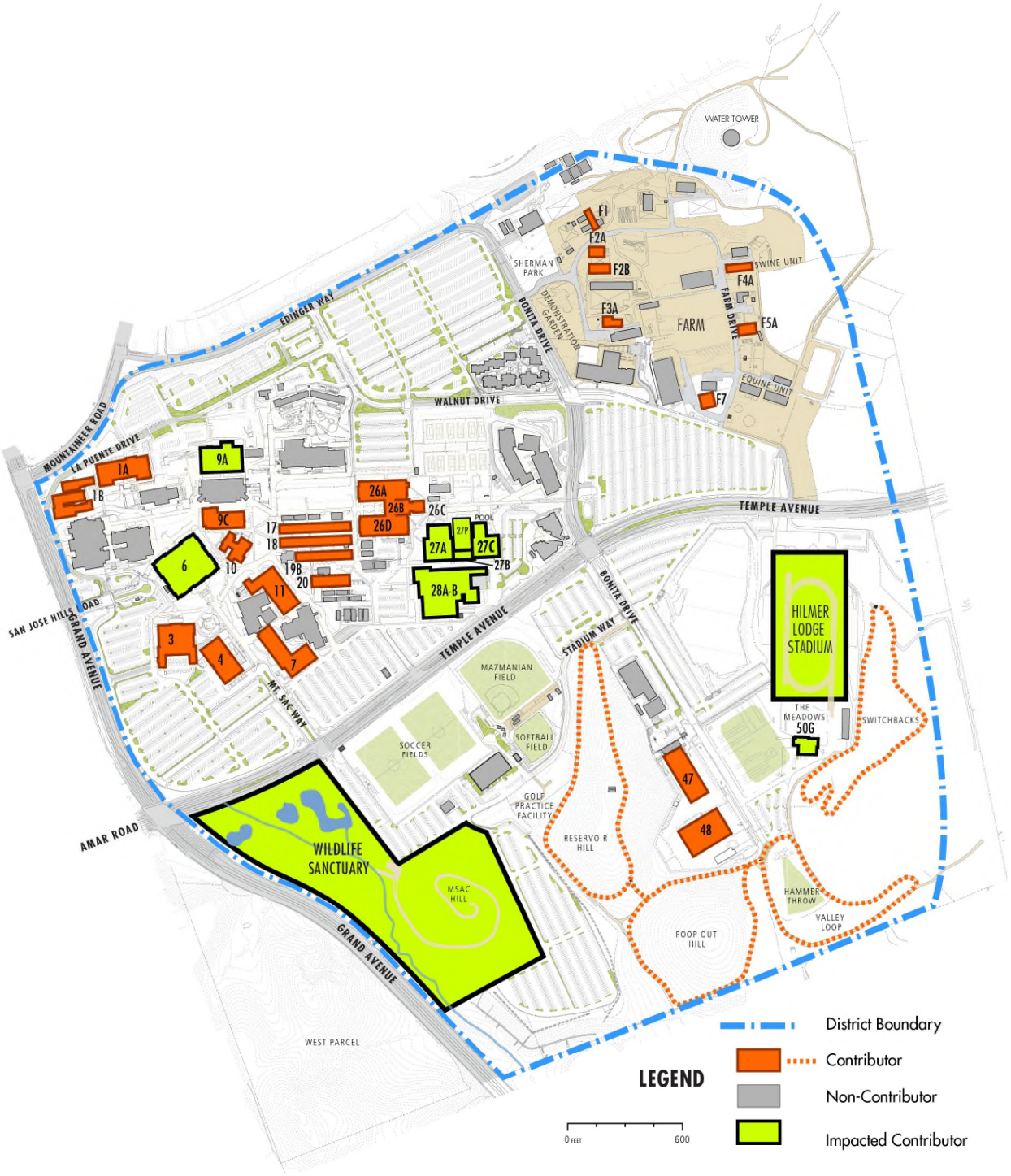


Figure 46. Contributing resources to the Mt. SAC Historic District that could potentially be impacted by the SEIR.

New construction is also proposed for the expansion of the Wildlife Sanctuary. Based on ASM's conversation with Mt. SAC staff familiar with the design plans, it does not appear that the proposed expansion will result in an adverse indirect impact on the historic district. The design of the proposed expansion will be visible from the Wildlife Sanctuary, but it will not introduce an element that is incompatible with the criteria under which the property is eligible nor will it result in obstructive views. The design will be compatible with the character-defining features of the Wildlife Sanctuary. The overall impact to the historic district's integrity of setting, feeling, or association as a whole is minimal; there is no impact on the historic district's integrity of location, design, materials, and workmanship. As such, this aspect of the project will not result in any adverse indirect visual impacts.

A pedestrian bridge will be constructed across Temple Avenue connecting the Physical Education Complex to Parking Lot F. The pedestrian bridge will be visible from individually eligible Buildings 28A/B; however, viewshed from that resource is not one its character-defining features. This pedestrian bridge will create a minor, partial visual interruption of the mid-ground views from contributing resources in the historic district. As the visual interruption is partial and minor, the overall impact to the historic district's integrity of setting, feeling, or association as a whole is minimal; there is no impact on the historic district's integrity of location, design, materials, and workmanship. As such, this aspect of the project will not result in any adverse indirect visual impacts.

Finally, the Project includes a series of special annual events to be held on campus that include the Mt. SAC/Brooks Relays, the Mt. SAC XC Invite, and 2020 Olympic Track & Field Trials in 2020. It is not anticipated that any of those events will result in adverse indirect visual impacts. Any disruption in the historic views from and towards the historic district and its contributing resources will be a temporary visual intrusion, and therefore, not adverse.

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7. MITIGATION MEASURES

7.1 ARCHAEOLOGICAL MITIGATION MEASURES

The archaeological investigations discussed above have not identified any prehistoric sites, historic sites, isolated artifacts, or human remains within Project boundaries. However, as the majority of construction undertaken on the Mt. SAC campus took place before the institution of the NHPA and CEQA, the Project areas have never been fully assessed for the presence or absence of archaeological remains. Further, various local Native American tribes claim this area as part of their ancestral and traditional territory (see Appendix C). As such, there is a possibility of unanticipated and accidental archaeological discoveries during ground-disturbing Project-related activities.

No mitigation measures specific to archaeology exist within the current EIR documents. We recommend that the mitigation measures detailed below should be undertaken to minimize any potentially significant impacts in accordance with CEQA.

- During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning & Management shall monitor compliance.
- If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the Contractor shall inform the Project Manager, and the County Coroner must be notified according to Section 5097.98 of the PRC and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.

7.2 HISTORIC RESOURCE MITIGATION MEASURES

The Project, as proposed, will result in adverse direct and indirect visual impacts to the Mt. SAC Historic District and individually eligible Hilmer Lodge Stadium (50A-H). The preferred mitigation approach is project redesign to avoid demolition of a CEQA historic resource.

- **Avoid Demolition, Evaluate Feasible Options**
  The recommended action for the adverse impact on historic resources and on the Mt. SAC Historic District due to buildout of the 2015 FMPU and the PEP is revision of the Land Use Plan to avoid demolition of a CEQA historic resource. An evaluation of feasible options shall be prepared for CMPCT prior to certification of the Final EIR. The college shall evaluate whether the impacts on 3CD or 3CB buildings proposed for removal or demolition in the recommended District may be reduced to Less than Significant. The alternatives to be considered include: (1) redesign of the 2015 Facility Master Plan Update to avoid impacting the 3CD or 3CB buildings, (2) redesign of the 2015 Facility Master Plan Update to reduce the project impacts on 3CD or 3CB buildings to Less than

Significant, (3) redesign of phases of the project to reduce impacts on 3CD or 3CB buildings to Less than Significant as more detailed planning for each phase comes up for review before the Campus Master Plan Coordinating Team (CMPCT), and (4) evaluation of adaptive reuses of 3CD or 3CB buildings prior to construction. Planning Facilities & Management shall monitor compliance. The Facilities Planning & Management Department shall ensure compliance

- **Mitigation Measures if No Feasible Alternatives**
  If project redesign is not feasible to achieve the Project and College's educational goals and facility needs, the following mitigation shall be implemented to reduce the significant impacts on historical resources: (a) HABS Level II History Report for the (1) Mt. SAC Historic District and (2) Hilmer Lodge Stadium consistent with *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007); (b) HABS Level II Standard Photography following the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines for the Mt. SAC Historic District and Hilmer Lodge Stadium; (c) reproduction of select existing drawings for each building proposed for demolition or alteration following HABS Level II guidelines; (d) creation of a interpretative exhibit within Heritage Hall (HH) including not only the history of Hilmer Lodge Stadium, but the entire historic district as well, and (e) development of a "Mt. SAC History" section of the campus website. The Facilities Planning & Management Department shall ensure compliance.

  a) HABS Level II Narrative Historical Report
  Prior to demolition, removal, or remodeling of any 3CD or 3CB building on campus, the college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. Documentation through HABS is an important measure because it allows documentation of the resource before alterations begin. Given the relative historic significance of the resources, Level II HABS is the recommended documentation standard, to be prepared in accordance with the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines (http://www.nps.gov/hdp/standards/habsguidelines.htm). A narrative historical report following the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007) should be prepared for the (1) Mt. SAC Historic District and (2) Hilmer Lodge Stadium. The college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. The DPR forms shall be submitted to the State Office of Historic Preservation (via the SCCIC) for their records. All other historic documents shall be made available to the public in the collection of the College's Learning Technology Center, including: the HABS Narrative Historical Report, DPR 523 forms, the *Historic Resources on the Campus of Mt. San Antonio College, Walnut, California* (The Building Biographer, June 1, 2003) and *The Historical Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California* (Davis 2012), and a copy of this report. Facilities Planning & Management shall ensure compliance.

  b) HABS Level II Large-format Photographs
  Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall hire a qualified HABS photographer to provide photo-documentation for the properties on campus identified as 3CD or 3CB which are proposed for

removal or demolition in the 2012 Facilities Master Plan or 2015 FMP Update. The photo-documentation shall be made available to the public in the collection of the College's Learning Technology Center. The documentation should be done in accordance with the Guidelines provided in the *Photographic Specifications: Historic American Building Survey, Historic American Engineering Record, Division of National Register Programs, National Park Service, Western Region*. Facilities Planning & Management shall ensure compliance.

To date, several buildings have already been photographed to HABS Level II standards, including the following: 08, 12A, 17, 18, 19B, 20, 27A-C, and 50.

c) HABS Level II Reproduction of select existing drawings (if available).
Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall prepare archivally stable reproduction of original as-built drawings. Reproductions of drawings shall be done in accordance with the *Secretary of the Interior's Guidelines for Architectural and Engineering Documentation*. Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar in accordance with the U.S. Copyright Act, as amended. Facilities Planning & Management shall ensure compliance.

d) Establishment of Heritage Hall
To recognize the history of Mt. SAC, part of the facilities for the new Stadium will include Heritage Hall, an area dedicated to historical interpretation of the history of the stadium and the college. The interpretative panels could utilize information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.

e) Establishment of a "Mt. SAC History" section on the school's website
To further recognition of the history of Mt. SAC, a page or series of pages should be developed for inclusion on the school's website. This project could be completed as a multi-disciplinary school project, prepared by students in the Technology and History departments utilizing the information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.

Although the above recommended mitigation measures are recommended by ASM to lessen the significant adverse impacts, demolition or complete loss of eligibility of a CEQA resource cannot be mitigated to less than significant. As such, even after the implementation of the mitigation measures, the Project will still result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

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8. CUMULATIVE IMPACTS

In consideration of cumulative impacts within the APE, several prior Projects have been conducted that resulted in adverse impacts. The 2003 Facilities Master Plan resulted in the demolition of several contributing resources to the Mt. SAC Historic District, as identified by Tim Gregory (Gregory 2003). The 2015 Facilities Master Plan resulted in the demolition of several additional contributing resources to the Mt. SAC Historic District, as identified by Gregory in 2003 and ASM in 2012 (Gregory 2003; Davis 2012). The Cultural Resources Survey conducted by Applied EarthWorks, Inc. for the current adjacent West Parcel Solar Project did not identify any impacts to historic resources (Thomas and Smallwood 2014).

As the prior two Facilities Master Plans identified adverse impacts, combined with the currently identified adverse impacts, the Updated FMP and PEP will result in adverse cumulative impacts to a CEQA historic resource, specifically, the Mt. SAC Historic District.

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9. CONCLUSION

As a result of this cultural resources report, ASM surveyed 22 potentially new contributing resources to the Mt. SAC Historic District. Twenty of those are recommended as eligible contributing resources (3CD) to Mt. SAC Historic District. As the district retains approximately 75 percent of its eligible contributing resources, ASM recommends that the Mt. SAC Historic District continues to be eligible for the CRHR under Criterion 1, for the Theme of Education, with a period of significance of 1948-1972. ASM also identified two individually eligible properties: Hilmer Lodge Stadium (50A-H) eligible under Criterion 1, for the Themes of Education and Recreation, with a period of significance of 1948-1972; and the Technology Center (28A/B) under Criterion 3, for the Theme of Architecture, with a period of significance of 1971.

The Mt. SAC Historic District, Hilmer Lodge Stadium (50A-H), and the Technology Center (28A/B) are located within the Project APE. The Mt. SAC Historic District and Hilmer Lodge Stadium (50A-H) are directly and indirectly impacted by the Project. The demolition of the Hilmer Lodge Stadium (50A-H) constitutes an adverse direct and indirect visual effect as the loss of individually eligible and contributing resources to the Mt. SAC Historic District. As such, the Project will result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

The preferred mitigation approach is project redesign to avoid these potential impacts. If project redesign is not feasible, the mitigation measures detailed in Chapter 7 are recommended to minimize the potentially significant impacts in accordance with CEQA. However, demolition of a CEQA resource cannot be mitigated to less than significant. As such, even after the implementation of the mitigation measures, the Project will still result in a significant direct impact pursuant to CEQA Section 15064.5.

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APPENDICES

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APPENDIX A

DPR-523 Forms

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APPENDIX B

SCCIC Records Search

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Report Detail: LA-00342

Identifiers

Report No.: LA-00342
Other IDs:
Cross-refs:

Citation information

Author(s): Taylor, Thomas T.
Year: 1978
Title: Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District
Affliliation:
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-000883	CA-LAN-000883	ELEPHANT HILL

No. resources: 1
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): BALDWIN PARK, LA HABRA, SAN DIMAS, YORBA LINDA
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/12/2015	agarcia

IC actions:

Date	*User*	*Action taken*
5/6/2008	jay	Appended records from old Surveys database.
3/12/2015	agarcia	GIS QC

Record status:

Report Detail: LA-00481

Identifiers

Report No.: LA-00481
Other IDs:
Cross-refs:

Citation information

Author(s): Van Horn, David M.
Year: 1979
Title: Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California
Affliliation: Archaeological Associates, Ltd.
No. pages: 5
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/12/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/12/2015	agarcia	GIS QC

Record status:

Report Detail: LA-01268

Identifiers

Report No.: LA-01268
Other IDs:
Cross-refs:

Citation information

Author(s): Mason, Roger D. and Nancy Whitney-Desautels
Year: 1983
Title: Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca
Affliliation: Scientific Resource Surveys, Inc.
No. pages: 14
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/13/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/13/2015	agarcia	GIS QC

Record status:

Report Detail: LA-01346

Identifiers

Report No.: LA-01346
Other IDs:
Cross-refs:

Citation information

Author(s): Brock, James P.
Year: 1984
Title: Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)
Affliliation: Archaeological Advisory Group
No. pages: 17
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/13/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/13/2015	agarcia	GIS QC

Record status:

Report Detail: LA-02679

Identifiers

Report No.: LA-02679
Other IDs:
Cross-refs:

Citation information

Author(s): Cottrell, Marie G.
Year: 1979
Title: Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract
Affliliation: ARMC
No. pages: 23
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/16/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/16/2015	agarcia	GIS QC

Record status:

Report Detail: LA-03835

Identifiers

Report No.: LA-03835
Other IDs:
Cross-refs:

Citation information

Author(s): Cottrell, Marie G.
Year: 1979
Title: Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California
Affliliation: Archaeological Resource Management Corp.
No. pages: 4
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/16/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/16/2015	agarcia	GIS QC

Record status:

Report Detail: LA-05644

Identifiers

Report No.: LA-05644

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2002
Title: Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 8
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/18/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/18/2015	agarcia	GIS QC

Record status:

Report Detail: LA-05646

Identifiers

Report No.: LA-05646

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2001
Title: Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 8
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/18/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/18/2015	agarcia	GIS QC

Record status:

Report Detail: LA-06262

Identifiers

Report No.: LA-06262

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2002
Title: Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 16
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/19/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/19/2015	agarcia	GIS QC

Record status:

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00342		1978	Taylor, Thomas T.	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District		19-000883
LA-00481		1979	Van Horn, David M.	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California	Archaeological Associates, Ltd.	
LA-01268		1983	Mason, Roger D. and Nancy Whitney-Desautels	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca	Scientific Resource Surveys, Inc.	
LA-01346		1984	Brock, James P.	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)	Archaeological Advisory Group	
LA-02679		1979	Cottrell, Marie G.	Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract	ARMC	
LA-03835		1979	Cottrell, Marie G.	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California	Archaeological Resource Management Corp.	
LA-05644	Cellular -	2002	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California	LSA Associates, Inc.	
LA-05646	Cellular -	2001	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California	LSA Associates, Inc.	
LA-06262	Cellular -	2002	Duke, Curt	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California	LSA Associates, Inc.	

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-186869		Resource Name - Mt San Antonio College	Building	Historic	HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)	2003 (T. Gregory, The Building Biographer)	

Resource Detail: P-19-186869

Identifying information

Primary No.: P-19-186869
Trinomial:
Name: Mt San Antonio College
Other IDs:

Type	*Name*
Resource Name	Mt San Antonio College

Cross-refs:

Attributes

Resource type: Building
Age: Historic
Information base: Other
Attribute codes: HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)
Disclosure: Unrestricted
Collections:
Accession no(s):
Facility:

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
5/27/2003	T. Gregory	The Building Biographer	

Associated reports

Location information

County: Los Angeles
USGS quad(s): SAN DIMAS
Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
1100 N Grand Ave	Walnut		

PLSS:
UTMs:

Management status

Database record metadata

	Date	*User*
Entered:	5/1/2008	jay
Last modified:	7/25/2012	sstjames

IC actions:

Date	*User*	*Action taken*
5/1/2008	jay	Appended records from Encodent database.

Record status:

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial 19-186869
NRHP Status Code 5S1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Mt. San Antonio College Campus

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T 1S ; R 9W ; NE ¼ of NW¼ of Sec 32 ; M.D. S.B. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422100 mE/ 3767500 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Mount San Antonio College campus occupies 421 acres northeast and southeast of the intersection of Grand Avenue and Temple Avenue in the City of Walnut. The campus occupies a fairly flat valley between the Puente and San Jose Hills--low, rolling grass- and chaparral-covered hills that show signs of increasing urbanization. On clear days, Mount San Antonio is the dominant landscape feature to the north. The campus consists of at least sixty buildings of varying architectural styles, some of which date back to the 1930s. The buildings are separated, for the most part, by well-landscaped areas of grass and trees. Vast parking lots occupy the peripheral areas. Of the sixty buildings, thirteen buildings or clusters of connected buildings contribute to the historical significance of the campus. Of the thirteen, seven are used for direct educational purposes and six are used for student or physical plant supportive services.

*P3b. Resource Attributes: (List attributes and codes) Hospital (HP41); Educational Building (HP15); Stadium/Sports Arena (HP42)

*P4. Resources Present: ☐Building ☐Structure ☐Object ☐Site ☑District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

*NRHP Status Code: 5S1

*Resource Name or # (Assigned by recorder): Mt. San Antonio College Campus

D1. Historic Name: D2. Common Name:

*D3. Detailed Description (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.): The Mount San Antonio College campus occupies 421 acres northeast and southeast of the intersection of Grand Avenue and Temple Avenue in the City of Walnut. The campus occupies a fairly flat area surrounded by low, rolling grass- and chaparral-covered hills that show signs of increasing urbanization. On clear days, Mount San Antonio is the dominant landscape feature to the north. The campus consists of at least sixty buildings of varying architectural styles, some of which date back to the 1930s. The buildings are separated, for the most part, by well-landscaped areas of grass and trees. Vast parking lots occupy the peripheral areas. Thirteen buildings or clusters of connected buildings contribute to the historical significance of the campus and are documented on separate Primary Record forms. They are: Art Center/Gallery (01); Physical Education Center (03); Campus Inn (08); Staff Center (10); Classroom Buildings (13, 14N, 14S, 15, 16, 17, 18, and 19B); Stadium (50); Information Technology/Nursing (05); Oden House (12A); Child Development Center South (19A); Family and Consumer Sciences (20); Air Conditioning (21); Welding (22); Beef Unit (F9).

*D4. Boundary Description (Describe limits of district and attach map showing boundary and district elements.):
The boundary of the district is the same as the boundaries of the college itself, as shown on the attached map.

*D5. Boundary Justification: The significant buildings of the district are spread throughout the campus among other structures of little or no significance.

*D6. Significance: Theme: Education Area: Los Angeles County
Period of Significance: 1947- Applicable Criteria: A, C (Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.)

A) ***Brief History of Walnut***: The first residents of this area can be traced back to the Gabrielino Indians who were of Shoshoean origin. Walnut has one recorded site of archaeological significance dating from the era of Native-American habitation. (This site is not on the campus of Mount San Antonio College.)

The arrival of the Spanish in the area introduced large ranches, the beginnings of agricultural development, and the creation of extensive home-sites. The first land grants in the Walnut area were those of the Rancho de San Jose (22,340 acres), presented in 1837 to Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales (4,340 acres), issued in 1840 to Jose de la Cruz Linares; and La Puente Rancho, consisting of 48,790 acres, issued to John Rowland and William Workman in 1842. All this land had first been used as grazing for the cattle and sheep of the San Gabriel Mission. (see continuation sheet)

*D7. References (Give full citations including the names and addresses of any informants, where possible.):
Hall, Barbara Ann and Odette Marie Pietezsch *Mt. San Antonio College: The First Fifty Years.* The College, 1996.
King, William F. *The Vintage Years: Our Valley Before 1945.* 1975.
Swain, J. G. *Walnut Before and After Incorporation* in *The Historical Volumes and Reference Works*, Vol. II, 1963.
Los Angeles Times
Pomona Valley Historian

*D8. Evaluator: Tim Gregory Date: 5/27/03
Affiliation and Address: DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

Jose de la Cruz Linares died in 1846, and his wife had to sell part of their rancho to Ricardo Vejar to help pay her husband's debts. Vejar's home was in the bend of the hills near the springs of the San Jose Creek, which is now known as Spadra, within the city limits of Pomona. Serving all of the Vejar family's needs, their adobe consisted of living quarters, a chapel, blacksmith shop, silver working shop, and a stable. Ricardo Vejar's adobe served as a social center for the people of the valley in those days. A team change station for the Butterfield Overland Stage Company was also located near the Vejar home from 1858 until 1861.

A second adobe, located in what is now Walnut's Lemon Creek Park, has been preserved as one of the City's most important historical resources. The William R. Rowland Adobe Redwood Ranch House was designated a point of historical interest by the State of California in 1975. This mixed adobe and redwood structure, built in 1883, served as the home of Rowland's ranch foreman and is one of the last original ranch houses in the area.

Walnut originally obtained its name from the Rancho de los Nogales land grant–*nogal* being the Spanish word for "walnut." The Rancho itself had derived its name from the many wild black walnut trees that covered nearby hillsides. The Southern Pacific Railroad came through in 1874, bringing with it more visitors and potential residents. A stop was established, called the Lemon Station because it was situated on Lemon Street and because of the many citrus trees then in the area. "Lemon" became the town's informal name. "Walnut" was not adopted as the community's official name until 1912, with the building of a new post office.

Walnut's first school was established in about 1876, the teacher taking the train back and forth to El Monte every day. After the schoolhouse burned in 1892, students attended Spadra School. The Lemon School District, which incorporated Walnut, was established in 1893. High school students had to travel to Pomona or El Monte until La Puente High School was constructed in 1915. In 1884, Pierre Carrey, originally from France, and his wife Maria settled in Walnut. Carrey, who had worked for William Rowland when the latter was a sheriff, had received part of his pay in land consisting of forty acres above Valley Blvd. on the south side of La Puente Road and east of Lemon Street. The Carrey family operated the first Walnut store and post office on Valley Blvd. Other enterprising French emigres, as well as Basques and Italians, acquired land in the Walnut-Spadra area.

Another historically significant figure, Captain William Banning, son of Phineas Banning, retired to what is now Walnut, transporting there the Banning Stable that had housed the first Los Angeles- Wilmington stages. Another important landowner was Alvan T. Currier, formerly of Maine. In 1869, he purchased 2,400 acres between Spadra and Walnut along the Southern Pacific tracks. He was later elected County Sheriff in 1881 and served as a State Senator beginning in 1898. Currier helped found the Walnut Fruit Growers Association which, in 1906, built the first packing house to handle both citrus and walnut crops. In would function for the next fifty years. Currier also developed the first reliable water sources in Walnut when he established seven wells on the southern fork of San Jose Creek. Another important source of water was the southern branch of the San Jose Creek (sometimes called Walnut Creek).

From the 1880s until just after World War II, the valley's land was used for farming and cattle-raising. It became known as one of the finest agricultural areas in the state, particularly for citrus and walnuts. (The first commercial walnut grove was established in 1912, but the industry had more or less faded by 1940 after many of the trees had succumbed to disease .) Walnut and other neighboring communities remained small and rural, the only city of any major size being Pomona. Numerous fruit packing houses, the major local industry, were linked with each other and with the nation's urban markets by the railroad's freight lines. Only a narrow paved highway, Valley Boulevard, connected the valley to Los Angeles.

A pioneer in the pre-World War II establishment of Walnut's image as a rural retreat was Percy G. Winnett, the founder, with John G. Bullock, of the Bullocks Wilshire chain. He bought eighty acres in Walnut in the 1930s, turning the hay and grain farm into an equestrian showcase. He raised thoroughbred racehorses and threw parties, barbeques, and fox hunts.

Immediately following the war, returning G.I.'s unloosed a pent-up demand for housing all over Southern California, and the Walnut area was no exception. The rural lifestyle of open rolling hills, oranges, and horses began to be supplanted with freeways and housing tracts. Fearing they might be swallowed up by other fast-growing neighboring cities, the citizens of Walnut voted to incorporate in 1958 with about 7.5 miles of territory and about one thousand residents. The eastern boundary of the new city was the easterly edge of the Mt. San Antonio College campus.

By 1990, Walnut, with a population of 29,105 (a 133% increase over 1980), was the second-fastest-growing city in Los Angeles County. It was also quickly becoming a multiethnic community, with Asian Americans and Latinos constituting about 60% of the population.
(See continuation sheet)

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

B) ***Brief History of the Campus of Mount San Antonio College (to 1956)*:** In 1920, the State of California purchased 800 acres in Walnut--adjacent Lots 6 and 7 of the C. M Wright Tract on the eastern edge of the original La Puente Rancho. The land had been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and would become the future site of the Pomona campus of California Polytechnic University.

In 1915, the state Legislature had passed a bill that called for a comprehensive study of "feeble-mindedness." A committee studied the issue and recommended the creation of an institution for the insane in Southern California. In March 1921, the Pacific Colony was founded in Walnut on the above-mentioned Lot 6 (about 388 acres). Nineteen male patients were transferred to it from the state facility in Sonoma. However, the site did not have an adequate water supply and closed in January 1923. The state reopened the Pacific Colony in May 1927 on Pomona Blvd., a facility that is now known as the Lanterman Developmental Center.

In the early 1930s, the State Narcotic Hospital occupied the Lot 6 site and a number of still-extant buildings were constructed. During World War II, the facility was leased to the United States Government as the location of a U.S. Army Hospital, and later a U.S. Naval Hospital. There were eventually 9 permanent buildings and 99 temporary barracks-like structures spread over the site.

In February 1945, the Pomona Chamber of Commerce adopted a resolution requesting the state to make the hospital site (which was scheduled for closure in 1946) the temporary quarters for a new junior college in Eastern Los Angeles County. The rising population had made the area's only junior college in Pomona woefully too small to meet the demand for post-secondary education, especially among returning older students. In October 1945, the California State Board of Education was petitioned by four school districts–Pomona, Covina, Puente, and Bonita–for a junior college to serve the combined areas. In December of that year, voters approved the establishment of a new junior college district which would incorporate the old Pomona district.

A two-year lease was negotiated with the state for use of the U.S. Naval Hospital site. It was an ideal location, in the center of the new district, seven miles east of Puente and seven miles west of Pomona. Also, it would be a physically independent campus, not sharing a site with a high school, which the majority of junior colleges did in those days. The perennial problem of obtaining a guaranteed flow of water to the campus was solved when an agreement was reached with the Metropolitan Water District in December 1947.

The almost impossible task of organizing a junior college from scratch began in earnest on July 1, 1946. Twenty-three faculty members were hired initially. Dr. George H. Bell, the newly hired president, and his family moved into the former hospital director's house (now known as the Staff Center–Building 10), which was then surrounded with gardens. Tom Oden, the chief of maintenance, and his family lived in what is now the Oden House (Building 12A). Some naval personnel remained on the site until the complete changeover from hospital uses was accomplished. What is now the Information Building (Building 05) housed the first administrative offices. It had served as the narcotics treatment center of the hospital and had bars on the windows, special therapy rooms, and jacuzzi baths. The driveway to the campus was lined with camphor trees and there was a small orange grove just south of Building 05.

Instruction on the new campus began in September 1946, many of the first 682 registered students attending class in the non-air-conditioned old barracks buildings, connected by clay and weed-choked paths. Apple- and orange-crates were used for furnishings until war surplus furniture could be purchased. Money remained tight during the first year or two of the college's existence. The old state and military buildings had not been maintained, and Mr. Oden was credited with keeping everything going by patching and repairing where possible, often at his own expense. Nevertheless, a tremendous amount of financial and volunteer time was donated by faculty, students (the average age was 25), administrators, and committed members of the community, creating the legendary "spirit of Mt. San Antonio College" to make it all work.

Barbara Ann Hall and Odette Marie Pietzsch in their history of the college entitled *Mt. San Antonio College: the First Fifty Years* vividly describe the college's early setting:

> Being surrounded by foothills, the college supported an abundance of wildlife. Many native birds nested in the swamp at the south edge of the property. Occasional road runners, coyotes and skunks roamed the grounds. Above the area where the stadium was to be constructed, a bob-tailed bobcat was reported. Several deer grazed near the east boundary of the campus. Large tarantulas burrowed into the hillsides and roamed the campus during their migration, and rattlesnakes basked in the sun. Oden reported killing a rattlesnake about three feet long (Hall 8).

Until 1948, the campus was still considered a temporary site. While the state Department of Mental Health was considering other uses for the 445-acre leased property, a building program could not be instituted. Finally, in March 1947, a bond election was conducted. The amount requested, $1.75 million, was to be used to purchase land and construct the first classrooms and support facilities specifically designed for Mt. San Antonio College. The bond issue received an overwhelming approval of almost 11 to 1. At the first commencement exercises in June 1947, word was received from Governor Warren that the state had decided to sell the former hospital land to the college. The sales price turned out to be $270,000. (see continuation sheet)

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

In May 1947, architect Frederick H. Kennedy, Jr., was hired to create a campus master plan and to design the first real college buildings. Mr. Kennedy would be retained as the campus architect until 1955. (Please see Appendix 4 for a biographical essay on Mr. Kennedy and his career.) The first buildings of which Mr. Kennedy supervised the design were the stadium, field houses, shops, gymnasium, and library. With the exception of the shop buildings, all roofs were to be of mission tile. Form was to follow function, so that what took place in the buildings was to dictate the design. Faculty, recognized as specialists in their field, were to have a great deal to say in the lay-out of the academic buildings.

In November 1947, the board of trustees approved the plans for a new football stadium. The natural bowl between the hills in the southeast corner of the property adjoining Cal Poly was the selected site. Only the west side of the bowl was scheduled to have bleachers, to seat 11,000. The stadium was planned to have a state-of-the-art cinder track. Built at a cost of $100,000, the stadium, said to be the largest such facility in the San Gabriel Valley, was dedicated by State Representative Richard M. Nixon in 1948.

Anticipating a greatly expanded student body of 2,000 by 1957, Mt. San Antonio College embarked upon another building campaign. In March 1950, a financing election was held, but this time it was a pay-as-you-go tax override rather than a bond issue. It carried, 1,220 to 828.

Dr. Bell retired from the college's presidency in 1956. It was at this time his home was converted to the Faculty and Staff Center.

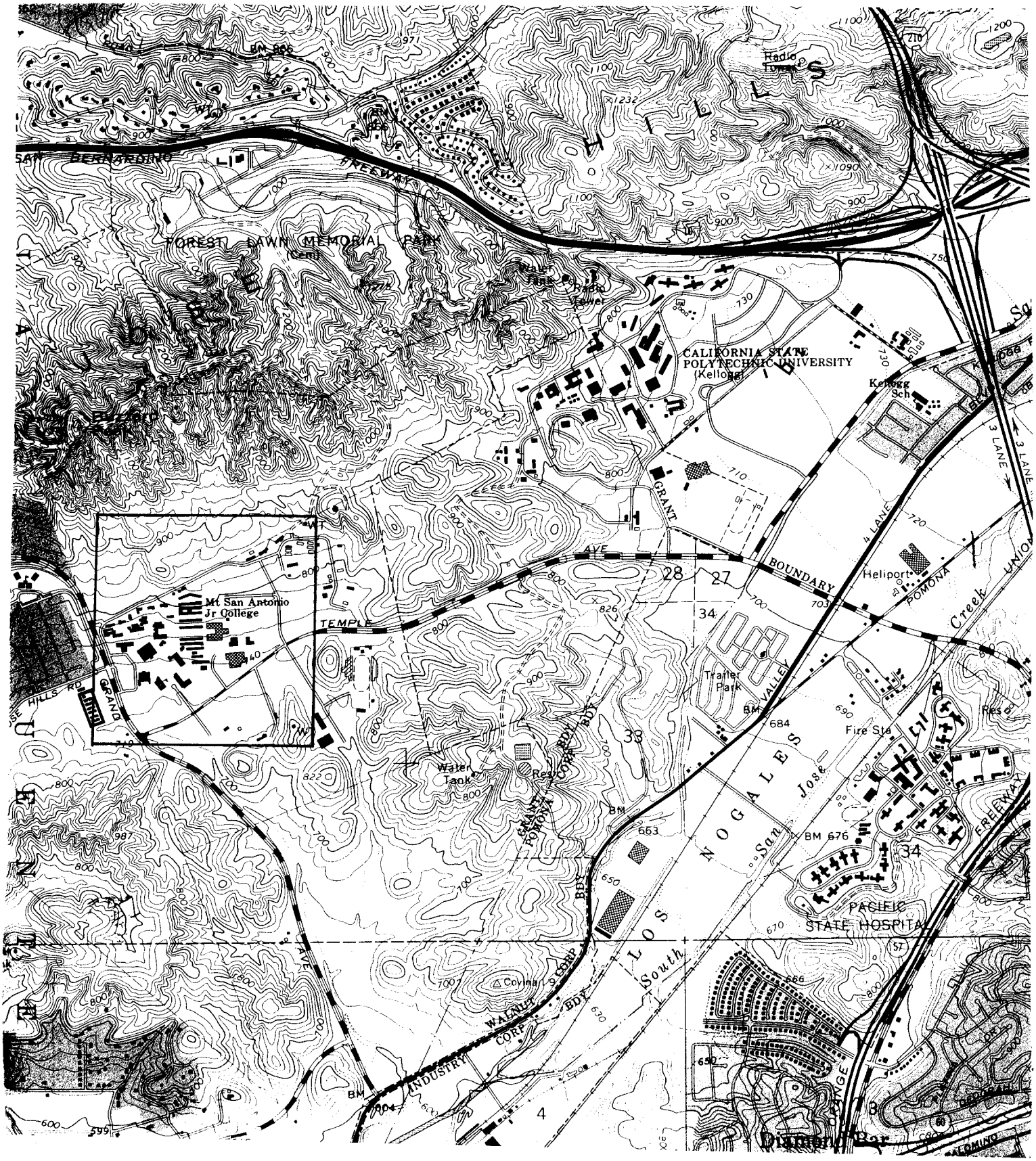
C) ***Summary of Significance***: The significance of the Mt. San Antonio College Campus district is based on both Criteria A and C. The evolution of the site from the Pacific Colony of 1927, to the State Narcotic Hospital of the 1930s, to a U.S. Naval Hospital during World War II, and finally to a community college campus in 1946 is documented by surviving buildings from each era. Many of the post-war buildings were designed between 1947 and 1955 by Frederick H. Kennedy, Jr., an architect of regional renown in the areas of residential, school, and church design. Mr. Kennedy also prepared the campus master plan of 1947.

Thirteen buildings or clusters of buildings contribute to the historical significance of the district. These are recorded on their own Primary Record forms. The exteriors of all these significant buildings have good to excellent integrity, meaning that the physical characteristics that existed during their period of significance are still intact and have not been removed, substantially altered, or lost due to neglect, etc.

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **LOCATION MAP**	Primary # HRI# Trinomial 19-186869

Page 6 **of** 20 ***Resource Name or #:** Mt. San Antonio College Campus

***Map Name:** San Dimas ***Scale** 2.5" = 1 mile ***Date of Map:** 1981



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary #
HRI# 19-186869
Trinomial

Page 7 **of** 20 **Resource Name or #:** Mt. San Antonio College Campus

***Drawn By:** The College ***Date:** 5/27/03

SEE ATTACHED

NOTE: Include bar scale and north arrow.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Art Center/Gallery

P1. Other Identifier: Building 1 B/C; Art Center West, Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422300 mE/ 3767540 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This is an inter-connected 13,200-square-foot complex of three one- and two-story buildings of Spanish Colonial Revival style. The basically rectangular buildings have plaster walls, multi-paned metal sash (some having been replaced), and gabled tile roofs of low pitch. The central building has return gables. A newer mosaic occupies the east gable-end of the central building. Stucco chimneys with arched caps punctuate the roofs of the north and south buildings. Arcades sheltered by flat roofs supported by brick piers and metal posts link the buildings and run along their side walls. The north sides of the central and northerly buildings have large studio-type multi-paned windows. The northerly building extends further east than the others and has eight-paned casement windows on both the north and south sides of the extension.

The north and south buildings of the complex were probably designed by the State of California in 1931 as part of the old state narcotics hospital that once occupied the College site. As such, these parts of the complex are the oldest still-extant structures on the campus. The central building, a rear two-story extension of the north building, and the connecting arcades appear to have been designed around 1947 by campus architect Frederick H. Kennedy, Jr., when the rest of the campus was expanded. The complex is surrounded by mature landscaping and low brick walls with metal railings. The integrity of the buildings is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
East side, looking west 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. St. Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Physical Education Center/Gymnasium

P1. Other Identifier: Building 03; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted

*a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Date: T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422160 mE/ 3767300 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This two-story basically rectangular building of a contemporary neo-Romanesque style has a gabled tiled roof, plaster walls, and steel sash. Three louvered vents appear in the gable-ends on the east and west sides. These sides also each have eight windows having transom tops and bottoms with six panes of stationary glass in between. Brick detailing appears at the corners of the building with courses of counter-laid brick. Intaglios of figures engaged in sports activities have been cut into the second-floor exterior northerly wall. Below them is a one-story flat-roofed brick-walled extension with small-paned windows high on the walls. The main entrance is centered in this wall recessed under a flat-roofed canopy supported by pairs of slender steel poles. The entrance consists of three pairs of double-doors evenly spaced, each with an upper glass panel and six rectangular-paned stationary transoms above. There are shed-roofed brick-walled extensions of the building on both its southeast and southwest corners. Brick detailing also appears around each of the two door openings on the south side as well as on the balustrades of the parallel staircases leading up to them.

This 22,921-square-foot building, designed in 1950 by campus architect Frederick H. Kennedy, Jr., is the largest still-extant structure from the campus' earliest years. It was built in a style that blends the Mediterranean architecture prescribed in the campus' original general plan with more "modern" school design concepts. It represents a departure from architect Kennedy's usual output. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #) North and east sides, looking southwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P

*A ilding, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Campus Inn

P1. Other Identifier: Building 08; College Dining Hall; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422120 mE/ 3767560 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

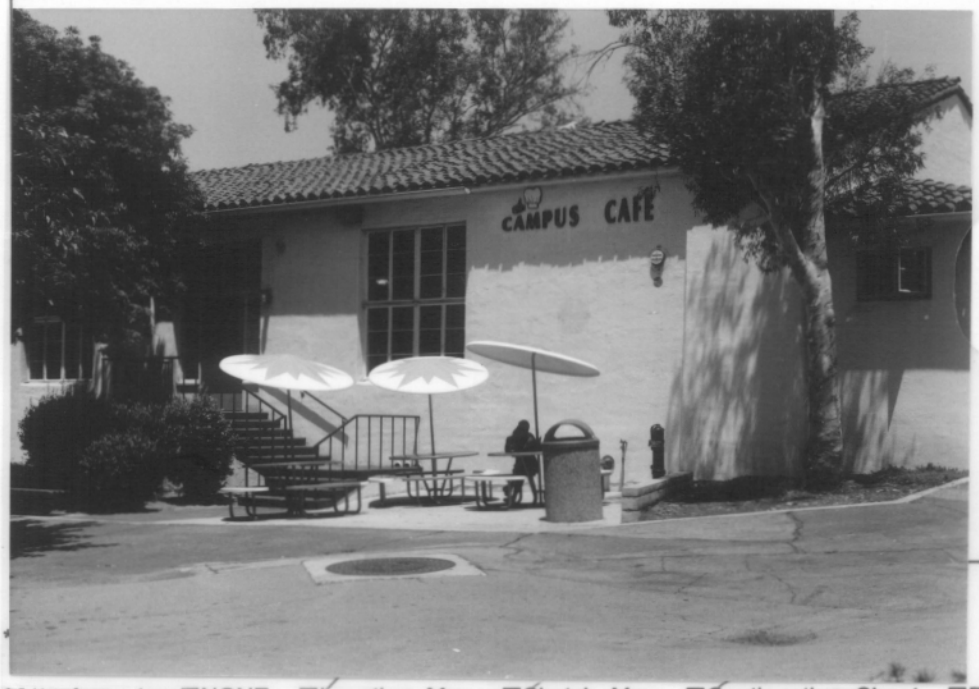
This is a basically rectangular one-story building in the Spanish Colonial Revival style with a tile roof, stucco walls, and steel sash. Its recessed main entrance on the southerly façade is approached by a side staircase with wrought-iron railings. Tall double casement windows with multi-panes flank the main entrance. A paved area outside the main entrance is used for outdoor dining. Another entrance into a small wing on the west end of the front façade is sheltered by a shed-like roof supported by a single stucco pier and is approached by a perpendicular staircase. There is a chimney at the west end of the building. On the east side there is a door to the deli recessed on the south end; a door to the café recessed centrally and flanked by two large casement windows like those in the front; and two large recessed windows on the north end flanked by stucco engaged pilasters. Chevron-shaped venting appears in the gable-end above these windows. The north side of the building has two sets of double wood-paneled doors. The west side of the building has been significantly altered.

This building was designed by the State of California in 1941 and has served as a social gathering center for all three past and present tenants of the site: two hospitals and the school. Although the northerly section has been somewhat altered, the general integrity of the building is good.

*P3b. Resource Attributes: (List attributes and codes) Community Center/Social Hall (HP13)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
South side, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 East North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Staff Center

P1. Other Identifier: Building 10; Faculty Center; Mt. San Antonio College

***P2. Location:** ☐ Not for Publication ☑ Unrestricted ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** San Dimas **Date:** 1981 **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422060 mE/ 3767480 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This basically T-shaped one-and-two-story building is in the Spanish Colonial Revival style. It has a gabled tile roof, stucco walls, and wood sash. Tiled venting appears in the gable-ends. The front (northerly) façade has a large multi-paned double-casement window positioned centrally in the wall to the east of the front door. It has a projecting canopy made of stucco and is protected by a wrought-iron grille. The front entrance consists of a recessed arched wood-paneled door with a an elongated glass panel and a decorative tile surround, protected by its own shed-like tile roof supported by scrolled wood brackets. Wrought-iron light fixtures appear on both sides of the entrance porch with has a tiled floor and is approached by tiled steps. A cut-out plaster grille covers a recessed window on the easterly end of the wall. On the second floor above the large window are two French doors on the second floor that share a wrought-iron balcony. A pair of small casements are placed east of the French doors. The one-story west side of the house features a stepped chimney flanked by elongated multi-paned casement windows. The south side of this west wing has a double door centered in it which is flanked by arched multi-paned windows and is surmounted by a fanlight in a similar style. There is another set of double doors perpendicular to it on the west side of the "T" at the rear of the house which is approached by tiled steps with a wrought-iron railing. These doors are flanked by large windows that have a stationary pane in the center with four-paned casements to each side.

This 3,769-square-foot house was originally built by the State of California in 1931 as a residence for the director of the state narcotics hospital and was later used by the directors of the military hospitals that once occupied the site. It was also the home of the College's first president. Its integrity is moderately good, but it has been somewhat altered by blocked-up or replaced windows and by a non-sympathetic addition on the southeast corner.

***P3b. Resource Attributes:** (List attributes and codes) Single Family Property (HP2)

***P4. Resources Present:** ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
North side, looking southeast 6/5/02

***P6. Date Constructed/Age and Sources:** ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

***P7. Owner and Address:**
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

***P8. Recorded by:** (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

***P9. Date Recorded:** 5/27/03

***P10. Survey Type:** (Describe)
Reconnaissance survey as part of campus master planning

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") None

***Attachments:** ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Biological Sciences; Liberal Arts; Business Education Classrooms

P1. Other Identifier: Buildings 13, 14N, 14S, 15, 16, 17, 18, 19B; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423880 mE/ 3767500 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

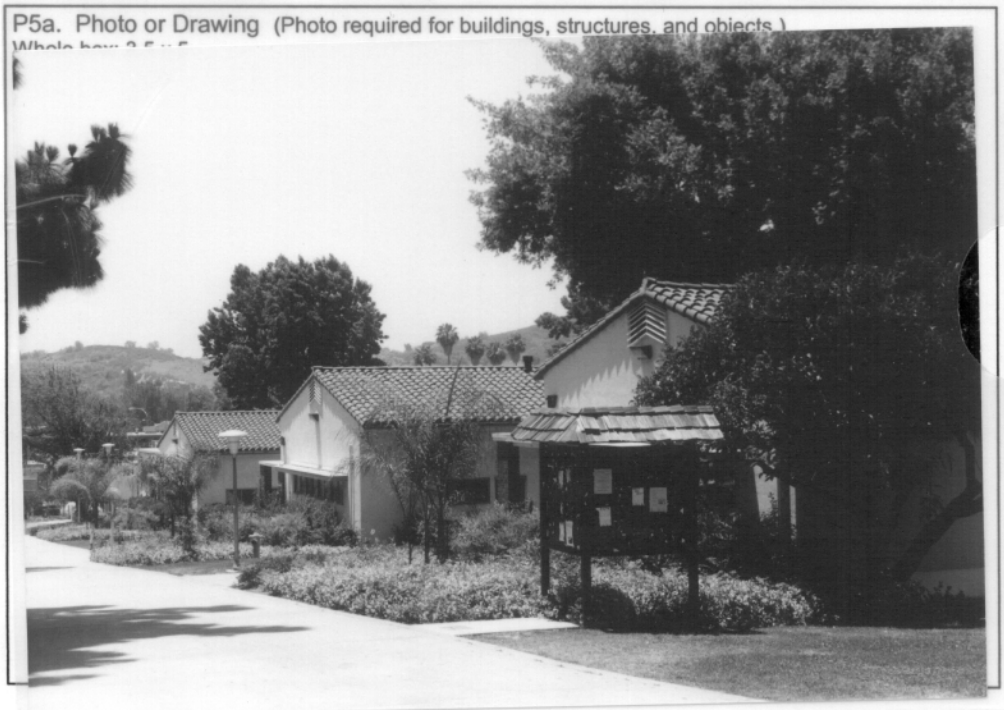
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The eight long, one-story rectangular buildings in this classroom complex are designed in a neo-Spanish Colonial Revival style and are stair-stepped up their hillside site. They have gabled tiled roofs, stucco walls, chevron-shaped venting in the gable-ends (although there are some older-looking tile venting in places on the west ends), and continuous flat-roofed outdoor passageways, supported by brick piers and steel columns, on the southerly sides onto which the classroom and faculty office doors face. The northerly sides of the buildings have bands of tall multi-paned (mixed transom and fixed) windows that look out onto landscaping planted between the buildings. Each of the east ends of the buildings has a band of four two-paned windows high on the wall. The mid-points of some of the buildings are connected by covered passageways placed perpendicularly to them.

This complex was the historic academic center of the campus, its buildings among the first to be specifically designed to reflect the needs of one of California's first post-war colleges. Built over a period of four years as funds became available, they were designed as a single master-planned unit. In February 1976, *Los Angeles Times* columnist Jack Smith described his discovery of this tile-roofed complex "was like coming upon an unexpected village in the Italian countryside...low buildings on the west slope of the greening hills between the San Gabriel and Pomona Valleys." The lay-out reflected the emerging, rather revolutionary philosophy of educational architecture espoused by the designer Frederick H. Kennedy, Jr. It allowed for the introduction of as much natural north light as possible and the opening up of both sides of the classroom to an outside environment of landscaped courts rather than the traditional practice of enclosing the entrances within an interior hallway. The buildings show fairly good integrity, but air-conditioning equipment was later installed in an insensitive manner and detracts from the appearance of the westerly ends of the buildings.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
Bldg. 14 in foreground, looking south 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-186869
HRI#
Trinomial

***Resource Name or #** (Assigned by recorder) Biological Sciences, etc.

***Recorded by:** Tim Gregory

***Date:** 5/27/03 ☐ Continuation ☐ Update

Building 16 in foreground, looking northwest 6/5/02



*Recorded by: Tim Gregory *Date: 5/27/03 ☐ Continuation ☐ Update

1) Building 14, north side, looking southwest 6/5/02
2) Building 14, north side, looking southeast 6/5/02





State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Stadium

P1. Other Identifier: Building 50; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423220 mE/ 3767340 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

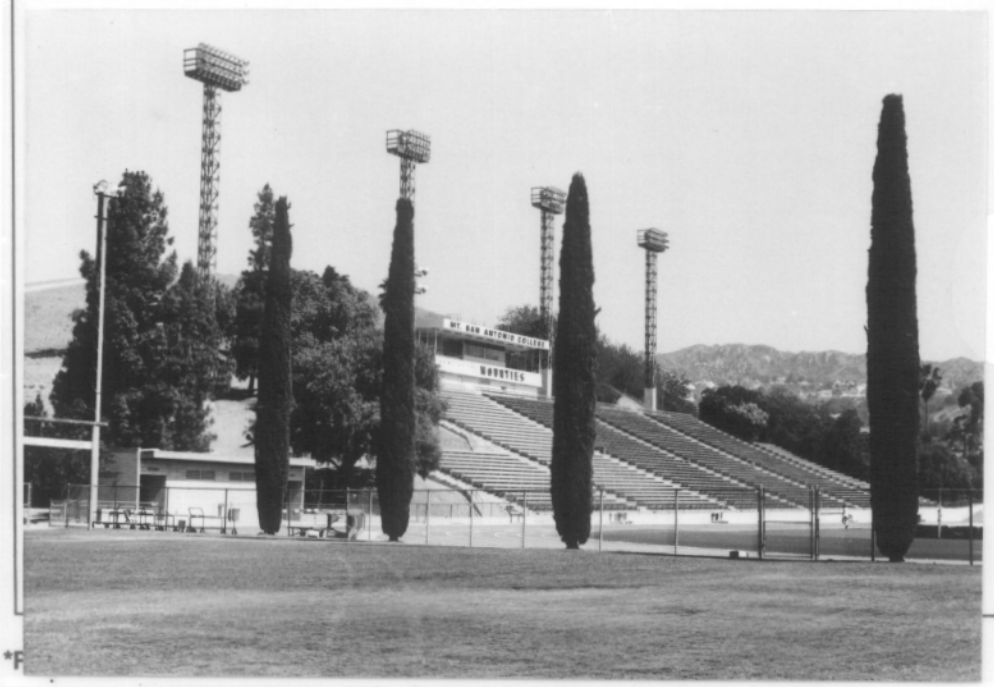
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The stadium consists of two raked concrete seating areas facing each other on the west and east sides of an oval track made of composite material with grass in the center. Each seating area has rows of bleacher-like benches, broken into six sections by seven stairway-aisles. A press-box with glass and partly-open walls is situated at the top of the west side of the stadium and, above this, are four tall steel-lattice columns surmounted by banks of lights. Similar banks of lights appear on the east side of the stadium. Adjacent to the seating areas to the south on both the west and east sides are one-story flat-roofed utility buildings made of concrete block. A manual scoreboard appears on the north end of the stadium beyond which is a park-like landscaped area and a view of the hills.

Designed as part of the campus master plan in 1948 by Frederick H. Kennedy, Jr., this is the largest such stadium in the San Gabriel Valley and was considered state-of-the-art when dedicated in 1948 by then-State Representative Richard M. Nixon. The annual amateur U.S. track and field meet is held at the stadium, bringing it national attention. It has been a historical landmark over the last 54 years for the campus and the surrounding community. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Stadium/Sports Arena (HP42)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
Westerly seating area, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

*Resource Name or #: Information Technology/Nursing

P1. Other Identifier: Buildings 05 and 05A/Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted

*a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422180 mE/ 3767540 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a U-shaped building with a hipped tiled roof and stucco walls designed in a modern interpretation of Spanish Colonial Revival. Metal cupolas with finial tops appear on the east end of the roof and at the northwest corner of the building. Small steel casement windows, each with six panes, are positioned in groups of twos and threes on the west end of the south facade. Windows on the east end are larger and double-hung, but also arranged in groups of twos and threes. Tapered stucco chimneys pierce the ridge-line of the roof in several places. The entrance porch is located easterly of the central point on the building's southerly façade. Its hipped tiled roof is supported by four large square stucco posts. The southern section of a stepped-back addition on the west end of the building appears to be newer than the rest. A solid door with a molding surround appears on the easternmost end of the south façade. Building 5A was apparently built onto the rear of the older structure at a later date. Its gable-ends have chevron-shaped venting. There is a square brick-detailed bay with a multi-paned window on its west end. An outdoor passage running along the addition's southern façade (which faces the northern façade of the older building) is sheltered by a slanted tile roof supported by stucco piers. Still clearly visible on the east end of the north façade of the original building is a molded arch recessed under which is an entrance porch with a southerly wooden door with artistically arranged metal studs. An entrance into the building from the west side of the porch has been plastered over.

Designed in 1941 by the State of California and probably added to by architect Frederick H. Kennedy, Jr., during the campus expansion program of 1947, this 8,890-square-foot building was originally used as a treatment center for narcotics addicts and later as the campus' first administration building. It is of interest because of its early uses and its dominant siting on the campus. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
South side looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Oden House

P1. Other Identifier: Building 12A; Custodial Center; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423980 mE/ 3767680 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is an L-shaped, 2,153-square-foot Spanish Colonial Revival cottage with a gabled tiled roof, stucco walls, and single and double wood casement windows, each side of the casement having four panes. Vents, consisting of a triangular arrangement of six roofing tiles, appear in the gable-ends. The front door, with an ornate wooden screen, is recessed on the east end of the westerly leg of the "L". It is approached by a flight of concrete steps with a wrought-iron railing. A stucco chimney, capped with an arch, appears on the west end of the house. There is a small wing that juts out at the northeast corner of the building. It has a cut-out plaster grille over a recessed window on the west end of its south façade.

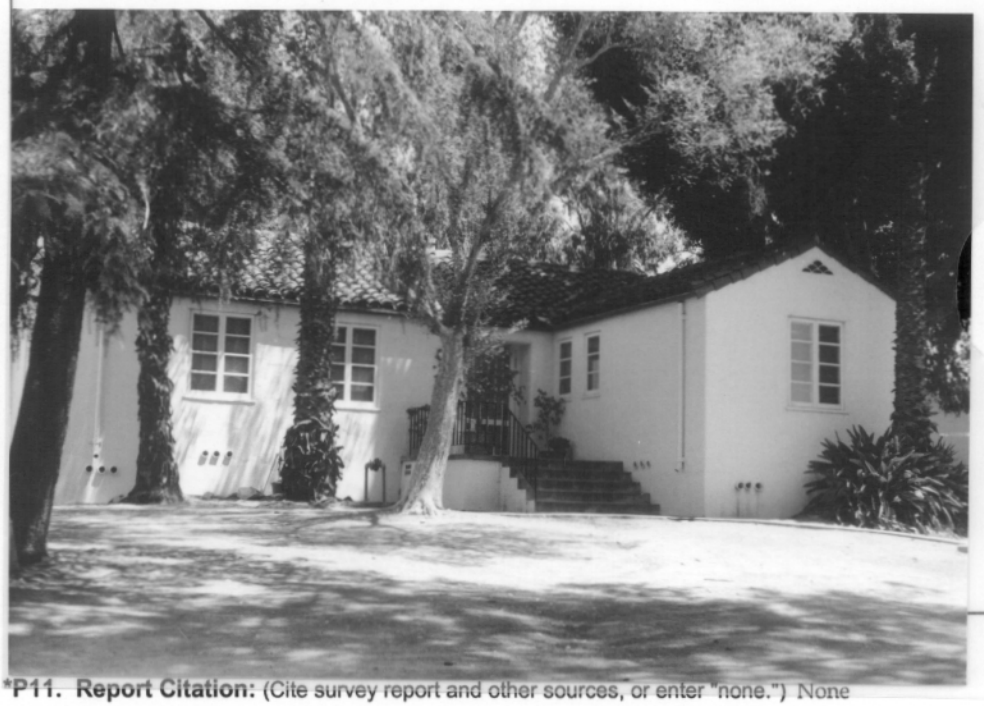
Although this building's official construction date is 1949, there are historical references to the college's first maintenance supervisor having moved into it as early as 1947. However, its architecture is very similar to those of other buildings on campus that date from the early 1930s, which means it was probably built during the site's earlier use as a hospital. If so, it would have been designed by the State of California as one of the two original residences on the grounds. Integrity is good, although some window openings have been stuccoed over. There is some physical evidence that the building may have been moved from its original location.

Adjacent to the northeast is a square garage building with stucco walls and a pyramidical tiled roof topped with a round-roofed hexagonal cupola. The roof's overhanging eaves are supported by molded beam-ends. Two large vehicle openings on the south side have been plastered over, but the concrete driveway apron remains. On the east side, a utility door on the south end and a window opening on the north end have also been plastered over. A band of newer steel sash windows appears between them. On the west side of the building are a newer utility door and a pair of steel windows.

*P3b. Resource Attributes: (List attributes and codes) Single Family Property (HP2)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
West and south sides, looking northeast

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

*Resource Name or #: Child Development Center South

P1. Other Identifier: Building 19A; Nursery School; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423960 mE/ 3767460 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

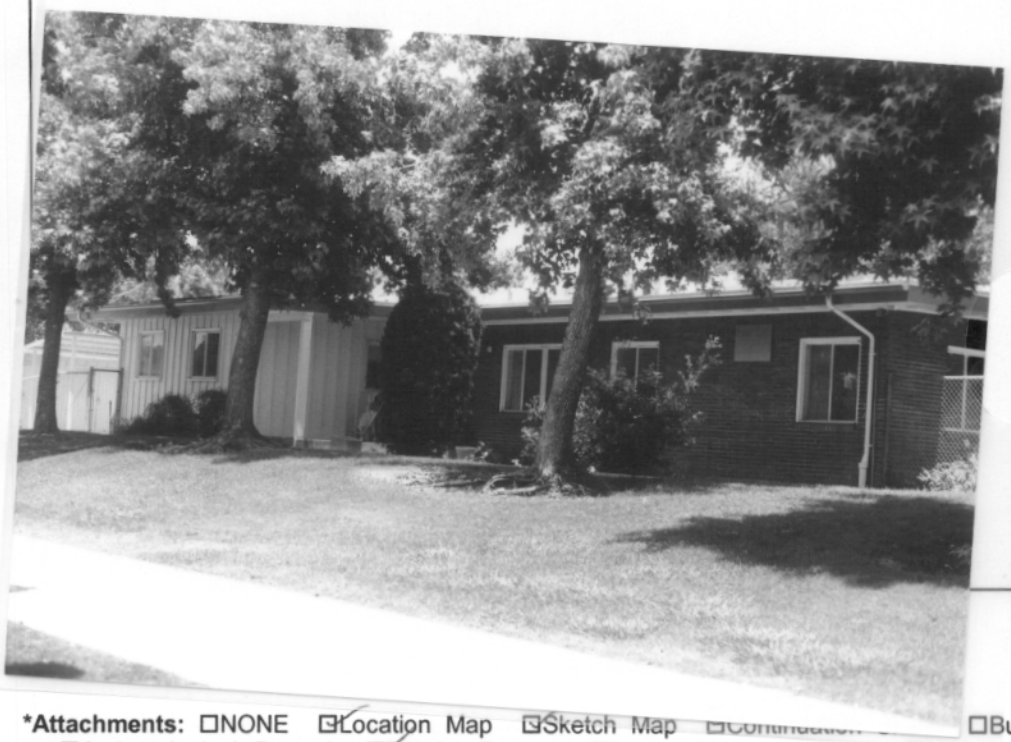
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a basically flat-roofed, small home-like building of 1,686 square feet in the shape of an "L." Designed in a contemporary style, it has deep eaves with exposed rafter-tails, metal casement and fixed windows, and brick walls on its east and southeast sides and board-and-batten walls on its west, north, and southwest sides. The main entrance to the building is on the south facade where the southerly projecting leg of the "L" begins. The entry porch is protected by the projecting roof of the wing, supported by a single wooden post. The play area at the easterly rear of the building is situated under a projecting part of the roof.

Built in 1952 and designed by campus architect Frederick H. Kennedy, Jr., this is one of the earlier structures built especially for the college, probably funded by the second financing election of 1950. It is of some historical interest, because the construction of a nursery school on the campus would have been a rather revolutionary concept in 1952. It has good integrity.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑ Building ☐ Structure ☐ Object ☐ Site ☐ District ☑ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
South side, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑ Historic
☐ Prehistoric ☐ Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐ NONE ☑ Location Map ☑ Sketch Map ☐ Continuation ☐ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☐ Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

*Resource Name or #: Family and Consumer Sciences

P1. Other Identifier: Building 20; Homemaking 2; Langdon Hall; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423880 mE/ 3767410 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

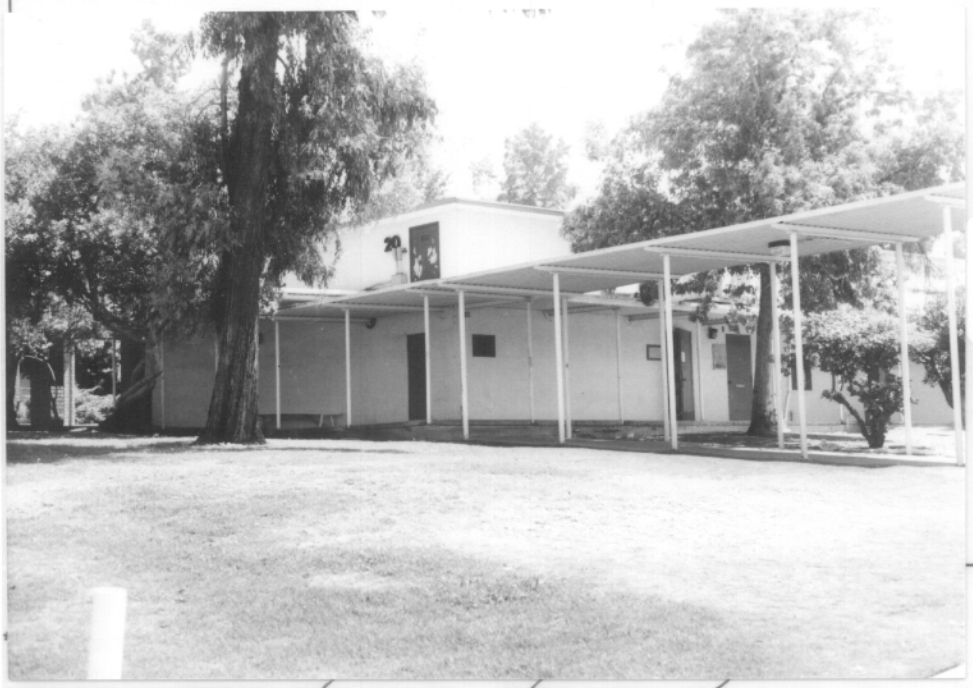
A 1 ½-story classroom complex designed in a contemporary style with a flat roof, an outdoor hallway with a roof supported by thin metal poles, and solid classroom doors bordering the hallway on the south side. Bands of painted-over transom windows in groups of three, separated by pilasters, appear above the hallway roof, each window having eight panes. The north side, with a wall of mixed stucco and vertical siding, has three bands of tall transom windows, each with ten panes. A metal plaque mounted at the west end of the south façade reads: "Langdon Hall/dedicated to the memory of Herbert G. Langdon/founder-trustee-friend/of/Mt. San Antonio College." The building has a stripped-down industrial look, but its open layout is similar to other more traditionally styled classroom structures on the campus.

This 7,095-square-foot building was designed in 1948 by the campus architect Frederick H. Kennedy, Jr. It is one of the three oldest still-extant buildings designed specifically for the new college. Its contemporary style was unusual, since Spanish Colonial Revival was the prevalent style for other campus structures that were built beginning just one year later. It is reminiscent of the elementary schools that the architect was designing at that time for many Southern California school districts. Integrity is good, except for deferred maintenance and the evidence that a bay on the west end of the north façade has been filled in with siding and newer windows.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
West and south sides, looking northeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

*Resource Name or #: Air Conditioning Building

P1. Other Identifier: Building 21; Shop Building; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91689

d. UTM: Zone: 11 ; 423880 mE/ 3767370 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This is a plain, 1 ½-story flat-roofed rectangular building of 7,205 square feet designed in a contemporary style of form following function. Its westerly side is plain stucco with a flat-roofed outdoor passageway along the entire façade (which links it with Building 20), the roof of which is roof supported by slender metal poles. The northerly façade has bands of continuous steel transom multi-paned windows, each with 27 panes. The southerly façade consists of a solid wall onto which open solid classroom doors. The outdoor hallway that runs along this façade is sheltered by a continuation of the flat roof of the west façade. Bands of eight-panedwindows, arranged in groups of three separated by pilasters, appear above the hallway roof. These windows have all been painted over and are partially obscured by the ducts of a later-added air-conditioning system.

This building was designed and built in 1948 by the campus architect Frederick H. Kennedy, Jr. An addition with walls of corrugated-metal and brick has been added to the east end of the building. The original building has fairly good integrity despite evidence of deferred maintenance.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
North and west sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial 19-186869
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

 *Resource Name or #: Welding Building

P1. Other Identifier: Building 22; Welding Shop; Mt. San Antonio College
*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.
c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789
d. UTM: Zone: 11 ; 423860 mE/ 3767340 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a 6,419-square-foot two-story square utilitarian building designed in a contemporary style. It has a flat roof, steel sash, and stucco walls. On the west (front) side are bands of windows on each floor—9 panes each on the first floor and 12 panes each on the second floor. The north side has a band of three 20-paned transom windows on the west end of the second floor and a band of nine taller windows, each with 44 panes, on the east end that covers both floors. The rear (east) side of the building was once open but is now covered with movable sections of vertical wood siding. Large metal horizontal louvers cover all the windows on the south side of the building.

Built in 1948, this building was designed by campus architect Frederick H. Kennedy, Jr. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)
*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #)
West and north sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Beef Unit

P1. Other Identifier: Building F9; Mt. San Antonio College
*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.
c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789
d. UTM: Zone: 11 ; 423620 mE/ 3767180 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Beef Unit consists of a barn and an attached feed shed with a combined square footage of 2,301. Both of these buildings, designed in a vernacular style, have gabled corrugated-metal roofs. The walls of the barn are also corrugated-metal. Two ventilators pierce the ridgeline of the barn roof. The walls of the feed shed are open, except on its west end, the roof supported by wooden posts. A shed with open walls and its own metal roof is attached to the northerly side of the barn. Corrals, fenced with wood or metal, surround the buildings. A round feed hopper is immediately adjacent to the east side of the barn.

The barn and feed shed were constructed in 1954 under the general oversight of the campus architect Frederick H. Kennedy, Jr. They are the oldest still-extant agricultural buildings on the campus and hark back to the days when the college was still in the middle of a prosperous rural area. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Farm/Ranch (HP33)
*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: (View, date, accession #)
North and west sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

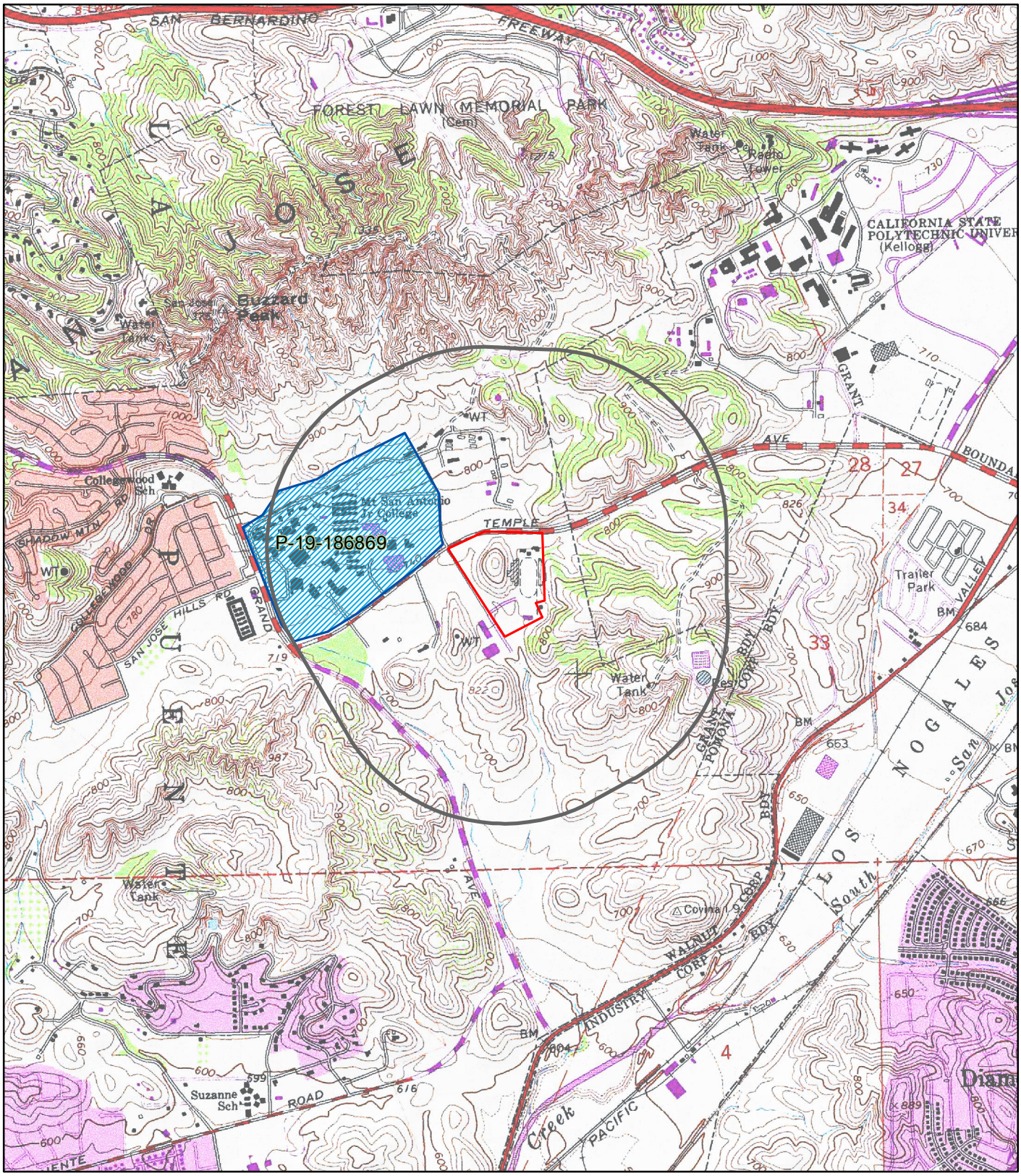
*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):



Miles
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Kilometers
0 0.15 0.3 0.6

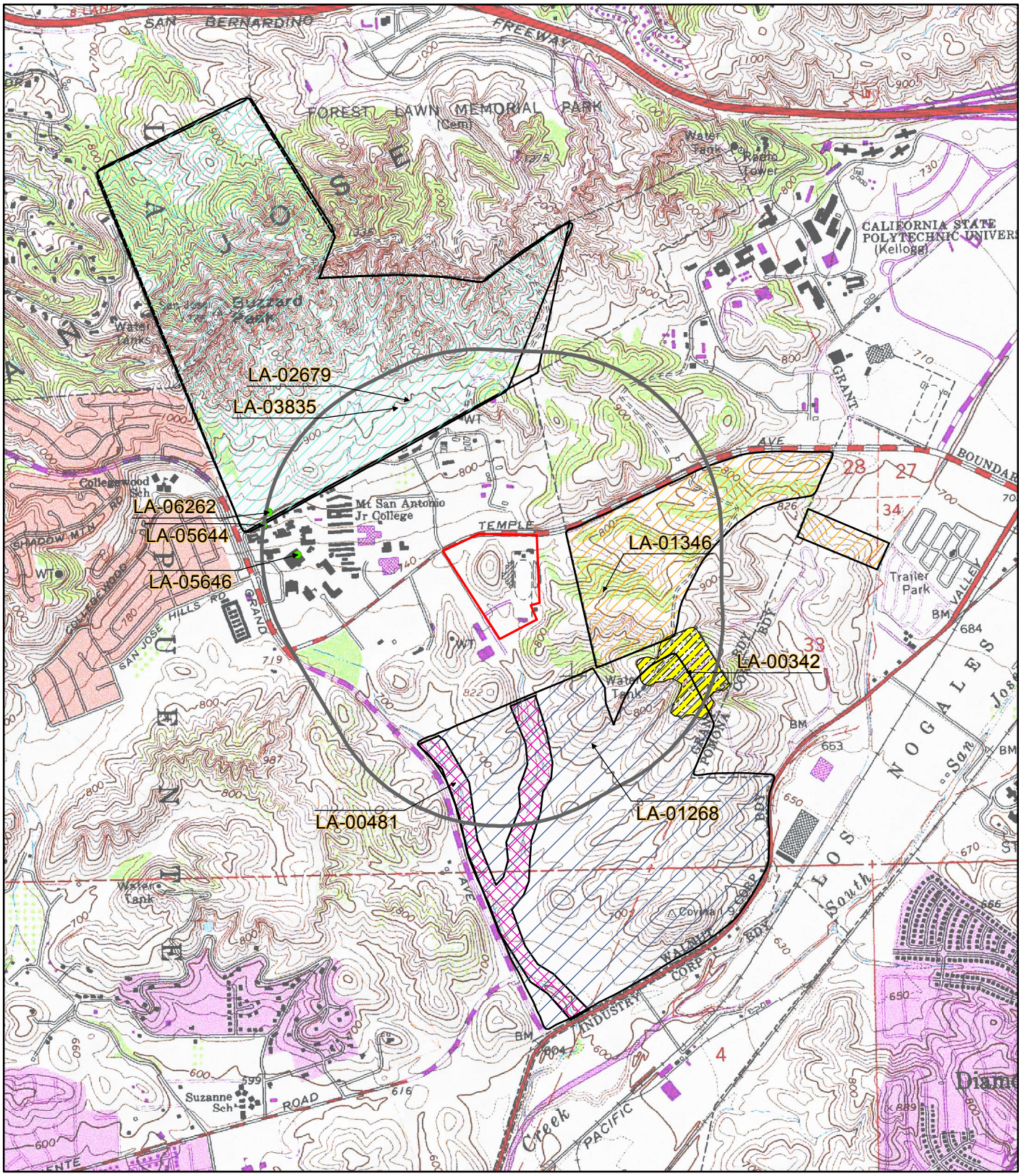
N
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S

South Central Coastal Information Center

Resources, 1/2-mile APE:
19-186869

San Dimas, CA
USGS 7.5'
PR: 1981 | 1:24,000
Inv. #15911
Jan 2016

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South Central Coastal Information Center

Reports, 1/2-mile APE:
LA342, LA481, LA1268, LA1346, LA2679, LA3835, LA5644, LA5646, LA6262

San Dimas, CA
USGS 7.5'
PR: 1981 | 1:24,000
Inv. #15911
Jan 2016

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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

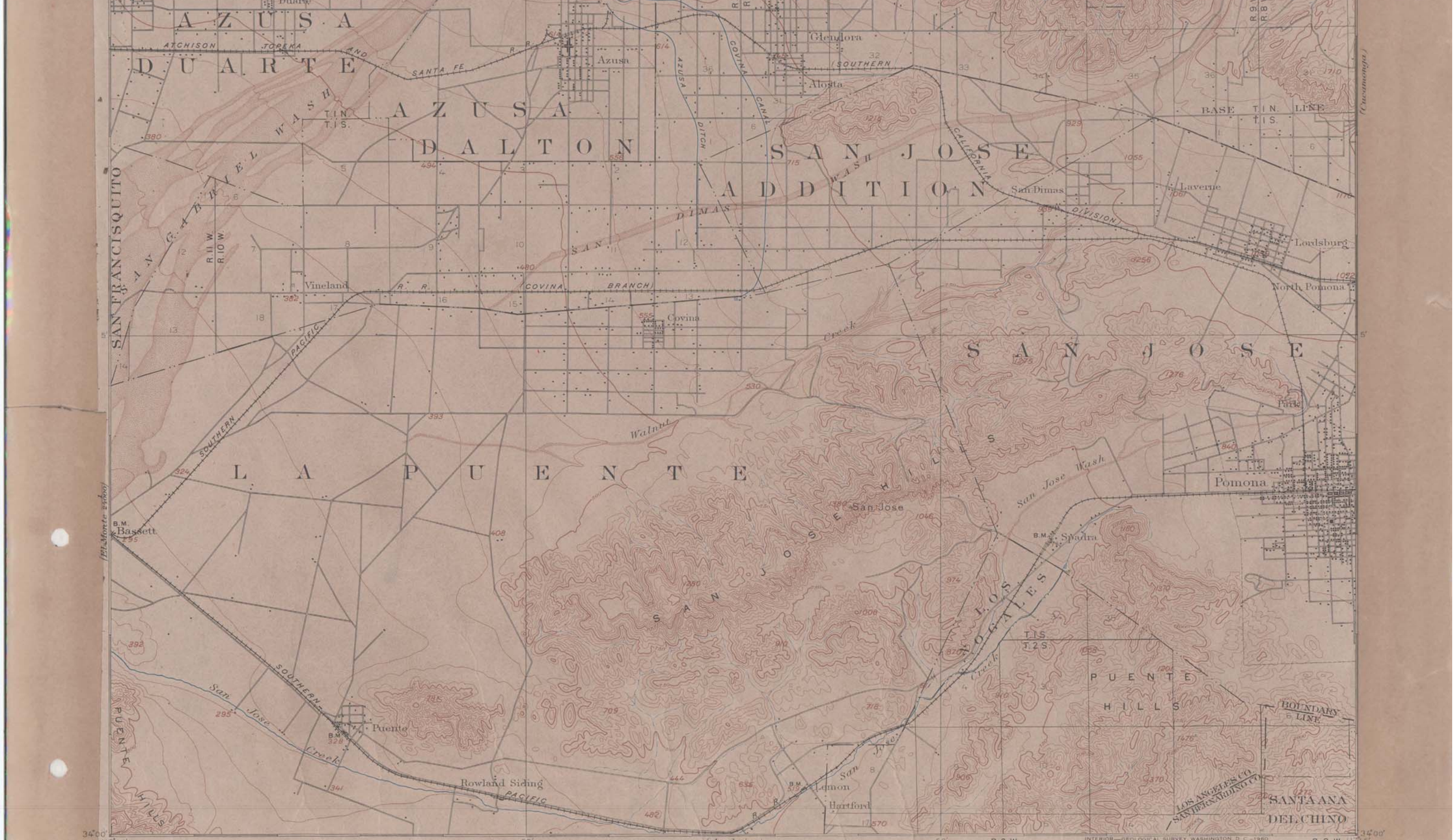
CALIFORNIA
POMONA QUADRANGLE

(Mt. Wilson 15')
118°00' R.11 W.
34°15'
T. 2 N.
(Chileno Canyon 15') R.10 W. 55'
(Camp Rincon 15') 50' R.9 W.
(Camp Bonita 15') R.8 W. 117°45'
(San Antonio)
34°15'
T. 2 N.

(Mt. Wilson 15')
(Sierra Madre 15')
T. 1 N.
T. 1 N.
(Cucamonga)

West Fork San Gabriel River
Club House
Bear Creek
North Fork
Burrow Canyon
Susanna Canyon
Graveyard Canyon
Roberts Canyon
San Gabriel River
Cattle Canyon
Cape Horn Canyon
Horse Canyon
East Fork
Browns Gulch
SAN GABRIEL CANYON
ANGELES
SAN GABRIEL MOUNTAINS
NATIONAL FOREST
Monrovia Peak
Rankin Peak
Silver Mt.
Islip Canyon
Deer Park
Fish Canyon
Roberts Canyon
Water Canyon
Pine Canyon
Sawpit Canyon
Van Tassel Canyon
Harrow Canyon
Little Dalton Canyon
Big Dalton Canyon
Lewis Paul Canyon
Monroe Canyon
Volfe Canyon
Bell Canyon
Pine Canyon
West Fork
San Dimas Canyon
Wolfskill Canyon
Johnstone Pk
Sycamore Flat
R.11 W.
R.10 W.
R.9 W.
R.8 W.
SANTA ANITA
Monrovia
Duarte
AZUSA
DUARTE
ATCHISON TOPEKA AND SANTA FE R.R.
Azusa
Glendora
Alosta
(SOUTHERN PACIFIC)
AZUSA DITCH
COVINA CANAL
EL WASH
T. 1 N.
T. 1 S.
AZUSA
DALTON
SAN JOSE
BASE T. 1 N. LINE
T. 1 S.
CALIFORNIA

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Henry Gannett, Chief Topographer.
R.U.Goode, Geographer in charge.
Triangulation by A.P.Davis.
Topography by L.C.Fletcher and T.G.Gerdine.
Surveyed in 1894.

SCALE 1:62500

1 0 1 2 3 4 MILES
3000 0 2000 6000 9000 12000 15000 18000 21000 FEET
1 5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION 1902

Polyconic projection. To place on 1927 North American datum move projection lines 560 feet south and 560 feet west

This area also covered by 1:24 000-scale maps of Glendora; Azusa, Baldwin Park, and San Dimas 7.5-minute quadrangles, surveyed in 1953

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1960

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D.C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

POMONA, CALIF.
N3400—W11745/15
1894

Los Angeles

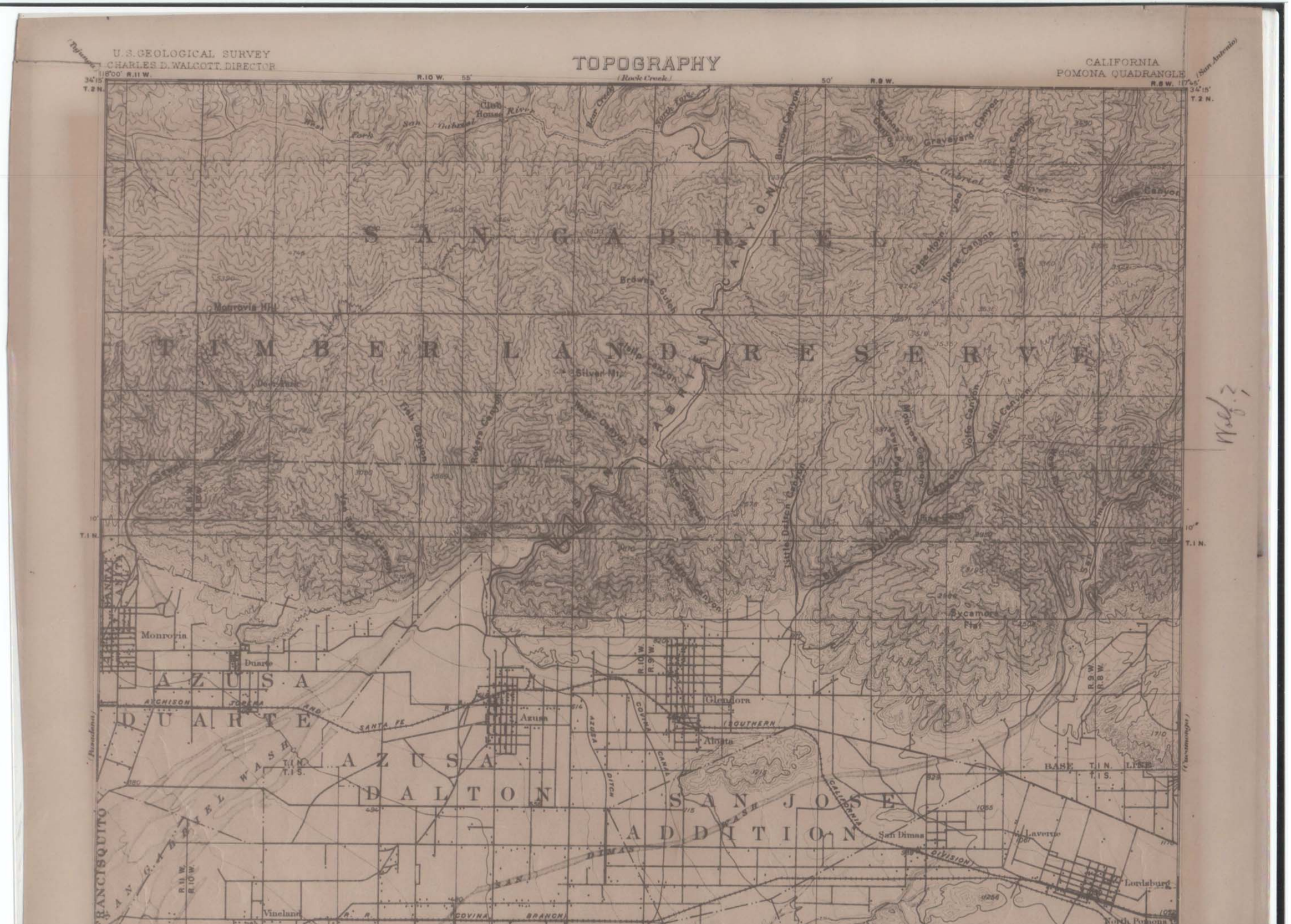
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U.S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

TOPOGRAPHY

CALIFORNIA
POMONA QUADRANGLE



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Monrovia
Duarte
AZUSA
DUARTE
AZUSA
DALTON
SAN JOSE
ADDITION
Glendora
Azusa
Alosta
Vineland
Covina
San Dimas
Laverne
Lordsburg
North Pomona
Pomona
San Jose
Spadra
Puente
Rowland Siding
Lemon
Hartford
LA PUENTE
PUENTE HILLS
SANTA ANA
DEL CHINO
SAN GABRIEL
SAN JOSE
SAN FRANCISQUITO
WASH
CREEK
BRANCH
DITCH
DIVISION
ATCHISON TOPEKA AND SANTA FE
SOUTHERN PACIFIC
SOUTHERN
CALIFORNIA
LOS ANGELES COUNTY
BOUNDARY LINE
R.9 W.
R.8 W.
R.11 W.
R.10 W.
T.1 S.
T.2 S.
T.1 N.
T.2 N.
BASE
Bassett
Spadra
Puente
(Anaheim)
(Pasadena)
(Downey)
(Compton)
(Whittier)
34°00'
118°00'
117°45'
55'
50'
5'

U.S.G.S.
FILE COPY
Ed. Div. Topographic Maps

Henry Gannett Chief Topographer.
R.U.Goode, Geographer in charge.
Triangulation by A.R.Davis.
Topography by L.C.Fletcher and T.G.Gerdine.
Surveyed in 1894.

Scale 62500
Miles
Kilometers
Contour interval 50 feet.
Datum is mean sea level.

Edition of Feb. 1904.

U.S.G.S.
FILE COPY
Ed. Div. Topographic Maps

U.S. Geological Survey,
Historical File
APR 11 1904 3116
Topographic Division
Ed. Div. Topographic Maps.

Pomona, Cal.

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APPENDIX C

NAHC Response Letter

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STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 10, 2016

Sherri Andrews, M.A., J.D., RPA
ASM Affiliates

Sent by Email: sandrews@asmaffiliates.com
Number of Pages: 2

RE: Proposed 2015 Traffic Study and Physical Education Division Projects, City of Walnut, Los Angeles County, California

Dear Ms.Andrews:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton
Associate Governmental Program Analyst

Native American Contact List
Los Angeles County
February 10, 2016

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067
(626) 676-1184 Cell

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell

(626) 286-1262 Fax

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.com
(626) 926-4131

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrielino-Tongva Tribe
Conrad Acuna
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

(310) 428-5690 Cell

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed 2015 Traffic Study and Physical Education Division Project, City of Walnut, Los Angeles County, California.

APPENDIX D

Original Architectural Drawings

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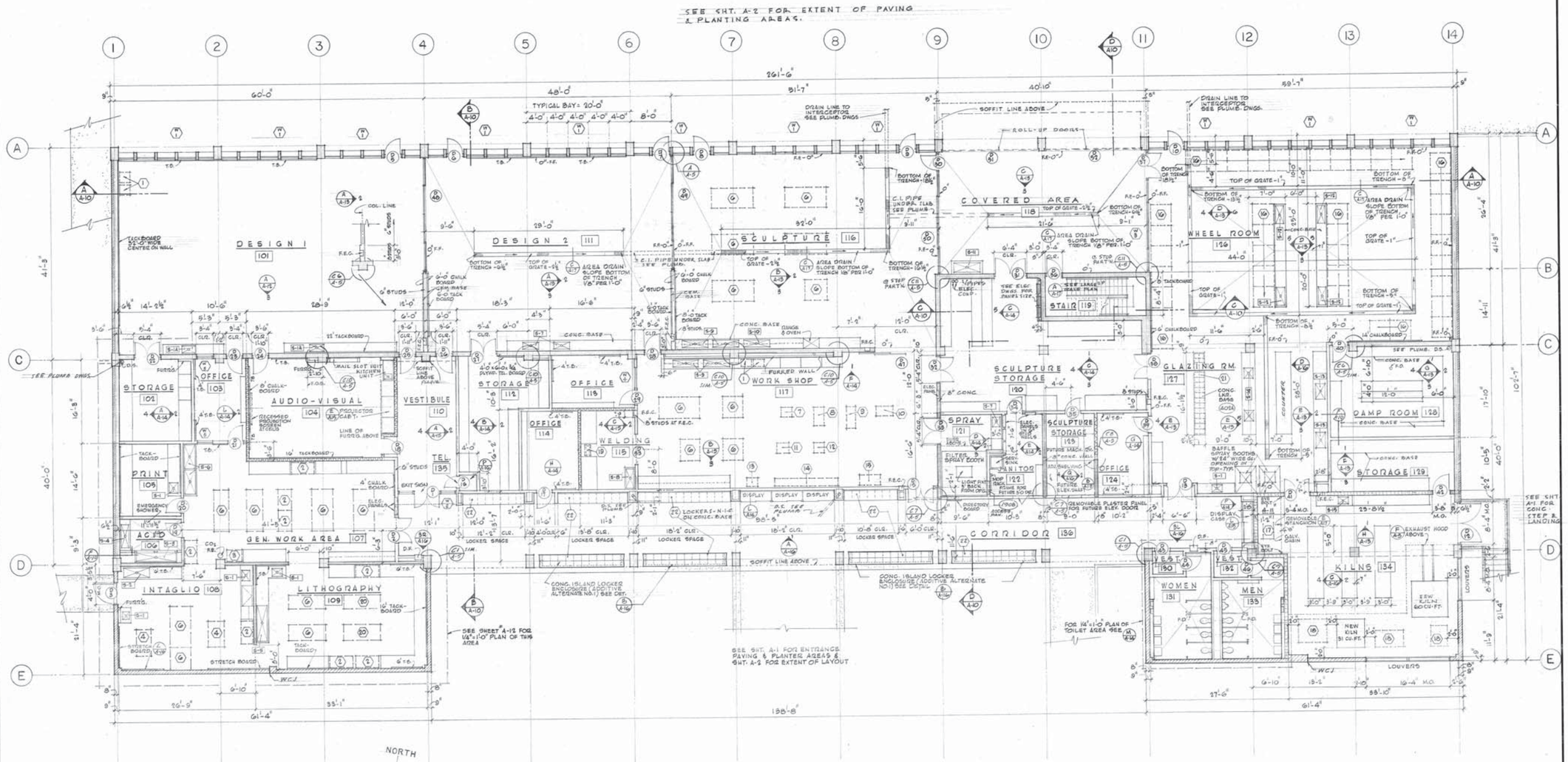
APPENDIX D - ORIGINAL ARCHITECTURAL DRAWINGS INDEX

1. Building 1A: First Floor Plan
2. Building 1A: Building Elevations
3. Building 4: Lower Floor Plan
4. Building 4: Upper Floor Plan
5. Building 4: Building Elevations
6. Building 6: Building Elevations
7. Building 7: Second Floor Plan
8. Building 7: Building Elevations
9. Building 7: North Elevation
10. Building 9A: Building Floor Plan
11. Building 9A: Building Elevations
12. Building 12: Building Floor Plans
13. Building 12: Building Elevations
14. Building 47: Building Floor Plans
15. Building 47: Building Elevations
16. Building 48: Building Floor Plan
17. Building 48: Building Elevations

18–25. Building 50ABC: Building Elevations, Plans, Sections

26. Buildings F1-F4A: Site Plan
27. Building F2A: Building Elevations
28. Building F3A: Building Elevations
29. Building F4A: Building Elevations
30. Building G2: Building Floor Plan
31. Wildlife Sanctuary: Site Plan

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FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"

DATUM: FINISH SLAB ELEVATION 780.8'

NOTE: VERIFY EXACT LOCATION OF WORKSHOP EQUIPMENT OUTLETS WITH OWNER BEFORE PROCEEDING WITH POURING OF FLOOR SLAB

SINK SCHEDULE

SINK Nº	SIZE	MATERIAL	GA.	FITTING	RM. LOCATION
S-1	24 x 21 x 8	SEE PLUMB. DWGS.	—	——	109, 106, 108, 127
S-1A	30 x 21 x 8	SEE PLUMB. DWGS.	—	——	101
S-2	60 x 24 x 12	STAINLESS STL. #302	#16	A - 2"	108
S-3	60 x 24½ x 6	STAINLESS STL. #302	#16	A - 2"	106
S-4	54 x 18 x 8	STAINLESS STL. #302	#16	A - 2"	106
S-5	84 x 24 x 5	STAINLESS STL. #302	#16	A - 2"	109
S-6	54 x 24 x 10	STAINLESS STL. #302	#16	A - 2"	107
S-7	30 x 19 x 8	GALV. IRON	#14	A - 2"	111, 121
S-8	54 x 20 x 18	"	#14	A - 2"	115
S-9	60 x 19 x 12	"	#14	A - 3"	116, 117
S-10	60 x 19 x 18	"	#14	A - 3"	116
S-11	60 x 24 x 24	"	#14	B	118
S-12	42 x 18 x 12	"	#14	A - 3"	120
S-13	36 x 20 x 12	"	#14	A - 2"	127
S-14	24 x 20 x 12	"	#14	A - 2"	127
S-15	24 x 19 x 12	"	#14	A - 2"	134

FITTING DESCRIPTION

A - WASTE FITTING AND LEVER HANDLE - ELKAY #87R
B - J.R. SMITH #7940 DRAIN W/GROUND JOINT PLUG-S PROVIDE CHAIN FOR PLUG.

SINKS IDENTIFIED THUS ON PLAN S-4

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
SEP 8 1971

N.I.C. EQUIPMENT SCHEDULE

Nº	DESCRIPTION	RM. LOCATION
(1)	FUTURE ELECTRIC KILNS	101, 117
(2)	6 SPEED RACK	107, 108, 109
(3)	AQUA-TINT BOX	107
(4)	ETCH PRESS	108
(5)	ELECTRIC HOT PLATE	109
(6)	TABLE	107, 108, 109, 117
(7)	BAND SAW	117
(8)	JIG SAW	117
(9)	JOINTER - FUTURE	117
(10)	TABLE SAW - FUTURE	117
(11)	DISC/BELT SANDER	117
(12)	DISC/BELT SANDER - FUTURE	117
(13)	DRILL	117
(14)	PANEL SAW - FUTURE	117
(15)	RADIAL ARM SAW - FUTURE	117
(16)	ELECTRIC POTTERS WHEELS	126
(17)	PUG MILL	134
(18)	KILNS, GAS FIRED	134
(19)	PORTABLE TANK CART	118
(20)	LITHO PRESS	109
(21)	MET. BOX LOCKERS	127
(22)	CORRIDOR STUDENT LOCKERS	136

BUILDING AREA:

1ST. FLOOR	21,345 S.F.
MECH. EQUIP. FLOOR	2,450 S.F.
COVERED AREA #2	1,195 S.F.
TOTAL	24,990 S.F.
OCCUPANCY	C
TYPE OF CONSTRUCTION	I
FIRE ZONE	3

LEGEND

- 4" MET. STUDS UNLESS NOTED OTHERWISE DET. (C-5/A-5)
- CONCRETE
- CONCRETE BLOCK
- BRICK
- SOUND INSULATED WALLS - DET. (C-4/A-5)
- (15) EQUIPMENT - N.I.C. SEE EQUIPMENT SCHEDULE
- EQUIPMENT - IN CONTRACT

AS-BUILT DRAWING
DATE OCT. 1, 1973

REVISIONS		

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES — OFFICE OF ARCHITECTURE AND CONSTRUCTION
3431 APPROVED SEP 8 - 1971

ENGINEER: LICENSE NO. 5E-484

ARCHITECT: LICENSE NO. C-324

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

FIRST FLOOR PLAN
ART CENTER BLDG. N & IA
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

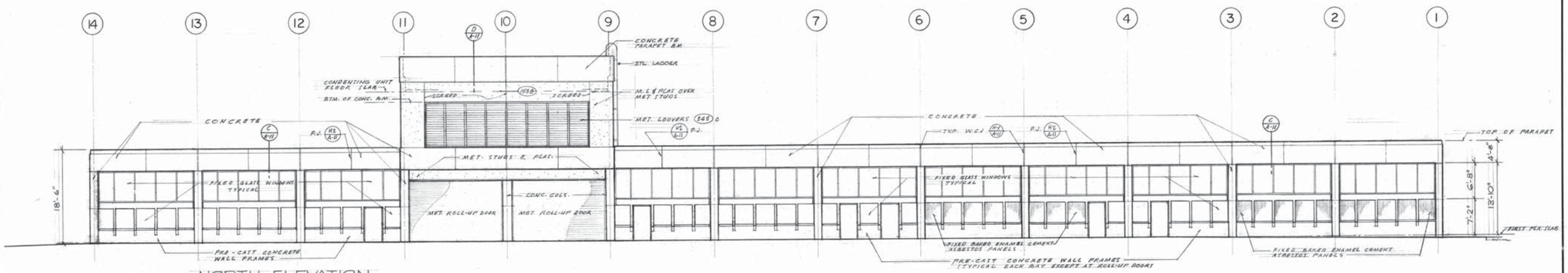
PROJECT XIX

COMM. 1560
DATE 6-14-71
DRAWN MARTIN
CHECKED DB

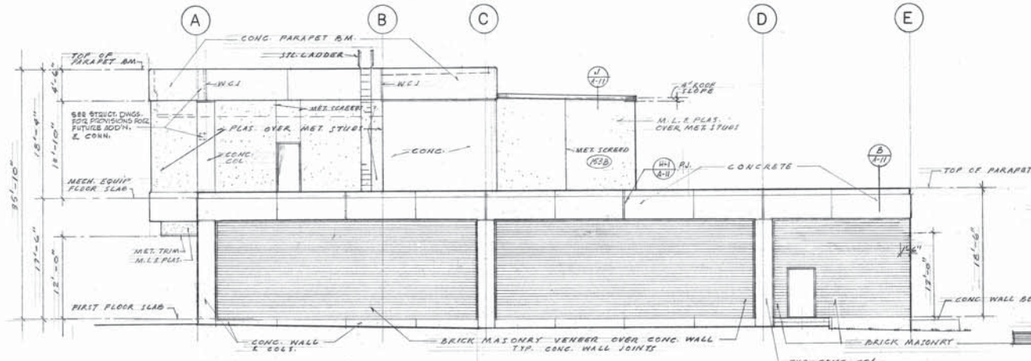
SHEET A-6
6 OF 45

8/69 DIETERICH-POST CLEARPRINT 1000H

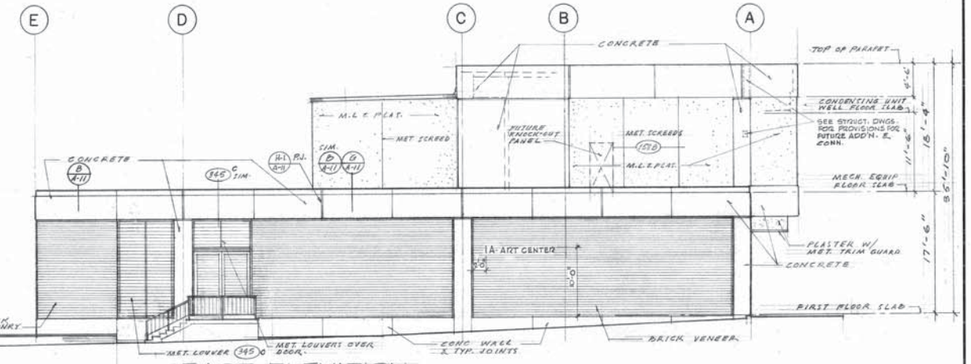
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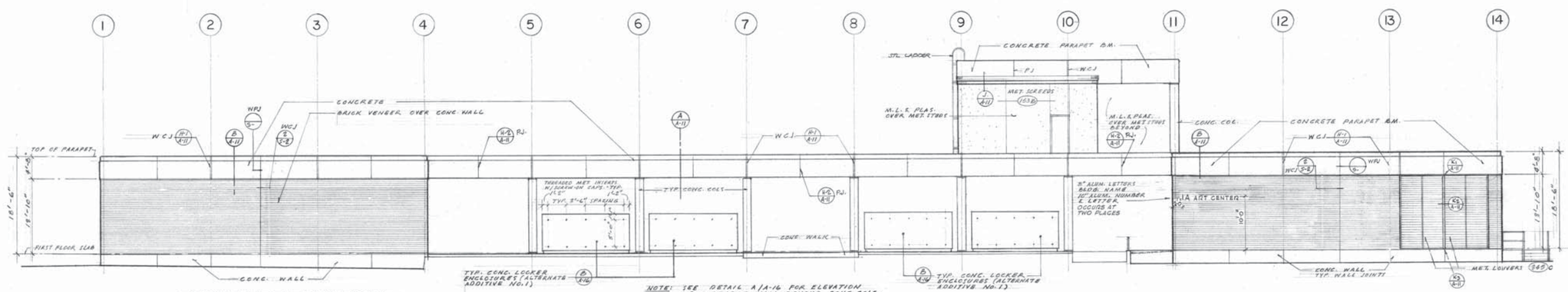
NORTH ELEVATION
SCALE 1/8" = 1'-0"



WEST ELEVATION
SCALE 1/8" = 1'-0"



EAST ELEVATION
SCALE 1/8" = 1'-0"



SOUTH ELEVATION
SCALE 1/8" = 1'-0"

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
APPL. #
BY:

AS-BUILT DRAWING
DATE OCT. 1, 1973

REVISIONS			

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
34311 APPROVED SEP 8 - 1971
APPLICATION NO. For: D.S.A.

ENGINEER	ARCHITECT
William J. Wheeler	Charles E. Fry
LICENSE NO. SE-486	LICENSE NO. C-324

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

EXTERIOR ELEVATIONS
ART CENTER BLDG. No. 1A
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

PROJECT XIX

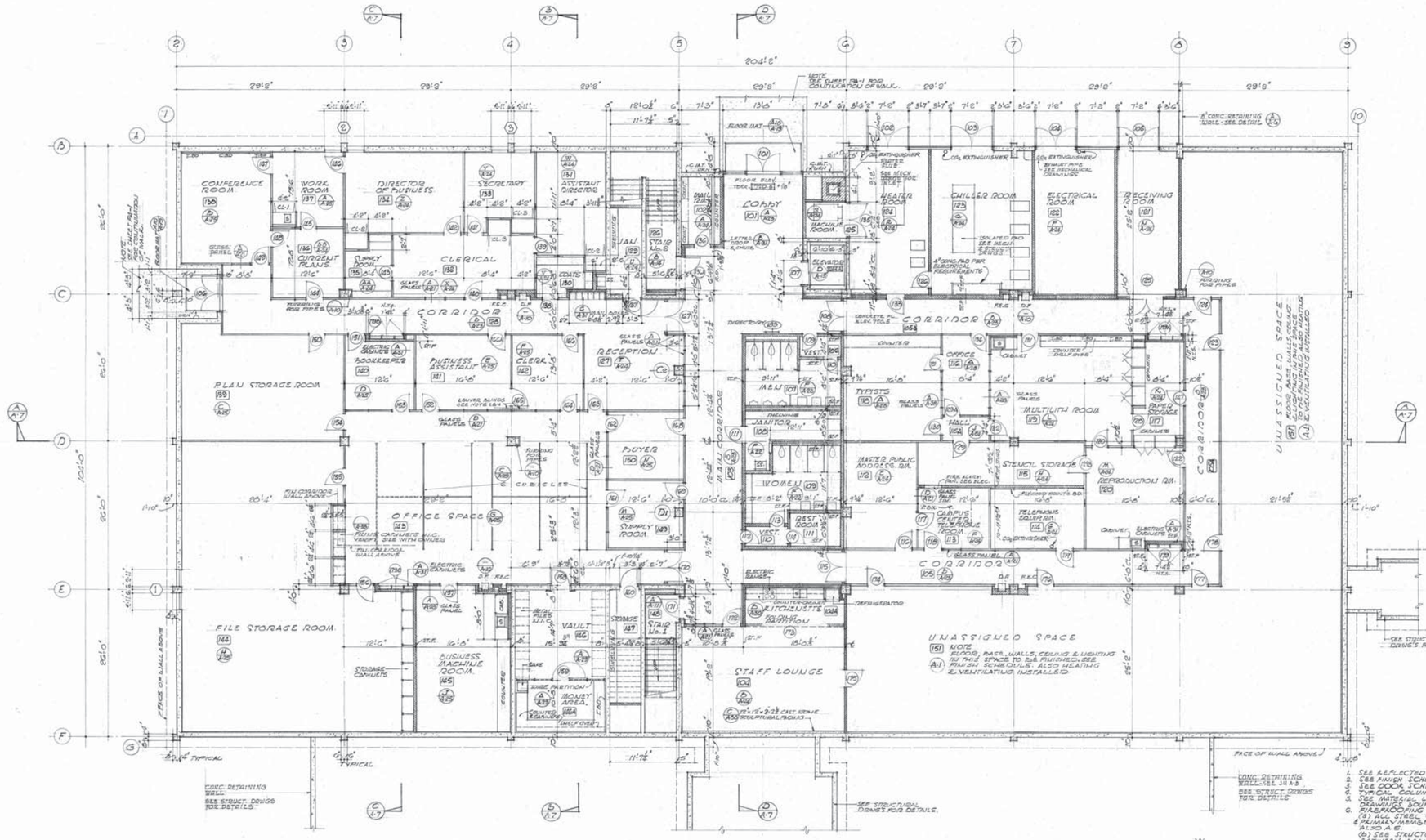
COMM. 1560
DATE 6-14-71
DRAWN BARCELONA
CHECKED D.B.

SHEET A-9
9 OF 43

DSA 701-500

8/68 DIETERICH-POST CLEARPRINT 2000H

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NOTES

1. SEE REFLECTED CEILING PLAN - SHEET A-1C.
2. SEE FINISH SCHEDULE & FINISH TYPES SHEET A-1
3. SEE DOOR SCHEDULE & DOOR TYPES SHEET A-9
4. TYPICAL COLUMN DETAILS FOR FIN. & MASS. SHEET A-10
5. SEE MATERIAL LEGEND & ABBREVIATIONS ON STANDARD DRAWINGS BOUND IN BACK OF SPECIFICATIONS
6. FIRE PROOFING:
   (a) ALL STEEL COLUMNS, PURLINS, BEAMS, GIRDERS, STRINGERS & PRIMARY MEMBERS SHALL BE FIREPROOFED, SEE SHEET A-10 AND A-8.
   (b) SEE STRUCTURAL DRAWINGS FOR DISTINCTION BETWEEN BEAMS & GIRDERS.
7. SEE WINDOW DETAILS SHEET A-9D.
8. ALL CONCRETE WALLS OF BUILDING BELOW GRADE SHALL BE WATERPROOFED - SEE SPECIFICATIONS
9. FOR CLY THRU CLT SEE 24, A-82

NOTE, L & L-1:
LOUVER BLINDS (PAR SPACE) AT WINDOWS # 1, 2, 3 AND AT GLASS PANELS IN RMS # 140, 141, 142, 169 & 180. AT INTERIOR PARTITIONS RAILS OF BLINDS SHALL BE ATTACHED TO WINDOW BLIND FRAME.

PARTITION LEGEND

- 2½# THICK MOVABLE GYP. BD. PARTITION
- METAL STUD PARTITION W/ GYP. BD. FINISH
- METAL STUD PARTITION
- METAL STUD PARTITION - 2 HOUR CONSTRUCTION
- DOUBLE METAL STUD PARTITION W/ 1" FIBER BOARD INSULATION BETWEEN, A.M.S. DETAILS & 17/A6
- ALUM. FRAMED GLASS PANELS, IN 3/16" THICK GYP. BD. PARTITION
- EXTERIOR & INTERIOR COMB. WITH PLASTER ON BUILDING AREA USES ECHED, FOR OTHER FINISHES SEE PLASTER

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
23614 APPROVED AUG 1 51963
By E. Hwang

STATE FIRE MARSHAL
APPROVED AUG 1 51963
OFFICE OF STATE FIRE MARSHAL
STATE OF CALIFORNIA

REVISIONS	ENGINEER	ARCHITECT
	William J. Fuller LICENSE NO. 12566	Charles E. Fry LICENSE NO. C-524

AUSTIN & FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

LOWER FLOOR PLAN. SCALE: 1/8" = 1'-0"

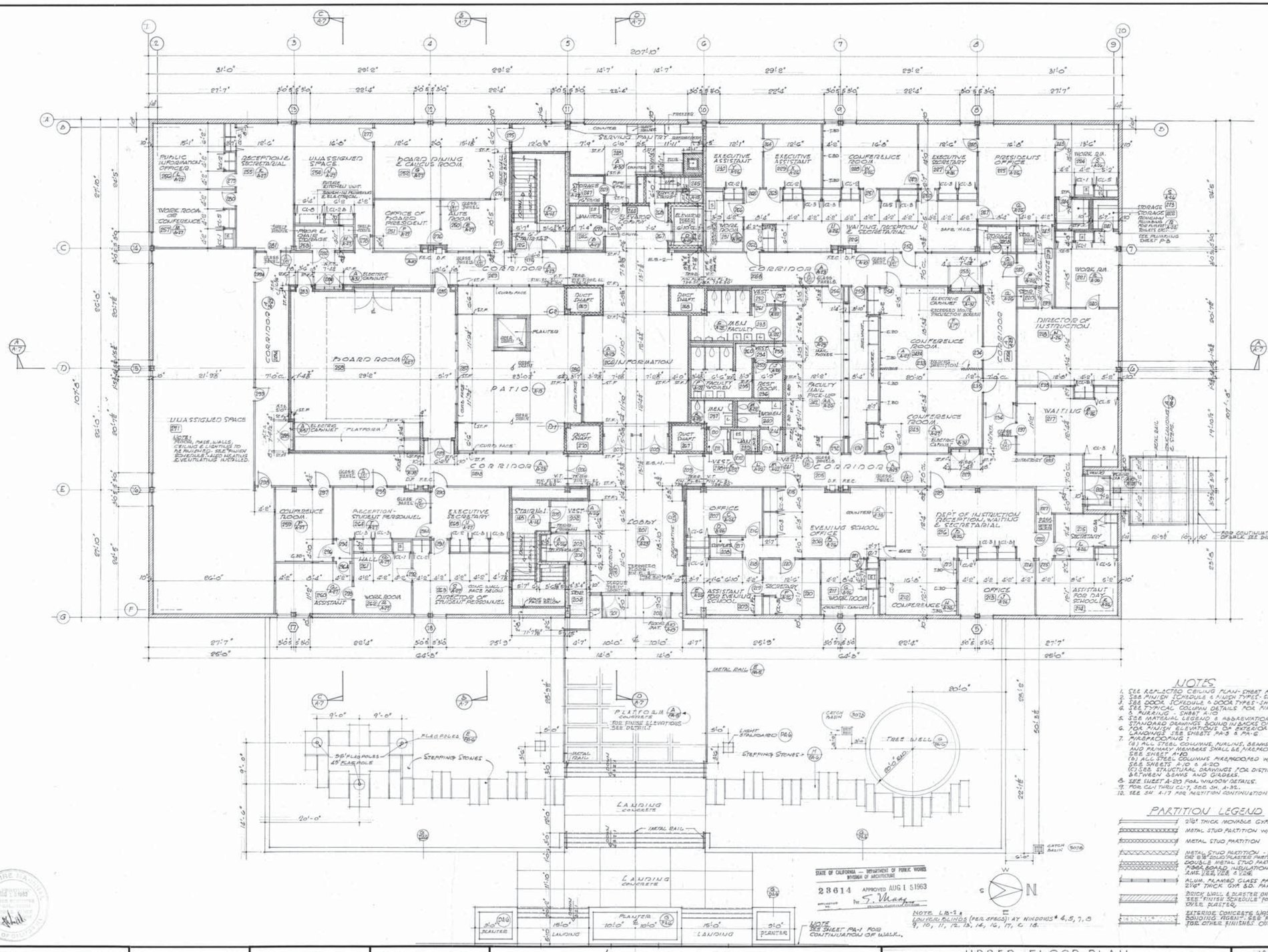
COLLEGE CENTER BUILDING # 4
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

PROJECT IX

COMM. 1378
DATE MAY 1, 1963
DRAWN HENRY
CHECKED MAY

SHEET A-2
OF 75

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NOTES

1. SEE REFLECTED CEILING PLAN - SHEET A-17
2. SEE FINISH SCHEDULE & DOOR TYPES - SHEET A-1
3. SEE DOOR SCHEDULE & DOOR TYPES - SHEET A-4
4. SEE TYPICAL COLUMN DETAILS FOR FINISHES & FURRING - SHEET A-10
5. SEE MATERIAL LEGEND & ABBREVIATIONS ON STANDARD DRAWINGS BOUND IN BOOKS OF SPECS.
6. FOR MINOR ELEVATIONS OF EXTERIOR STEP LANDINGS SEE SHEETS PA-5 & PA-6
7. FIREPROOFING:
   (a) ALL STEEL COLUMNS, PURLINS, BEAMS, GIRDERS, TRUSSES, AND PRIMARY MEMBERS SHALL BE ENCASED SEE SHEET A-10
   (b) ALL STEEL COLUMNS ENCASED W/ CONC. SEE SHEETS A-10 & A-20
   (c) SEE STRUCTURAL DRAWINGS FOR DISTINCTION BETWEEN BEAMS AND GIRDERS.
8. SEE SHEET A-20 FOR WINDOW DETAILS.
9. FOR CH THRU CH-7, SEE SH. A-35.
10. SEE SH. A-17 FOR PARTITION CONTINUATION ABOVE CEILINGS.

PARTITION LEGEND

- 2 1/8" THICK MOVABLE GYP. BD. PARTITION
- METAL STUD PARTITION W/ GYP. BD. FINISH
- METAL STUD PARTITION
- METAL STUD PARTITION - 2 HOUR CONSTRUCTION OR 8" SOLID PLASTER PARTITION.
- DOUBLE METAL STUD PARTITION W/ 1" FIBER BOARD INSULATION BETWEEN. S.M.S. 128, 132, & 1248.
- ALUM. FRAMED GLASS PANELS IN 2 1/4" THICK GYP. BD. PARTITION
- BRICK WALL & PLASTER OR BONDING AGENT SEE "FINISH SCHEDULE" FOR OTHER FINISHES OVER PLASTER.
- EXTERIOR CONCRETE WALL & PLASTER ON BONDING AGENT SEE "FINISH SCHEDULE" FOR OTHER FINISHES OVER PLASTER.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
28614 APPROVED AUG 1 5 1963
by T. Mary

NOTE: L.B.-2 LOUVER BLINDS (PER SPECS.) AT WINDOWS # 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, & 18.

NOTE: SEE SHEET PA-1 FOR CONTINUATION OF WALK.

STATE FIRE MARSHAL — APPROVED AUG 1 5 1963 — STATE OF CALIFORNIA

REVISIONS		ENGINEER	ARCHITECT
		William Winkler LICENSE NO. 5248E	Charles E. Fry LICENSE NO. C-524

AUSTIN, FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326

UPPER FLOOR PLAN. SCALE: 1/8" = 1'0"

COLLEGE CENTER BUILDING #4
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

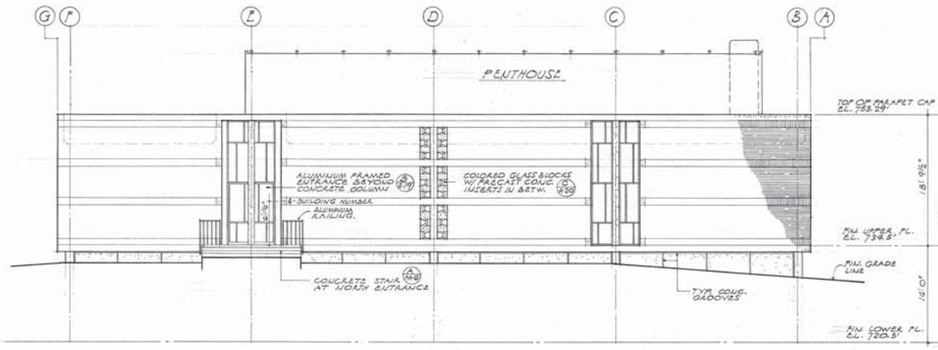
PROJECT IX

COMM. 1378
DATE MAY 1, 1963
DRAWN HENRY
CHECKED BENBY

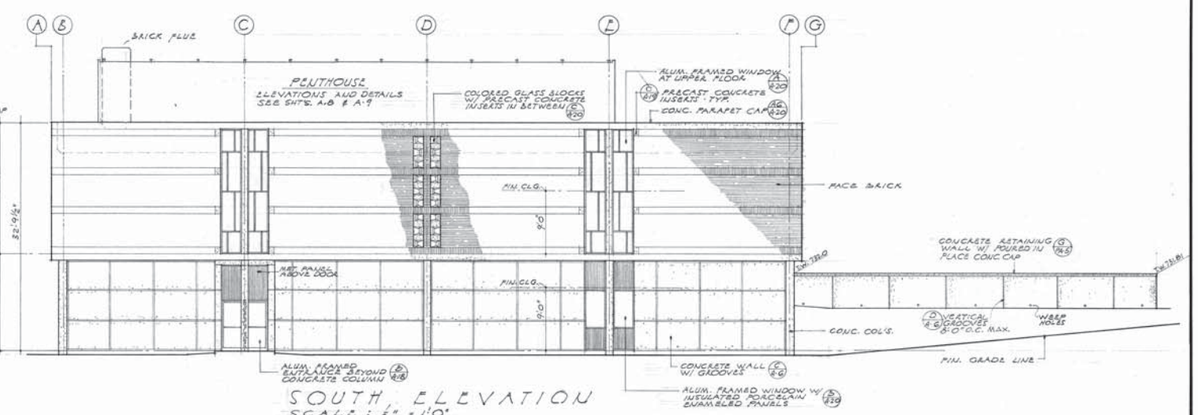
SHEET A-3 OF 75

04-6341-010

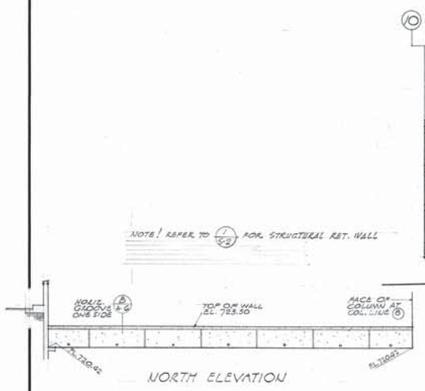
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NORTH ELEVATION
SCALE: 1/8" = 1'-0"



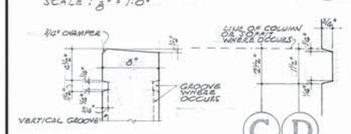
SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION

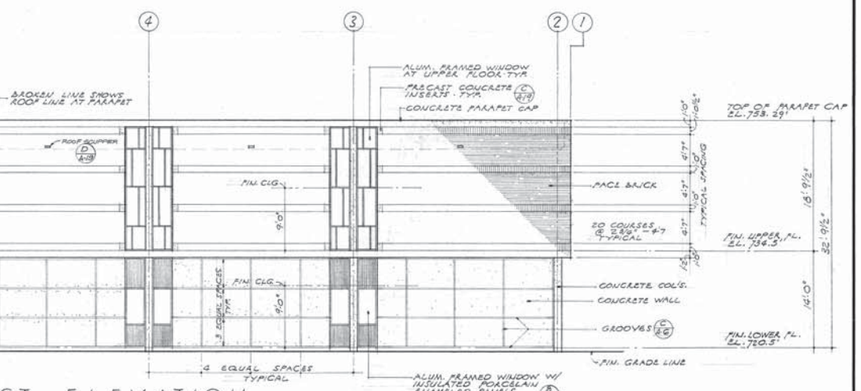
WEST ELEVATION
CURVED PORTION OF WALL PROJECTED TO A FLAT PLANE

CONCRETE RETAINING WALL AT WEST SIDE OF BUILDING (A)
SCALE: 1/8" = 1'-0"

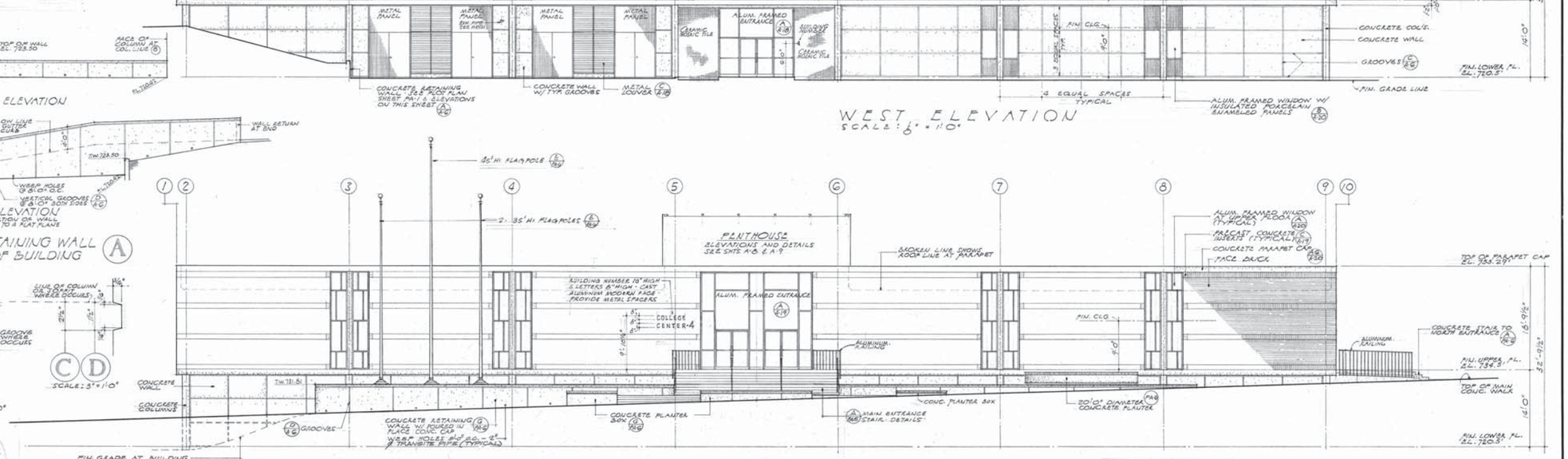


B
SCALE: 1/2" = 1'-0"

C D
SCALE: 3" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
23614 APPROVED AUG 1 51963
By E. Neary

NOTE:
ALL CONCRETE WALLS OF BUILDING BELOW GRADE SHALL BE WATERPROOFED SEE SPECS.
SEE SHEET PA-2 FOR FINISH GRADES

STATE FIRE MARSHAL
AUG 1 2 1963
BUREAU OF ENGINEERING
DIVISION OF INDUSTRIAL SAFETY
STATE OF CALIFORNIA

REVISIONS		ENGINEER	ARCHITECT
		William W. Keller LICENSE NO. 5F 4886	Earl E. Fry LICENSE NO. C-5246

AUSTIN, FIELD & FRY
Architects & Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

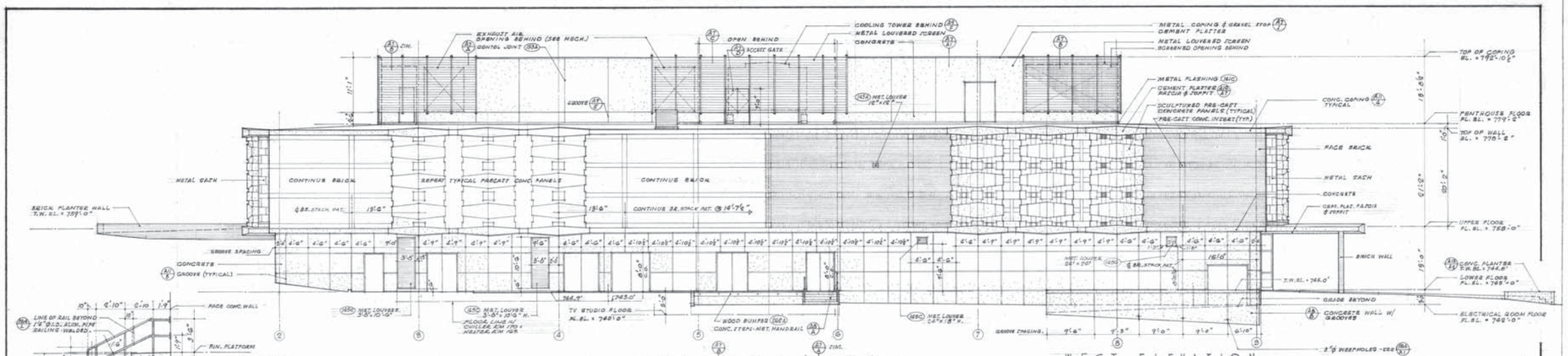
EXTERIOR ELEVATIONS
COLLEGE CENTER - BUILDING #4
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA
PROJECT IX

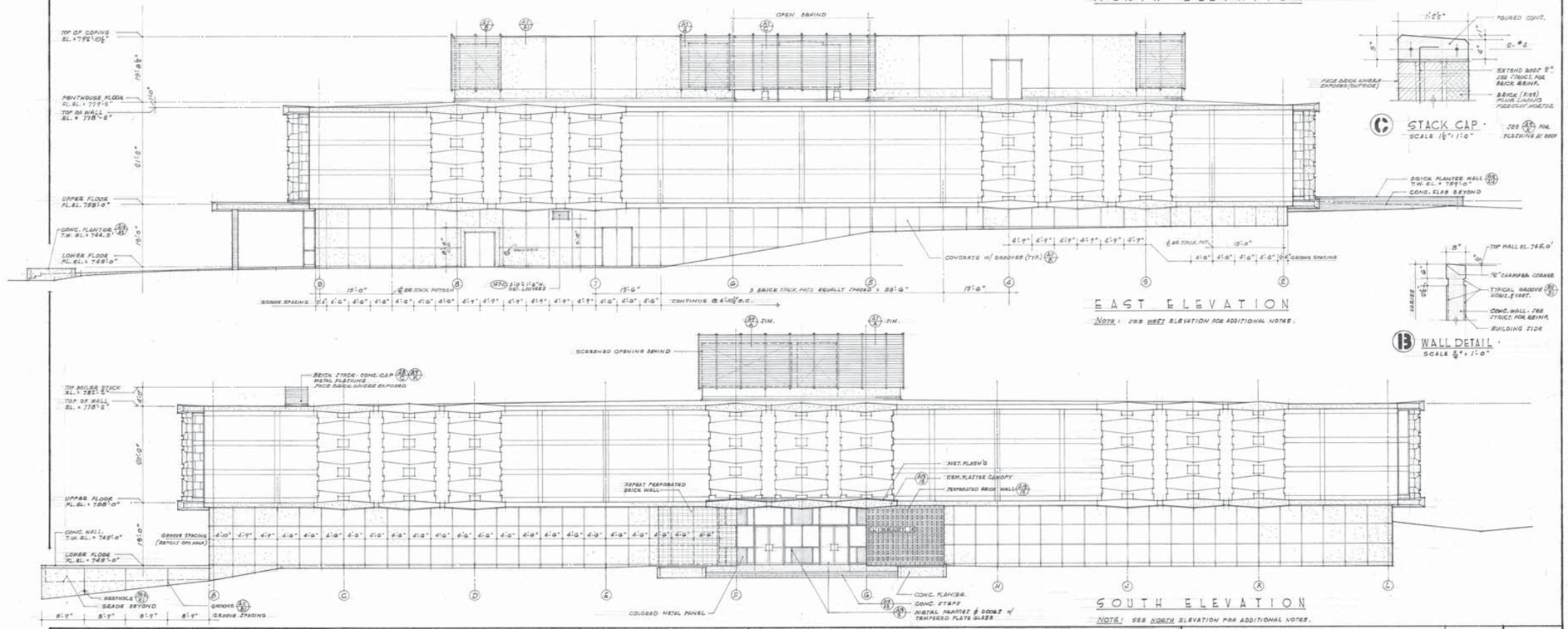
COMM. 1378
DATE May 1, 1963
DRAWN NATSUNO
CHECKED KOBA

SHEET A-6 OF 75

64-6601-015

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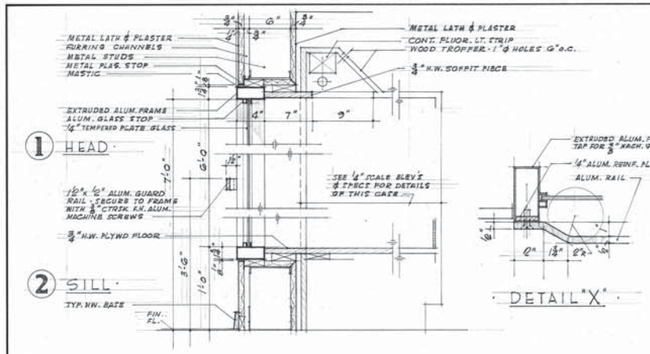
REVISIONS		ENGINEER	ARCHITECT		
	STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE 21407 APPROVED AUG 23 1961	William H. Wheeler LICENSE NO. 4546	Charles E. Fry LICENSE NO. C-524	AUSTIN FIELD & FRY Architects Engineers TWENTY-THREE ELEVEN WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.

ELEVATIONS
LIBRARY BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

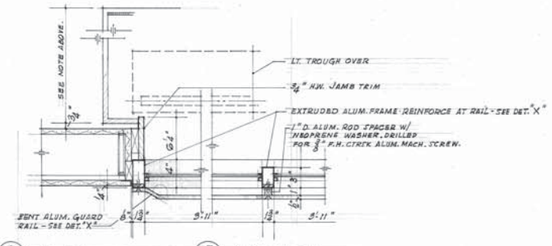
SCALE 1/8"=1'-0" | PROJECT VI | COMM. 1045 | DATE 4-7-61 | DWN. R.E.F. BOOMAR | CHKD. HOAAF

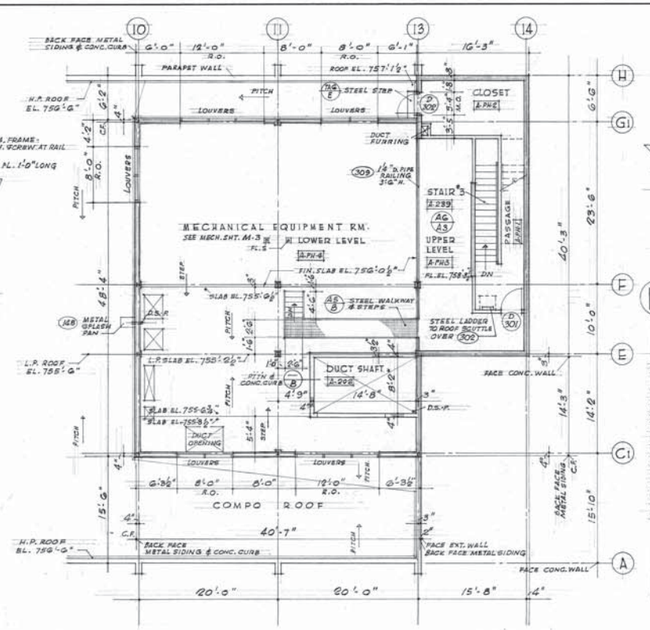
SHEET NO. A-8

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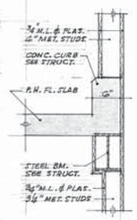
DETAIL "X"





PENTHOUSE FLOOR PLAN

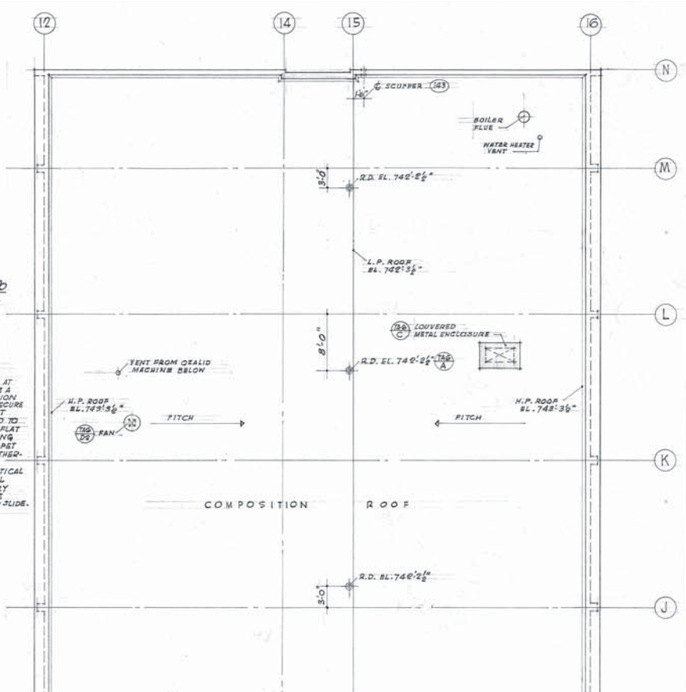
NOTE: SEE STRUCTURAL & MECH. DWGS FOR TIES & LOCATION OF DUCT OPEN'GS IN P.H. FLOOR.



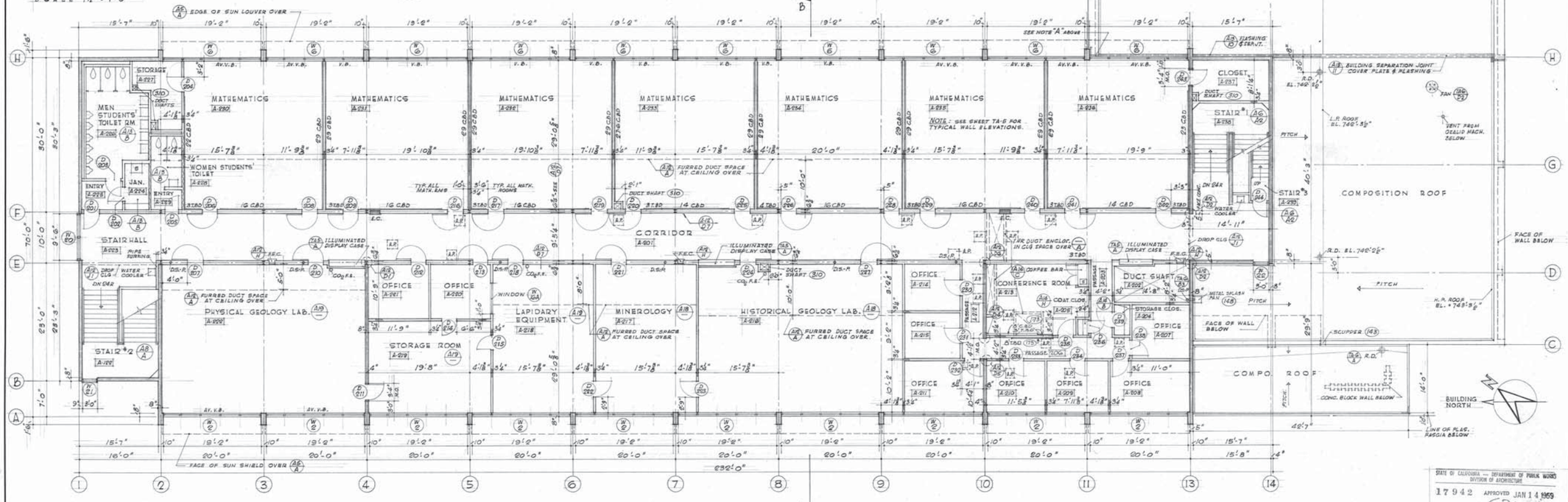
13 DETAIL OF CURB AT DUCT SHAFT
SCALE 1" = 1'-0"

NOTE "A"

PROVIDE 26 GA. G.I. MET. FLASHING AT TOP OF PARAPET. FLASHING TO HAVE A FLAT SEAM TO ALLOW SLIDING ACTION OF METAL IN TWO DIRECTIONS. SECURE ONE END OF FLASHING IN REGLET OF TWO STORY WALL & OTHER END TO CONC. PARAPET BEFORE FORMING FLAT SEAM. EXTEND THE METAL FLASHING A MIN. OF 18" ALONG TOP OF PARAPET AND TURN DOWN TO FORM A WEATHER-TIGHT CONNECTION. TURN DOWN METAL FLASHING ON INSIDE VERTICAL FACE OF PARAPET AND LAP METAL WALL FLASHING ALONG TWO STORY PORTION OF BUILDING. ALL JOINTS TO BE WEATHER-TIGHT BUT FREE TO SLIDE. SEE DET'L. A-19/10.



DISPLAY WINDOW DETAILS CORRIDOR A-102 (A)
SCALE 1½" = 1'-0"



NOTE: ALL CEILING ACCESS PANELS (A.P.) ARE TO BE 8'-0" x 2'-0" UNLESS NOTED OTHERWISE. SEE (701) FOR DETAIL. SEE NOTE 16, SHEET PA-1 RE: LOCATION.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
17942 APPROVED JAN 14 1959
By S. Murray

Remarks | Revisions | Engineers | Approvals

DRAWN | CHECKED | ARCHITECT — LICENSE #C-5[illegible]

AUSTIN · FIELD & IRY Architects A.I.A. Engineers
2311 WEST THIRD STREET
LOS ANGELES 57, CALIFORNIA
DUnkirk 8-1326

BUILDING

SECOND FLOOR AND PENTHOUSE PLAN.

PHYSICAL SCIENCE & ENGINEERING CENTER
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

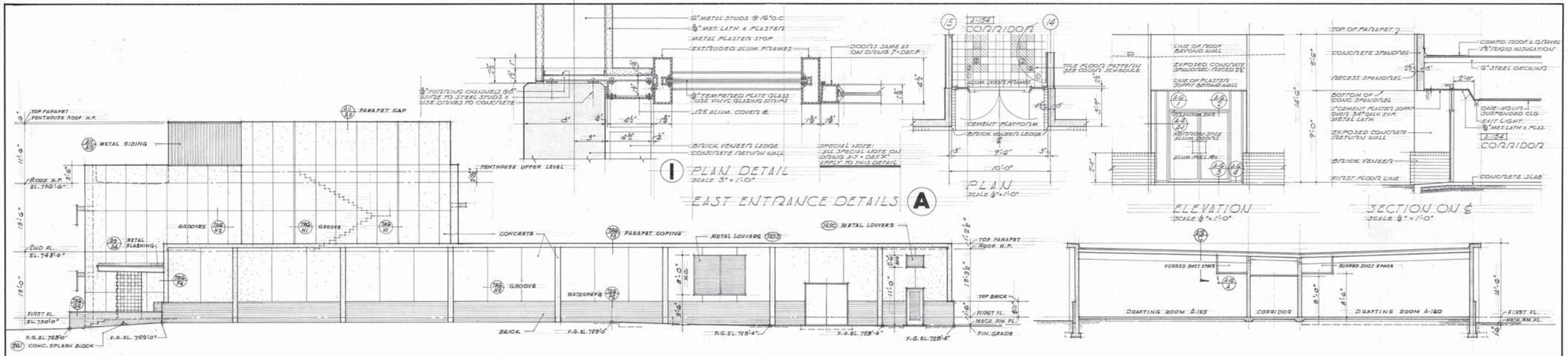
DATE 10/28/58 | COMM. 1532 | PROJ. NO. III | SCALE 1/8" = 1'-0" | SHEET NUMBER A1-3

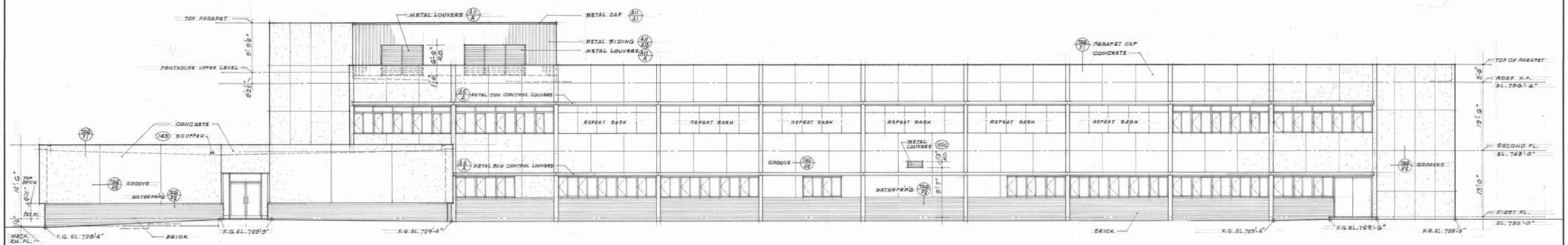
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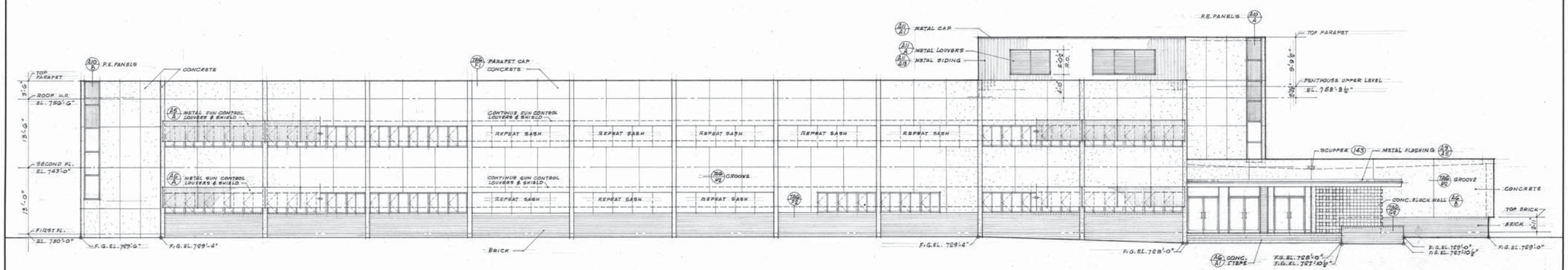
L-7-1961-609

PA-111

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NOTE: SEE ⅛" SCALE PLANS FOR WIDTHS OF LOUVERED OPENINGS.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE
7942 APPROVED JAN 14 1959
By T. Vlang

Remarks | Revisions | Engineers | Approvals

AUSTIN-FIELD & IRY Architects & Engineers A.I.A.
2311 WEST THIRD STREET
LOS ANGELES 57, CALIFORNIA
DUnkirk 8-1326

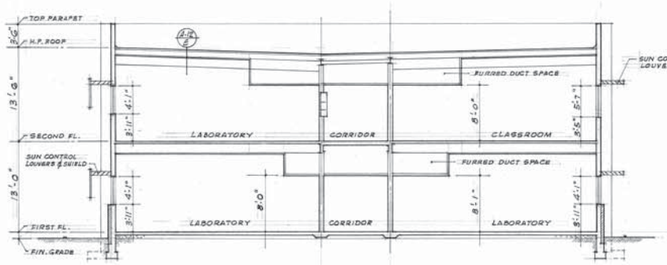
BUILDING
EXTERIOR ELEVATIONS AND SECTION
PHYSICAL SCIENCE & ENGINEERING CENTER
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

DATE 10/28/58
COMM. 1232
PROJ. NO. III
SCALE ⅛" = 1'-0"
SHEET NUMBER A-4

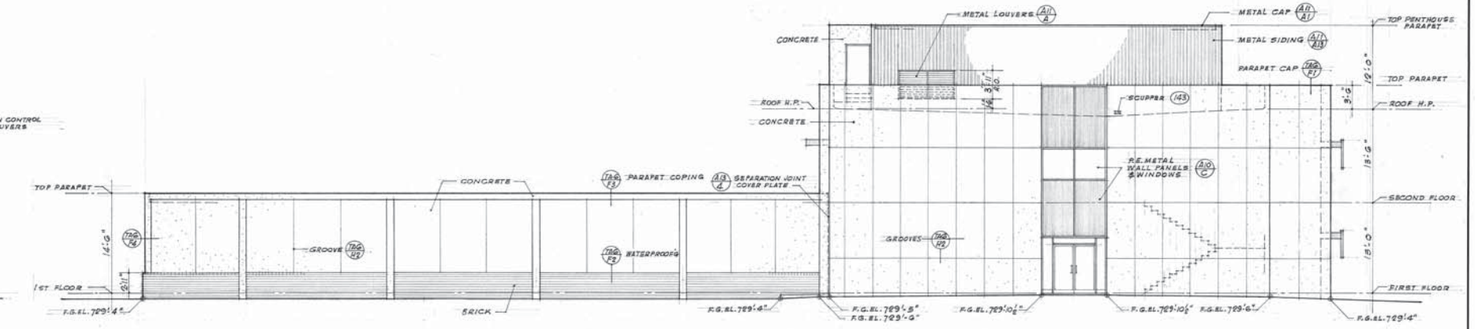
T-5851-010

PA-112

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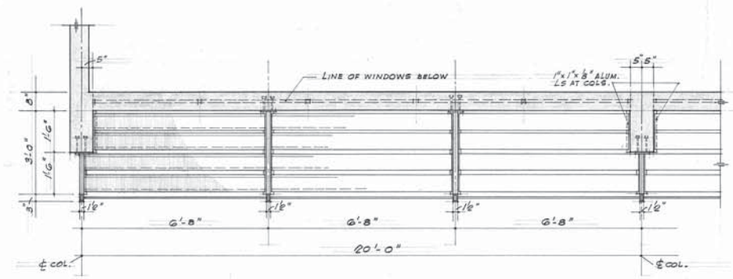


· SECTION 'B-B' ·

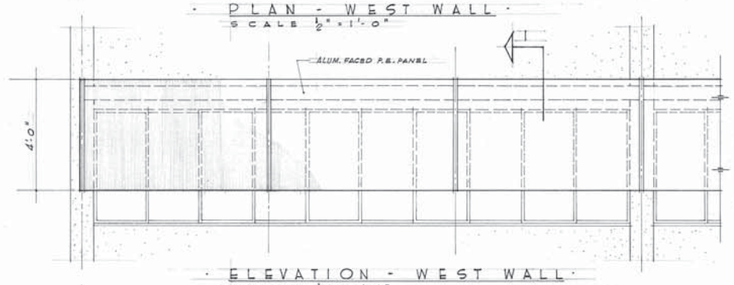


· NORTH ELEVATION ·

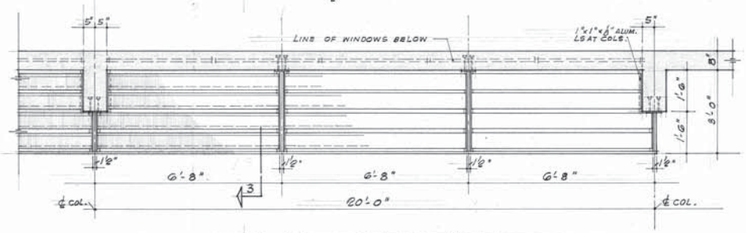
NOTE : SEE ¼"SCALE PLANS FOR WIDTH OF MET. LOUVERS



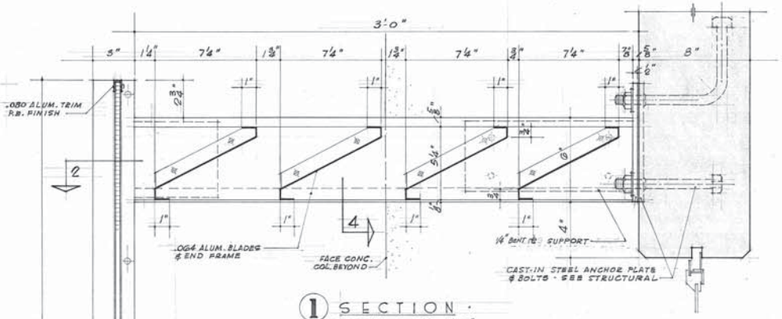
· PLAN - WEST WALL ·
SCALE ½" = 1'-0"



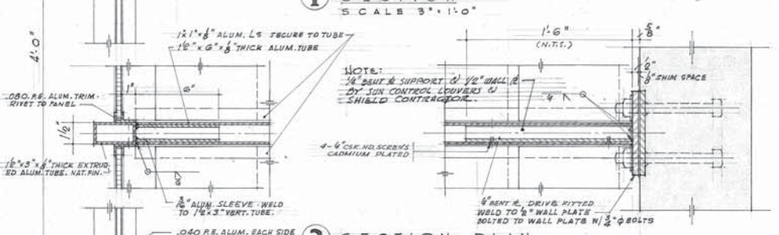
· ELEVATION - WEST WALL ·
SCALE ½" = 1'-0"



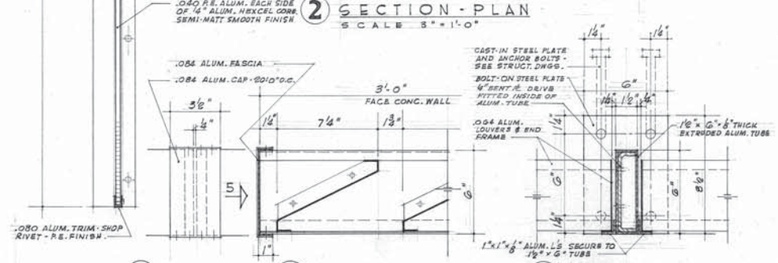
· PLAN - EAST WALL ·
SCALE ½" = 1'-0"



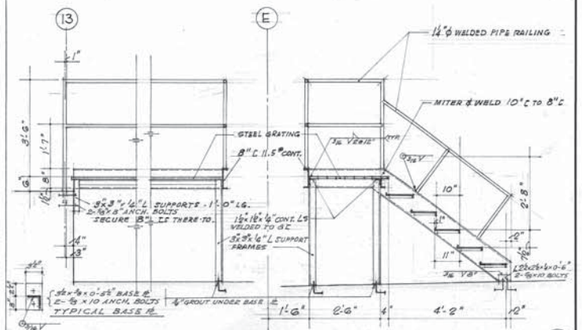
① SECTION ·
SCALE 3" = 1'-0"



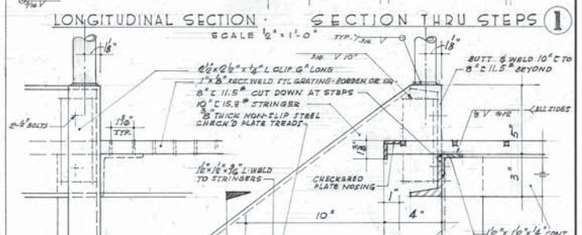
② SECTION - PLAN
SCALE 3" = 1'-0"



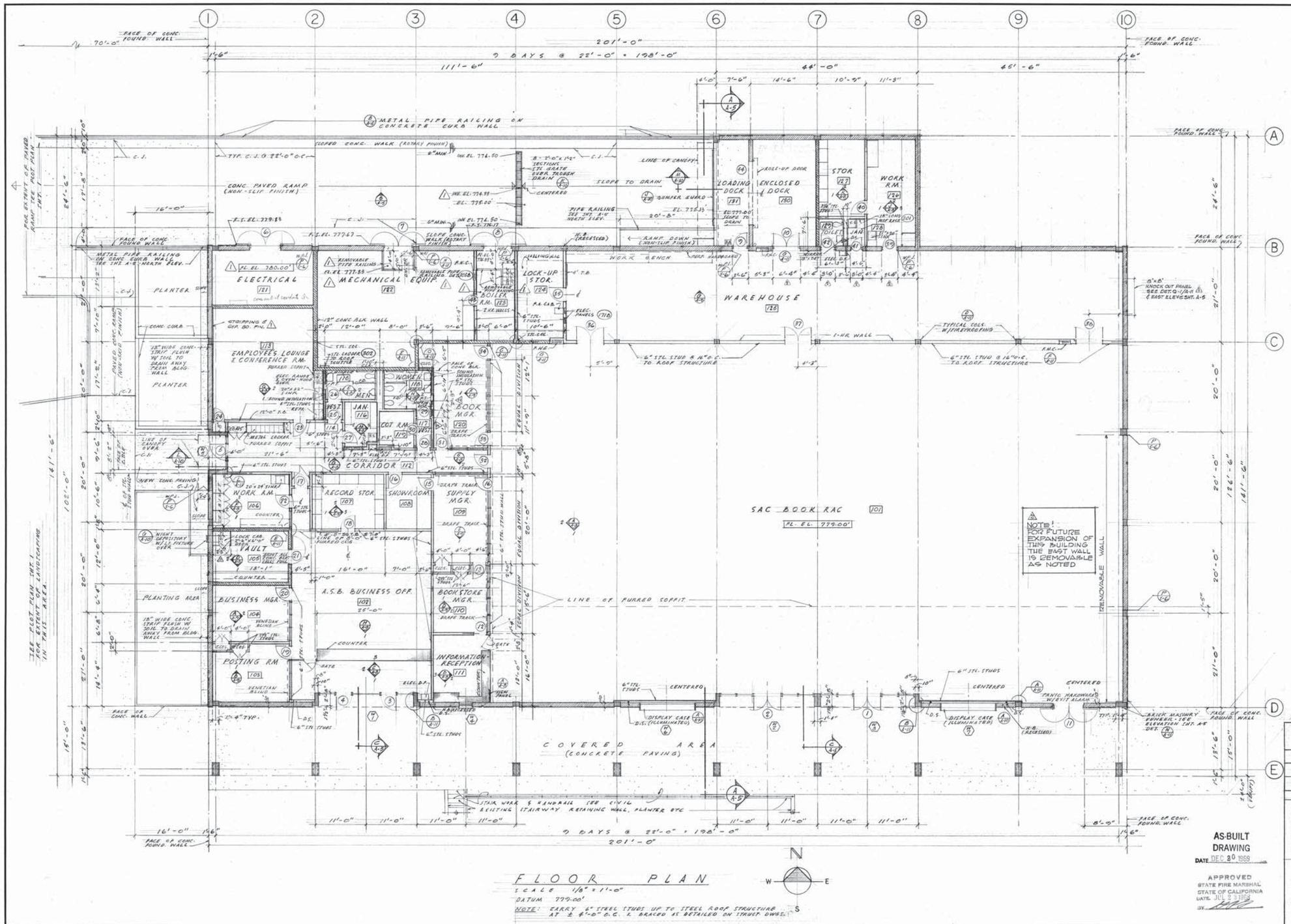
⑤ ELEV. ③ SECTION · ④ SECTION ·
SCALE 3" = 1'-0"



LONGITUDINAL SECTION · SECTION THRU STEPS ①
SCALE ½" = 1'-0"


TYP.
⅜" V GRTG.
⅛" TYP.
6"x4"x⅜" L CLIP @ LONG
1"x⅜" RECT. WELD FTL GRATING - BORDER OR CG
8" C 11.5" CUT DOWN AT STEPS
10" C 15.3" STRINGER
⅜" THICK NON-SLIP STEEL CHECK'D PLATE TREAD
ALL SIDES
2-⅝" BOLTS
⅛" TYP.
⅜" V GRTG
⅛" TYP.
⅜" V GRTG
⅛" TYP.
⅜" V GRTG

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FLOOR PLAN

SCALE 1/8" = 1'-0"

DATUM 779.00'

NOTE: CARRY 6" STEEL STUDS UP TO STEEL ROOF STRUCTURE AT ± 8'-0" O.C. L. BRACED IF DETAILED ON STRUCT. DWGS.

AS-BUILT DRAWING

DATE DEC 30 1969

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 23 1969
BY

BUILDING AREA	21,440
COV. AREA 3,030 ÷ 2	1,515
TOTAL	22,955
OCCUPANCY	C
TYPE OF CONSTRUCTION	III 1 HR.
FIRE ZONE	3

LEGEND

- BRICK MASONRY IF THE TYPICAL
- CONCRETE BLOCK IF THE SHADES NOTED
- CONCRETE
- 6" STEEL STUDS TYPICAL - UNLESS NOTED OTHERWISE.
- (301) AUSTIN, FIELD & FRY STANDARD DETAIL SHEETS BOUND W/ SPECIFICATIONS
- INDICATES VIEW OF INTERIOR WALL
- INDICATES SECTION THRU BUILDING OR PARTIAL SECTION

REVISIONS		
1	9-19-68	REVISED THE FLOOR ELEV.
2	12-17-69	AS BUILT CHANGES

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF ARCHITECTURE AND CONSTRUCTION
APPLICATION NO. 30808
APPROVED: JUL 23 1968
AS BUILT SEP 24 1968

ENGINEER: William J. Whaley — LICENSE NO. C-4996

ARCHITECT: Robert Field Jr. — LICENSE NO. C-1326

AUSTIN, FIELD & FRY
Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

FLOOR PLAN
STUDENT UNION & ACTIVITY FACILITY
MT. SAN ANTONIO COLLEGE — BLDG. No. 9A
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XIV

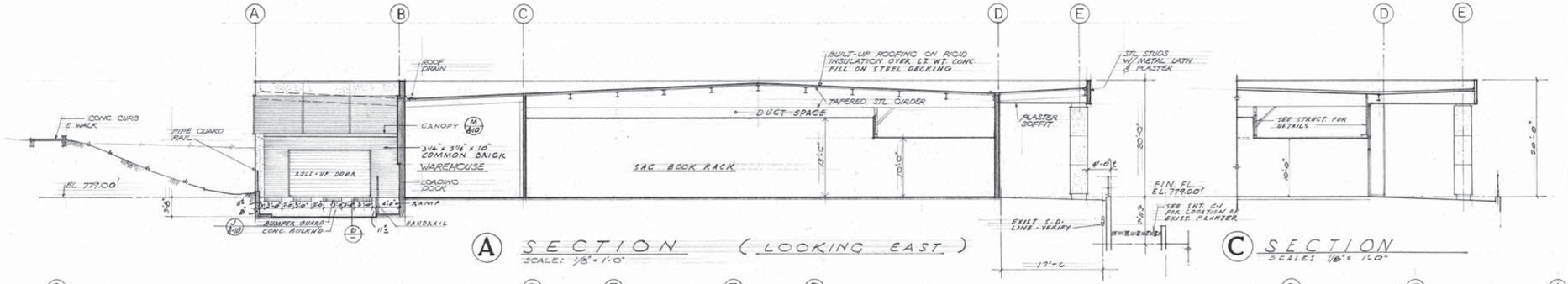
COMM. 1487
DATE 6-1-68
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CHECKED BARROW

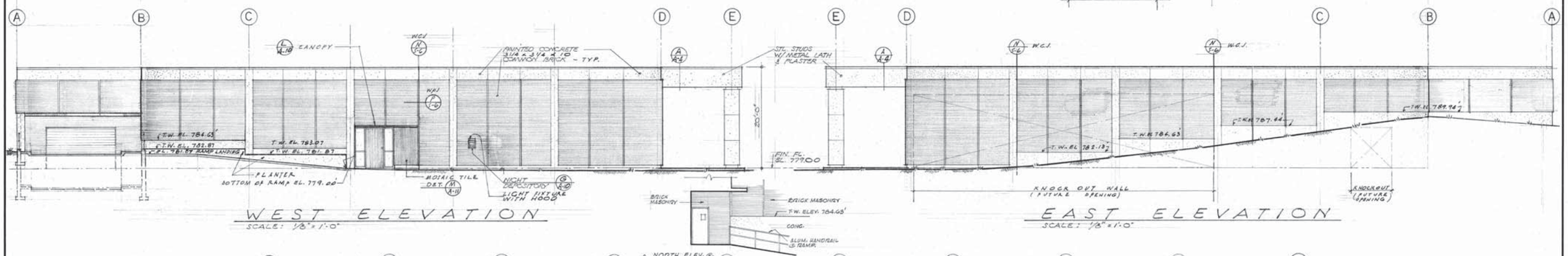
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4 OF 35

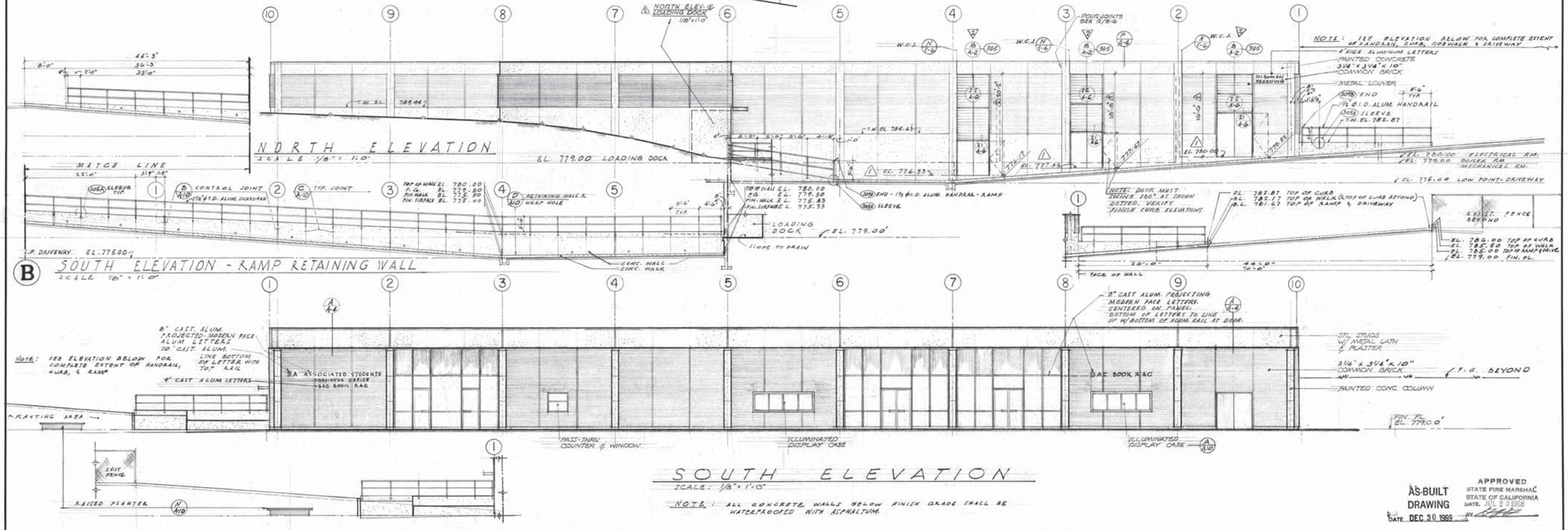
9A-6801-608

2/68 DIETERICH-POST CLEARPRINT 1000H

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AS-BUILT DRAWING
DATE DEC 30 1969

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 23 1968
BY

REVISIONS		ENGINEER	ARCHITECT
9-26-68 REVISED FIN. FLOOR ELEV.	STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES DIVISION OF ARCHITECTURE AND CONSTRUCTION AS REVISED SEP 24 1969 APPROVED JUL 23 1968	William J. Wheeler	Charles C. Fry
10-10-69 AS BUILT CHANGES		LICENSE NO. C-5761	LICENSE NO. C-324

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

EXTERIOR ELEVATIONS & SECTIONS
STUDENT UNION & ACTIVITY FACILITY
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XIV
BLDG NO. 9A

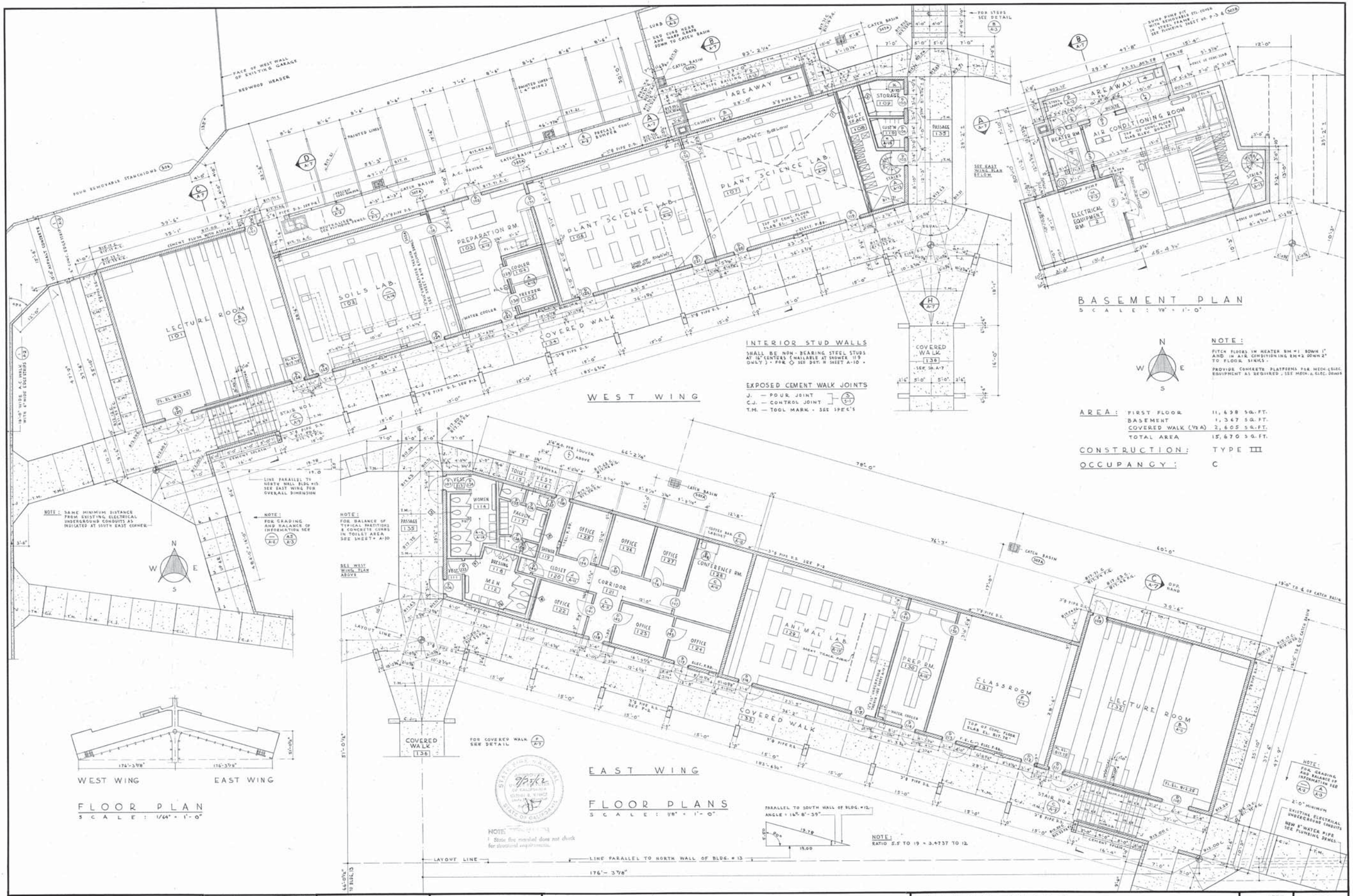
COMM. 1487
DATE 6-1-68
DRAWN KOTTRA
CHECKED EARLEW

SHEET A-5
6 OF 35

9A-6801-010

6/68 DIETZGEN-POST CLEARPRINT 1008H

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REVISIONS					

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
APPROVED BY DIRECTOR
22786 APPROVED SEP 25 1962
for Director

ENGINEER
William H. Wilder
LICENSE NO. 10486

ARCHITECT
Charles E. Fry
LICENSE NO. C-324

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

FLOOR PLANS
AGRICULTURAL SCIENCE BLDG. # 12
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

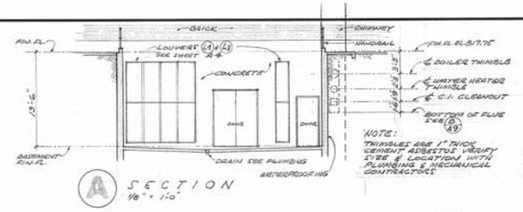
PROJECT VIII

COMM. 1377
DATE 8-1-62
DRAWN R. CUYOT
CHECKED H.F. & R.I.S.

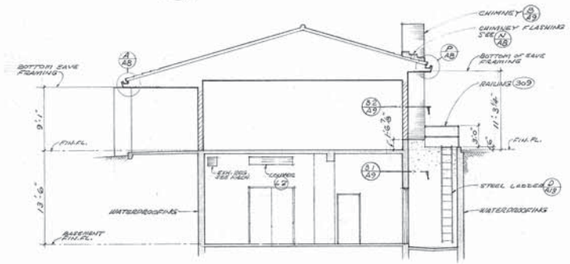
SHEET A-5 OF 35

12-6001-005

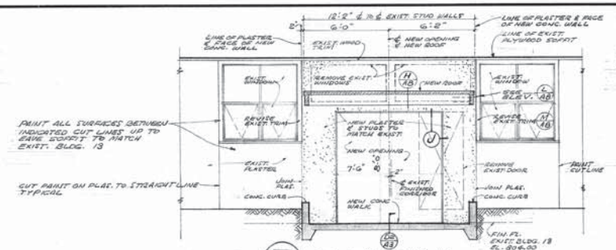
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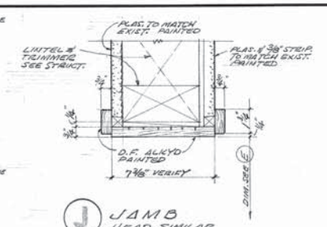
A SECTION
1/8" = 1'-0"



B SECTION
1/8" = 1'-0"



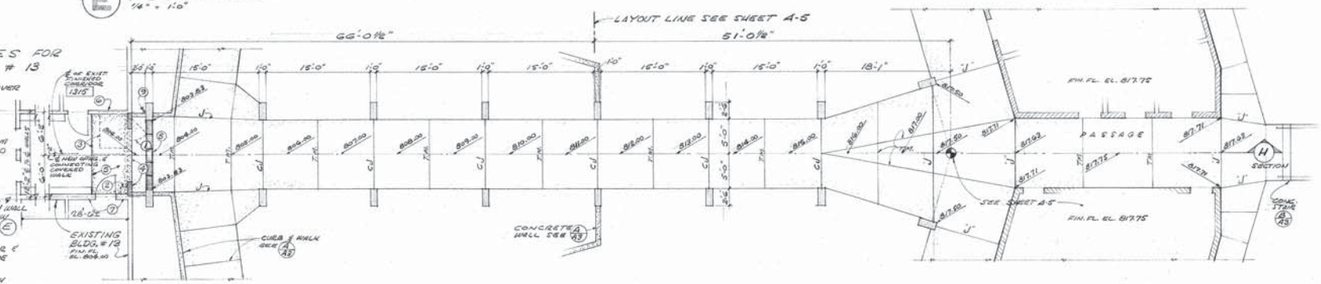
E ELEVATION
1/4" = 1'-0"



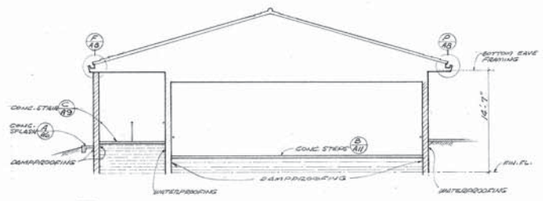
J JAMB
HEAD SIMILAR
3" = 1'-0"

REMODELING NOTES FOR EXISTING BLDG. # 13

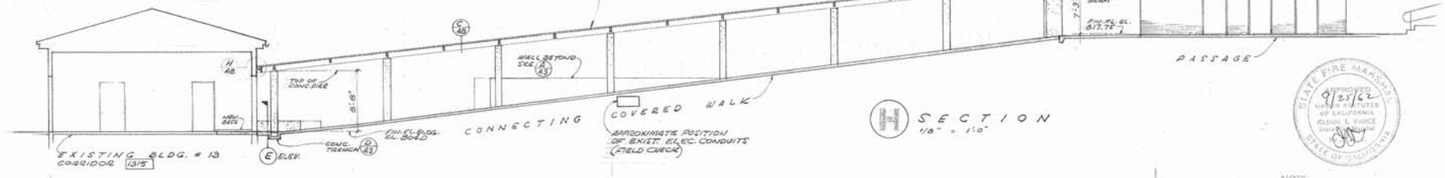
1. REMOVE EXIST. DOOR & DELIVER TO DISTRICT.
2. REMOVE EXIST. CONC. LOCKER, BASE.
3. REMOVE EXIST. CONC. PLATFORMS & STEPS. REPLACE WITH NEW 4000 P.S.I. STAINED CEMENT FLOOR & RAMP. BASE TO JOIN & MATCH EXIST. - PATCH EXIST. WALL AS REQUIRED
4. REMOVE EXIST. 2 x 6 STUD WALL & WINDOWS & CONC. FOUNDATION WALL AS REQ'D. - CONSTRUCT NEW WALL & OPENING AS INDICATED (E) SEE STRUCT. FOR LINTEL
5. REMOVE EXIST. CEMENT FLOOR & REPLACE WITH NEW FLOOR & BASE SEE NOTE (2)
6. EXIST. 2 x 6 STUD WALL WITH PLASTER EACH SIDE.
7. EXIST. 2 x 6 STUD WALL WITH 1/4 DIAG. SHEATHING EACH SIDE & PLASTER ON 1x8 STRIPPING EACH SIDE
8. NEW FRAME & GRATING OVER CONC. DRAINAGE TRENCH - SEE (D) A3
9. DOWNSPOUT BOOT SEE PLUMBING DWGS.



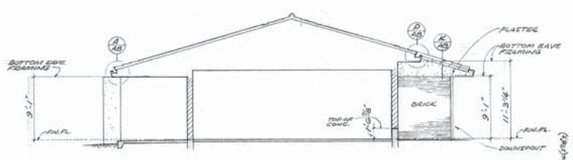
F PLAN — CONNECTING COVERED WALK
1/8" = 1'-0"



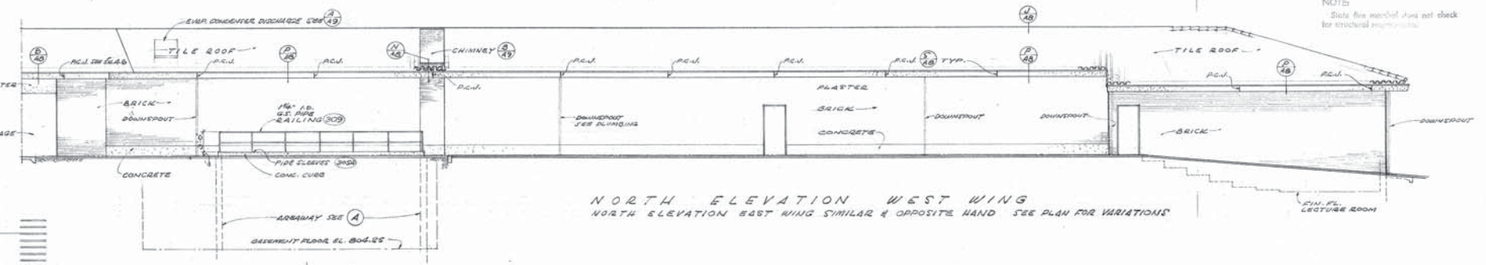
C SECTION
1/8" = 1'-0"



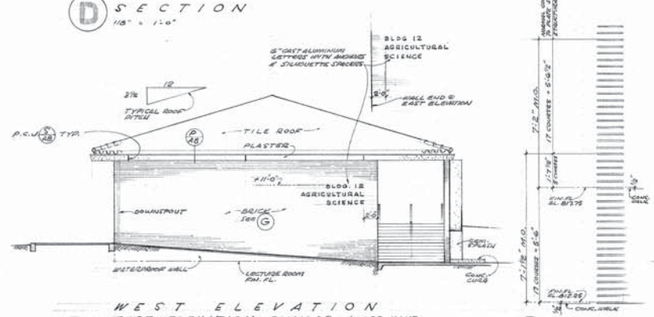
H SECTION
1/8" = 1'-0"



D SECTION
1/8" = 1'-0"

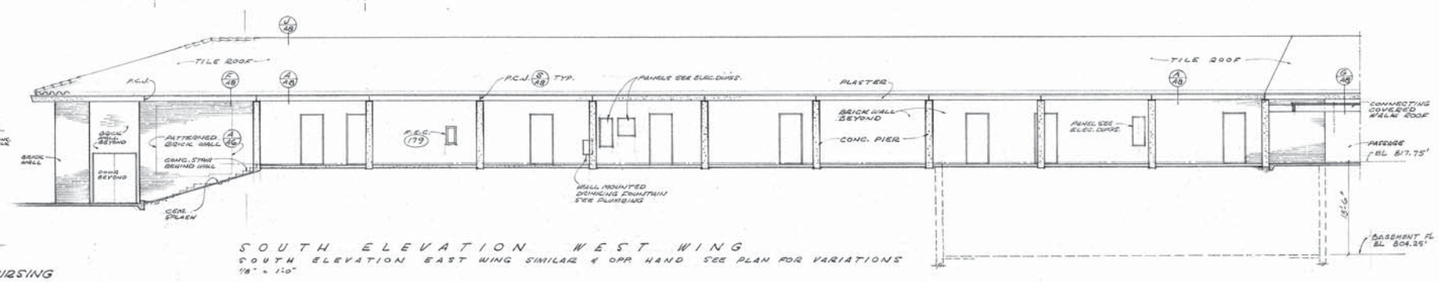


NORTH ELEVATION WEST WING
NORTH ELEVATION EAST WING SIMILAR & OPPOSITE HAND SEE PLAN FOR VARIATIONS



WEST ELEVATION
EAST ELEVATION SIMILAR & OPP. HAND
1/8" = 1'-0"

G BRICK COURSING



SOUTH ELEVATION WEST WING
SOUTH ELEVATION EAST WING SIMILAR & OPP. HAND SEE PLAN FOR VARIATIONS
1/8" = 1'-0"

STATE FIRE MARSHAL
APPROVED 9/25/62
UNIVERSITY OF CALIFORNIA
ELMER E. VANCE
STATE OF CALIFORNIA

NOTE:
State fire marshal does not check for structural requirements.

REVISIONS		STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS	ENGINEER	ARCHITECT	AUSTIN FIELD & FRY Architects Engineers	ELEVATIONS, SECTIONS & CONNECTING WALK	COMM. 1377	SHEET A.7
		22786, APPROVED SEP 25 1962			JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.	AGRICULTURAL SCIENCE BLDG # 12 MT. SAN ANTONIO COLLEGE	DATE 9-1-62	OF 35
			LICENSE NO. C-15816	LICENSE NO. C-734	2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326	WALNUT CALIFORNIA	PROJECT VIII DRAWN DRICKER CHECKED HARRIS	

12-1029-007

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B TYP. WALL DET. AT STEEL COLUMN

SEE DET. N/A-A2 FOR CLOSURE (IN ROOMS WITH CEILINGS ONLY)

D CORNER DETAIL

C WALL DET. AT MECH. EQUIP. ROOM #130

SCALE 1/8" = 1'-0"

A FURRED WALL DETAIL - F.E. CAB. & D.F.

SCALE 1½" = 1'-0"

MEZZANINE FLOOR PLAN

SCALE 1/8" = 1'-0"

MECHANICAL EQUIPMENT PLATFORM PLANS

SCALE 1/8" = 1'-0"

11 BAYS @ 24'-0" = 264'-0"

262'-8"

COL L-1

EXTEND WALLS AT RMS. 107 & 107A TO UNDERSIDE OF METAL ROOF

11 BAYS @ 24'-0" = 264'-0"

NOTE!
THIS CONTRACTOR SHALL INSTALL THE FOLLOWING EQUIPMENT BY PERMANENTLY FASTENING TO THE FLOOR - OR COUNTER, ETC.:

A. CARPENTERS SHOP
1. BAND SAW
2. JIG SAW
3. JOINER
4. DE WALT SAW
5. DRILL PRESS
6. ONE TABLE SANDER
7. TABLE SAW

B. PLUMBING & MAINTENANCE SHOP
1. POWER GRINDER
2. STEEL WELDER'S TABLE
3. TWO DRILL PRESSES
4. PIPE THREADER

C. ELECTRIC SHOP
1. BAND SAW

E. AT SINKS OR SHOPS, PROVIDE SURFACE MOUNTED PAPER TOWEL CABINET & SOAP DISPENSER, TYPICAL.

APPROVED
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE

GENERAL NOTES:
1. MASONRY OPENINGS - DOORS & OTHER OPENINGS ON FLOOR PLANS ARE FINISH SIZES. WIDTH OF MASONRY OPENINGS SHALL BE DETERMINED BY METAL BUILDING CONTRACTOR, AFTER DOOR, FRAME SIZES, HAVE BEEN DETERMINED.
2. ALL LOUVERS IN CORRIDOR DOORS SHALL HAVE FUSIBLE LINKS.
3. SEE STRUCTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS IN CONCRETE SLAB AT COLUMN LINES.
4. DIMENSIONS GO TO ℄ OF STUDS & FACE OF MASONRY.

T = OPERATOR'S SIDE.
(T) = AUSTIN, FIELD & FRY STANDARD DETAIL SHEETS BOUND IN THE BACK OF THE SPECIFICATIONS.

FINISH FLOOR ELEV. 716.50'

FLOOR PLAN

SCALE 1/8" = 1'-0"

LEGEND:
- 2'-6" WOOD STUD WALL UNLESS NOTED OTHERWISE.
- OUTER "MONOPANE" WALL SYSTEM OR EQUAL.
- 2 HOUR PARTITION: (STAGGERED STUDS) UNLESS OTHERWISE NOTED.
- CONCRETE MASONRY WALL (STACK BOND - TYPICAL.)

MAINTENANCE & OPERATIONS BLDG. 'A' 47

MAY 1, 1968

LEGEND	
BUILDING AREAS:	
MAINTENANCE	18,460
PAINT & CARPENTER	5,606
TOTAL 1ST FL.	24,066
MEZZANINE:	
PAINT SHOP	542
ALL OTHERS	518
TYPE OF CONSTRUCTION	II-N

REVISIONS		ENGINEER	ARCHITECT
	⚠ AS BUILT - NOV. 1, 1968	William [illegible]	[illegible]
		LICENSE NO. [illegible]	LICENSE NO. C-1326

AUSTIN, FIELD & FRY
Architects & Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326

FLOOR PLANS
COLLEGE SERVICE CENTER
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XII

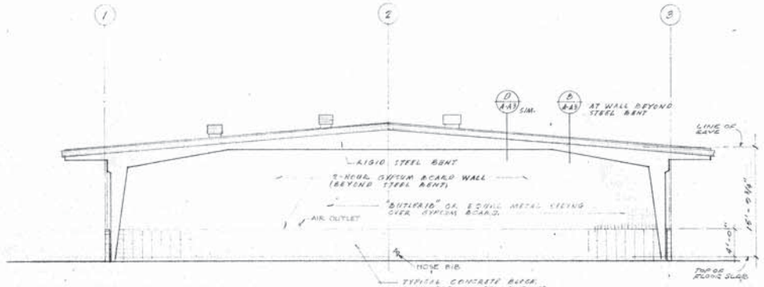
COMM. 1904
DATE APR. 28, 1967
DRAWN CHWN
CHECKED REB

SHEET A-A1
16 OF 55

17-670-016

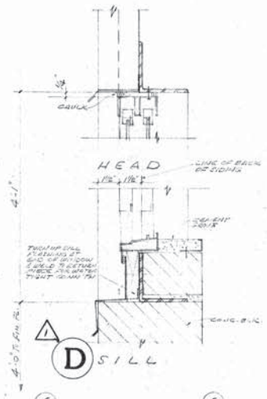
6/65 DIETZGEN-POST CLEARPRINT 1000H

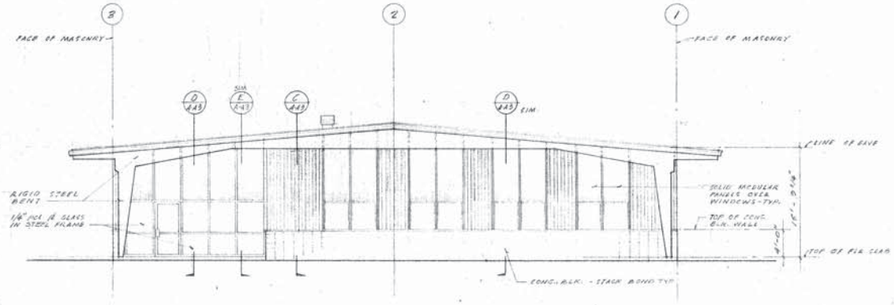
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SOUTH

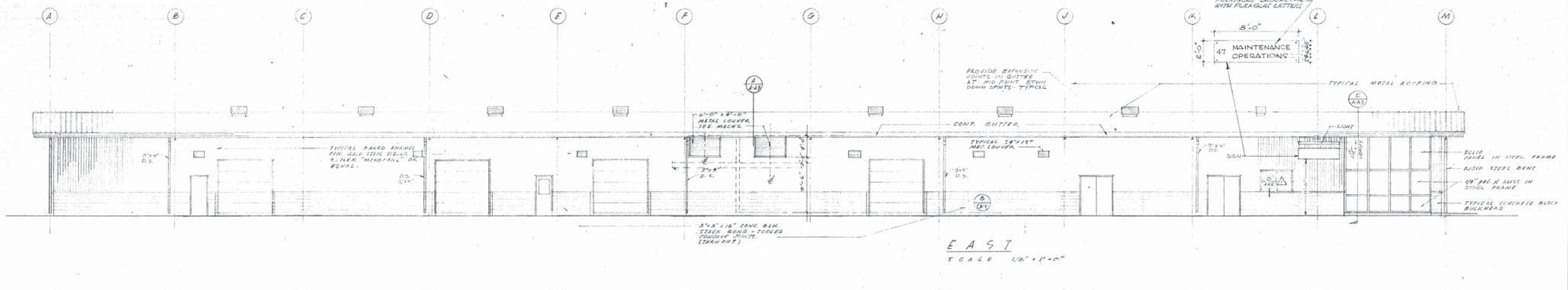
SCALE 1/8" = 1'-0"





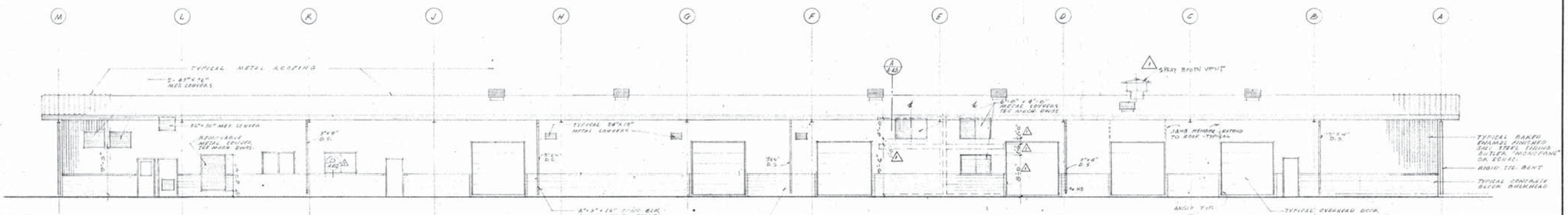
NORTH

SCALE 1/8" = 1'-0"



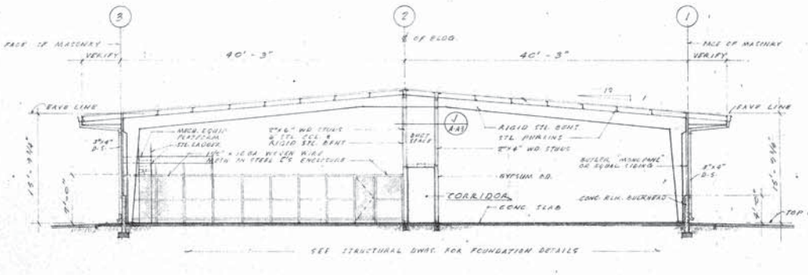
EAST

SCALE 1/8" = 1'-0"



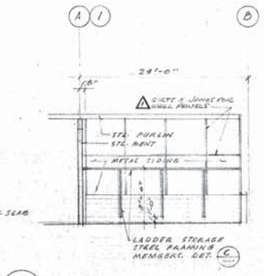
WEST

SCALE 1/8" = 1'-0"



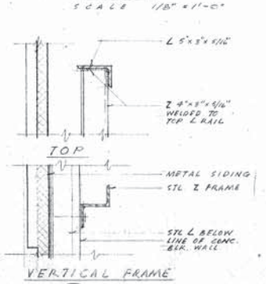
A SECTION

SCALE 1/8" = 1'-0"



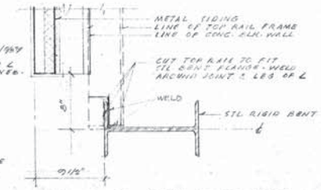
B 182 WEST TRUCK & CAR SHED ELEVATION

SCALE 1/8" = 1'-0"



C STEEL FRAME FOR LADDER STORAGE

SCALE 1½"=1'-0"



CONN. AT STEEL RIGID BENT

APPROVED
STATE OF CALIFORNIA
STATE COLLEGES
DATE 7/1/68

MAINTENANCE & OPERATIONS BUILDING "A" (47) MAY 5, 1967

REVISIONS	ENGINEER	ARCHITECT
⚠1 AS BUILT - NOV. 1, 1968	William M. White, LICENSE NO. SE-486	Charles E. Fry, LICENSE NO. 2-926

AUSTIN FIELD & FRY Architects Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A. · ROBERT FIELD JR., A.I.A. · CHARLES E. FRY, F.A.I.A.

EXTERIOR ELEVATIONS & SECTIONS
COLLEGE SERVICE CENTER
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

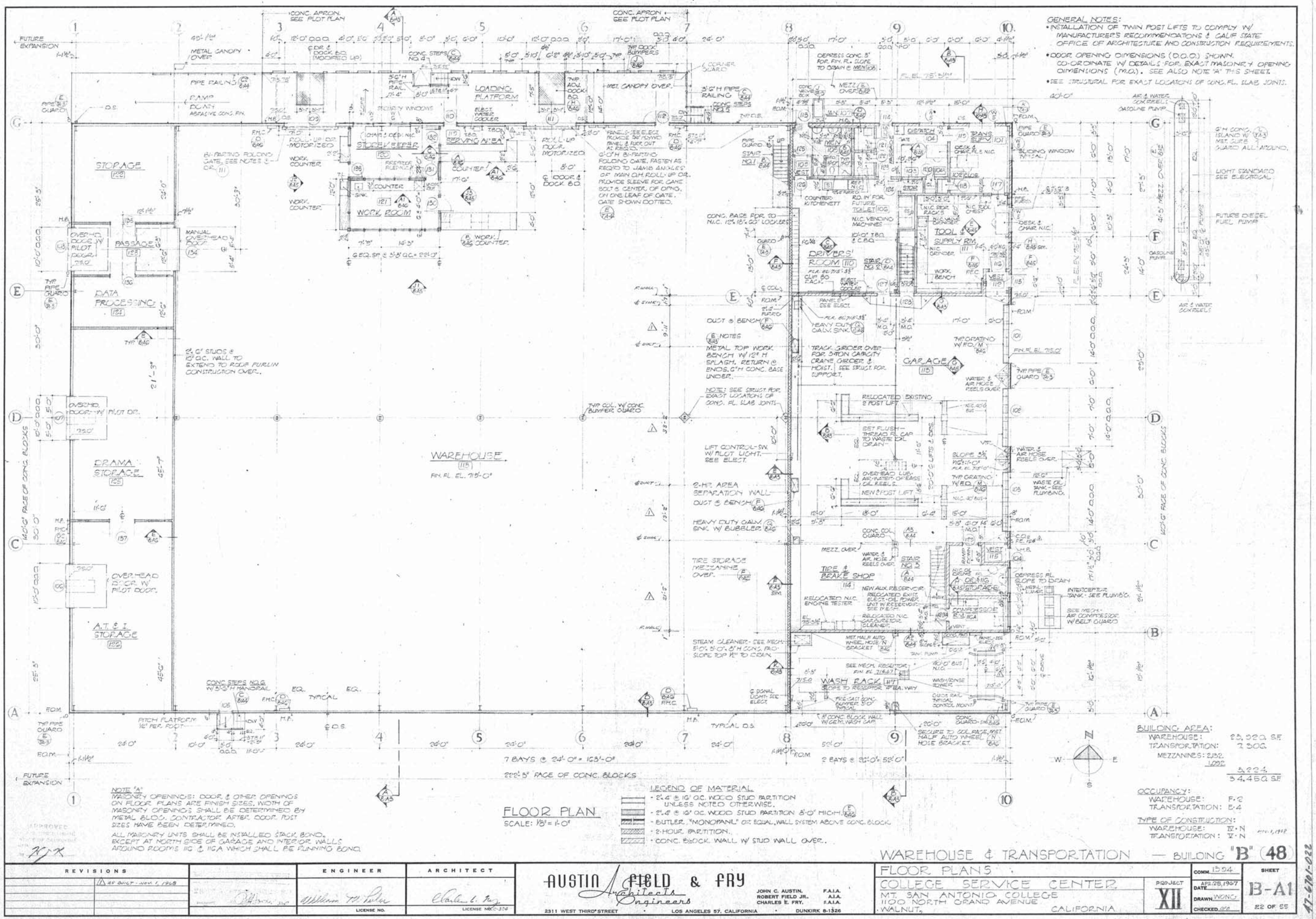
PROJECT XII
COMM. 1894
DATE APR. 28, 1967
DRAWN CHINN
CHECKED JSG

SHEET A-A2
17 OF 55

67-1017-017

8/68 DIETERICH-POST CLEARPRINT 1000H

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FLOOR PLAN
SCALE: 1/8" = 1'-0"

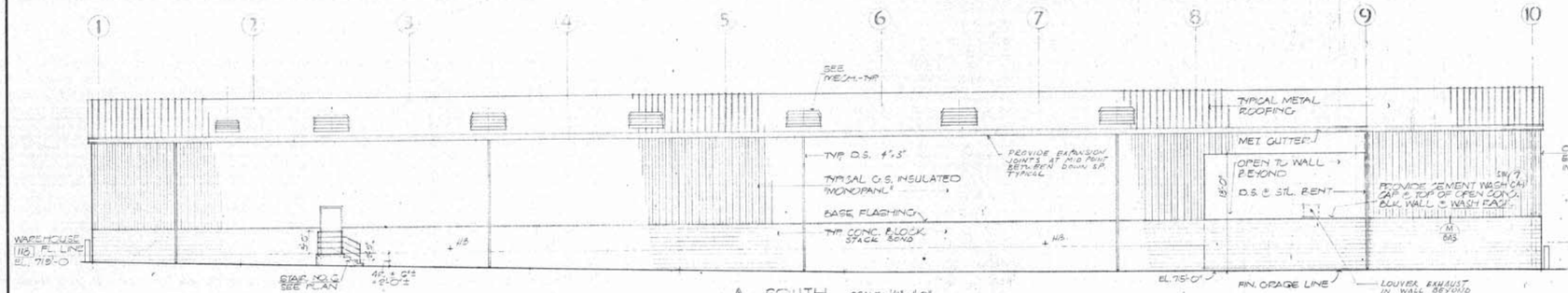
WAREHOUSE & TRANSPORTATION — BUILDING "B" (48)

REVISIONS		ENGINEER	ARCHITECT			
1	48" QUILT - NOV. 1, 1968	William W. Fuller	Charles E. Fry	AUSTIN FIELD & FRY Architects Engineers	JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, F.A.I.A.	FLOOR PLANS
		LICENSE NO.	LICENSE NO. C-314	2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326		COLLEGE SERVICE CENTER MT. SAN ANTONIO COLLEGE 1100 NORTH GRAND AVENUE WALNUT, CALIFORNIA

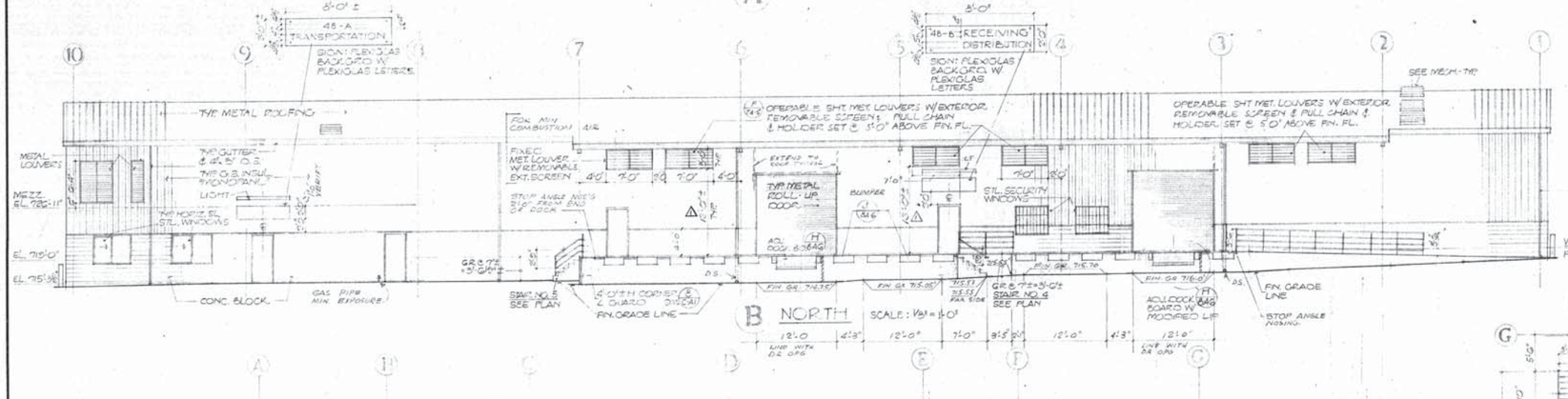
PROJECT XII
COMM. 1504
DATE APR. 28, 1967
DRAWN WONG
CHECKED GFE
SHEET B-A1
22 OF 55

47-681-022

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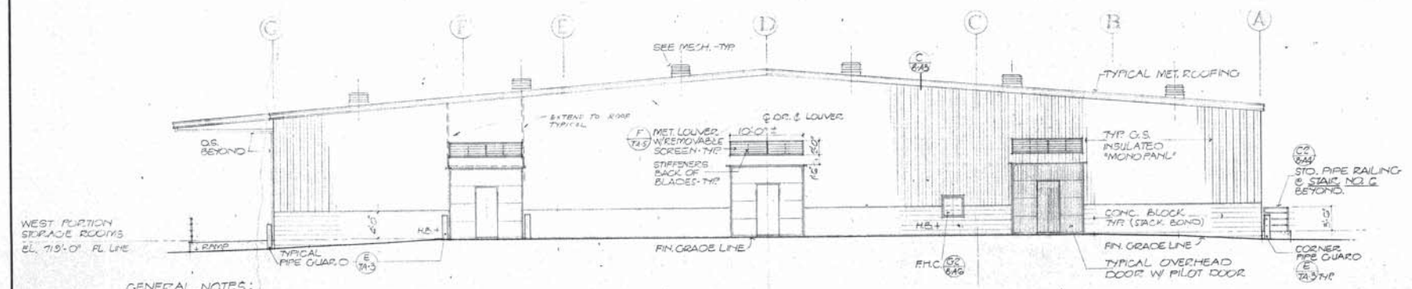


A SOUTH SCALE: 1/8"=1'-0"



B NORTH SCALE: 1/8"=1'-0"

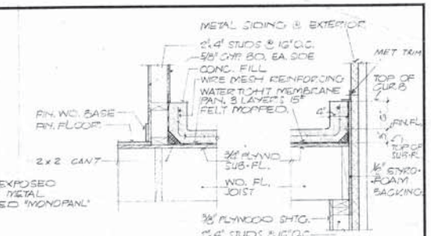
C EAST SCALE: 1/8"=1'-0"



D WEST SCALE: 1/8"=1'-0"

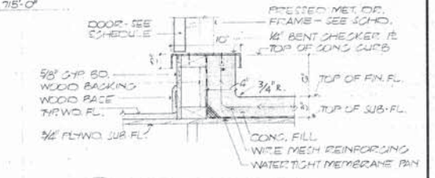
GENERAL NOTES:
- GALV. STEEL INSULATED "MONOPANL", WHERE NOTED, TO BE BAKED ENAMEL FINISHED, BUTLER OR APPROVED EQ.
- STEEL FABRICATOR TO PROVIDE ALL NECESSARY STRUCTURAL FRAMING & SUPPORTS AS REQUIRED FOR ALL OPENINGS.
- PROVIDE 4 MESH 18 GA. GALV. REMOVABLE SCREEN @ EXTERIOR FACE @ ALL LOUVER OPNG'S.
- MECH. EQUIPMT. WHERE SHOWN OR OCCURS @ ROOF, SEE ROOF PLAN & MECHANICAL.

APPROVED STATE OF CALIFORNIA DEPT. OF GENERAL SERVICES



1 SECT. @ CONC. FL. SCALE: 1"=1'-0"

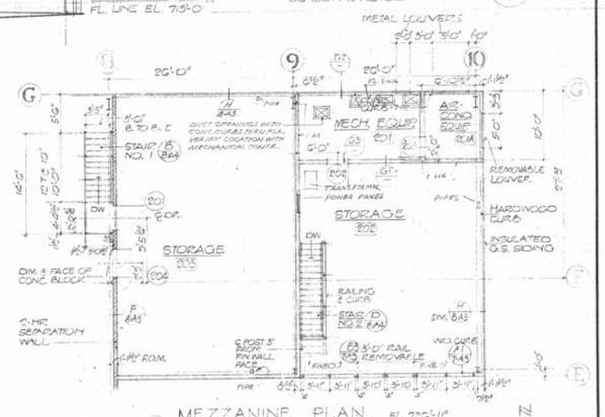
2 CURB @ WALL SCALE: 1"=1'-0"



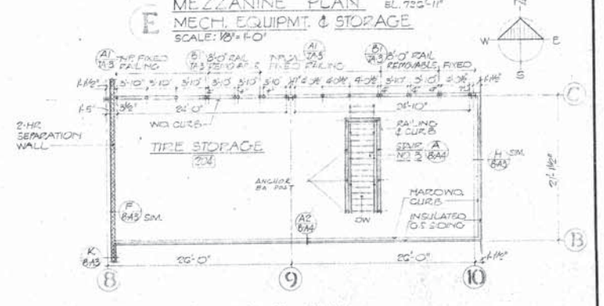
3 CURB @ DOOR SILL SCALE: 1"=1'-0"

GEN. NOTES:
- PROVIDE 6"H CONC. CURB UNDER PARTITION PERIM. ENVS. MECH. EQUIP. RM. & AIR COND. EQUIP.
- 6"H x 4" THICK CONC. CURBS AROUND DUCT OPENINGS.

G MEZZANINE CURBS SCALE: AS NOTED



E MEZZANINE PLAN MECH. EQUIPMT. & STORAGE SCALE: 1/8"=1'-0"



F MEZZANINE PLAN TIRE STORAGE SCALE: 1/8"=1'-0"

NOV. 1, 1968

WAREHOUSE & TRANSPORTATION — BUILDING "B" (48)

REVISIONS	ENGINEER	ARCHITECT
1 ADDEND. - NOV. 1, 1968	William T. Wolfe, License No. 12856	Charles E. Fry, License No. C-5324

AUSTIN FIELD & FRY Architects Engineers
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A. · ROBERT FIELD JR., A.I.A. · CHARLES E. FRY, F.A.I.A.

EXTERIOR ELEVATIONS & MEZZANINE PLANS
COLLEGE SERVICE CENTER
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XII
COMM. 1594
DATE APR. 28, 1967
DRAWN WONG
CHECKED DFB

SHEET B-A2 23 OF 95

41-6701-013

8/66 DIETZGEN-POST CLEARPRINT 3000H

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EAST BUILDING
NORTH ELEVATION
SCALE 1/8 IN = 1 FT

NORTH ELEVATION

WEST BUILDING NORTH ELEVATION

OFFICE
FIRST AID
WOMEN
MEN
TEAM

PLAN
SCALE 1/8 IN = 1 FT

WEST ELEVATION - TICKET SALE

WEST ELEVATION

EAST ELEVATION

WEST BUILDING
SOUTH ELEVATION

TURNSTILES & EXIT GATES
NOTE SEE SHEET NO. 5 FOR DETAILS
SOUTH ELEVATION

EAST BUILDING
SOUTH ELEVATION

EAST ELEVATION - TICKET SALE

STADIUM FIELD HOUSES

APPROVED BY STATE DIVISION OF ARCHITECTURE
STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPROVED 2-20-48
5784

SCALE 1/8" = 1'-0"
DATE 7-1-48

FIELD HOUSE AT SAN ANTONIO
PLANS & ELEVATIONS

FREDERICK KENNEDY JR.
1041 E. GREEN ST., PASADENA

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TEAM 3 OFFICE BUILDINGS

TYPICAL WALL SECTION AT DOORS

TICKET SALE BUILDING

SALES WINDOWS

TYP. NON BRACED PANEL

TYPICAL SECTION

TYP. BRACED PANEL

TYPICAL WALL SECTIONS

SECTION AT DOOR

SECTION AT SALES WINDOW

SECTION

TYPICAL CONCRETE PILE SECTION

SECTION AA

ELEVATION

DETAIL OF SHOWER

STRUCTURAL DETAILS

FREDERICK KEHN JR. ARCH.

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NORTH ELEVATION - TICKET SALES & WEST BLDG.
SCALE 3/4" = 1'-0"

SOUTH - ELEVATION - CORNER WEST BLDG.
SCALE 3/4" = 1'-0"

EAST ELEVATION - TICKET SALES
SCALE 3/4" = 1'-0"

ELEVATION TYP PIER & EXIT GATES 3/4" = 1'-0"

PLAN SCALE 3/4" = 1'-0"

GENERAL PLAN ENTRANCES & EXITS.
SCALE 1" = 1'-0"

PLAN - TYPICAL TURNSTILE
SCALE 3/4" = 1'-0"

FRONT ELEV.

END ELEV.

PLAN

BENCHES - TEAM ROOMS
SCALE 1/4" = 1'-0"

FIELD HOUSES - STADIA
MT. SAN ANTONIO COLLEGE
SCALE
ELEVATIONS, PLANS, EXITS, GATES
DATE
FREDERICK KENNEDY, A.I.A. ARCHITECT
1041 E. GREEN ST., PASADENA, CALIF.

EXAMINED BY STATE DIVISION OF ARCHITECTURE
STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPLICATION NO. 5704
APPROVED 7-22-48

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DETAIL "C" SCALE: 3/4"=1'0"

SECTION "D-D" SCALE: 3/4"=1'0"

DETAIL OF COUNTER

SECTION A-A

DETAIL OF KNEES IN COUNTER

NORTH ELEV.
3/4"=1'0"

WEST ELEV.
EAST ELEV. SIMILAR

SOUTH ELEV.
3/4"=1'0"

MT. SAN ANTONIO JR. COLLEGE

REFRESHMENT BOOTH

FREDERICK KENNEDY JR. ARCHITECT
1041 E. GREEN ST., PASADENA CALIFORNIA

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ROOF FRAMING AT END OF BUILDING
CONSTRUCTION AT TICKET SALES BUILDING
SHALL BE SIMILAR. SCALE: 1/4"=1'0"

DETAIL OF ROOF OVERHANG CORNER
SCALE: 1"=1'0"

SECTION D/7
SCALE: 1/2"=1'0"

ELEVATION

PLAN

DETAIL OF 1/4" STEEL PLATE

DETAIL OF OUTLOOKER CONNECTION E/7
SCALE: 3/4"=1'0"

FOUNDATION PLAN
SCALE: 1/8"=1'0"

SECTION B
SCALE: 1/2"=1'0"

SECTION A
SCALE: 1/2"=1'0"

NOTE:
STEEL PLATE SHALL BE WELDED ALONG PERIMETER OF SAME. SAY DRILLED FOR 3/4" Ø BOLTS.

COLUMN TO BEAM CONNECTION
SCALE: 3"=1'0"

SECTION F
SCALE: 3/16"=1'0"

SECTION G
SCALE: 1/4"=1'0"

SECTION H
SCALE: 1/4"=1'0"

WEST BUILDING

Frederick Kennedy
SPEED BOWLES STADIUM
SAN ANTONIO, TEX.
ARCHITECTURAL CONSTRUCTION

APPROVED	2-20-48
Harry M. Butler	

FOUNDATION PLAN
ROOF FRAMING & DETAILS
FREDERICK KENNEDY JR. ARCHITECT
1041 E. GREEN ST. PASADENA, CALIF.

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NAILING SCHEDULE

JOISTS TO SIDE OF STUDS
2"x6" : 3-16d
2"x10" : 4-16d

JOISTS OR RAFTERS TO ALL BEARINGS
TOE NAIL EACH SIDE : 2-10d NAILS

STUDS TO WALL PLATE, SOLE PLATE OR HEAD PLATE
2-10d NAILS

BLOCKING BETWEEN RAFTERS
TO RAFTERS: TOE NAIL EA SIDE AT ENDS : 2-10d
TO RAFTER BEARING: TOE NAIL EA SIDE : 2-10d

SHEATHING
1/2" : 2-8d AT BEARINGS: 3-8d AT ENDS
5/8" : 3-8d AT BEARINGS: 4-8d AT ENDS

RIBBONS TO STUDS: 1" THICK : 2-8d

DOUBLE TOP PLATES:
LOWER PLATE, TO TOP OF STUD : 2-8d
UPPER PLATE TO LOWER PLATE UNSPECIFIED

NAIL HOLES SHALL BE DRILLED WHERE SPLITTING MIGHT OTHERWISE RESULT.

GENERAL NOTES

SPECIFICATIONS ARE A PART OF APPROVED PLANS

CONCRETE 3000 LBS AT 28 DAYS

SOIL: IS DENSE CLAY, BEARING VALUE 3000 LBS.

DEAD & LIVE LOAD PER SQ. FT.

BORE FOR WOOD SCREWS, HOLE DIAMETER TO EQUAL DIAMETER OF SHANK, DEPTH OF HOLE TO EQUAL DEPTH OF SHANK

BOLT HOLES FOR BOLT IN WOOD TO BE THE SAME DIAMETER AS THE BOLT. USE PLATE OR BEARING FOR WOOD SMALL ENOUGH TO BE CONCEALED BY WASHERS.

WASHERS FOR BOLTS SHALL BE OF FOLLOWING SIZES:
FOR 5/8" BOLTS : 2-1/4" x 2" CUT STEEL PLATE
FOR 3/4" BOLTS : 2-1/2" x 2-1/2" PLATE
FOR 7/8" BOLTS : 2-3/4" x 3" PLATE

FOR 1" BOLTS : 3" x 3" PLATE (CLARK)
FOR 1" BOLTS : 3" x 3" PLATE

FRAMING LUMBER : SHALL BE NO. 1 DOUG. FIR OR NO. 1 COMMON REDWOOD

SHEATHING : SHALL BE #1 COMMON D.F.

WAINSCOT : SHALL BE FOUNDATION GRADE REDWOOD

VERTICAL SECTION THRU SASH AT FRONT
HALF FULL SIZE

SECTION "1-1"
HALF FULL SIZE

SECTION "3-3"
HALF FULL SIZE

SECTION "2-2"
HALF FULL SIZE

CORNICE at FRONT ELEVATION
SCALE 1/2"=1'0"

FOUNDATION PLAN
SCALE 1/8"=1'0"

DETAIL OF BAYS
SCALE 1"=1'0"

AT SOUTH ELEVATION AT NORTH ELEVATION

DETAIL of CONC. WALK & CONC. CURB.

SECTION THRU FOOTING

DIAGRAM OF NAILING SPACES FOR SHEAR WALLS AND FOR ROOF SHEATHING

SECTION "8-8"

SECTION "4-4" SEC "5-5"

SECTION "6-6"

SECTION "7-7"

SEC "9"

SEC "10"

PLOT PLAN

DETAIL of GIRDER SPLICE

SECTION

BEAM SPLICE and POST-BEAM CONNECTION

SOUTH ELEVATION

NORTH ELEVATION

FRONT ELEVATION

PLAN

REAR ELEVATION

APPROVAL AS TO STATE BUILDING & ARCHITECTURE

STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE

APPROVED 7-20-49

5784

EQUITY SUET AS SCHOOLS

Sheet 10

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FENCE

SCORE BOARD - NOT IN THIS CONTRACT

CAP 1/2" ABOVE GRADE

EXISTING 1" CONDUIT

NEW CONDUIT IN THIS CONTRACT

CUT EXIST CONDUIT

PROVIDE PULLBOX 2'-0" SQ. INSIDE 4 CONC. WALLS & BOTTOM 1 CONC. TOP WITH LIFT RING 1 LAY. #6 WIREMESH REINF.

CHECK SCORE BOARD

PANEL D

TO PAN. A 75 ft

PLAN OF REFRESHMENT BOOTH -
Scale 1/4" = 1'-0"
SEE ARCH. PLOT PLAN FOR LOCATION -

REPEAT FLIGHTS & HANGERS

CONSTRUCTIONS FOR SCORE BOARD FOOTINGS

DEPTH = 3.81 | 4.25 | 4.71

ASSUMED 2000# SOIL VALUE & 4'-0" DEPTH
WIND = 16(7 x 15 x 14 = 3.00 KIPS PER POST

CONCRETE

MASONRY PIER

CONCRETE

TYP. FOR GATE STRUCTURE BY OTHERS

POLE FOR FIXTURE H
Scale 3/4" = 1'-0"

PLAN - MEN'S BLDG.

PLAN - WOMEN'S BLDG.

PANEL A

CIRCUIT	NO. LAMPS	WATTS	BREAKER	NOTES
A1	8	900	15	
3	7	420	15	
5	7	FUTURE		
7	6	1000	20	PLUGS
9	6	1000	20	PLUGS
11	8	960	15	
13	1	1000	20	
15	1	1000	20	
17	1	1000	20	
19	1	1000	20	
21	1	1000	20	
23	1	1000	20	
25	1	1000	20	
27	1	1000	20	
29	1	1000	20	
31	1	1000	20	
33	1	1000	20	
35	1	1000	20	
37	1	1000	20	
39	1	1000	20	
41	1	1000	20	
43	1	1000	20	
45	1	1000	20	
47	1	1000	20	
49	1	1000	20	
51	1	1000	20	
53	1	1000	20	
55	1	1000	20	
57	1	1000	20	
59	1	1000	20	
61	1	1000	20	
63	1	1000	20	
65	1	1000	20	
67	1	1000	20	
69	1	1000	20	
71	1	1000	20	
73	1	1000	20	
75	1	1000	20	

LIGHTING FIXTURE SCHEDULE

M	W.L.H. (STANDARD DOME SOCKET) TYPE "MEDIATOR"
C	COMMERCIAL FIXTURES & CEILING RANGE - RANGE-RITER - W.L.H. GLASS
D	
E	CROUSE-HINDS "EVITORC"
F	
G	
H	

PANEL B

CIRCUIT	NO. LAMPS	WATTS	BREAKER	NOTES
A1	11	330	15	
2	2	1000	20	PLUGS
4	4	480	15	
6	SPARE	1000	15	
8				
10				

PANEL C

CIRCUIT	NO. LAMPS	WATTS	BREAKER	NOTES
A1	3	900	15	
2	8	1800	20	PLUGS
4	6	1000	20	FLOOD
6		1800	20	
8	SPARE	1000	15	
10	SPARE	1000	15	

PANEL D

CIRCUIT	NO. LAMPS	WATTS	BREAKER	NOTES
A1	4	600	15	
3	8	1800	20	PLUGS
5	SPARE RATED		30	& POLE

LEGEND

WALL OUTLET - UNLESS NOTED -
DUPLEX RECEPTACLE - UP 1'-6" UNLESS NOTED -
WP WEATHERPROOF RECEPTACLE - UP 1'-6" UNLESS NOTED -
JUNCTION BOX -
SINGLE POLE SWITCH - UP 4'-0" TO CENTER -
LAMP HEAD -
WALL BRACKET -
SWITCH & OUTLET -

DEPARTMENT OF STATE DIVISION OF ARCHITECTURE
STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPROVED 7-20-48
5784

SAN JOSE HILLS RD. WALNUT, CALIFORNIA
SHEET NO. 9
DATE 6-48
CHARLES M. PAINE AND W. A. MAYBECK, ARCHITECTS
1004 E. HARBOR ST. PIEDMONT, CALIF.

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FIXTURE CONNECTIONS

WATER CLOSET	4	10"	2					3-50
LAVATORY	1	1¼	1½	1¼	1½	30"	24"	1-00
URINAL	2	6"		¾		18"		2-00
TROUGH URINAL	2	2"	1¼			24" PER URINAL		OUTSIDE LENGTH
SHOWER HEAD	2	2"	1¼	1	1½			2-00
FLOOR DRAIN	4	2"	1½				6"	1-50
DISHWASHER	1	1½	1¼					2-00
SINK (KITCHEN)	1	1½	1½	1½	—			2-00

LEGEND

SOIL OR WASTE

OPEN JOINT SEEPAGE TILE

VENT

ANGLE VALVE

GATE VALVE

CHECK VALVE

SHOWER HEAD

HOSE BIBB

CAP

PLUG

UNION

DRINKING FOUNTAIN

FLOOR DRAIN

CLEAN OUT

CAST IRON SOIL PIPE

CAST IRON VENT PIPE

CAST IRON WASTE PIPE

COPPER WATER PIPE

HOT WATER RETURN

GAS PIPE

GAS VENT

GAS VALVE

GAS COCK

GAS METER

GAS REGULATOR

GAS PRESSURE GAUGE

GAS DRIP

GAS CONNECTION

GAS FLEXIBLE CONNECTION

GAS CAP

GAS PLUG

GAS UNION

GAS TEE

GAS ELBOW

GAS REDUCER

GAS NIPPLE

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SITE PLAN

SCALE 1" = 200'

INDEX TO DRAWINGS

SHT. No.	DESCRIPTION -
	ARCHITECTURAL
A-1	SITE PLAN & DRAWING INDEX
A-2	PLOT PLANS
A-3	STABLE UNIT & HEADHOUSE
A-4	POULTRY BUILDINGS
A-5	SWINE UNIT
A-6	DAIRY UNIT
A-7	DETAILS
A-8	EXISTING SWINE BLDG. #46 REHABILITATION
A-9	FINISH SCHEDULE & DOOR SCHEDULE
	STRUCTURAL
S-1	STRUCTURAL NOTES & TYPICAL DETAIL
S-2	DAIRY UNIT - STRUCTURAL PLANS & SECTIONS
S-3	FOUNDATION PLANS & DETAILS
	MECHANICAL
M-1	SWINE, POULTRY & STABLE UNIT FLOOR PLANS & DETAILS
M-2	DAIRY UNIT FLOOR PLAN, SECTIONS & DETAILS
	ELECTRICAL
E-1	ELECTRICAL PLOT PLAN - SOUTH, SYMBOLS AND NOTES.
E-2	ELECTRICAL PLOT PLAN - NORTH.
E-3	STABLE UNIT - ELECTRICAL PLANS
E-4	POULTRY UNIT & WAREHOUSE - ELECTRICAL PLANS.
E-5	HEAD HOUSE & SWINE UNIT - ELECTRICAL PLANS
E-6	DAIRY UNIT - ELECTRICAL PLANS.

STANDARD DETAILS

(BOUND IN BACK OF SPECIFICATIONS)

(131)	MOP OR KICK PLATES
(147)	MIRROR & SHELF DETAILS
(184)	ROOM NAME & NUMBER PLATES
(261)	SPLASH BLOCKS
(346)	LOUVERS.
(97)	ABBREVIATIONS
(98)	ABBREVIATIONS

BUILDING NOTES

GROSS AREAS OF BUILDINGS:

STABLE UNIT	1156	SQ. FT.
HORTICULTURE HEADHOUSE	1203	" "
POULTRY UNIT	1048	" "
POULTRY WAREHOUSE	7040	" "
SWINE UNIT	2880	" "
DAIRY UNIT	2316	" "
	15743	" " TOTAL

AS-BUILT DRAWING
DATE APR 28 1971

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 14 1970
BY D.E. Cannaday Jr.

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF ARCHITECTURE AND CONSTRUCTION
33269 APPROVED JUL 14 1970

These drawings Nos. 1 to 20 incl. approved this 14th day of July 1970
By R.T. Wilson Supervising Engr. Coord.
Los Angeles County Schools

ENGINEER
SAMPSON, RANDALL & FREED, INC.
CONSULTING ELECTRICAL ENGINEERS
R.P. Randall LICENSE NO. 4848

REVISIONS	
A. AS BUILT REVISIONS	

MECHANICAL DEPARTMENT	ENGINEER	ARCHITECT
APPROVED J. Bulman Jr.	WHEELER & GRAY CONSULTING ENGINEERS	
Samuel B. C. Bin	William Wheeler	Richard A. Fry
LICENSE No. M 11579	LICENSE NO. 486	LICENSE NO. C-7217

AUSTIN, FIELD & FRY Architects Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.

SITE PLAN & DRAWING INDEX
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

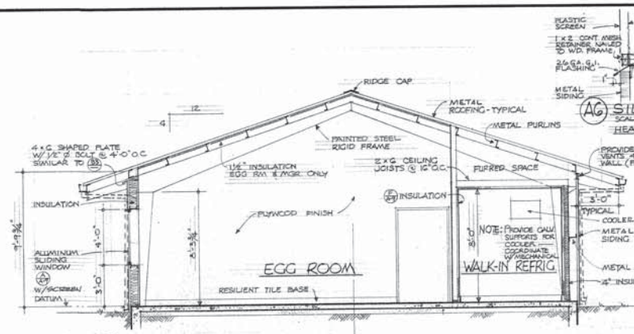
PROJECT XV-C

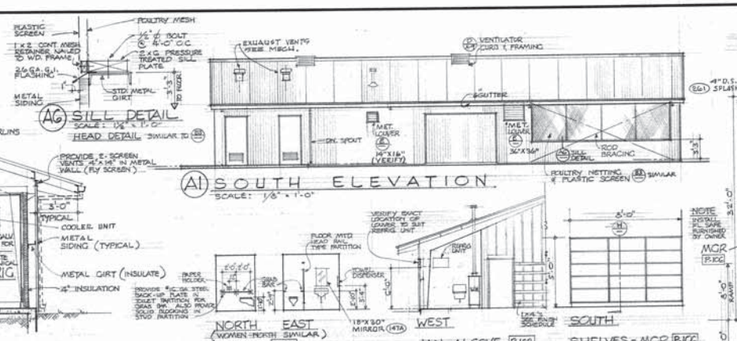
COMM. 1538A
DATE JUNE 15, 1970
DRAWN D.B., J.L.
CHECKED D.B.

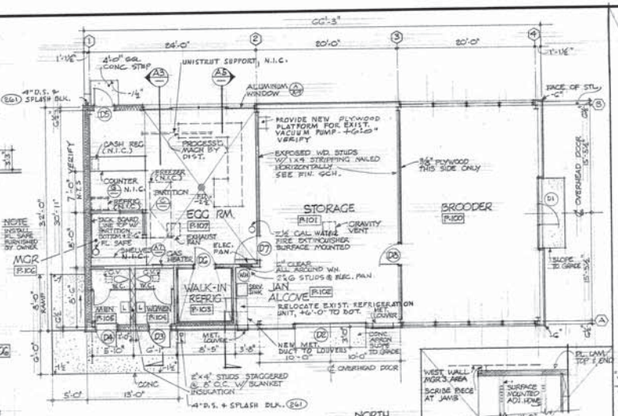
SHEET A-1
1 OF 20

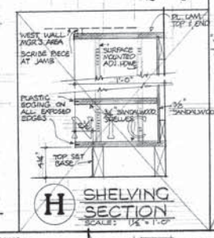
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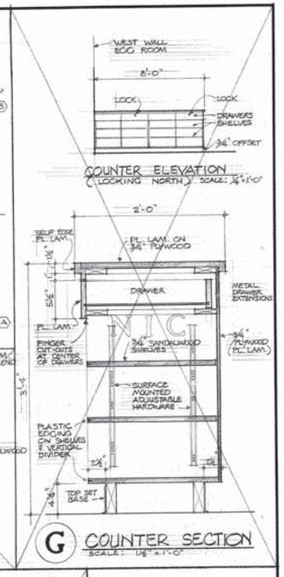
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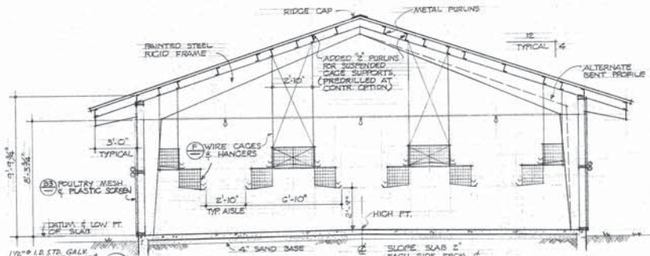


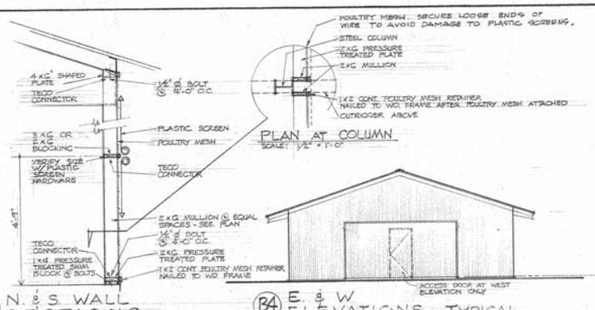


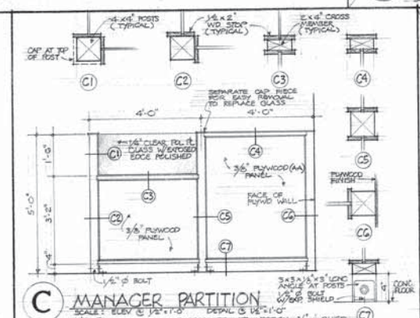


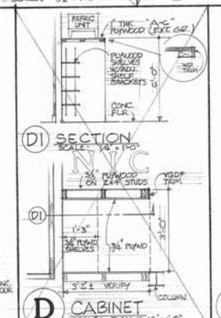


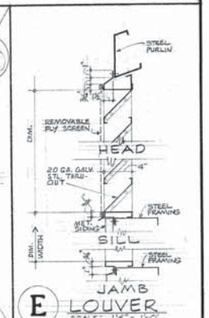


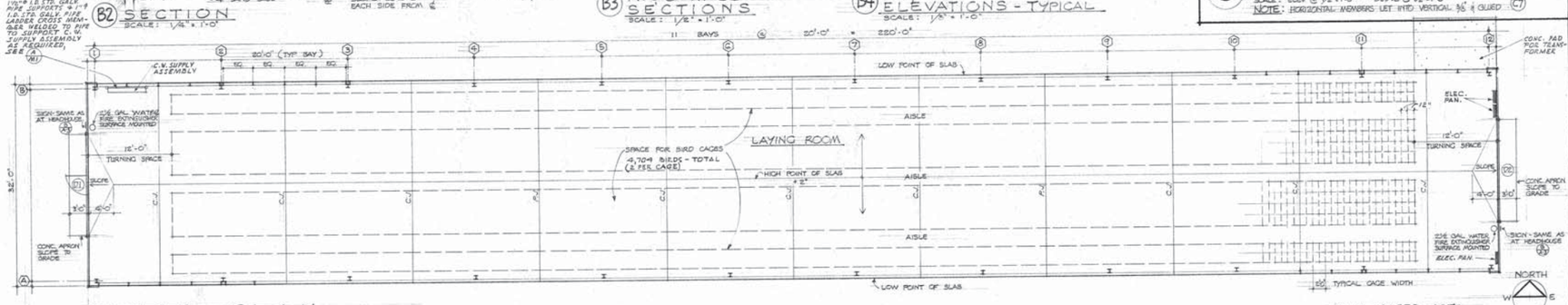


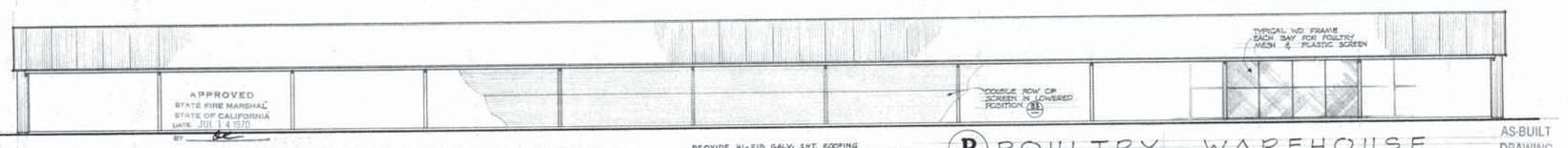


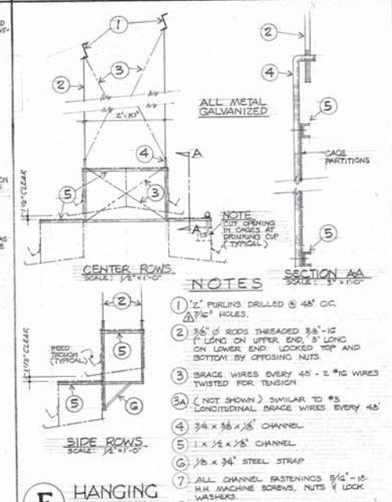












REVISIONS
1 AS BUILT REVISIONS.

STATE OF CALIFORNIA — DEPT. OF PUBLIC WORKS — DIVISION OF ARCHITECTURE
33269 — APPLICATION NO. — JUL 14 1970 — W. A. Henderson

ENGINEER	ARCHITECT
William Wheeler	Charles E. Fry
LICENSE NO. 486	LICENSE NO. C-5144

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
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2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326

POULTRY BUILDINGS
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1535A
DATE JUNE 15/70
DRAWN M.M.
CHECKED C.B.

SHEET A-4
4 OF 20

FI-1001-004

8/68 DIETZGEN-POST CLEARPRINT 1000H
5-13-70 - 98%

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WEST ELEVATION
@ 1/4"=1'-0"

NORTH ELEVATION
@ 1/4"=1'-0"

EAST ELEVATION
@ 1/4"=1'-0"

SOUTH ELEVATION
@ 1/4"=1'-0"

SECTION A
@ 1/8"=1'-0"

SECTION B
@ 1/8"=1'-0"

FLOOR PLAN
@ 1/4"=1'-0"

2212 SQ. FT. GROSS AREA

○ DENOTES EQUIPMENT SPECIFIED IN ALTERNATE NO. 2&3, SECTION "10" OF THE SPECIFICATIONS.

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 14 1970
BY

NORTH

AS-BUILT DRAWING
DATE APR 28 1971

REVISIONS		STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES — DIVISION OF STATE ARCHITECT	ENGINEER	ARCHITECT
1 AS BUILT REVISIONS		39269 JUL 14 1970	William Wheeler	Austin, Field & Fry
		APPROVED	LICENSE NO. 6116	LICENSE NO. C-2347

AUSTIN, FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

DAIRY UNIT
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1538 A
DATE JUNE 15, 1970
DRAWN DR, JH
CHECKED DB

SHEET A-6
6 OF 20

FI-7001-006

8/68 DIETERICH-POST CLEARPRINT 3000H

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D EXTERIOR DETAILS
SCALE AS NOTED

E DOOR + WINDOW DETAILS
SCALE 3"= 1'-0"

F FENCING + GRATING DETAILS
SCALE 1½"= 1'-0"

G GATE DETAILS
SCALE 3"= 1'-0"

D7 SECTION 3"= 1'-0"
D4 SECTION 1½"= 1'-0"
D3 PLAN 1½"= 1'-0"
D2 PLAN 1½"= 1'-0"
D6 SECTION 1½"= 1'-0"
D5 SECTION 1½"= 1'-0"
D1 SECTION 1½"= 1'-0"
E8 HEAD 3"= 1'-0"
E4 HEAD 3"= 1'-0"
E7 JAMB 3"= 1'-0"
E3 JAMB 3"= 1'-0"
E10 JAMB - HEAD SIMILAR 3"= 1'-0"
E6 JAMB 3"= 1'-0"
E2 JAMB 3"= 1'-0"
E9 SILL 3"= 1'-0"
E5 SILL 3"= 1'-0"
E1 SILL 3"= 1'-0"
F10 SECTION 1½"= 1'-0"
F9 PLAN 1½"= 1'-0"
F8 PLAN 1½"= 1'-0"
F7 SECTION 1½"= 1'-0"
F6 ELEVATION 1½"= 1'-0"
F5 PLAN 1½"= 1'-0"
F4 SECTION 1½"= 1'-0"
F3 ELEVATION 1½"= 1'-0"
F2 PLAN 1½"= 1'-0"
F1 SECTION 1½"= 1'-0"
G3 ELEVATION 3"= 1'-0"
G1 PLAN 3"= 1'-0"
G2 PLAN 3"= 1'-0"

EAST ELEVATION
SCALE 1/8" = 1'-0"

NORTH ELEVATION
SCALE 1/8" = 1'-0"

C SECTION
SCALE 1/8" = 1'-0"

WEST ELEVATION
SCALE 1/8" = 1'-0"

SOUTH ELEVATION
SCALE 1/8" = 1'-0"

B SECTION
SCALE 1/8" = 1'-0"

A SECTION
SCALE 1/8" = 1'-0"

FLOOR PLAN
SCALE 1/8" = 1'-0"
2880 SQ. FT. (UNDER ROOF)

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 14 1970
BY

AS-BUILT DRAWING
DATE APR 28 1971

REVISIONS	
AS BUILT REVISIONS	

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF THE STATE ARCHITECT — DIVISION OF ARCHITECTURE
33269 APPROVED JUL 14 1970 APPLICATION NO. DSA FORM NO. 5 FINANCIAL ASSISTANCE NUMBER

ENGINEER: William T. Wheeler LICENSE NO. 486
ARCHITECT: Charles E. Fry LICENSE NO. C-3247

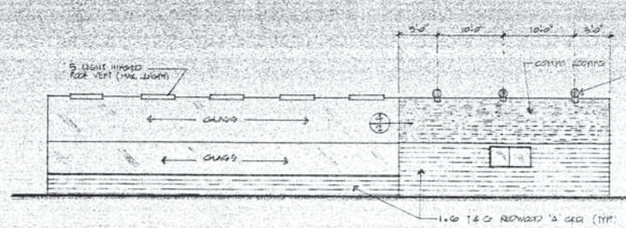
AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

SWINE UNIT
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

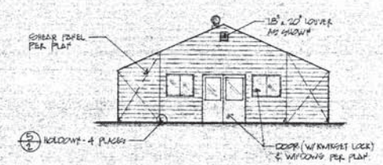
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COMM. 1538A
DATE JUNE 15 1970
DRAWN JL
CHECKED D.B.
SHEET A-5
5 OF 20

FI-T001-005

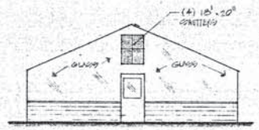
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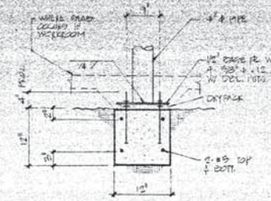
SOUTH ELEVATION (NORTH SIM.)
SCALE: 1/8"=1'-0"



EAST ELEV.



WEST ELEV.

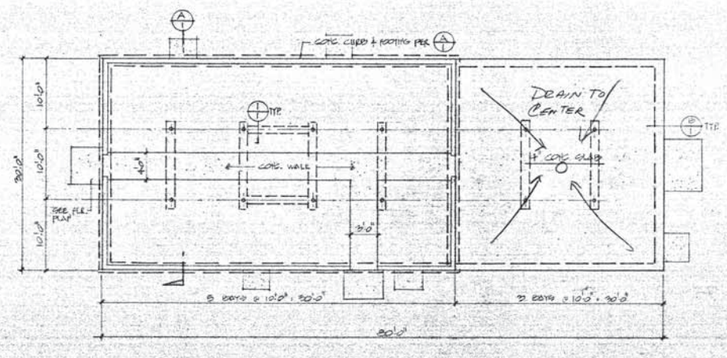


DETAIL

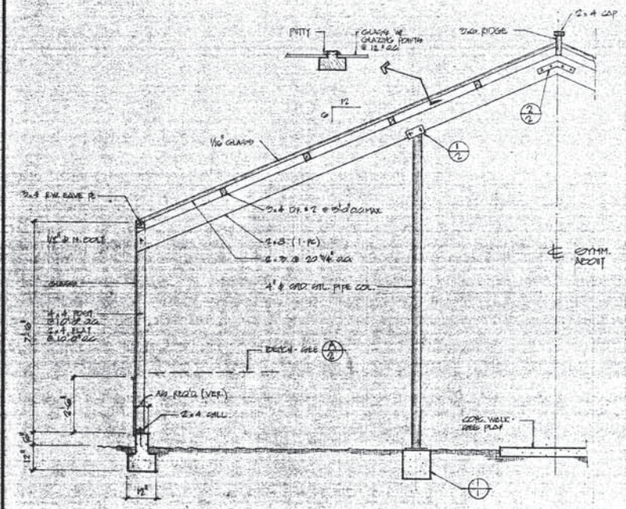
SPECIFICATIONS

LUMBER — GRADE MARKED, DF, #2 (OR BETTER, MC15)
CONCRETE — 6SACK, 2500 PSI
PIPE — ASTM A53-B, STD. WEIGHT
WELDING — STR. WELDERS IN SHOP.

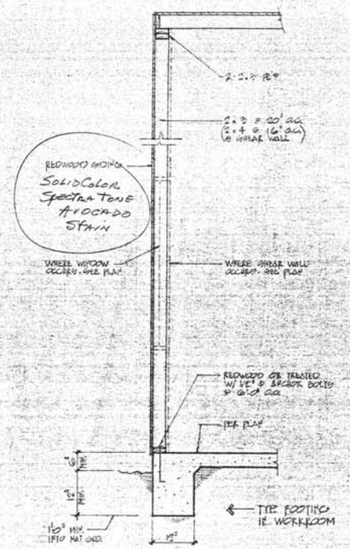
STEEL — ASTM A36
BOLTS — MIN. BEARING CLASSIFICATION OF 1000 PSI



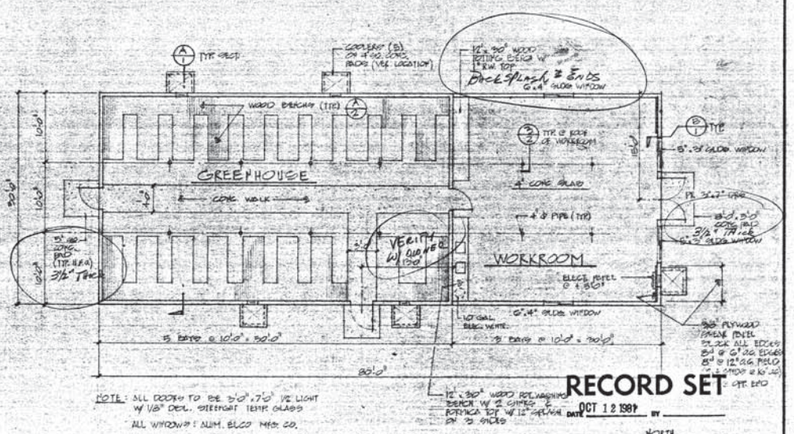
FOUNDATION PLAN
SCALE: 1/8"=1'-0"



SECTION
SCALE: 1/4"=1'-0"



SECTION
SCALE: 1/4"=1'-0"



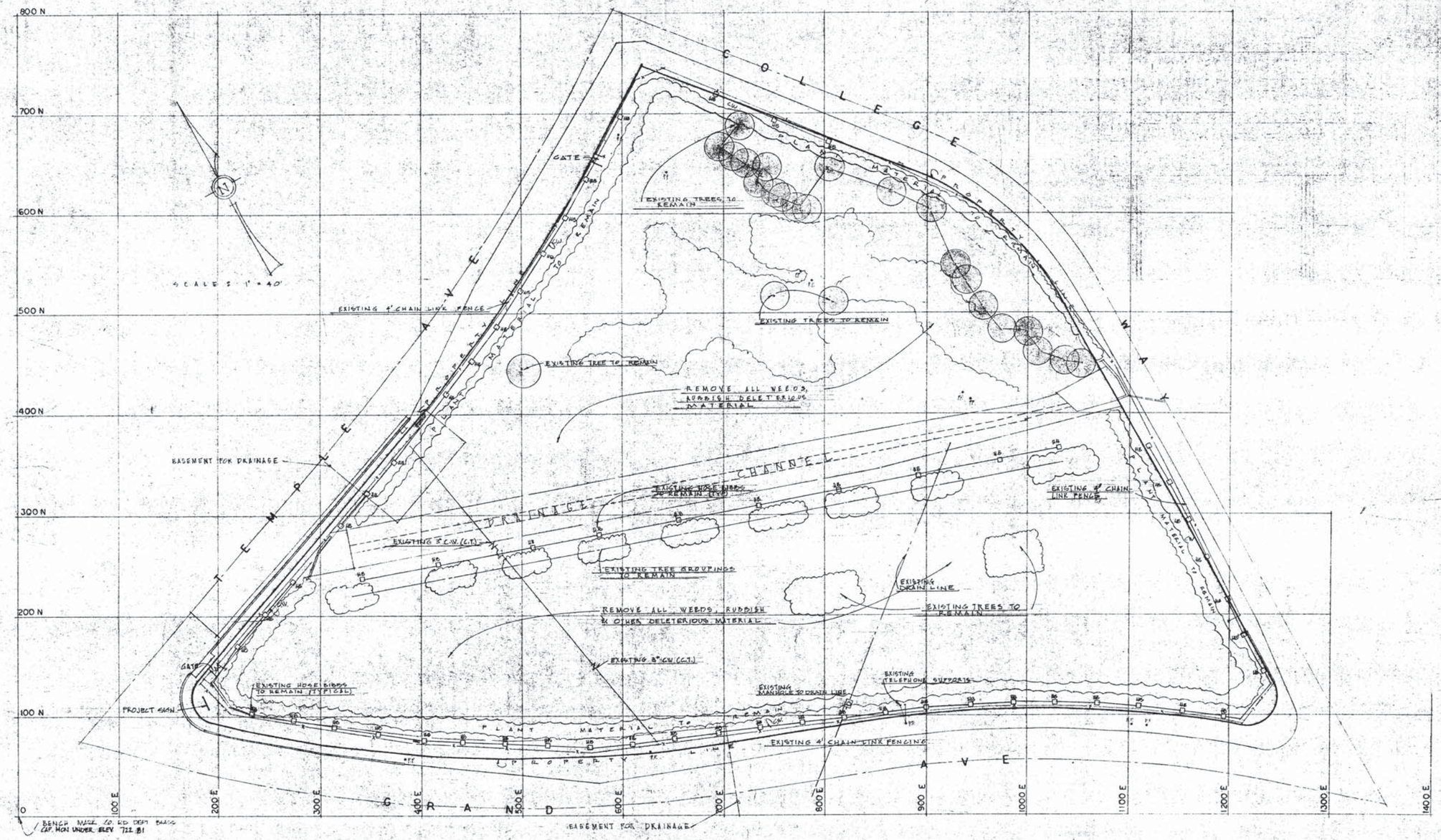
FLOOR PLAN
SCALE: 1/8"=1'-0"

RECORD SET
OCT 12 1981 DATE BY
AUG 19 1981
HANRICH, INC.

REVISION:	DRAWN BY T.D CHECKED BY A.M. DATE CHECKED 8-12-81	H. M. HANSIN STRUCTURAL ENGINEER S. E. #824	**HANRICH, INC.** STRUCTURAL ENGINEERING COMMERCIAL & INDUSTRIAL PLANNING	(HANSEN & DISTRICH) 9126 LAS TUNAS DR. TEMPLE CITY, CALIF. 91780 PH. (213) 286-8137 & 283-6721	GREENHOUSE FOR: MT. SAN ANTONIO COLLEGE WALNUT, CALIFORNIA	ELEVATIONS PLANS SECTIONS	JOB NO. 81-230 DATE Aug. 10, 1981 REV. DATE	SHEET NO. 1 OF

F-8101-001

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SITE PREPARATION

SCALE: 1" = 40'-0"

REVISIONS

no:	date:	description:	by

JOHN ROBERT RUSSELL
LANDSCAPE ARCHITECT
16 W. MISSION ST. STUDIO "C" SANTA BARBARA, CALIFORNIA
PHONE (TC) 5-1021

scale: 1"=40'-0" | date: AUG. 1966 | title: SITE PREPARATION | sheet no: L 1
drawn: M.H. | approved: | project: MT. SAN ANTONIO COLLEGE
checked: | job no: 6619 | WILDLIFE SANCTUARY

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APPENDIX E

Facility Description of the Stadium Press Box

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IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606
(949) 387-8500, Fax: (949) 387-0800

Sheet:	A6		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Rough Constr. Cost	
S1	Large cracking at slab on grade initiating from face of steps extending to the center of slab. Resulted in full-depth rupture of the slab with visible vertical offset.	S1a to S1d	75 ft	Damaged portion of the slab shall be demolished to pour new concrete and tied to existing slab using epoxy dowels.	$13,400	##
S2	Top of concrete retaining wall is tilted. This is possibly caused by rotation of the foundation due to the soil and water pressure and has created slab rupture indicated in item 1.	S2a & S2b	4ft tall & 36 ft long	Retaining wall to be periodically monitored for further rotation and future reconstruction.	A/R	
S3	Cracking at slab with width ±1/8"	S3	10 ft	Infill with epoxy injection.	$1,000	##
S4	Separation of concrete at the bottom of the step	S4	16 ft	To be sealed with epoxy injection or other means.	$1,200	##
S5	Exposed bar at joint	S5		Cover bar with epoxy coating.	$150	##
S6	Concrete break down at railing support	S6a & S6b	4 plcs	Remove broken and cracked concrete around railing. Place new concrete repair mortar and connect to existing by epoxy dowels.	$1,700	##
S7	Approximately 2/3 of the wood seats are rotten and damaged. Connection screws are loose and separated in many locations.	S7a to S7i	Approx. 5,000 linear ft	Replace all the seats.	$205,000	##
S8	Slab reinforcing is exposed	S8a &S8b	8 plcs	Infill with epoxy to restore original shape and provide cover for exposed bar.	$1,350	##
S9	Separation of concrete at the bottom of the step	S9	60ft	To be sealed with epoxy injection or other means.	$4,500	##
S10	Concrete break down with tripping hazard. Possible nest for snakes	S10a & S10b	6ft	Remove broken and cracked concrete . Pour new concrete and connect to existing by epoxy dowels.	$1,200	##
S11	Vertical offset of ±2" between walkway and seat section. This is due to differential settlement between south and north portion of the stand. The south portion was added in 1957 and is supported by concrete columns, beams and footings while the north portion is older construction (probably) with slab on grade and shows more settlement.	S11a to S11d	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$10,500	##
S12	Separation of concrete at the bottom of the step ±2"	S12	6 ft	To be sealed with epoxy injection or other means.	$225	##
S13	Vertical offset of ±1" at separation joint with tripping hazard	S13	20 ft	Some portions of the concrete shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,500	##

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IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606
(949) 387-8500, Fax: (949) 387-0800

Sheet:	A7		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation(continued)

S14	Large separation of concrete at the bottom of the step ±2"	S14	40ft	To be sealed with epoxy injection or other means.	$1,500	##
S15	Vertical offset of ±1/2" at separation joint with tripping hazard	S15	10 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$6,300	##
S16	Vertical offset of ±1/2" at separation joint with tripping hazard	S16	4 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth transition between two sides.	$3,900	##
S17	Separation of concrete at the bottom of the step ±2"	S17	50ft	To be sealed with epoxy injection or other means.	$3,000	##
S18	Separation of concrete at the bottom of the step ±1"	S18	40ft	To be sealed with epoxy injection or other means.	$2,400	##
S19	Separation of concrete at the bottom of the step ±1"	S19	30 ft	To be sealed with epoxy injection or other means.	$2,000	##
S20	Vegetation inside construction joints	S20		Clean all the vegetation and trash.	$2,600	##
S21	Approximately 2/3 of the Wood seats are rotten and damaged. Connection screws are loose and separated in many locations. Some of the seats are totally broken.	S21	Approx. 6,500 linear ft	Replace all the seats.	$265,000	##
S22	Separation of concrete at the bottom of the step ±1"	S22	60 ft	To be sealed with epoxy injection or other means.	$3,600	##
S23	Vertical offset of ±1/2" at separation joint with tripping hazard	S23	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,000	##
S24	Cracking at slab with width ±1/8"	S24a & S24b	60 ft	Infill with epoxy injection. Concrete around seat support shall be demolished and new concrete to be poured with epoxy dowel connection.	$6,800	##
S25	Damaged concrete with exposed bar and slab cracking	S25	6 ft	Remove damaged portions of concrete and infill with epoxy injection.	$400	##
S25	Exposed bar at joint	S26a & S26b	8plcs	Cover bar with epoxy coating.	$2,000	##
S26	Cracking at slab with width less tahn 1/8"		1,000 linear ft (assumed)	Cover bar Sealant.	$12,000	##
						##

Total Estimated Costs= **$560,225**

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Assessment of Distress
At Mt. San Antonio Stadium

On Call Engineering Services









June 18, 2010

IDS GROUP

1 Peters Canyon Road, Suite 140, Irvine, CA 92606 949-387-8500 fax: 949-387-0800

IDS GROUP
Integrated Design Services

June 18, 2010

Mr. Gary Nellesen
Director
Facility Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

Subject: ***Assessment of the Distress at Mt. San Antonio Stadium***
IDS Project Number: 29.157.03

Dear Mr. Nellesen:

At your request, IDS Group, Inc. (IDS) completed the assessment of the distress observed at the main stadium at Mt. San Antonio College (MTSAC) located at 1100 North Grand Avenue, Walnut, California. Our scope of work for this review consisted of:

1. A site visit to observe the existing structure.
2. Review of project drawings.
3. Providing a priority list of repair items.
4. Providing recommendations for methods of repair.
5. Providing an opinion of the repair cost.
6. Providing recommendations if there are any DSA implications for life safety.

In addition, a civil engineering study of storm water has been performed and results are presented as part of our investigations.

This letter and its attachments represent our opinions and recommendations and will serve as the project report. Note that this report does not include the press box structure, which will be provided under a separate report.

Project Description

The Mt. San Antonio Stadium (Also Known as Hilmer Lodge Stadium) is located at the southeast corner of the campus, south of W. Temple Avenue (see the site plan below). The original stadium construction is consisted of concrete stands formed and cast on grade. It appears that the original construction is dated in the later 1940's. No plans of the original construction were available for our review. In a 1957 modification, additional stands were added using elevated concrete framing supported by concrete columns, beams and footings at both the east and west sides (see the structural key plan).

Site Observations

After receiving a notice to proceed with this study, IDS visited the site on April 27, 2010 and May 5, 2010 and met with Mr. Roger Sneeds, the facility manager. The site visit performed by our team of a structural engineer, ADA architects, and civil engineers. We evaluated the stadium structure, ADA conformance, and storm water control. Please refer to the attached key plans and photos taken during our site visits.

Our observations indicate that:

- The concrete slabs on grade are cracked in many areas. The crack widths vary from hairline to larger than 1/8". Full depth rupture of the concrete slab was observed in several locations.
- Differential settlement at slab on grade joints is noticeable in several locations and exceeds 2" in some areas.
- Separation of concrete between vertical and horizontal portions of the stepped concrete slab has created gaps as large as 2" in numerous locations.
- The wood seats in both the East and West stands are severely damaged. It appears that over two-thirds of the seats are cracked, broken, rotten or loose.
- Storm water investigations indicate that siltation and clogging in several V ditches and basins has significantly lowered the capacity of the drainage system and contributed to settlement of the stands.
- Handicapped areas do not meet current ADA requirements.

Detailed results of the site observation are identified on key plans and are reflected in the attached evaluation matrices.

Conclusions

Based on our site visits and review of existing drawings for the stadium we indicate the following primary factors in relation to the distressed conditions at stadium:

- The cracking in the concrete slabs has occurred due to long term shrinkage of the concrete and settlement of the supporting soils. Once cracking in the slabs occurs, slab settlement is exacerbated by the repeated intrusion of water into the soils beneath the slab, which can cause soil weakening and erosion.
- The more significant areas of slab settlement in the east stands appears primarily due to inadequate drainage conditions which have resulted in soil erosion below the slabs and large gaps in the supporting soils.
- Significant settlement of up to 2" appear where the added elevated concrete stands of 1957 meet the original slab on grade stands. It is noted that the added slab has different structural support conditions: Please note the following: 1) the existing slabs have already settled at the time of construction for the new stands, but the new stands still undergo some settlement as they age, and 2) the nature of structural support in the original and 1957 stands addition, and therefore the extent of long term settlement, is substantially different, i.e. slab on grade vs. elevated slabs supported on columns and footings.

Recommendations

Recommendations for repair and maintenance are reflected in the attached evaluation matrices for structural, civil and ADA items. Our recommendations are preliminary in nature and are not considered repair design document; they are intended to identify the scope of work needed to make the stadium safer and more functional and minimize future damage. Additional engineering and design work is required in order to translate the general repair recommendations into actual construction documents to perform the repair work. Key recommendations are listed below.

1. Eliminate tripping hazards which can present safety concerns:
    a. Remove the concrete at the expansion joints and pour new concrete to provide a smooth transition between the adjacent surfaces.
    b. Remove and replace areas of broken and heavily cracked concrete slab.
2. Eliminate the risks of injury by replacing damaged and splintered wood seating.
3. Remove the siltation and clogging from V ditches and catch basins to control rain and storm water and thereby mitigate continued wash-out of soils and associated settlement.
4. Seal all concrete slab cracks with measurable width, and repair large cracks (1/8" width or larger) to limit water intrusion which can result in deterioration of reinforcement and concrete damage.
5. Fill in the gaps at corners in the slab on grade to prevent water penetration and soil wash-out under the stands.
6. Conduct annual (or more frequent) follow-up surveys to confirm repairs are holding and continued cracking and soil erosion damage has been mitigated.

Repair Costs

Our opinion of probable cost of the repair construction is presented in the attached tables. This preliminary cost estimate is based on the current condition of the stadium as of our last site visit of May 5, 2010. It is expected that a more thorough investigation during the preparation of the construction document could revise the construction cost shown in the tables.

Thank you for the opportunity to be of service on this project. If you have any questions or would like us to provide investigation services for other facilities, please do not hesitate to contact us.

Sincerely,
IDS Group, Inc.



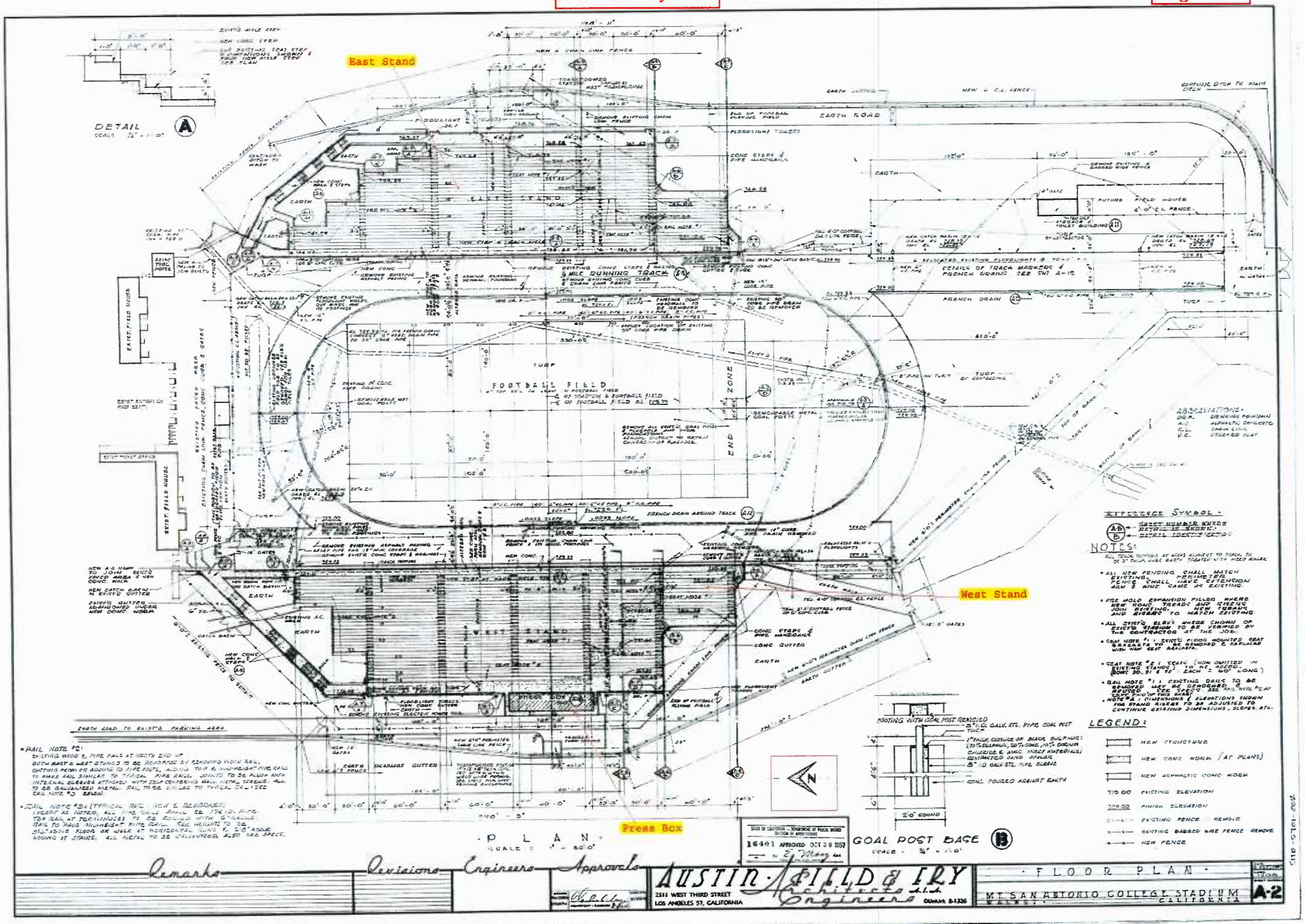
Matt Kani, SE
Project Manager

Said Hilmy, Ph.D., SE, LEED AP
Principal

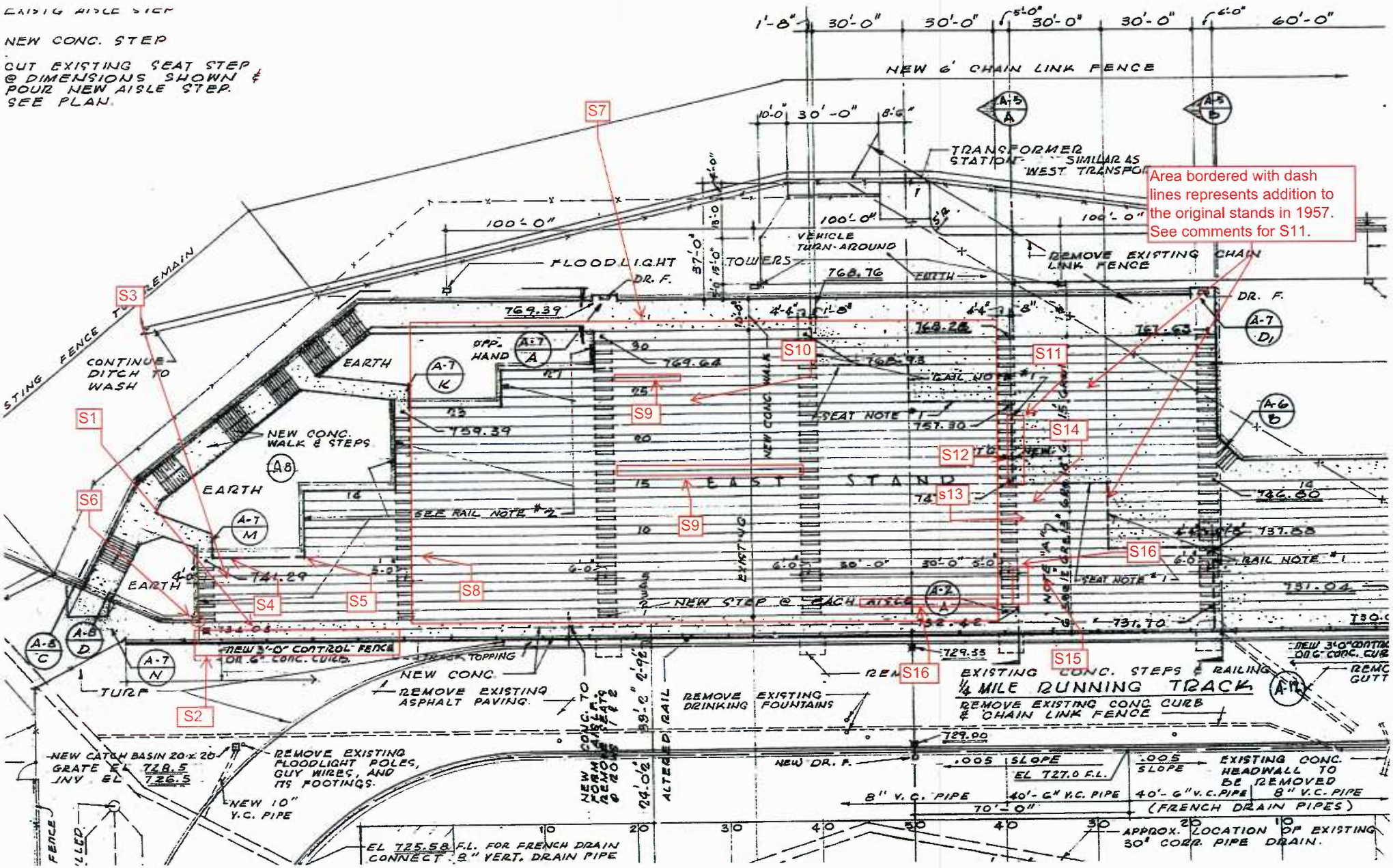
IDS GROUP
Integrated Design Services

General Key Plan

Page A1

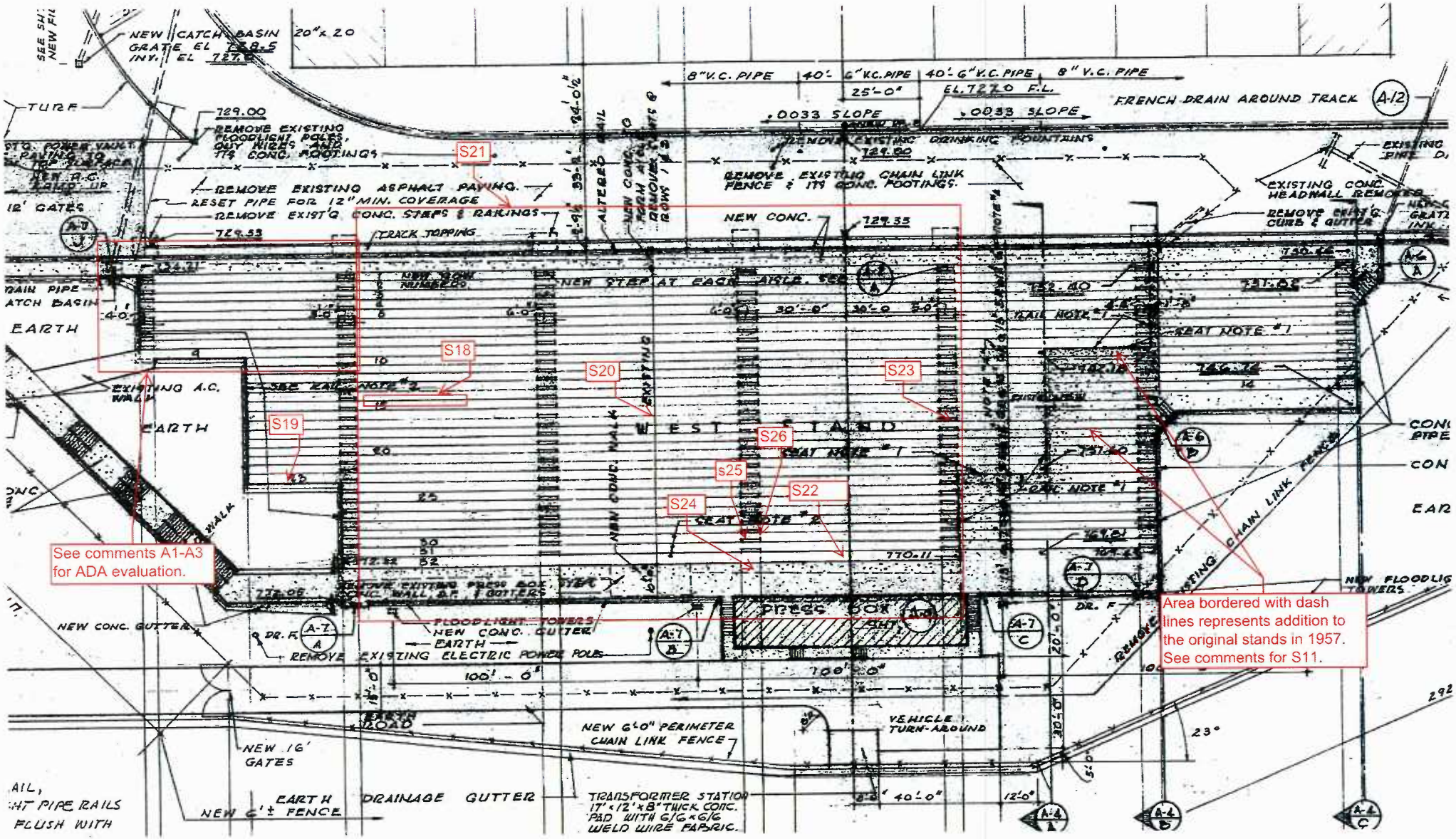


Structural Key Plan- East Stand

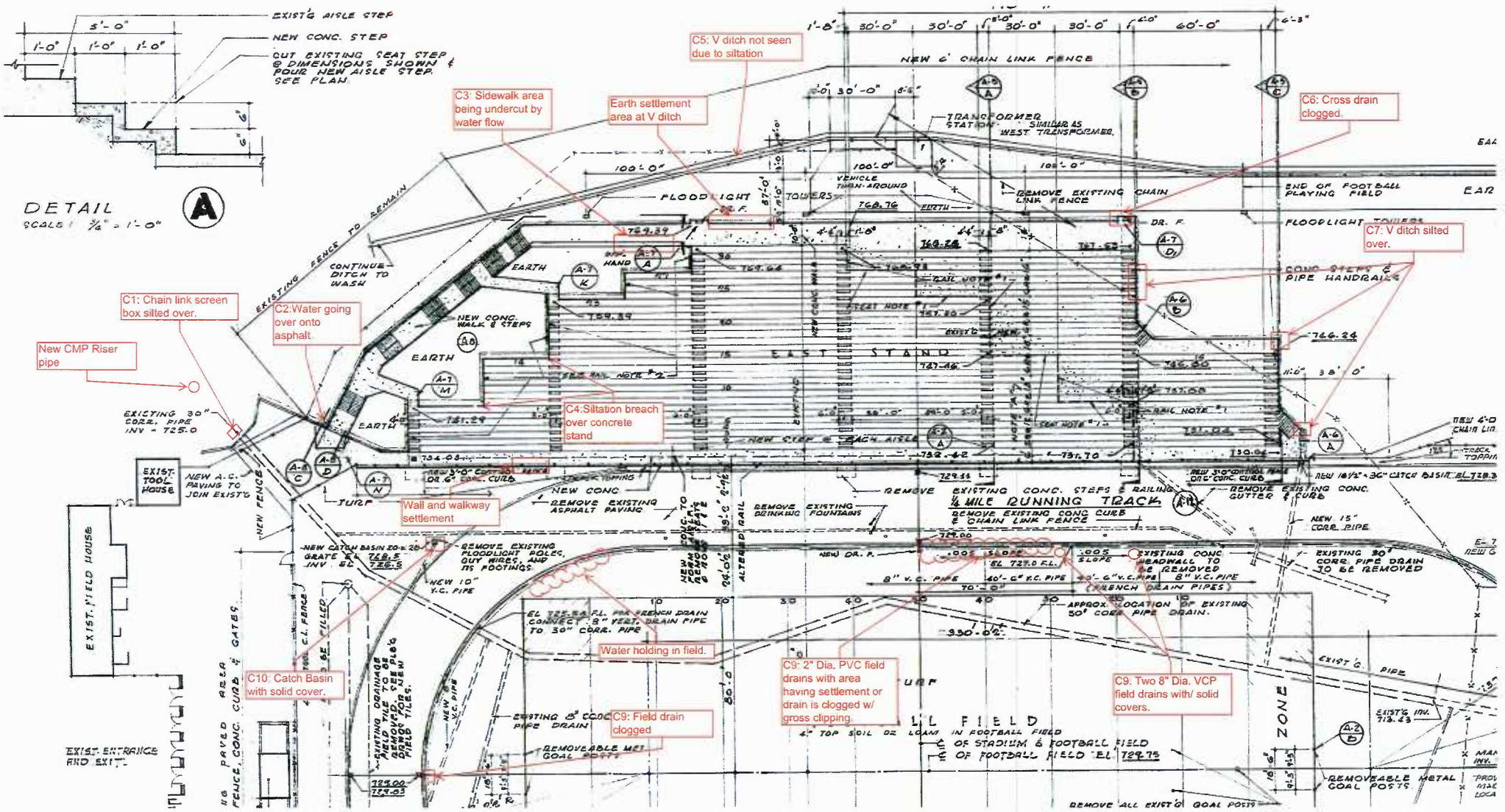


Area bordered with dash lines represents addition to the original stands in 1957. See comments for S11.

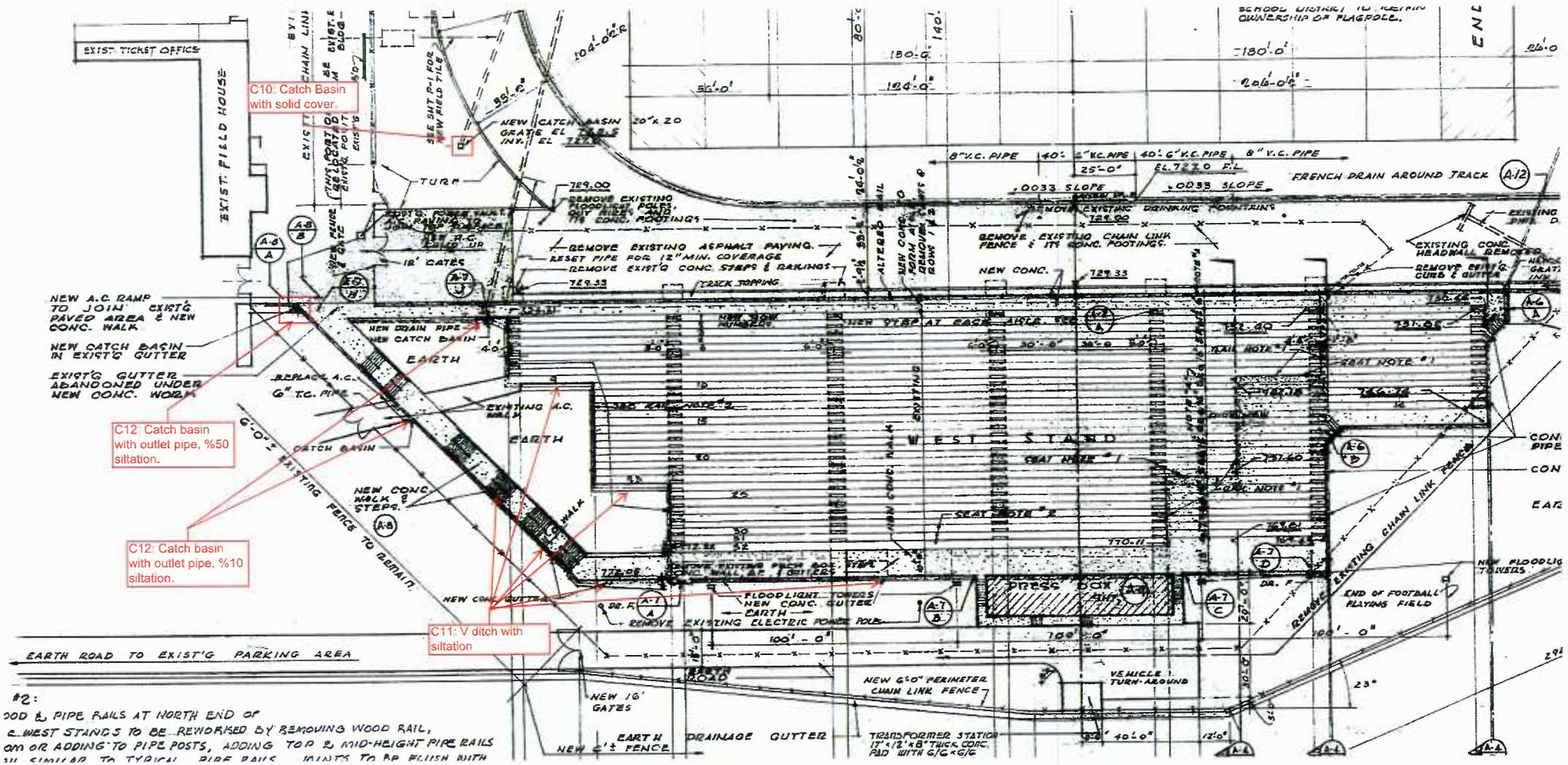
Structural Key Plan- West Stand



Civil Key Plan- East Stand



Civil Key Plan- West Stand



Project Assessment Tables

The following tables provide a concise summary of the distress conditions observed during our investigation. Description of each item is identified. Also included are photo references, approximate size of distressed area and recommendation of each repair. An estimate of repair cost of each item is also provided.

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A6		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Rough Constr. Cost
S1	Large cracking at slab on grade initiating from face of steps extending to the center of slab. Resulted in full-depth rupture of the slab with visible vertical offset.	S1a to S1d	75 ft	Damaged portion of the slab shall be demolished to pour new concrete and tied to existing slab using epoxy dowels.	$13,400
S2	Top of concrete retaining wall is tilted. This is possibly caused by rotation of the foundation due to the soil and water pressure and has created slab rupture indicated in item 1.	S2a & S2b	4ft tall & 36 ft long	Retaining wall to be periodically monitored for further rotation and future reconstruction.	A/R
S3	Cracking at slab with width ±1/8"	S3	10 ft	Infill with epoxy injection.	$1,000
S4	Separation of concrete at the bottom of the step	S4	16 ft	To be sealed with epoxy injection or other means.	$1,200
S5	Exposed bar at joint	S5		Cover bar with epoxy coating.	$150
S6	Concrete break down at railing support	S6a & S6b	4 plcs	Remove broken and cracked concrete around railing. Place new concrete repair mortar and connect to existing by epoxy dowels.	$1,700
S7	Approximately 2/3 of the wood seats are rotten and damaged. Connection screws are loose and separated in many locations.	S7a to S7i	Approx. 5,000 linear ft	Replace all the seats.	$205,000
S8	Slab reinforcing is exposed	S8a &S8b	8 plcs	Infill with epoxy to restore original shape and provide cover for exposed bar.	$1,350
S9	Separation of concrete at the bottom of the step	S9	60ft	To be sealed with epoxy injection or other means.	$4,500
S10	Concrete break down with tripping hazard. Possible nest for snakes	S10a & S10b	6ft	Remove broken and cracked concrete . Pour new concrete and connect to existing by epoxy dowels.	$1,200
S11	Vertical offset of ±2" between walkway and seat section. This is due to differential settlement between south and north portion of the stand. The south portion was added in 1957 and is supported by concrete columns, beams and footings while the north portion is older construction (probably) with slab on grade and shows more settlement.	S11a to S11d	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$10,500
S12	Separation of concrete at the bottom of the step ±2"	S12	6 ft	To be sealed with epoxy injection or other means.	$225
S13	Vertical offset of ±1" at separation joint with tripping hazard	S13	20 ft	Some portions of the concrete shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,500

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A7		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation(continued)

S14	Large separation of concrete at the bottom of the step ±2"	S14	40ft	To be sealed with epoxy injection or other means.	$1,500
S15	Vertical offset of ±1/2" at separation joint with tripping hazard	S15	10 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$6,300
S16	Vertical offset of ±1/2" at separation joint with tripping hazard	S16	4 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth transition between two sides.	$3,900
S17	Separation of concrete at the bottom of the step ±2"	S17	50ft	To be sealed with epoxy injection or other means.	$3,000
S18	Separation of concrete at the bottom of the step ±1"	S18	40ft	To be sealed with epoxy injection or other means.	$2,400
S19	Separation of concrete at the bottom of the step ±1"	S19	30 ft	To be sealed with epoxy injection or other means.	$2,000
S20	Vegetation inside construction joints	S20		Clean all the vegetation and trash.	$2,600
S21	Approximately 2/3 of the Wood seats are rotten and damaged. Connection screws are loose and separated in many locations. Some of the seats are totally broken.	S21	Approx. 6,500 linear ft	Replace all the seats.	$265,000
S22	Separation of concrete at the bottom of the step ±1"	S22	60 ft	To be sealed with epoxy injection or other means.	$3,600
S23	Vertical offset of ±1/2" at separation joint with tripping hazard	S23	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,000
S24	Cracking at slab with width ±1/8"	S24a & S24b	60 ft	Infill with epoxy injection. Concrete around seat support shall be demolished and new concrete to be poured with epoxy dowel connection.	$6,800
S25	Damaged concrete with exposed bar and slab cracking	S25	6 ft	Remove damaged portions of concrete and infill with epoxy injection.	$400
S25	Exposed bar at joint	S26a & S26b	8plcs	Cover bar with epoxy coating.	$2,000
S26	Cracking at slab with width less tahn 1/8"		1,000 linear ft (assumed)	Cover bar Sealant.	$12,000

Total Estimated Costs= $585,725

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A8		
Job No.:	29.157.03		
Calc. By.:	KL	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Storm water investigation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Estimated Constr. Costs
C1	At the proposed, 9-3-1957 Headwall location, a hole was cut at the top of the 30" CMP and a protective chain link screen box constructed over top of the hole. This new drainage point for the surface water coming from the East Stand area was observed to be silted over reducing the effect of the drain.	C1		Remove siltation, remove solid plate cover. Repair chain link fence guard. Install perforated cover over existing hole and secure to CMP	$1,800
C2	The north East Stand entry point at the lower left corner of the entry steps; water is draining over the constructed concrete "V" ditch and flowing onto the asphalt drive area. This is due to excessive siltation build at the "V" ditch turning point.	C2		Remove siltation	$250
C3	At the upper most elevation, the water from the high side of the sidewalk was being redirected to a lower point of the sidewalk, causing water flow over the concrete sidewalk to the earthen area. this new water direction created an undercutting of the sidewalk and exposing the underside of the walk by 1'-0" to 2'-0". This redirection is due to ground settlement, of 1 to 2 inches of the upper "V" ditch section.			At settlement area re-grade the area for positive drainage into the "V" ditch. Slurry mix the area of side walk that has been under cut and re-grade the landscape area for positive water flow.	$7,700
C4	This excessive water flow breached and silted over the upper concrete "V" ditch for the lower Stands, causing water to flow ever the stands into existing cracks and butt joints. Several weep holes have visible siltation coming from them.	C4a to C4e		Remove siltation. At all points at both East and West Stands where the concrete "V" ditches make a 90 degree down turn, a concrete based material should be constructed at the upper most corner to direct the water away from going into the stand.	$1,700
C5	At the top of the East Stand behind the light towers, the first "V" ditch, on the east side of the chain link fence, was non-existent. No exploratory measures were taken at this time			Remove siltation	$7,500
C6	At the South side of the East Stand area; several under sidewalk drains were clogged with siltation making the drains inoperable.			Remove siltation	$400
C7	The south side of the East Stand "V" ditches were also silted to the point they were inoperable.	C7		Remove siltation	$700
C8	Several 8" VAC drains were protected with solid covers that contained one ¾" hole. Reducing the effectiveness of the drain.			Remove solid cover and install perforated cover and secure.	$750

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A9		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Storm water investigation(continued)

C9	Several 2" PVC drains were covered with grass clippings and/or the area around the drains were settled 1" below the grade. Reducing the effectiveness of the drain.			Remove grass clippings and re-grade area for positive water flow.	$2,400
C10	Two turf catch basin drains located at the northeast and west corner of the track had solid plates bolted down over the catch basin grates. Reducing the effectiveness of the drain.			Remove the solid covers and install perforated covers and secure	$2,700
C11	Several concrete "V" ditches have been silted over causing a redirection of storm water flow over the stand area and walk way.			Remove siltation	$3,200
C12	Several catch basins at the north base of the stands are silted closed from 10% - 50% of the pipe diameter.			Remove siltation	$1,600
C13	Upper earth drainage gutter has siltation.			Remove siltation	$7,200
C14	Upper most "V" ditch area behind chain link fence.			Future recommendation if top "V" ditch does not control water runoff a French Drain could be installed at the upper elevation adjacent to the "V" ditch draining to the designed catch basins.	Future

Total Estimated Costs= $37,900

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Sheet:	A10		
Job No.:	29.157.03		
Calc. By.:	CC	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - ADA Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Estimated Constr. Costs
A1	ADA seating area is not accessible from parking lot		Approx. 2400 s.f.	Demo concrete sidewalk, regrade, compact soils and pour new sidewalk so that POT does not exceed 5% and cross-slope does not exceed 2%	$27,000
A2	ADA seating area is not code-compliant. Wheelchair can slip off edge.		Approx. 30 linear feet	Provide 6" concrete curb on sides where drop exceeds 18".	$1,600
A3	Replace handrails on POT.		Approx. 400 linear feet.	Provide ADA compliant handrails with wheelchair guard to keep wheelchair from slipping off sidewalk.	$60,000

Total Estimated Costs= $118,600

IDS GROUP
Integrated Design Services

PHOTOS



Site Plan



Photo S1a:



Photo S1b:

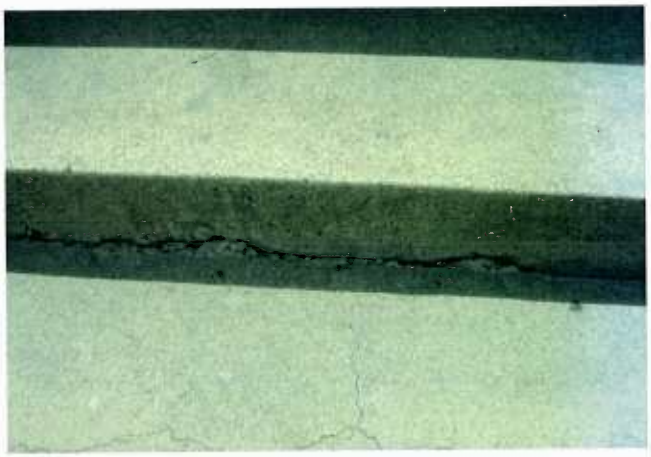


Photo S1c:



Photo S1d:



Photo S2a:

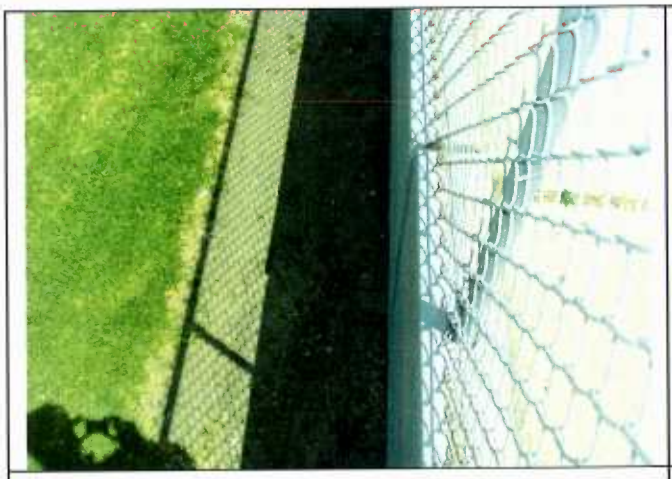


Photo S2b:



Photo S3:

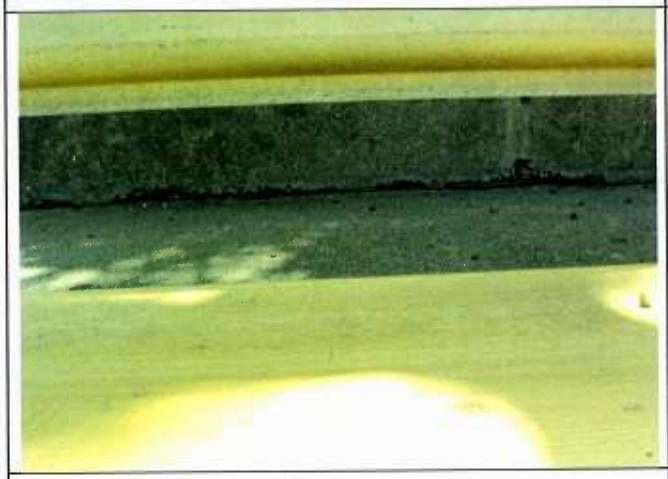


Photo S4:



Photo S5:



Photo S6a:



Photo S6b:



Photo S7a:



Photo S7b:



Photo S7c:



Photo S7d:



Photo S7e:

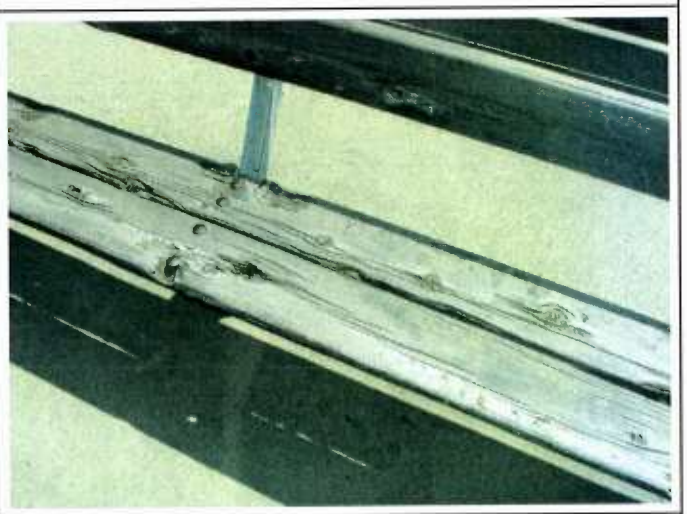


Photo S7f:



Photo S7g:



Photo S7i:



Photo S8a:



Photo S8b:

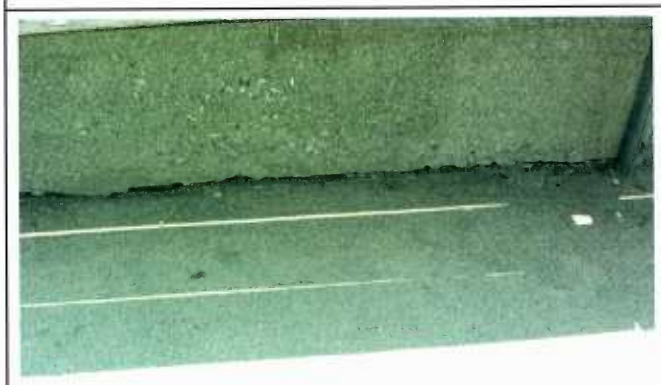


Photo S9:



Photo S10a:



Photo S10b:



Photo S11a:



Photo S11b:



Photo S11c:



Photo S11d:



Photo S12:

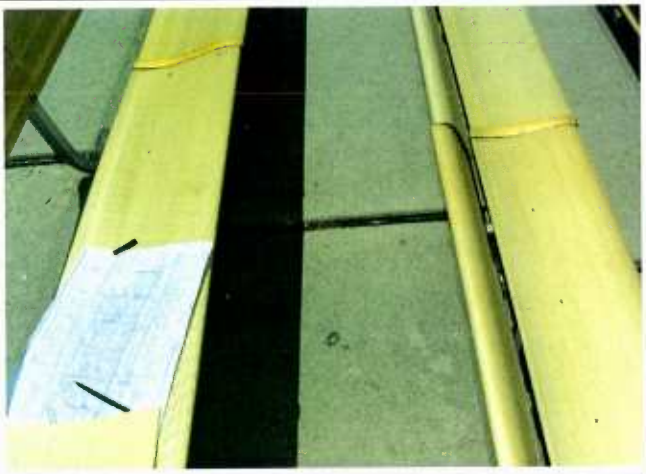


Photo S13:



Photo S14:



Photo S15:



Photo S16:



Photo S17:



Photo S18:



Photo S19:



Photo S20:



Photo S21a:



Photo S21b:



Photo S21c:



Photo S22:



Photo S23:



Photo S24a:



Photo S24b:



Photo S25:



Photo S26a:



Photo S26b:



Photo C1:



Photo C4a:



Photo C4b:



Photo C4c:



Photo C4d:



Photo C7:

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Facility : 0050 50F- STADIUM PRESS BOX



General Info:

		Estimate Cost:	$195,243.37
Type:	Building	Additional Cost:	$111,953.63
Gross Area:	1845 S. F.	Repair Cost:	$307,197.00
Year Built:	1948	Replacement Value:	$448,242.75
Last Renovation:	1959	FCI%:	68.53%

Facility Description:

0049; Building, No.50 D, is located at the Mt. San Antonio College in Walnut, California. The 1 - story, 1845 square foot building contains press box. Originally constructed in 1948 with a minor remodel in 1959 with no major renovations to date, 2013.

STRUCTURAL/EXTERIOR CLOSURE:
The building rests on slab-on-grade that are original to construction. The main structure is cast in place, CMU that is metal framed with metal skinned exterior walls. Roof framing is metal. The roof is rolled asphalt of unknown vintage. Exterior entrance doors are typically hollow metal in hollow metal frames using lever handles. The windows in this building are a combination of metal and or aluminum fixed and operational window walls.

INTERIORS:
Partition wall types include painted CMUs. The interiors of exterior walls are typically painted brick. Most ceilings 12"x12" are acoustical tiles. Flooring in high traffic areas is carpet. Interior doors are generally solid wood in wood frames. There are no restrooms in this building.

MECHANICAL/PLUMBING
Heating/cooling is provided by a roof top heat pump with roof top exposed duct for ceiling supply and returns. The plumbing is of original type. The plumbing is a porclin sink and a electric in line water heater with a wall mounted water fountain.

ELECTRICAL:
The electrical system is fed from the sub station behind press box to the local panel to the press box 60 amp sub panel. The lighting is by T-12 fixtures using typical switches and outlets.

FIRE PROTECTION/LIFE SAFETY SYSTEMS:
The fire protection is by fire extinguishers.

Hazmat.
None noted.

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July 12, 2012

Ms. Becky Mitchell
Manager
Facilities Support Services
Mount San Antonio College
1100 North Grand Avenue
Walnut, California 91789

Re: Historical Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California

Dear Ms. Mitchell,

ASM Affiliates, Inc. (ASM) has completed an analysis of five buildings on the Mount San Antonio College Campus for eligibility for listing in the California Register of Historical Resources (CRHR) and as historical resources under the California Environmental Quality Act (CEQA). Mount San Antonio College is located in the San Gabriel Valley at 1100 North Grand Avenue, in Walnut, California. The five buildings are proposed for demolition as part of the 2012 Mount San Antonio College Facilities Master Plan (FMP). The results of this analysis and evaluation will assist Mount San Antonio College in the development of the FMP.

ASM evaluated five buildings constructed from 1958 to 1972: the Student Life Center (9C), the Marie T. Mills Aquatic Facility (Aquatic Facility) (27B), the Locker Rooms (formerly the Women's Locker Facilities) (27C), the Exercise Science/Wellness Center (formerly the Men's Locker Facilities) (27A), and Mount San Antonio College Snack Bar (19C). This letter report is divided into the following sections: Introduction, Methodology, Historic Context, Architectural Descriptions, Recommendations of Eligibility, and Conclusion. References are included as Attachment A, Figures as Attachment B, and Department of Parks and Recreation (DPR) 523 site record forms as Attachment C.

INTRODUCTION

ASM prepared this historical evaluation to determine the historical and architectural significance of five potential historical resources at the Mount San Antonio College Campus located at 1110 North Grand Avenue, Walnut, California. The Mount San Antonio College campus occupies 421 acres at 1100 North Grand Avenue, in the City of Walnut, California. The campus sits in the San Gabriel Valley between the Puente and San Jose hills. Mount San Antonio is the dominant landscape feature to the north.

Section 21084.1 of CEQA defines a historical resource as any resource listed in, or eligible for listing in, the CRHR. The five potential historical resources at Mount San Antonio College have not previously been evaluated, nor are they listed in the CRHR or National Register of Historic Places (NRHP). These potential historical resources are also not California Points of Historical Interest nor California Historical Landmarks. The City of Walnut does not have a historic preservation ordinance, nor has its established a local register of historic places.

In this letter report, the Student Life Center (9C), Aquatic Facility (27B), Locker Rooms (27C), Exercise Science/Wellness Center (27A), and Mountie Grill (19C) are evaluated for their eligibility for designation on the local, state, and national level as individual resources and potential contributors to a historic district, in accordance with CEQA and CRHR guidelines.

RESEARCH AND SURVEY METHODOLOGY

In evaluating the historical resources of Mount San Antonio College, ASM considered a number of factors relevant to making a recommendation of eligibility, including:

- the history of the college's construction and use;
- the history of the surrounding community and the college's historical context within that community;
- the college's association with important people or events;
- whether the components of the college are the work of a master architect, craftsman, artist, or landscaper;
- whether the college is representative of a particular style or method of construction; and
- whether the college has undergone structural alterations over the years, the extent to which such alterations have compromised it historical integrity, and the current condition of the property.

Records Search and Data Analysis

As a first step in identifying whether or not the resources of the Mount San Antonio College Campus are potentially eligible, ASM consulted historic maps and aerial photos to help identify the locations and construction dates (Historicaerials.com 1948, 1953, 1965, 1972, 1980). ASM obtained a records search from the South Central Coastal Information Center (SCCIC) to identify all historic built-environment resources on the campus that had been previously recorded in the California Historical Resources Information System, as well as other documented colleges in Los Angeles County. The previous evaluation of the Mount San Antonio College Campus conducted by Tim Gregory in 2003 was reviewed (Gregory 2003).

Field Survey

ASM conducted a historical resource field survey on June 20, 2012, to document the Student Life Center (9C), Aquatic Facility (27B), Locker Rooms (27C), Exercise Science/Wellness

Center (27A), and Mountie Grill (19C). The intensive-level field survey was conducted on foot by ASM's Senior Architectural Historian Shannon Davis and Architectural History Assistant Evanne St. Charles. During the survey, multiple photographs were taken of each building (interior and exterior) to document the resources and their setting. Buildings' plans, architectural features, condition, and historical integrity were noted. In order to determine whether the building might be associated with a potential historic district, particular attention was paid to the extant structures that comprise the larger college campus. DPR 523 site record forms were prepared to document this field survey and are provided in Attachment C.

HISTORIC CONTEXT

Brief History of the San Gabriel Valley and Walnut, California

The first occupants of the San Gabriel Valley were the Gabrielino Indians of Shoshonean origin. After the arrival of the Spanish in the late 1700s, large ranches, extensive agricultural development occurred and residences were constructed. The first land grants included the Rancho de San Jose, established in 1837 by Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales, presented in 1840 to Jose de la Cruz Linares; and La Puente Rancho, issued to John Rowland and William Workman in 1842. Prior to the establishment of these land grants, the land had been used for cattle and sheep grazing by the San Gabriel Mission (Gregory 2003).

Walnut originally obtained its name from Rancho de los Nogales (*nogal* is the Spanish word for "walnut tree"), the land the city came to occupy. The Rancho obtained its name from the black walnut trees located along the hillsides. The name of the town was originally Lemon, due to the many citrus trees in the area and the name of the town's station (Lemon Station) for the Southern Pacific Railroad. The name "Walnut" was adopted as the community's official name in 1912 with the construction of the new post office (Gregory 2003).

From the 1880s to just after World War II, the area was used predominantly for cattle-raising and farming, well-known particularly for its walnut and citrus groves. Walnut as well as the surrounding communities remained primarily rural, Pomona being the only major city (Gregory 2003).

After World War II, returning veterans created an increasing demand for housing across southern California, including the city of Walnut. The small rural town developed quickly and, fearing that they might be annexed by their faster-growing neighbors, the residents of Walnut decided to incorporate with approximately 7.5 mi.^{2} of territory and about 1,000 residents in January 1959 (Gregory 2003).

Between 1980 and 1990, Walnut grew by 133 percent, to a population of 29,105, and became the second-fastest-growing city in Los Angeles County (Gregory 2003). Today, Walnut has a population of 29,661. Four elementary schools, three middle schools, two high schools, and Mount San Antonio College are located within the city boundaries (City of Walnut 2012).

Early Educational Facilities in Walnut and San Gabriel Valley

Walnut's first school was constructed ca. 1876. After the schoolhouse burned in 1892, students transferred to Spadra School. The Lemon School District, of which Walnut was a part, was established in 1893. High school students traveled to Pomona and El Monte until 1915, when La Puente High School was constructed (Gregory 2003).

When the first junior colleges were established in California at the beginning of the twentieth century, most (two-thirds) were begun either on high school campuses or as parts of high school districts. Citrus College, located in Glendora and founded in 1915, is the oldest junior college in Los Angeles County and the fifth oldest in the state. One of the first junior colleges in the San Gabriel Valley was Pomona Junior College, planned in 1916 and established on the Pomona High School campus in 1917. Oscar H. Edinger was the director of the college (Hall and Pietzsch 1996). Chaffey, located in Rancho Cucamonga, was first established as a private college in 1883 and became public in 1916. Pasadena City College was established in 1924, and Glendale Community College was founded in 1927.

With the return of young men and women after World War II, the San Gabriel Valley, along with much of the state, increasingly recognized the limitations of having colleges set on high school campuses, and pushed for the establishment of junior colleges independent from high schools. Pomona Junior College was seen as inadequate to accommodate the many veterans seeking higher education. Thus, in October 1945, the California State Board of Education was petitioned by the school districts of Pomona, Covina, Puente, and Bonita for a junior college to serve the combined communities (Pomona, La Verne, San Dimas, Covina, Baldwin Park, West Covina, Puente, Otterbein, Walnut, and Spadra). Edgar Rothrock, chairman of the Board of Trustees for Bonita High School, and Carl L. Lorbeer, president of the Pomona Board of Education, were particularly influential in encouraging community members to support the creation of the college. In his 1945 statement as candidate to be president of the Pomona Board of Education, Mr. Lorbeer advocated for "the formation of a junior college not only for general relief of the school system but to separate the high school and junior college activities. It would be my intention, if elected, to immediately have a representative committee appointed to make a thorough study of the entire junior college situation" (*Mt. SACourier* 1966). Voters approved the formation of a new college by a seven-to-one vote margin, and the first Board of Trustees was formed (Hall and Pietzsch 1996). The new college was to replace Pomona Junior College, and Mount San Antonio College became one of the first junior colleges to be established as independent from a high school campus at the time of its foundation.

A few different locations were considered for the new college, including Kellogg Ranch in Pomona, the Voorhis School in San Dimas, and the Naval Hospital located in Walnut. The Naval Hospital was eventually chosen as the location for the school, as it was considered an ideal location at the center of the proposed college district. The Kellogg Ranch and the Voorhis School were soon after acquired by California Polytechnic School for their southern California branch (Cal Poly Pomona 2012; Hall and Pietzsch 1996).

Mount San Antonio College Property History

In 1920, the State of California purchased lots 6 and 7 of the C. M Wright Tract on the eastern edge of the original La Puente Rancho, consisting of 800 acres. The land had previously been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and later became the site of the California Polytechnic University, Pomona Campus. Lot 6, the location of the current Mount San Antonio College, was used to establish the Pacific Colony, an institution for the insane, founded in 1921. The Pacific Colony only operated briefly at this location, as it closed in 1923 due to an inadequate water supply and later reopened on Pomona Boulevard in 1927 (Gregory 2003).

In the early 1930s, lot 6 was occupied by the State Narcotic Hospital, and during World War II, the United States Government leased the property for a U.S. Army Hospital and later a U.S. Naval Hospital. In February 1945, the Pomona Chamber of Commerce requested the state to make the hospital site (which was scheduled to close in 1946) the temporary location for a new junior college which eventually became Mount San Antonio College (Gregory 2003).

The first staff of the new junior college included several members of surrounding educational facilities: Dr. George H. Bell, superintendent of education for Bonita High School District, became president; Oscar H. Edinger, former director of Pomona Junior College, became director of instruction; Ernest W. Carl, an officer in the Navy, became director of business; and Marie T. Mills, physical education teacher for Covina High School, became dean of women. Additionally, a small group of support staff and 23 faculty members were selected (Hall and Pietzsch 1996).

The new staff and faculty were faced with the almost impossible task of preparing the buildings of the old Naval Hospital for college classes in only a matter of months. (The property was authorized in July 1946, and the college was to open in September that same year.) Community members as well as prospective students contributed countless hours as well as small sums of money to prepare the campus for opening day (Hall and Pietzsch 1996).

The temporary name for the college was the East Los Angeles County Junior College. A contest was held to choose the official name for the college. Mount San Antonio College, named after the most visible snow-capped mountain north of the college, became the official name (Hall and Pietzsch 1996).

When Mount San Antonio College opened in 1946, nine permanent buildings and 99 temporary barrack buildings from the site's previous uses were utilized as classrooms and faculty housing. A two-story building used by the director of the hospital became the home of President Bell and his family (Hall and Pietzsch 1996).

When registration began in August 1946, the college advertised seven divisions and 12 departments, including art, commerce, English and speech arts, foreign languages, homemaking, math and engineering, music, physical education and hygiene, science, social sciences, vocational agriculture, and trades and industries. There were 682 students the first year. Over half the students were veterans, and the average age was 25 (Hall and Pietzsch 1996).

In March 1947, the college Advisory Committee requested at $1,750,000 bond to aid in the construction of new classrooms and service buildings. The bond issue received an overwhelming approval ratio of 11 to 1. On June 14, 1947, the day of the first commencement, Governor Earl Warren approved Assembly Bill 1904 to allow the college to acquire the former hospital site as their permanent home (Hall and Pietzsch 1996). The first campus master plan, known as Building Plan "M", was designed by President Bell and Pasadena architect Frederick H. Kennedy Jr. The first buildings designed and approved were the stadium, field houses, shops, gymnasium, and library (Hall and Pietzsch 1996).

Enrollment continued to increase and the college grew, with construction of new buildings ongoing until the early 1970s, when the development of the college was complete and its growth reached a plateau. With a Walnut city population increase of 133 percent between 1980 and 1990, the college experienced a new period of growth and construction, and become one of the largest community colleges in the state; additional buildings were added to the campus in the 1990s and early 2000s. Today, Mount San Antonio College is the largest of six community colleges located in the San Gabriel Valley (including Glendale Community College, Chaffey College, Pasadena City College, Citrus College, and Rio Hondo College), and one of the largest of California's 112 junior colleges. The college serves approximately 20 communities and one million residents in the San Gabriel Valley, and offers more than 200 degree and certificate programs. More than 40,000 students are currently enrolled for credit at the junior college (Mt. San Antonio College 2012).

Student Life Center (9A)

Mount San Antonio College made an early commitment to extracurricular activities. Student activities, campus clubs, and the student government were supported by faculty members and administrators alike. A few of the earliest student organizations included the Associated Women Students and the Associated Men Students, as well as various special-interest groups, such as the *Chaparral Yearbook* group and the *Mt. SACourier* college newspaper. Student clubs participated in community events, such as the Los Angeles County Fair, and multiethnic organizations, such as Las Posadas, were established early on. James Straley was the first president of Associated Students in 1946. The college's Associated Students government program quickly became well known and admired throughout the state (Hall and Pietzsch 1996). However, it was not until 1962, when the Student Life Center was constructed, that students groups finally had a permanent facility on campus. The center, designed by Austin, Field & Fry Architects, was constructed between 1960 and 1962, and cost $330,000 (Austin, Field & Fry Architects 1960; Hall and Pietzsch 1996).

With the establishment of the Student Life Center, student groups were able to better organize events for the campus. During the late 1960s and 1970s, campuses across the nation, including Mount San Antonio College, were undergoing major changes and social unrest. Student organizations fought to express their political views openly, and students advocated for courses focused on multiethnic groups. Additionally, this was a period when students of ethnically diverse backgrounds were elected in significant numbers to leadership positions (Hall and Pietzsch 1996). The Student Life Center, equipped with several student meeting rooms and

activity spaces, allowed for the better organization of such events at a time when colleges across the United States were mobilizing and student activism was on the rise.

Mount San Antonio Athletic Facilities (27A, B, and C)

From the time the college was established, physical education and athletics have been an integral part of campus life. Two of the first buildings constructed for the college were the stadium and the gymnasium, further exemplifying the campus's commitment to athletic activities. Sports quickly drew attention from the students as well as the community. When the college opened, Archie Nisbet was the only full-time instructor for physical education; however several faculty members, including Marie T. Mills, assisted in teaching physical education and coaching various sporting activities (Hall and Pietzsch 1996).

During the 1950s and 1960s, major changes occurred in the physical education arena, as interest in and participation in physical education grew tremendously. Women in particular were deeply affected by this change in outlook, and they began to play a much more active role in physical activity. Campus programs began to reflect these changes in attitudes, and in 1971, Linda Garrison started the community fitness program (Hall and Pietzsch 1996).

The first pool constructed on the Mount San Antonio campus was next to the gymnasium, built in the early 1950s (between 1948 and 1953, according to historic aerial photographs) (Historicaerials.com 1948, 1953). However, this pool did not meet the specifications for Olympic/competitive pools. The Marie T. Mills Aquatic Facility (pool and Building 27B), named in honor of Marie T. Mills, the former physical education teacher for Covina High School, the first dean of women of Mount San Antonio and the first female president of the college, was completed in 1972. The new, Olympic-sized swimming pool was predominantly meant for physical education instruction. The specifications for the pool were designed to accommodate National Collegiate Athletic Association (NCAA) and Association of American Universities (AAU) competitive swimming and water polo events, and, as a part of the Community Services program, the pool was also open to the general public during the summer months. Construction of the $811,887 facility included an expansion of the women's locker rooms, a 900-seat bleacher section, and 1-m and 3-m diving boards. Austin, Field & Fry Architects designed the pool, and Earle T. Casler was the prime contractor (Austin, Field & Fry Architects 1970; *Mt. SACourier* 1972).

The Exercise Science/Wellness Center (formerly the Men's Locker Rooms, 27A) was constructed by Austin, Field & Fry Architects between 1959 and 1960, and an addition was constructed ca. 1973 (Austin, Field & Fry Architects 1973). The construction and addition to the locker rooms reflect the college's well-established commitment to physical education and sporting activities.

The Locker Rooms (formerly the Women's Locker Facilities, 27C) were built between 1959 and 1960, and an addition was constructed ca. 1971 (Austin, Field & Fry Architects 1959, 1970). The locker facilities were designed by Austin, Field & Fry Architects (1959). With the construction of the Marie T. Mills pool in 1972, the locker facilities were expanded. The construction and

expansion of the women's locker rooms reflected the female students' increased participation in physical education that was occurring nationwide (Hall and Pietzsch 1996).

Mount San Antonio College Snack Bar

The Mount San Antonio College Snack Bar, also known as Mountie Grill, was constructed between 1958 and 1959 (Austin, Field & Fry Architects 1958). The snack bar was designed by Austin, Field & Fry Architects. No specific information was uncovered regarding the function of the snack bar as anything other than a restaurant facility.

ARCHITECTURAL DESCRIPTIONS

Table 1. Mount San Antonio College buildings evaluated in this report

Building	Construction Date	Alteration/Addition & Date
Student Life Center (9C)	1960-1962	None
Marie T. Mills Aquatic Facility (27B)	1970-1972	Exhaust fan replacement, 1997; pool surface renovation and pool deck replacement, 1998
Locker Rooms (Women's Locker Room) (27C)	1959-1960	Small addition to south end, 1971; shower room renovation, 1998
Exercise Science/Wellness Center (Men's Locker Room) (27A)	1959-60	Small addition to south end, ca. 1973; plumbing, HVAC and electricity renovation , 1989; lighting upgrade, 1998
Mount San Antonio College Snack Bar (Mountie Grill) (19C)	1958-1959	None

Student Life Center

The Student Life Center, constructed between 1960 and 1962, is a single-story building. The Center is located near the northwest part of the Mount San Antonio College Campus, south of the Student Services Center and east of the Library. The building sits on a small hill, and is surrounded by concrete paths as well as manicured lawns, bushes, and trees. The building is an L-shaped structure, with the projection at the northwest end of the building. The structure has a side-gable roof on the east half of the building, and a flat roof on the west half. The gable roof extends on the north side of the building, over the main entry, and is supported by several rectangular concrete pillars. The Modern building is minimally decorated, and materials include brick veneer, stucco, and concrete. There are two sections comprising the north (main) façade: the eastern section covered by the gable roof, and the smaller, projecting western section covered by the flat roof. The eastern section of the north façade consists of a wall of several large, aluminum-framed casement windows, with one aluminum sliding window. There are also five aluminum-framed doors with two glass panes each on the eastern half of the north façade. The center section of the north façade (which is covered by the west part of the gable roof) is set back

slightly from the rest of the wall, and is composed of several large aluminum-paned casement windows and two pairs of double aluminum-framed doors. The west end of the north façade (which is covered by the flat roof) projects slightly from the rest of the façade and is clad with brick veneer. The west façade consists of 14 aluminum, single-paned casement windows. The flat roof projects slightly along the west façade. The south façade contains approximately 25 small clerestory aluminum casement windows and four additional casement windows near the center of the wall. There are two pairs of double doors on the south façade and several louvers. The doors are lower than the concrete path along the south side, and there are steps and a ramp down to them for entrance to the south side. The east façade consists of two sections: the southern half, comprising the east end of the long section of the L-shaped plan, and the northern section that is substantially set back and forms the east side of the short section of the L-shaped plan. The southern half of the east façade is comprised of brick veneer. The northern part of the east façade consists of brick veneer at the southern end and a large opening with 12 windowpanes and two double doors, all encased with aluminum framing, at the northern end. The Student Center maintains a high level of integrity in all seven aspects (location, design, setting, feeling, association, workmanship, and design).

Marie T. Mills Aquatic facility

The Marie T. Mills Aquatic Facility (pool and Building 27B), constructed between 1970 and 1972, is located near the eastern part of the main campus, south of the tennis courts, east of the Women's Locker Facilities, and west of the Men's Locker Facilities (now the Exercise Science/Wellness Center). The facility consists of an Olympic-sized swimming pool to the north and a small, rectangular building to the south. The concrete pool is 50 m by 25 yds. The pool is surrounded by the locker facilities on the east side, the Exercise Science/Wellness Center on the west side, the pool building on the south side, and a chain-linked fence to the north. Stadium seating is located to the west, and the pool has 1-m and 3-m diving boards. There is blue tile striping on the bottom of the white pool. The single-story building has a flat roof with a parapet wall and a slight overhang consisting of stucco panels. The Modern structure is minimally decorated, and materials include brick veneer, stucco, plaster, and concrete. There are no windows and several red metal doors along all the façades. The north façade has a large scoreboard at the center for events held at the aquatic facility. The facility maintains a high level of integrity in all seven aspects (location, design, setting, feeling, association, workmanship, and design).

Locker Rooms

The Locker Rooms (formerly the Women's Locker Facilities), constructed between 1959 and 1960, consist of a single-story structure, with an upper level forming the north half of the building, and a lower level forming the south half. The building is located on a small hill near the east side of the Mount San Antonio College campus. The Marie T. Mills Aquatic Facility is located to the west of the building, and the tennis courts are located to the north. Parking facilities with several planters are located to the south and east of the building. The L-shaped building has a flat roof with a parapet wall. The roof of lower/southern half of the building is approximately a half-story taller at the center than on the sides and is angled upward from west to east when viewed from the north façade. The Modern structure is minimally decorated, and materials include brick veneer, stucco, plaster, and concrete. The north façade consists of a pair

of red metal double doors and no windows. The upper/northern section of the west façade, which faces into the pool area, consists of 12 aluminum-framed casement windows, each with three vertically aligned windowpanes, and six projecting square bays. The lower/southern half of the west façade is composed of several rectangular aluminum casement windows and a few metal doors. The windows on upper/northern half of the east façade mirror the upper/northern section of the west façade, and there is one single red metal door. The lower/southern half of the east façade projects outwards from the upper/northern half to form the L-shaped plan of the building. The lower/southern half consists of several red metal doors and several aluminum casement windows. The south façade consists of four single red metal doors and no windows. The taller, center part of the south façade projects slightly, and is clad with stucco panels. The locker facilities received a small addition to the south end of the building ca. 1971, during the period of significance for the historic district. The building still retains much of its original workmanship and materials. Additionally, the building maintains a high level of integrity regarding its location, feeling, setting and association.

Exercise Science/Wellness Center

The Exercise Science/Wellness Center (formerly the Men's Locker Facilities) was constructed between 1959 and 1960 and consists of a single-story structure, with an upper level forming the north half of the building, and a lower level forming the south half. The building is located on a small hill near the eastern half of the Mount San Antonio College campus. The Marie T. Mills Aquatic Facility is located to the east of the building, and the tennis courts are located to the north. Parking facilities with several planters are located to the south of the building, and a concrete path is located north of the building, at the main entry. The rectangular building has a flat roof with a parapet wall. The roof of lower/southern half of the building is approximately a half-story taller at the center than on the sides. The Modern structure is minimally decorated, and materials include brick veneer (on the lower/southern section), stucco panels, plaster and concrete. The north (main) façade consists of two sets of double doors under a quarter-cylinder-shaped awning, with no windows. The northern/upper half of the east façade, which faces into the pool area, consists of 12 aluminum-framed casement windows, each with three vertically aligned windowpanes and six square projecting bays. The lower/southern level of the east façade is composed of several rectangular aluminum casement windows and a few metal doors. Both the lower and upper section windows of the west façade mirror the windows of the east façade. The west façade consists of two pairs of double doors on the lower/southern half and a single door and a pair of double doors on the upper/northern section. There is an outdoor ramp/concrete path from the lower level to the upper level along the west façade. The south façade consists of two single red metal doors, a pair of metal double doors with louvers, and no windows. The taller, center part of the south façade projects slightly, and is clad with stucco panels. Although the Center received a small addition to the south end of the building ca. 1973, it still retains much of its original workmanship and materials. Additionally, the Exercise Science/Wellness Center maintains a high level of integrity regarding its location, feeling, setting, and association.

Mount San Antonio College Snack Bar

The Mount San Antonio College Snack Bar, also known as the Mountie Grill, is a small, single-story building, constructed between 1958 and 1959. The Grill is located near the center of the campus, south of the Child Development classrooms, and north of the Interior Design

Department. The building is a rectangular structure, with a flat roof and wide overhangs. There is a metal roof structure to the west of the main building, covering an outdoor eating area. The Modern building is minimally decorated, and materials include brick veneer and cement, along with yellow metal panels along the overhangs and above and below the ordering counters. The north (main) façade consists of nine windows: five casement windows with aluminum framing, and four one-over-one aluminum-framed windows from which to order food. There is a metal counter along the north façade where food orders are made as well. There is a metal door on each of the east and south façades. The east and west façades also maintain a one-over-one window for ordering, with two casement windows on either side. The Grill maintains a high level of integrity in all seven aspects (location, design, setting, feeling, association, workmanship, and design).

RECOMMENDATIONS OF ELIGIBILITY

This historic evaluation was carried out in compliance with CEQA. Compliance with CEQA requires consideration of impacts to cultural resources that are historical resources, or those resources potentially eligible for listing on the CRHR. As such, the buildings at Mount San Antonio College were evaluated for CRHR eligibility and as CEQA historical resources. The procedures for assessing archaeological and historical resources are addressed in CEQA Guidelines Section 15064.5(a) and 15064.5(c).

California Register of Historical Resources Significance Criteria

The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA. The criteria established for eligibility for the CRHR are directly comparable to the national NRHP criteria.

In order to be eligible for listing in the CRHR, a building must satisfy at least one of the following four criteria:

1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2) It is associated with the lives of persons important to local, California, or national history.
3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Historical resources eligible for listing in the CRHR must meet one of the criteria of significance described above and retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. For the purposes of eligibility for CRHR, integrity is defined as “the authenticity of an historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance” (Office of Historic Preservation 2001). This general definition is generally strengthened by the more specific definition offered by the NRHP—the criteria and guidelines on which the CRHR criteria and guidelines are based upon.

Ordinarily properties that have achieved significance within the past 50 years shall not be considered eligible for the CRHR except under a special criteria consideration which allows for their eligibility if sufficient time has passed to obtain a scholarly perspective on the events associated with the resource. As with the concept of integrity, CRHR guidelines regarding properties that are less than 50 years old are strengthened by the more specific information offered by the NRHP. Properties less than 50 years old do not need to meet the special criteria consideration if they are integral part of a district. Properties are considered an integral part of an historic district if the district's period of significance is justified as a discrete period with a defined beginning and end; the character of the district's historic resources is clearly defined and assessed; specific resources in the district are demonstrated to date from that discrete era; or, the majority of district properties are more than 50 years old (National Park Service, National Register of Historic Places 1998).

Integrity

In order to be eligible for listing in the CRHR, a property must retain sufficient integrity to convey its significance. The NRHP publication *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, establishes how to evaluate the integrity of a property: "Integrity is the ability of a property to convey its significance" (National Park Service, National Register of Historic Places 1991). The evaluation of integrity must be grounded in an understanding of a property's physical features, and how they relate to the concept of integrity. Determining which of these aspects are most important to a property requires knowing why, where, and when a property is significant. To retain historic integrity, a property must possess several, and usually most, aspects of integrity:

1. **Location** is the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** is the physical environment of a historic property, and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a property was built and the functions it was intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.
4. **Materials** are the physical elements that were combined or deposited during a particular period or time, and in a particular pattern or configuration to form a historic property.
5. **Workmanship** is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory, and can be applied to the property as a whole, or to individual components.
6. **Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, when taken together, convey the property's historic character.
7. **Association** is the direct link between the important historic event or person and a historic property.

California Environmental Quality Act Significance Criteria
CEQA requires that all private and public activities not specifically exempted be evaluated against the potential for environmental damage, including effects to historical resources. Historical resources are recognized as part of the environment under CEQA. It defines historical resources as "any object, building, structure, site, area, or place which is historically significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California," as cited in Division I, Public Resources Code, Section 5021.1[b].

Lead agencies have a responsibility to evaluate historical resources against the CRHR criteria prior to making a finding as to a proposed Project's impacts to historical resources. Mitigation of adverse impacts is likely to be required if the proposed Project will cause substantial adverse change to a historical resource. Substantial adverse change includes demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired. While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance. The CRHR is used in the consideration of historical resources relative to significance for purposes of CEQA. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory, may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be a "historical resource" if it:

1) Is listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code, § 5024.1, Title 14 CCR, Section 4850 et seq.).
2) Is included in a local register of historical resources, or is identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code.
3) Is a building or structure determined to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

Evaluation
Four of the five buildings evaluated—the Student Life Center, Aquatic Facility, Women's Locker Facilities, and the Exercise Science/Wellness Center—are recommended as eligible as contributors to a potential historic district, the Mount San Antonio College Historic District. The

Mount San Antonio College Snack Bar is not recommended as an eligible contributor to the district. Its historic function does not directly reflect the educational themes of the historic district.

The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (one not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mount San Antonio College is the largest of six junior colleges in the San Gabriel Valley, with more than 40,000 students enrolled. The Student Life Center, Aquatic Facility, Women's Locker Facilities, and the Exercise Science/Wellness Center each reflect the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. Each building/structure contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resources maintain good integrity in all seven aspects.

The historic district is not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. Nor is the district recommended as eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

The district is not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

The special criteria consideration for properties less than 50 years old was not applied to the Aquatic Facility constructed from 1970 to 1972. Although it is less than 50 years old, the special criteria consideration need not be applied as the Aquatic Facility is an integral part of an historic district. Not only are the majority of district properties are more than 50 years old, but the district's period of significance is justified as a discrete period with a defined beginning and end;

the character of the district's historic resources is clearly defined and assessed; and specific resources in the district are demonstrated to date from that discrete era.

None of the buildings are recommended as individually eligible for the CRHR. As individual buildings, none sufficiently illustrate or represent the significant themes and/or criteria outlined above.

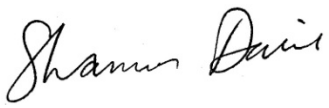
As the Student Life Center, Aquatic Facility, Locker Rooms, and Exercise Science/Wellness Center are recommended eligible as contributors to a potential historic district for the CRHR, they should be considered historical resources under CEQA.

CONCLUSION

After documentation and evaluation of the history and resources of Mount San Antonio College, and careful consideration of the ability of those resources to reflect the historic contexts with which they are associated, the Student Life Center, Aquatic Facility, Locker Rooms, and Exercise Science/Wellness Center are recommended as contributors to a potential historic district. The district would be eligible for the CRHR under Criterion 1 at the local level, under the theme of education, with a period of significance from 1946 to 1972. As such, the buildings need be considered historical resources for the purposes of CEQA compliance. The Mount San Antonio College Snack Bar is not recommended as a contributor to the potential historic district, and therefore is not recommended a historical resource for the purposes of CEQA compliance.

Please contact me as needed, if you have questions or concerns.

Sincerely,



Shannon Davis
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sdavis@asmaffiliates.com

Attachment A: References
Attachment B: Figures
Attachment C: DPR Forms

REFERENCES

Austin, Field & Fry Architects

1958 Architectural Plans for Mount San Antonio College Snack Bar, June 27, 1958

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2001 *Instructions on Recording Historic Resources*.

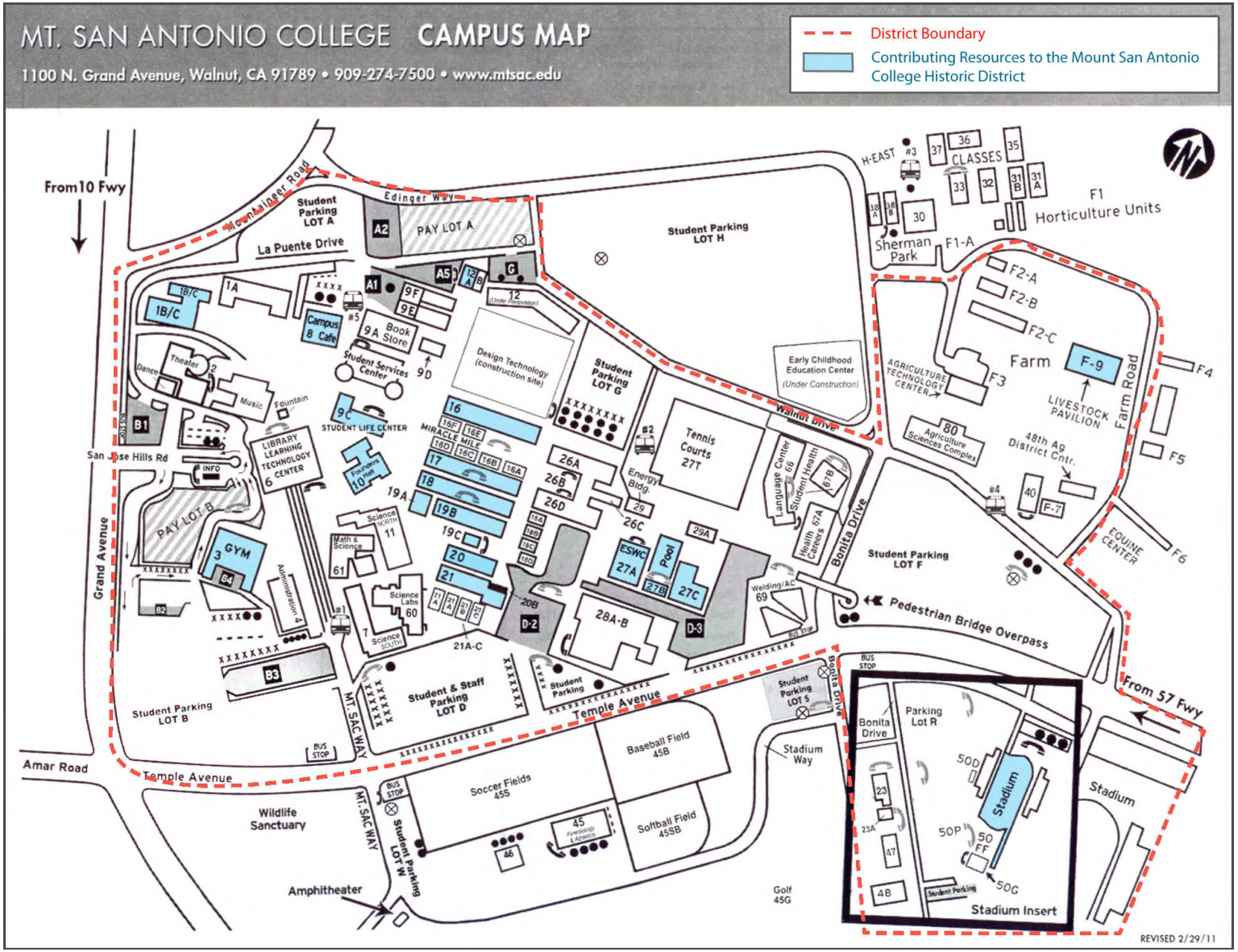


Figure 1. Map of the Mount San Antonio College Historic District



Figure 2. Aerial Photo, indicating the location of the Student Life Center (9C), the Marie T. Mills Aquatic Facility (27B), the Locker Rooms (formerly the Women's Locker Facilities) (27C), the Exercise Science/Wellness Center (formerly the Men's Locker Facilities) (27A), and Mount San Antonio College Snack Bar (Mountie Grill) (19C).



Figure 3. Student Life Center (9C)



Figure 4. Exercise Science/Wellness Center (27A)



Figure 5. Aquatic Facility (Pool and 27B)



Figure 6. Locker Rooms (27C)



Figure 7. Mountie Grill (19C)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-186869
HRI #
Trinomial

Page 1 of 5 ***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus/Student Life Center

Recorded by: Evanne St. Charles and Shannon Davis **Date:** 06/20/12

☒ Continuation ☐ Update

P1. Other Identifier: Building 9C
***P2. Location:** ☐ Not for Publication ☒ Unrestricted
***a. County:** Los Angeles
***b. USGS 7.5' Quad:** San Dimas **Date:** 1981; **T** 1S; **R** 9W;NE1/4 **of Sec.** 32; M.D. S.B. **B.M**
c. Address: 1100 North Grand Avenue **City:** Walnut **Zip:** 91789
d. UTM: Zone 11; East end: 422100 **mE /** 3767500 **mN**; (G.P.S.)

***P3a. Description:** The Student Life Center, constructed between 1960 and 1962, is a single-story building. The Center is located near the northwest part of the Mount San Antonio College Campus, south of the Student Services Center and east of the Library. The building sits on a small hill, and is surrounded by concrete paths as well as manicured lawns, bushes and trees. The building is an L-shaped structure, with the projection at the northwest end of the building. The structure has a side gable roof on the east half of the building, and a flat roof on the west half. The gable roof extends on the north side of the building, over the main entry, and is supported by several rectangular concrete pillars. The Modern building is minimally decorated, and materials include brick veneer, stucco and concrete. There are two sections comprising the north (main) façade – the eastern section covered by the gable roof, and the smaller, projecting western section covered by the flat roof. The eastern section of the north façade consists of a wall of several, large, aluminum-framed casement windows, with one, aluminum sliding window. There are also five aluminum-framed doors with two glass panes each on the eastern half of the north façade. The center section of the north façade (that is covered by the west part of the gable roof) is set back slightly from the rest of the wall, and is composed of several, large aluminum-paned casement windows and two pairs of double, aluminum-framed doors. The west end of the north façade (that is covered by the flat roof) projects slightly from the rest of the façade and is cladded with brick veneer. The west façade consists of 14, aluminum, single-paned casement windows. The flat roof projects slightly along the west façade. The south façade contains approximately 25 small, clerestory aluminum casement windows and four additional casement windows near the center of the wall. There are two pairs of double doors on the south façade and several louvers. The doors are lower than the concrete path along the south side, and there are steps and a ramp down to them to enter the south side. The east façade consists of two sections – the southern half, comprising the east end of the long section of the L-shape plan, and the northern section that is substantially set back and forms the east side of the short section of the L-shape plan. The southern half of the east façade is comprised of brick veneer. The northern part of the east façade consists of brick veneer at the southern end and a large opening with 12 windowpanes and two double doors, all encased with aluminum framing, at the northern end. The Student Center maintains a high level of integrity in all seven aspects (location, design, setting, feeling, association, workmanship, design).

***P3b. Resource Attributes:** Educational Building (HP15)
P5a. Photograph or Drawing:



P5b. Description of Photo:
South and west facades of Student Life Center

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1960-1962

***P7. Owner and Address:**
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

***P8. Recorded By:**
Shannon Davis
ASM Affiliates, Inc.
260 S. Los Robles Avenue Suite 106
Pasadena, CA 91107

***P9. Date Recorded:** 06/20/12
***P10. Survey Type:** Intensive
P11. Report Citation: Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

B1. Historic Name: Student Life Center
B2. Common Name: Student Life Center
B3. Original Use: Recreation facility
B4. Present Use: Recreation facility
***B5. Architectural Style:** Modern
***B6. Construction History:** **(Construction date, alterations, and date of alterations)** 1960-1962

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**
***B8. Related Features:**
B9a. Architect: Austin, Field & Fry b. Builder:
***B10. Significance: Theme** Education **Area:** Walnut, CA

***B10. Significance: Theme:** Education **Area:** Walnut, CA

Period of Significance: 1946-1972 **Property Type:** educational facility **Applicable Criteria:** A

Mount San Antonio College made an early commitment to extracurricular activities. Student activities, campus clubs and the student government were supported by faculty members and administrators alike. A few of the earliest student organizations included the Associated Women Students and the Associated Men Students, as well as various special interest groups, such as the Chaparral Yearbook group and the Mt. SACourier college newspaper. Student clubs participated in community events, such as the Los Angeles County Fair, and multiethnic organizations, such as Las Posadas, were established early on. James Straley was the first president of Associated Students in 1946. The college's Associated Students government program quickly became well known and admired throughout the state (Hall and Pietzsch 1996). However, it was not until 1962 when the Student Life Center was constructed that students groups finally had a permanent facility on campus. The center, designed by Austin, Field & Fry Architects, was constructed between 1960 and 1962, and cost $330,000 (1960 plans; Hall and Pietzsch 1996).

With the establishment of the Student Life Center, student groups were able to better organize events for the campus. During the late 1960s and 1970s, campuses across the nation, including Mount San Antonio College, were undergoing major changes and much unrest. Student organizations fought to express their political views openly, and students advocated for courses focused on multiethnic groups. Additionally, this was a period when students of color were elected in significant numbers to leadership positions (Hall and Pietzsch 1996). The Student Life Center, equipped with several student meeting rooms and activity spaces, allowed for the better organization of such events at a time when colleges across the United States were mobilizing and student activism was on the rise.

The Student Life Center is recommended as eligible as a contributor to the Mount San Antonio College Historic District. The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (one not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mount San Antonio College is the largest of six junior colleges in the San Gabriel Valley, with more than 40,000 students enrolled. The Student Life Center reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. It contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resource maintain good integrity in all seven aspects.

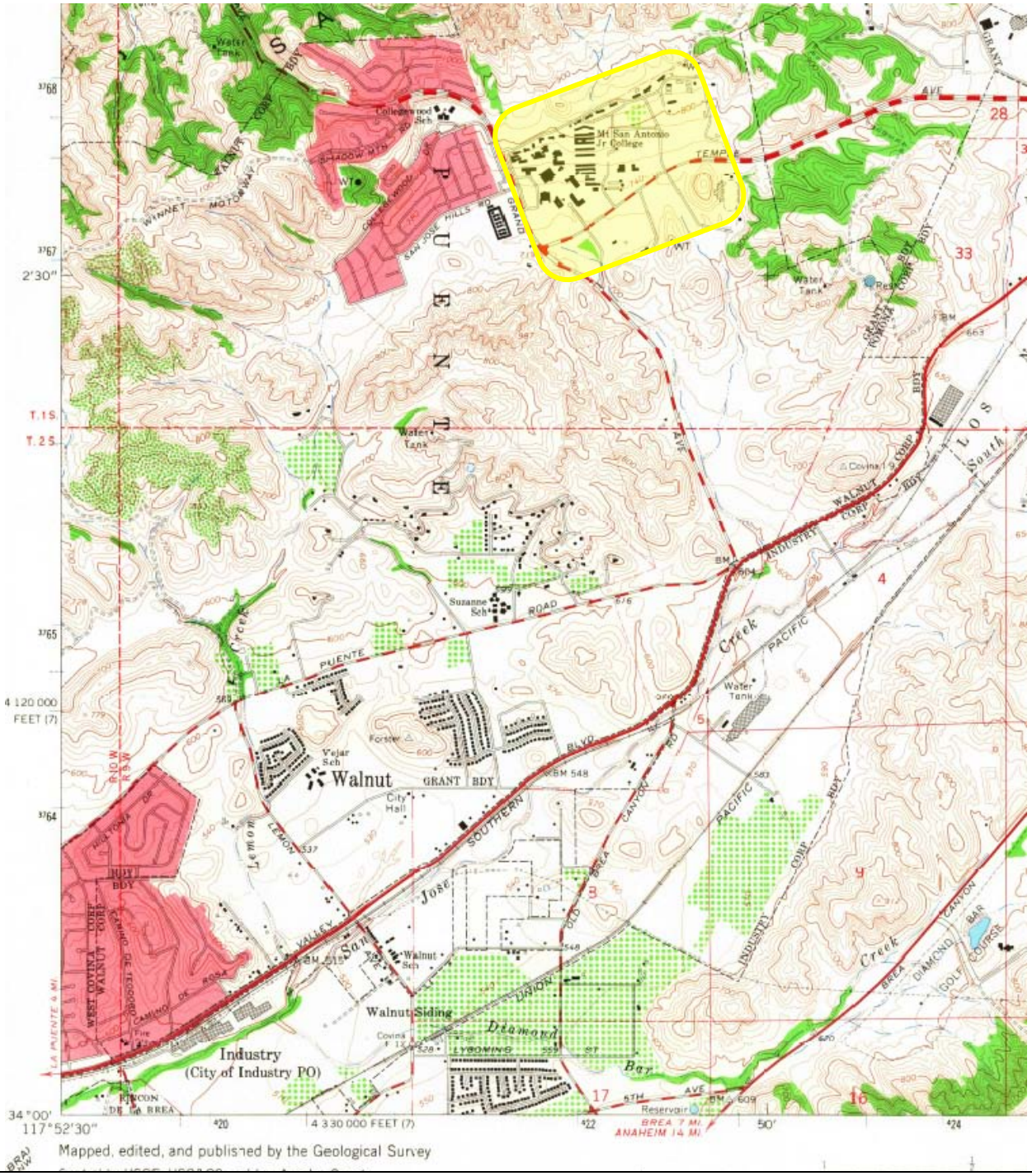
The historic district is not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. Nor is the district recommended as eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 19-186869
HRI #
Trinomial

***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus Exercise Science/ Student Life Center

***Map Name:** 7.5" USGS quad of San Dimas ***Scale:** 1: 24,000 ***Date of Map:** 1966



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH SHEET

Primary # 19-186869
HRI #
Trinomial

Page 4 of 5 ***Resource Name or # (Assigned by recorder)** Student Life Center
Recorded by: Shannon Davis **Date:** 06/20/12
☒ Continuation ☐ Update



Image 1. View of north and east facades looking southwest.



Image 2. View of north corridor and east facades looking west.



Image 3. View of north and west facades looking southeast.



Image 4. View of south facade looking northeast.



Image 5. View of north façade corridor and east facade looking southwest.

Image 6. View of looking .

***B10. Continued**

The district is not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

The Exercise Science/Wellness Center is not recommended as individually eligible for the CRHR as it does not sufficiently illustrate or represent the significant themes and/or criteria outlined above on its own.

P1. Other Identifier: Building 27A
***P2. Location:** ☐ Not for Publication ☒ Unrestricted
***a. County:** Los Angeles
***b. USGS 7.5' Quad:** San Dimas **Date:** 1981; **T** 1S; **R** 9W;NE1/4 **of Sec.** 32; M.D. S.B. **B.M**
c. Address: 1100 North Grand Avenue **City:** Walnut **Zip:** 91789
d. UTM: Zone 11; East end: 422100 **mE /** 3767500 **mN**; (G.P.S.)

***P3a. Description:** The Exercise Science/Wellness Center (formerly the Men's Locker Facilities) was constructed between 1959 and 1960 and consists of a single-story structure, with an upper level forming the north half of the building, and a lower level forming the south half. The building is located on a small hill near the eastern half of the Mount San Antonio College campus. The Marie T. Mills Aquatic Facility is located to the east of the building, and the tennis courts are located to the north. Parking facilities with several planters are located to the south of the building, and a concrete path is located north of the building, at the main entry. The rectangular building has a flat roof with a parapet wall. The roof of lower/southern half of the building is approximately a half story taller at the center than on the sides. The Modern structure is minimally decorated, and materials include brick veneer (on the lower/southern section), stucco panels, plaster and concrete. The north (main) façade consists of two sets of double doors under a quarter-cylinder-shaped awning, with no windows. The northern/upper half of the east façade, which faces into the pool area, consists of 12 aluminum-framed casement windows, each with three, vertically aligned windowpanes and six square projecting bays. The lower/southern level of the east façade is composed of several rectangular aluminum casement windows and a few metal doors. Both the lower and upper section windows of the west façade mirror the windows of the east façade. The west façade consists of two pairs of double doors on the lower/southern half and a single door and a pair of double doors on the upper/northern section. There is an outdoor ramp/concrete path from the lower level to the upper level along the west façade. The south façade consists of two single red metal doors, a pair of metal double doors with louvers and no windows. The taller, center part of the south façade projects slightly, and is cladded with stucco panels. Although the Center received a small addition to the south end of the building circa 1973, it still retains much of its original workmanship and materials. Additionally, the Exercise Science/Wellness Center maintains a high level of integrity regarding its location, feeling, setting and association.

***P3b. Resource Attributes:** Educational Building (HP15)
P5a. Photograph or Drawing:



P5b. Description of Photo:
North and east facades of the Exercise Science/Wellness Center.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1959-1960

***P7. Owner and Address:**
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

***P8. Recorded By:**
Evanne St. Charles and Shannon Davis
ASM Affiliates, Inc.
260 S. Los Robles Avenue Suite 106
Pasadena, CA 91107

***P9. Date Recorded:** 06/20/12
***P10. Survey Type:** Intensive
P11. Report Citation: Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

B1. Historic Name: Men's Locker Facilities
B2. Common Name: Exercise Science/Wellness Center
B3. Original Use: Recreation facility
B4. Present Use: Recreation facility
***B5. Architectural Style:** Modern
***B6. Construction History:** **(Construction date, alterations, and date of alterations)** 1959-1960

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**
***B8. Related Features:**
B9a. Architect: Austin, Field & Fry b. Builder:
***B10. Significance: Theme** Education **Area:** Walnut, CA

Period of Significance: 1946-1972 **Property Type:** educational facility **Applicable Criteria:** A

From the time the college was established, physical education and athletics have been an integral part of campus life. Two of the first buildings constructed for the college were the stadium and the gymnasium, further exemplifying the campus' commitment to athletic activities. Sports quickly drew attention from the students as well as the community. When the college opened, Archie Nisbet was the only full-time instructor for physical education, however several faculty members, including Marie T. Mills, assisted in teaching physical education and coaching various sporting activities (Hall and Pietzsch 1996).

The Exercise Science/Wellness Center (formerly the Men's Locker Rooms) were constructed between 1959 and 1960, and an addition was constructed circa 1973 (according to 1973 plans). The facilities were designed by Austin, Field & Fry Architects. The construction and addition to the locker rooms reflect the college's well-established commitment to physical education and sporting activities.

The Exercise Science/Wellness Center is recommended as eligible as a contributor to the Mount San Antonio College Historic District. The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (one not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mount San Antonio College is the largest of six junior colleges in the San Gabriel Valley, with more than 40,000 students enrolled. The Exercise Science/Wellness Center reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. It contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resource maintain good integrity in all seven aspects.

The historic district is not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. Nor is the district recommended as eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

The district is not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

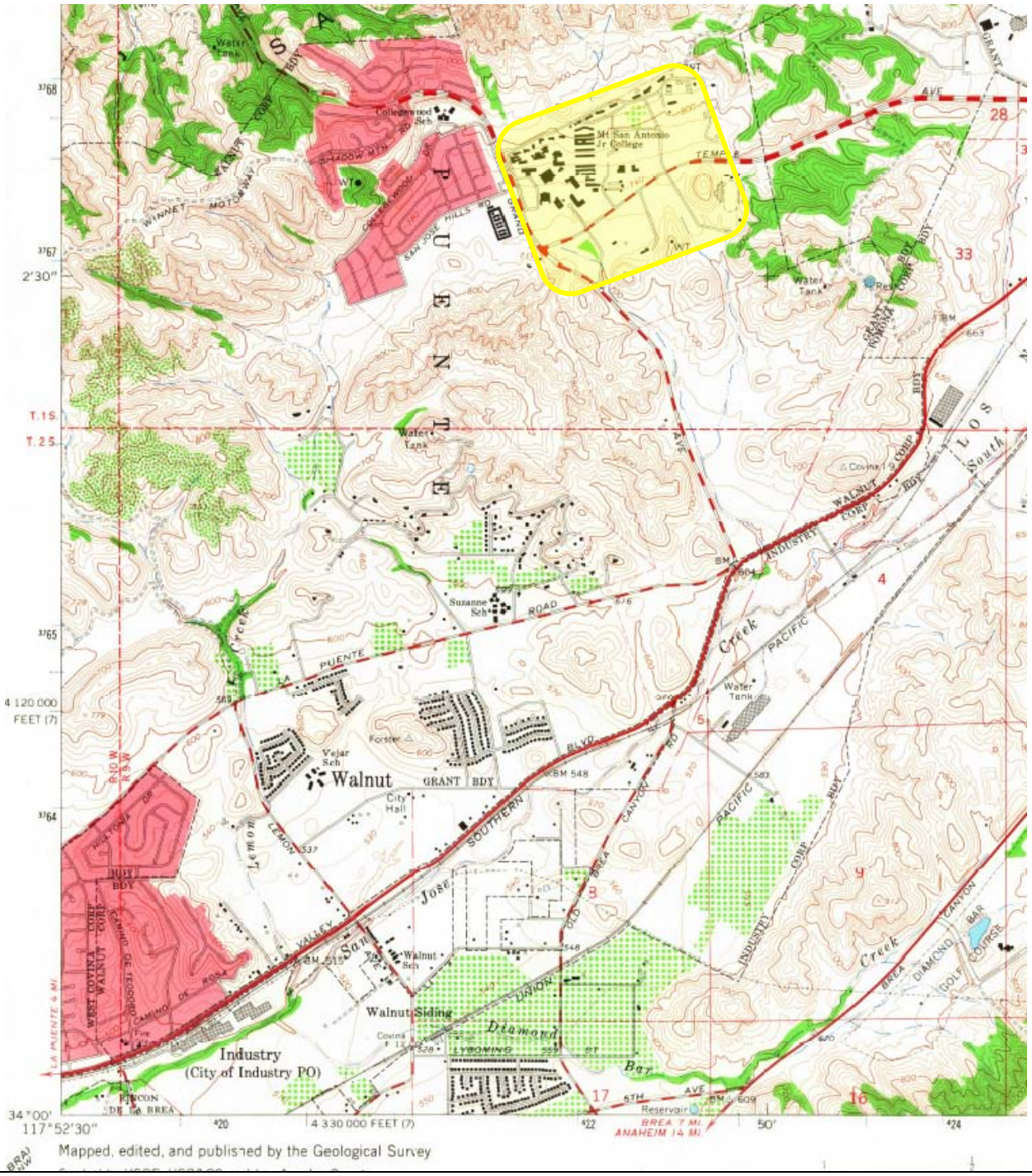
The Exercise Science/Wellness Center is not recommended as individually eligible for the CRHR as it does not sufficiently illustrate or represent the significant themes and/or criteria outlined above on its own.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 19-186869
HRI #
Trinomial

***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus Exercise Science/Wellness Center

***Map Name:** 7.5" USGS quad of San Dimas ***Scale:** 1: 24,000 ***Date of Map:** 1966



*Required Information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH SHEET

Primary # 19-186869
HRI #
Trinomial

Page 4 of 4 ***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus Exercise Science/Wellness Center

Recorded by: Shannon Davis **Date:** 06/20/12

☒ Continuation ☐ Update

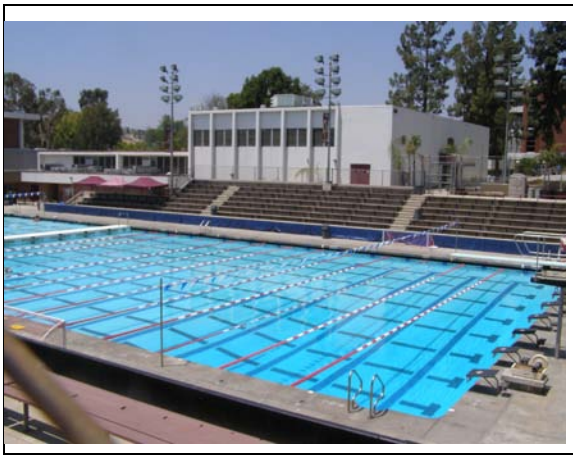


Image 1. View of north and east facades looking southwest.



Image 2. View of lower/southern half of west and south facades looking northeast.



Image 3. View of upper/north level of west facade looking southeast.



Image 4. View of south facade looking northeast.



Image 5. View of south and east facades looking northwest.

Image 6. View of looking .

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-186869
HRI #
Trinomial

Page 1 of 5 ***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus Marie T. Mills Aquatic Facility

Recorded by: Evanne St. Charles and Shannon Davis **Date:** 06/20/12

☒ Continuation ☐ Update

P1. Other Identifier: Building 27B
***P2. Location:** ☐ Not for Publication ☒ Unrestricted
***a. County:** Los Angeles
***b. USGS 7.5' Quad:** San Dimas **Date:** 1981; **T** 1S; **R** 9W;NE1/4 **of Sec.** 32; M.D. S.B. **B.M**
c. Address: 1100 North Grand Avenue **City:** Walnut **Zip:** 91789
d. UTM: Zone 11; East end: 422100 **mE /** 3767500 **mN**; (G.P.S.)

***P3a. Description:** The Marie T. Mills Aquatic Facility (pool and Building 27B), constructed between 1970 and 1972, is located near the eastern part of the main campus, south of the tennis courts, east of the Women's Locker Facilities and west of the Men's Locker Facilities (now the Exercise Science/Wellness Center). The facility consists of an Olympic-sized swimming pool to the north and a small, rectangular building to the south. The concrete pool is 50 meters by 25 yards. The pool is surrounded by the locker facilities on the east side, the Exercise Science/Wellness Center on the west side, the pool building on the south side and a chain-linked fence to the north. Stadium seating is located to the west, and the pool has one-meter and three-meter diving boards. There is blue tile striping on the bottom of the white pool. The single-story building (27B) has a flat roof with a parapet wall and a slight overhang consisting of stucco panels. The Modern structure is minimally decorated, and materials include brick veneer, stucco, plaster and concrete. There are no windows and several red metal doors along all the facades. The north façade has a larger scoreboard at the center for events held at the aquatic facility. The facility maintains a high level of integrity in all seven aspects (location, design, setting, feeling, association, workmanship, design).

***P3b. Resource Attributes:** Educational Building (HP15)
P5a. Photograph or Drawing:



P5b. Description of Photo:
View of pool in foreground and Building 27B in background looking south

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1970-1972

***P7. Owner and Address:**
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

***P8. Recorded By:**
Shannon Davis
ASM Affiliates, Inc.
260 S. Los Robles Avenue Suite 106
Pasadena, CA 91107

P11. Report Citation: Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

B1. Historic Name: Marie T. Mills Aquatic Facility
B2. Common Name: Aquatic Facility
B3. Original Use: Recreation facility
B4. Present Use: Recreation facility
***B5. Architectural Style:** Modern
***B6. Construction History:** **(Construction date, alterations, and date of alterations)** 1970-1972

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**
***B8. Related Features:**
B9a. Architect: Austin, Field & Fry b. Builder:
***B10. Significance: Theme** Education **Area:** Walnut, CA

Period of Significance: 1946-1972 **Property Type:** educational facility **Applicable Criteria:** A

From the time the college was established, physical education and athletics have been an integral part of campus life. Two of the first buildings constructed for the college were the stadium and the gymnasium, further exemplifying the campus' commitment to athletic activities. Sports quickly drew attention from the students as well as the community. When the college opened, Archie Nisbet was the only full-time instructor for physical education, however several faculty members, including Marie T. Mills, assisted in teaching physical education and coaching various sporting activities (Hall and Pietzsch 1996).

The first pool constructed on the Mount San Antonio campus was next to the gymnasium, built in the early 1950s (between 1948 and 1953, according to aerial photographs). However, this pool did not meet the specifications for Olympic/competitive pools. The Marie T. Mills Aquatic Facility (pool and Building 27B), named in honor of Marie T. Mills, the former physical education teacher for Covina High School, the first dean of women of Mount San Antonio and the first female president of the college, was completed in 1972. The new, Olympic-sized swimming pool was predominantly meant for physical education instruction. The specifications for the pool were designed to accommodate NCAA and AAU competitive swimming and water polo events, and, as a part of the Community Services program, the pool was also open to the general public during the summer months. Construction of the $811,887 facility included an expansion of the women's locker rooms, a 900-seat bleacher section, and one-meter and three-meter diving boards. Austin, Field & Fry Architects designed the pool, and Earle T. Casler was the prime contractor (Mt. SACourier: News of Mt. San Antonio College, "Pool Well on its Way," January 1972; 1972 plans).

The Aquatic Facility is recommended as eligible as a contributor to the Mount San Antonio College Historic District. The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (one not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mount San Antonio College is the largest of six junior colleges in the San Gabriel Valley, with more than 40,000 students enrolled. The Student Life Center reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. It contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resource maintain good integrity in all seven aspects.

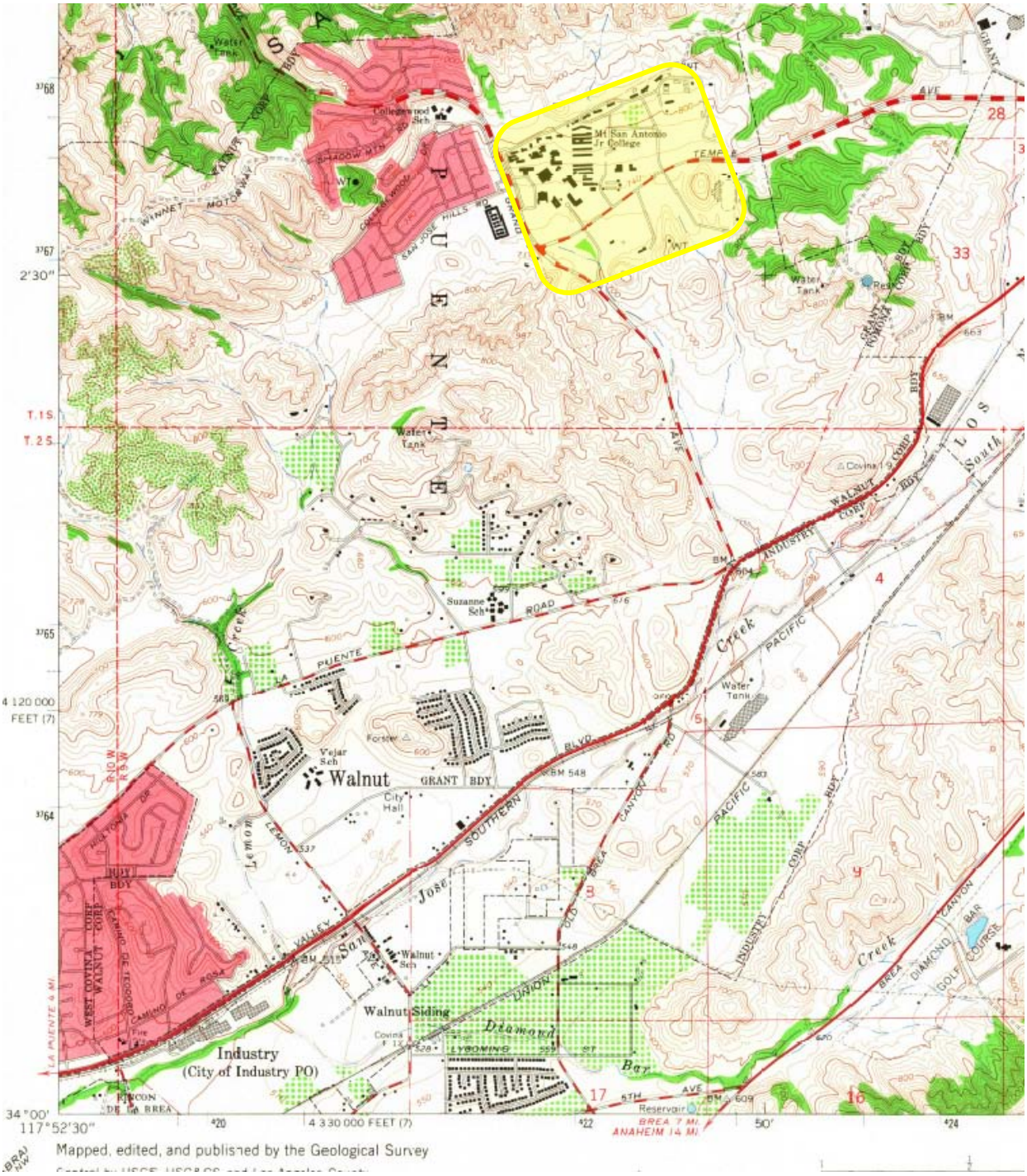
The historic district is not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. Nor is the district recommended as eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 19-186869
HRI #
Trinomial

***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus
Marie T. Mills Aquatic Facility

***Map Name:** 7.5" USGS quad of San Dimas ***Scale:** 1: 24,000 ***Date of Map:** 1966



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH SHEET

Primary # 19-186869
HRI #
Trinomial

***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus Marie T. Mills Aquatic Facility

Recorded by: Shannon Davis

Date: 06/20/12

☒ Continuation ☐ Update



Image 1. View of south and east façades of Building 27B looking southwest.



Image 2. View of south façade of Building 27B looking northeast.



Image 3. View of pool looking northeast.



Image 4. View of pool and north façade of Building 27B looking south.

Image 5. View of looking .

Image 6. View of looking .

***B10. Continued**

The district is not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

The special criteria consideration for properties less than 50 years old was not applied to the Aquatic Facility constructed from 1970 to 1972. Although it is less than 50 years old, the special criteria consideration need not be applied as the Aquatic Facility is an integral part of an historic district. Not only are the majority of district properties are more than 50 years old, but the district's period of significance is justified as a discrete period with a defined beginning and end; the character of the district's historic resources is clearly defined and assessed; and specific resources in the district are demonstrated to date from that discrete era.

The Aquatic Facility is not recommended as individually eligible for the CRHR as it does not sufficiently illustrate or represent the significant themes and/or criteria outlined above on its own.

P1. Other Identifier: Building 27C
***P2. Location:** ☐ Not for Publication ☒ Unrestricted
***a. County:** Los Angeles
***b. USGS 7.5' Quad:** San Dimas **Date:** 1981; **T** 1S; **R** 9W;NE1/4 **of Sec.** 32; M.D. S.B. **B.M**
c. Address: 1100 North Grand Avenue **City:** Walnut **Zip:** 91789
d. UTM: Zone 11; East end: 422100 **mE /** 3767500 **mN**; (G.P.S.)

***P3a. Description:** The Locker Rooms (formerly the Women's Locker Facilities), constructed between 1959 and 1960, consist of a single-story structure, with an upper level forming the north half of the building, and a lower level forming the south half. The building is located on a small hill near the east side of the Mount San Antonio College Campus. The Marie T. Mills Aquatic Facility is located to the west of the building, and the tennis courts are located to the north. Parking facilities with several planters are located to the south and east of the building. The L-shaped building has a flat roof with a parapet wall. The roof of lower/southern half of the building is approximately a half story taller at the center than on the sides and is angled upward from west to east when viewed from the north facade. The Modern structure is minimally decorated, and materials include brick veneer, stucco, plaster and concrete. The north façade consists of a pair of red metal double doors and no windows. The upper/northern section of the west façade, which faces into the pool area, consists of 12 aluminum-framed casement windows, each with three, vertically aligned windowpanes, and six projecting square bays. The lower/southern half of the west façade is composed of several rectangular aluminum casement windows and a few metal doors. The windows on upper/northern half of the east façade mirror the upper/northern section of the west façade, and there is one single red metal door. The lower/southern half of the east façade projects outwards from the upper/northern half to form the L-shape plan of the building. The lower/southern half consists of several red metal doors and several aluminum casement windows. The south façade consists of four single red metal doors and no windows. The taller, center part of the south façade projects slightly, and is clad with stucco panels. The locker facilities received a small addition to the south end of the building circa 1971, during the period of significance for the historic district. The building still retains much of its original workmanship and materials. Additionally, the building maintains a high level of integrity regarding its location, feeling, setting and association.

***P3b. Resource Attributes:** Educational Building (HP15)
P5a. Photograph or Drawing:



P5b. Description of Photo:
North and east facades of the Locker Rooms.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1959-1960

***P7. Owner and Address:**
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

***P8. Recorded By:**
Shannon Davis
ASM Affiliates, Inc.
260 S. Los Robles Avenue Suite 106
Pasadena, CA 91107

***P9. Date Recorded:** 06/20/12

P11. Report Citation: Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

B1. Historic Name: Women's Locker Room
B2. Common Name: Locker Rooms
B3. Original Use: Recreation facility
B4. Present Use: Recreation facility
***B5. Architectural Style:** Modern
***B6. Construction History:** **(Construction date, alterations, and date of alterations)** 1959-1960

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**
***B8. Related Features:**
B9a. Architect: Austin, Field & Fry b. Builder:
***B10. Significance: Theme** Education **Area:** Walnut, CA

Period of Significance: 1946-1972 **Property Type:** educational facility **Applicable Criteria:** A

During the 1950s and 1960s, major changes occurred in the physical education arena, as interest in and participation in physical education grew tremendously. Women in particular were deeply affected by this change in outlook, and they began to play a much more active role in physical activity. Campus programs began to reflect these changes in attitudes, and in 1971, Linda Garrison started the community fitness program (Hall and Pietzsch 1996).

The Locker Rooms (formerly the Women's Locker Facilities) were built between 1959 and 1960, and designed by Austin, Field & Fry Architects (according to 1959 plans). With the construction of the Marie T. Mills pool in 1972, the locker facilities were expanded. The construction and expansion of the women's locker facilities reflected the female students' increasing participation in physical education that was occurring nationwide (Hall and Pietzsch 1996).

The Locker Rooms building is recommended as eligible as a contributor to the Mount San Antonio College Historic District. The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (one not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mount San Antonio College is the largest of six junior colleges in the San Gabriel Valley, with more than 40,000 students enrolled. The Locker Rooms building reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. It contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resource maintain good integrity in all seven aspects.

The historic district is not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. Nor is the district recommended as eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

The district is not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

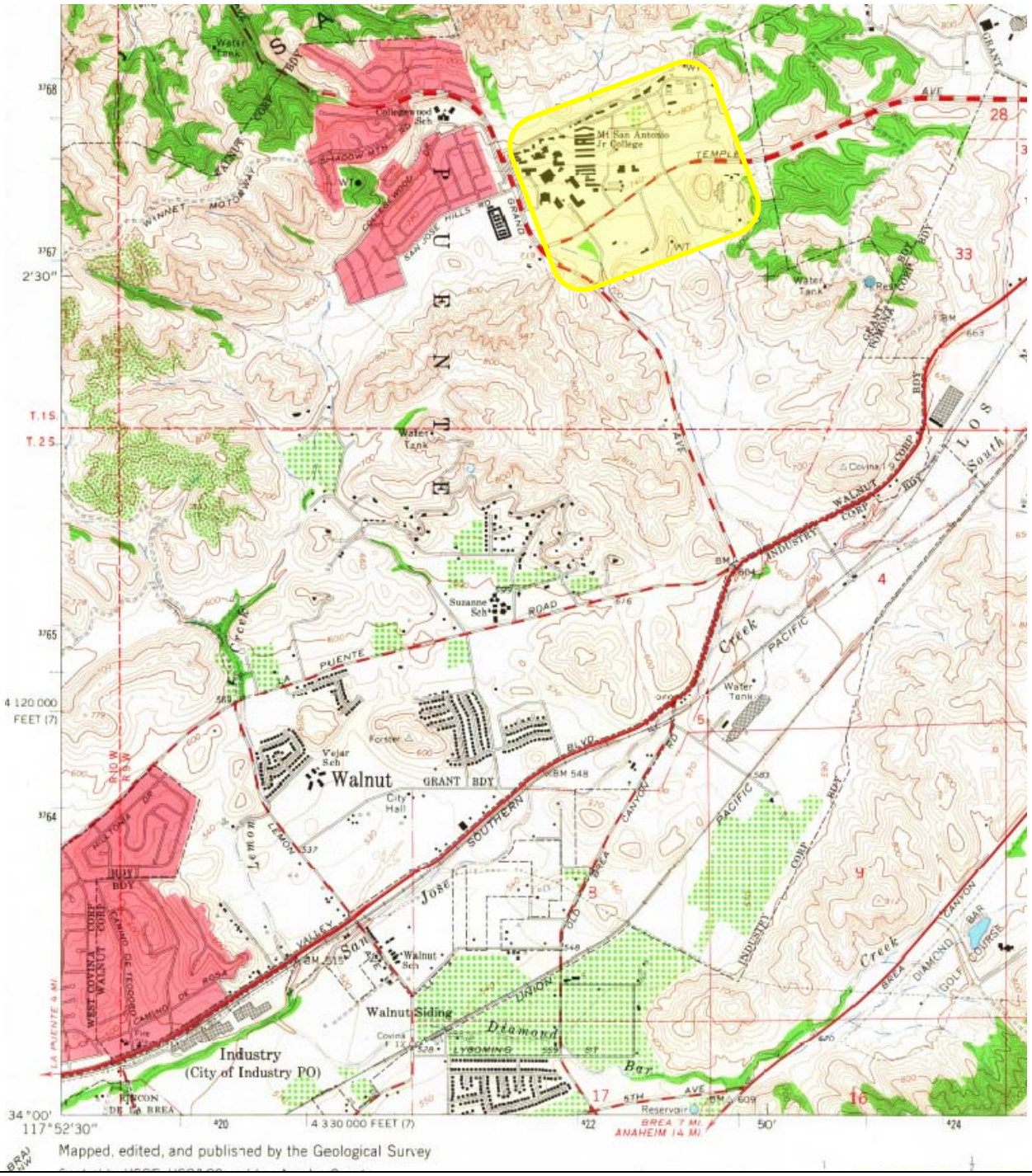
The Locker Rooms building is not recommended as individually eligible for the CRHR as it does not sufficiently illustrate or represent the significant themes and/or criteria outlined above on its own.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 19-186869
HRI #
Trinomial

***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus /Locker Rooms

***Map Name:** 7.5" USGS quad of San Dimas ***Scale:** 1: 24,000 ***Date of Map:** 1966



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH SHEET

Primary # 19-186869
HRI #
Trinomial

Page 4 of 4 ***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus /Locker Rooms
Recorded by: Shannon Davis **Date:** 06/20/12
☒ Continuation ☐ Update



Image 1. View of north and west facades looking southeast.



Image 2. View of south and east facades looking northwest.



Image 3. View of lower/southern level of east facade looking northwest.



Image 4. View of south facade looking northwest.

Image 5. View of looking .

Image 6. View of looking

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 6Z
Other Listings
Review Code Reviewer Date

Page 1 of 4 ***Resource Name or #:** Mount San Antonio College Campus/Snack Bar
P1. Other Identifier: Mountie Grill
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
***a. County:** Los Angeles **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** San Dimas **Date** 1981 **T** 1S **R** 9W;NE **¼ of** **NW1/4** **of Sec** 32;M.D. S.B. **B.M.**
c. Address 1100 North Grand Avenue City Walnut Zip 91789
d. UTM: (give more than one for large and/or linear resources) Zone Zone 11, 422100 mE/ 3767500 mN ; (G.P.S.)
e. Other Locational Data: (e.g. parcel#, directions to resource, elevation, etc.)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Mount San Antonio College Snack Bar, also known as the Mountie Grill, is a small, single-story building, constructed between 1958 and 1959. The Grill is located near the center of the campus, south of the Child Development classrooms, and north of the Interior Design Department. The building is a rectangular structure, with a flat roof and wide overhangs. There is a metal roof structure to the west of the main building, covering an outdoor eating area. The Modern building is minimally decorated, and materials include brick veneer and cement, along with yellow metal panels along the overhangs and above and below the ordering counters. The north (main) façade consists of nine windows; five casement windows with aluminum framing and four, one-over-one aluminum-framed windows to order food from. There is a metal counter along the north façade where food orders are made as well. There is a metal door on each of the east and south facades. The east and west façades also maintain a one-over-one window to order from, with two casement windows on either side. The Grill maintains a high level of integrity, as no alterations have been made.

(continued on page)

***P3b. Resource Attributes:** (List attributes and codes) Other (HP39 – restaurant/snack bar); Educational Building (HP15)
***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)
P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



P5b. Description of Photo: (view, date, accession#)
North and west facades of Mount San Antonio College Snack Bar

***P6. Date Constructed/Age and Source:**
☒ Historic ☐ Prehistoric ☐ Both
1958-1959

***P7. Owner and Address:**
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

***P8. Recorded by:** (Name, affiliation, and address)
Shannon Davis
ASM Affiliates, Inc.
2034 Corte Del Nogal
Carlsbad, CA 92011

***P9. Date Recorded:** 06/20/12

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (cite survey report and sources, or enter "none.") Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

***Attachments:** ☐ NONE ☒ Location Map ☐ Sketch Map ☐ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record
☐ Artifact Record ☒ Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # 19-186869
HRI #

Page 2 of 4 ***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) Mount San Antonio College Campus/Snack Bar

B1. Historic Name: Mount San Antonio College Snack Bar
B2. Common Name: Mantie Grill
B3. Original Use: Snack bar/restaurant
B4. Present Use: Snack bar/restaurant
***B5. Architectural Style:** Modern
***B6. Construction History:** **(Construction date, alterations, and date of alterations)** 1958-1959

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** **Original Location:**
***B8. Related Features:** Covered outdoor eating space
B9a. Architect: Austin, Field & Fry b. Builder:
***B10. Significance: Theme** Education **Area:** Walnut, CA

Period of Significance: 1946-1972 **Property Type:** Snack bar/restaurant **Applicable Criteria:** N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Mount San Antonio College Snack Bar was considered as a potential contributor to the Mount San Antonio College Historic District. The district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of education, for its association with the development Walnut, California and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mount San Antonio College was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The Mount San Antonio College Snack Bar maintains a fairly high level of integrity – the building sits in its original location; its setting has always been on a college campus, and thus maintains the same feeling as it originally did; the building maintains a high degree of workmanship, as it has not been altered and materials have remained unchanged; and the building has always been associated with Mount San Antonio College as a snack bar. However, the building is not recommended as eligible as a contributor to a potential historic district as its historic function does not directly reflect the educational theme of the historic district.

(continued on page)

B11. Additional Resource Attributes: (List attributes and codes)

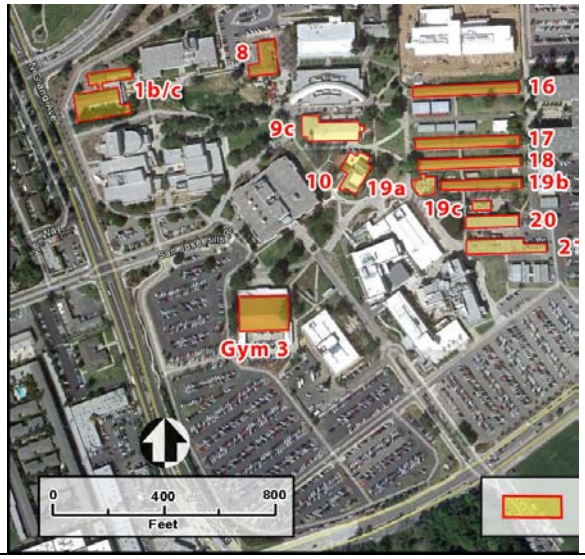
***B12. References:** See Letter Report Re: Historic Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California, ASM Affiliates, July 2012.

B13. Remarks:

***B14. Evaluator:** Evanne St. Charles and Shannon Davis

***Date of Evaluation:** July 12, 2012

Sketch Map with north arrow required.



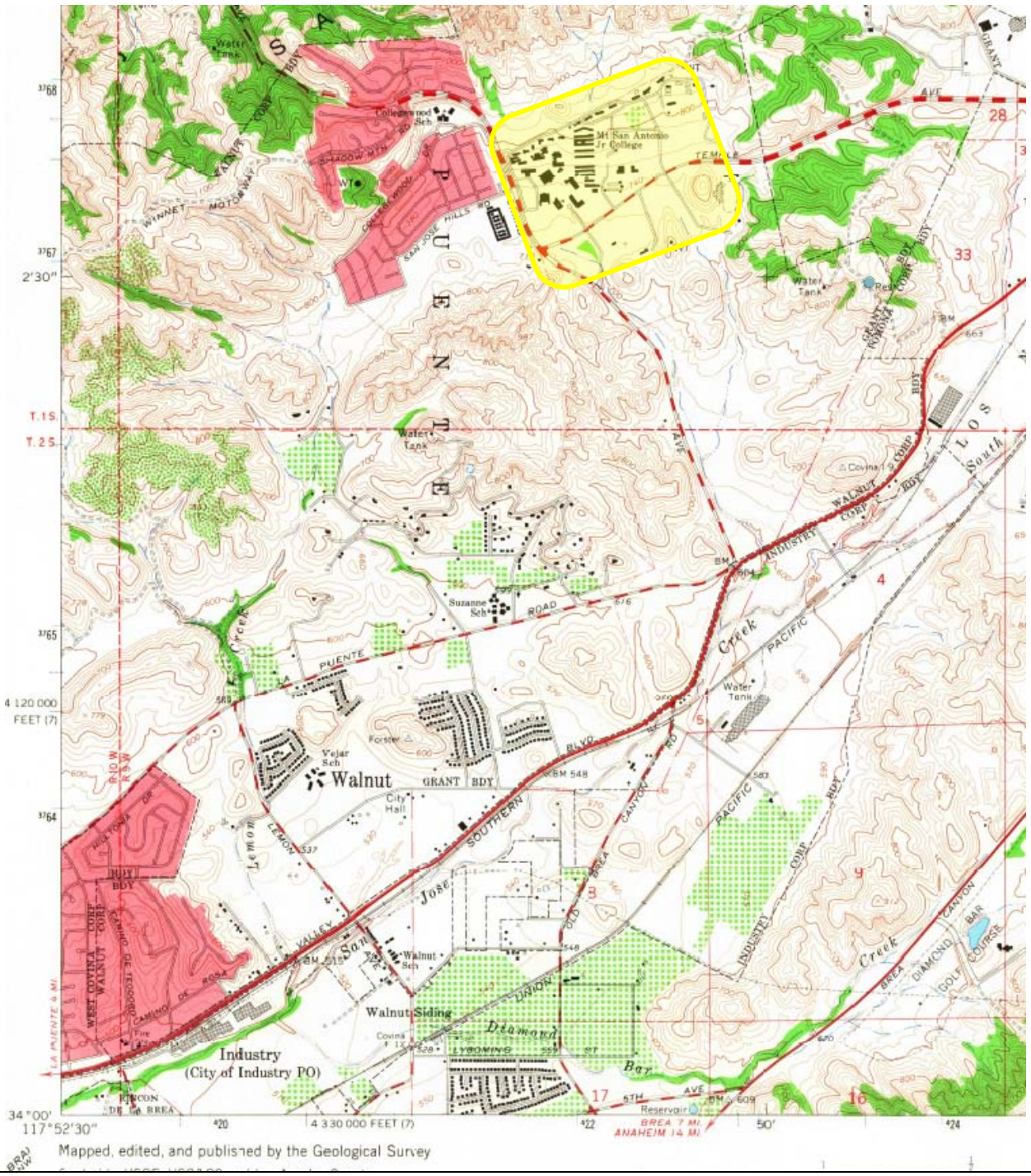
(This space is reserved for official comments)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # 19-186869
HRI #
Trinomial

Page 3 of 4 ***Resource Name or # (Assigned by recorder)** Mt. San Antonio College Campus
Marie T. Mills Aquatic Facility

***Map Name:** 7.5" USGS quad of San Dimas ***Scale:** 1: 24,000 ***Date of Map:** 1966



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPH SHEET

Primary # 19-186869
HRI #
Trinomial

 ***Resource Name or # (Assigned by recorder)** Mount San Antonio College Snack Bar
Recorded by: Shannon Davis **Date:** 06/20/12
☒ Continuation ☐ Update



Image 1. View of north and west facades looking southeast.



Image 2. View of north facade looking southeast.



Image 3. View of west facade looking southeast.



Image 4. View of north and east facades looking southwest.



Image 5. View of south facade looking northeast.

Image 6. View of looking .



THE BUILDING BIOGRAPHER
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- ❖ Historic Preservation and Archival Consulting

HISTORIC RESOURCES SURVEY:

MOUNT SAN ANTONIO COLLEGE

WALNUT, CALIFORNIA

DRAFT

Prepared for:

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June 24, 2002

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I. Project Description

This is a technical report of the historic resources reconnaissance survey of the campus of Mount San Antonio College. The College requires an evaluation of any potential historic resources found on the campus as part of an Update EIR for their Master Plan.

The three steps necessary in such a study are: 1) identification of the resources; 2) identification of the resources' historic context; and 3) evaluation of the historic significance of the resources.

In summary, this technical report contains the synopsis of the consultant's cultural resources identification and evaluation investigation of the campus in compliance with the California Environmental Quality Act (CEQA). Sections of this report are as follows: Identification of the Resources, Historic Context, and the Evaluation of the Historic Significance of the Resources and Recommendations. Also included is a Sources section and appendices of survey data, photographs and maps. Background discussions of the various phases of the process are also appended.

II. Identification of the Resources

(Please see Appendix 5 for a background discussion on the identification and historic context phase.)

A "windshield survey"(actually, in this case, a walking reconnaissance) of the campus was carried out on June 5, 2002.[1] With the aid of building summary reports furnished by the client, all sites identified as being more than forty-five years old were observed, recorded, mapped and photographed. (Although a fifty-year age is the normal cut-off for eligibility for the National Register of Historic Places and California Register of Historical Resources, many consultants undertaking surveys such as this one are now using an age of forty-five years so that their surveys will not be so quickly outdated.) While undertaking the survey, the consultant also paid special

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[1] According to *National Register Bulletin 24*, a windshield survey is an efficient "common method of reconnaissance when visible historic buildings and structures are the subjects of interest." California's office of Historic Preservation defines a windshield survey as a "systematic and complete drive through the entire survey area to locate [age-qualifying] buildings and to identify possible districts and landscape features."

For a resource to be recorded on a "windshield survey" it must: 1) by visual inspection appear to be at least fifty years old or possess some very significant attributes if less than fifty years old; 2) exhibit some elements of a determinable architectural style or styles; and 3) retain a significant proportion of its stylistic integrity. Slightly altered structures can be included as long as they are marked "altered" on the survey report.

Some buildings may be included not for their immediate architectural qualities, but because their apparent age makes them worthy candidates for historical research. In fact, these buildings may have been considerably altered.

attention to all buildings, whatever their age, that were identified by the client as scheduled for removal or significant alteration under the Campus Master Plan.

Research was undertaken before and after the site visit in order to further identify the history of the buildings and their context. The first step was to investigate whether information on any potential historic resources on the property had already been recorded at the South Coastal Information Center of the State Office of Historic Preservation located at California State University, Fullerton. No records were found.

Further research was conducted at the Mount San Antonio College library, the Los Angeles County Assessor's archives, and the Los Angeles Public Library, the oldest public library collection in Southern California. The focus of this research was to determine if any of the identified potential historic resources were of local or regional significance. As many additional sources as possible within realistic time and budget constraints were also investigated and are listed under Sources (Section V).

The consultant observed that land use on the campus is entirely educational. All buildings with non-academic uses house such related back-up needs as maintenance facilities and student, faculty, and administrative services. Many buildings on the campus are utilitarian or portable ("temporary") in nature and are of a vernacular or nondescript design. A number of new buildings are pleasing esthetically and show an attention to architectural style. Older buildings dating back to the earliest days of the College and to even earlier institutional uses of the grounds have varying degrees of historical and/or architectural interest.

As discussed in the historic context section below, much of what is now the campus area was formerly used for hospital purposes. Although many of the structures associated with that earlier use have already disappeared and been replaced with more recently built improvements, all pre-1948 buildings still remaining on campus were once associated with health-care. Also, many of the earliest buildings specifically constructed for use by the College are still extant.

A total of 57 buildings are listed as being affected by the Campus Master Plan. The campus has a total of 21 buildings identified as being at least 45 years old. Of these, only 6 will not be affected by the Master Plan; the remaining 15 are all scheduled for demolition between the years 2004 and 2012.

III. The Historic Context

(As discussed in Appendix 5, in order to assess previously recorded and as yet unevaluated historic resources, a historic context must be developed, revolving around a theme, place, and time. Then, it is possible to evaluate and study the identified historic resources within the research framework of the historic context.)

A) *Brief History of Walnut*: The first residents of this area can be traced back to the Gabrielino Indians who were of Shoshoean origin. Walnut has one recorded site of archaeological significance dating from the era of Native-American habitation. (This site is not on the campus of Mount San Antonio College.)

The arrival of the Spanish in the area introduced large ranches, the beginnings of agricultural development, and the creation of extensive home-sites. The first land grants in the Walnut area were those of the Rancho de San Jose (22,340 acres), presented in 1837 to Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales (4,340 acres), issued in 1840 to Jose de la Cruz Linares; and La Puente Rancho, consisting of 48,790 acres, issued to John Rowland and William Workman in 1842. All this land had first been used as grazing for the cattle and sheep of the San Gabriel Mission.

Jose de la Cruz Linares died in 1846, and his wife had to sell part of their rancho to Ricardo Vejar to help pay her husband's debts. Vejar's home was in the bend of the hills near the springs of the San Jose Creek, which is now known as Spadra, within the city limits of Pomona. Serving all of the Vejar family's needs, their adobe consisted of living quarters, a chapel, blacksmith shop, silver working shop, and a stable. Ricardo Vejar's adobe served as a social center for the people of the valley in those days. A team change station for the Butterfield Overland Stage Company was also located near the Vejar home from 1858 until 1861.

A second adobe, located in what is now Walnut's Lemon Creek Park, has been preserved as one of the City's most important historical resources. The William R. Rowland Adobe Redwood Ranch House was designated a point of historical interest by the State of California in 1975. This mixed adobe and redwood structure, built in 1883, served as the home of Rowland's ranch foreman and is one of the last original ranch houses in the area.

Walnut originally obtained its name from the Rancho de los Nogales land grant–*nogal* being the Spanish word for "walnut." The Rancho itself had derived its name from the many wild black walnut trees that covered nearby hillsides. The Southern Pacific Railroad came through in 1874, bringing with it more visitors and potential residents. A stop was established, called the Lemon Station because it was situated on Lemon Street and because of the many citrus trees then in the area. "Lemon" became the town's informal name. "Walnut" was not adopted as the community's official name until 1912, with the building of a new post office.

Walnut's first school was established in about 1876, the teacher taking the train back and forth to El Monte every day. After the schoolhouse burned in 1892, students attended Spadra School. The Lemon School District, which incorporated Walnut, was established in 1893. High school students had to travel to Pomona or El Monte until La Puente High School was constructed in 1915.

In 1884, Pierre Carrey, originally from France, and his wife Maria settled in Walnut. Carrey, who had worked for William Rowland when the latter was a sheriff, had received part of his pay in land consisting of forty acres above Valley Blvd. on the south side of La Puente Road and east of

Lemon Street. The Carrey family operated the first Walnut store and post office on Valley Blvd. Other enterprising French emigres, as well as Basques and Italians, acquired land in the Walnut-Spadra area.

Another historically significant figure, Captain William Banning, son of Phineas Banning, retired to what is now Walnut, transporting there the Banning Stable that had housed the first Los Angeles- Wilmington stages. Another important landowner was Alvan T. Currier, formerly of Maine. In 1869, he purchased 2,400 acres between Spadra and Walnut along the Southern Pacific tracks. He was later elected County Sheriff in 1881 and served as a State Senator beginning in 1898. Currier helped found the Walnut Fruit Growers Association which, in 1906, built the first packing house to handle both citrus and walnut crops. In would function for the next fifty years. Currier also developed the first reliable water sources in Walnut when he established seven wells on the southern fork of San Jose Creek. Another important source of water was the southern branch of the San Jose Creek (sometimes called Walnut Creek).

From the 1880s until just after World War II, the valley's land was used for farming and cattle-raising. It became known as one of the finest agricultural areas in the state, particularly for citrus and walnuts. (The first commercial walnut grove was established in 1912, but the industry had more or less faded by 1940 after many of the trees had succumbed to disease .) Walnut and other neighboring communities remained small and rural, the only city of any major size being Pomona. Numerous fruit packing houses, the major local industry, were linked with each other and with the nation's urban markets by the railroad's freight lines. Only a narrow paved highway, Valley Boulevard, connected the valley to Los Angeles.

A pioneer in the pre-World War II establishment of Walnut's image as a rural retreat was Percy G. Winnett, the founder, with John G. Bullock, of the Bullocks Wilshire chain. He bought eighty acres in Walnut in the 1930s, turning the hay and grain farm into an equestrian showcase. He raised thoroughbred racehorses and threw parties, barbeques, and fox hunts.

Immediately following the war, returning G.I.'s unloosed a pent-up demand for housing all over Southern California, and the Walnut area was no exception. The rural lifestyle of open rolling hills, oranges, and horses began to be supplanted with freeways and housing tracts. Fearing they might be swallowed up by other fast-growing neighboring cities, the citizens of Walnut voted to incorporate in 1958 with about 7.5 miles of territory and about one thousand residents. The eastern boundary of the new city was the easterly edge of the Mt. San Antonio College campus. By 1990, Walnut, with a population of 29,105 (a 133% increase over 1980), was the second-fastest-growing city in Los Angeles County. It was also quickly becoming a multiethnic community, with Asian Americans and Latinos constituting about 60% of the population.

B) *Brief History of the Campus of Mount San Antonio College (to 1956)*: In 1920, the State of California purchased 800 acres in Walnut--adjacent Lots 6 and 7 of the C. M Wright Tract on the eastern edge of the original La Puente Rancho. The land had been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and would become the future site of the Pomona campus of California Polytechnic University.

In 1915, the state Legislature had passed a bill that called for a comprehensive study of "feeble-mindedness." A committee studied the issue and recommended the creation of an institution for the insane in Southern California. In March 1921, the Pacific Colony was founded in Walnut on the above-mentioned Lot 6 (about 388 acres). Nineteen male patients were transferred to it from the state facility in Sonoma. However, the site did not have an adequate water supply and closed in January 1923. The state reopened the Pacific Colony in May 1927 on Pomona Blvd., a facility that is now known as the Lanterman Developmental Center.

In the early 1930s, the State Narcotic Hospital occupied the Lot 6 site and a number of still-extant buildings were constructed. During World War II, the facility was leased to the United States Government as the location of a U.S. Army Hospital, and later a U.S. Naval Hospital. There were eventually 9 permanent buildings and 99 temporary barracks-like structures spread over the site.

In February 1945, the Pomona Chamber of Commerce adopted a resolution requesting the state to make the hospital site (which was scheduled for closure in 1946) the temporary quarters for a new junior college in Eastern Los Angeles County. The rising population had made the area's only junior college in Pomona woefully too small to meet the demand for post-secondary education, especially among returning older students. In October 1945, the California State Board of Education was petitioned by four school districts–Pomona, Covina, Puente, and Bonita–for a junior college to serve the combined areas. In December of that year, voters approved the establishment of a new junior college district which would incorporate the old Pomona district.

A two-year lease was negotiated with the state for use of the U.S. Naval Hospital site. It was an ideal location, in the center of the new district, seven miles east of Puente and seven miles west of Pomona. Also, it would be a physically independent campus, not sharing a site with a high school, which the majority of junior colleges did in those days. The perennial problem of obtaining a guaranteed flow of water to the campus was solved when an agreement was reached with the Metropolitan Water District in December 1947.

The almost impossible task of organizing a junior college from scratch began in earnest on July 1, 1946. Twenty-three faculty members were hired initially. Dr. George H. Bell, the newly hired president, and his family moved into the former hospital director's house (now known as the Staff Center–Building 10), which was then surrounded with gardens. Tom Oden, the chief of maintenance, and his family lived in what is now the Oden House (Building 12A). Some naval personnel remained on the site until the complete changeover from hospital uses was accomplished. What is now the Information Building (Building 05) housed the first administrative offices. It had served as the narcotics treatment center of the hospital and had bars on the windows, special therapy rooms, and jacuzzi baths. The driveway to the campus was lined with camphor trees and there was a small orange grove just south of Building 05.

Instruction on the new campus began in September 1946, many of the first 682 registered students attending class in the non-air-conditioned old barracks buildings, connected by clay and weed-choked paths. Apple- and orange-crates were used for furnishings until war surplus

furniture could be purchased. Money remained tight during the first year or two of the college's existence. The old state and military buildings had not been maintained, and Mr. Oden was credited with keeping everything going by patching and repairing where possible, often at his own expense. Nevertheless, a tremendous amount of financial and volunteer time was donated by faculty, students (the average age was 25), administrators, and committed members of the community, creating the legendary "spirit of Mt. San Antonio College" to make it all work.

Barbara Ann Hall and Odette Marie Pietzsch in their history of the college entitled *Mt. San Antonio College: the First Fifty Years* vividly describe the college's early setting:

> Being surrounded by foothills, the college supported an abundance of wildlife. Many native birds nested in the swamp at the south edge of the property. Occasional road runners, coyotes and skunks roamed the grounds. Above the area where the stadium was to be constructed, a bob-tailed bobcat was reported. Several deer grazed near the east boundary of the campus. Large tarantulas burrowed into the hillsides and roamed the campus during their migration, and rattlesnakes basked in the sun. Oden reported killing a rattlesnake about three feet long (Hall 8).

Until 1948, the campus was still considered a temporary site. While the state Department of Mental Health was considering other uses for the 445-acre leased property, a building program could not be instituted. Finally, in March 1947, a bond election was conducted. The amount requested, $1.75 million, was to be used to purchase land and construct the first classrooms and support facilities specifically designed for Mt. San Antonio College. The bond issue received an overwhelming approval of almost 11 to 1. At the first commencement exercises in June 1947, word was received from Governor Warren that the state had decided to sell the former hospital land to the college. The sales price turned out to be $270,000.

In May 1947, architect Frederick H. Kennedy, Jr., was hired to create a campus master plan and to design the first real college buildings. Mr. Kennedy would be retained as the campus architect until 1955. (Please see Appendix 4 for a biographical essay on Mr. Kennedy and his career.) The first buildings of which Mr. Kennedy supervised the design were the stadium, field houses, shops, gymnasium, and library. With the exception of the shop buildings, all roofs were to be of mission tile. Form was to follow function, so that what took place in the buildings was to dictate the design. Faculty, recognized as specialists in their field, were to have a great deal to say in the lay-out of the academic buildings.

In November 1947, the board of trustees approved the plans for a new football stadium. The natural bowl between the hills in the southeast corner of the property adjoining Cal Poly was the selected site. Only the west side of the bowl was scheduled to have bleachers, to seat 11,000. The stadium was planned to have a state-of-the-art cinder track. Built at a cost of $100,000, the stadium, said to be the largest such facility in the San Gabriel Valley, was dedicated by State Representative Richard M. Nixon in 1948.

Anticipating a greatly expanded student body of 2,000 by 1957, Mt. San Antonio College embarked upon another building campaign. In March 1950, a financing election was held, but this time it was a pay-as-you-go tax override rather than a bond issue. It carried, 1,220 to 828.

Dr. Bell retired from the college's presidency in 1956. It was at this time his home was converted to the Faculty and Staff Center.

Themes of the Historic Context: Health/Medicine, 1920-1946, Walnut; Education, 1947-, Walnut.

Associated Resource Attributes: Hospital; Educational Building; Stadium/Sports Arena

IV. Evaluation of the Historic Significance of the Resources and Recommendations

(Please see Appendix 6 for a background discussion of the evaluation phase.)

Using the criteria of the California Register of Historical Resources which, as Appendix 6 explains, are fundamentally those of the National Register of Historic Places as well, the consultant must determine the significance of identified resources in the designated area. The Appendix also gives a fuller discussion of the meaning of the various significance evaluation codes.

The consultant has given none of the buildings a 3S evaluation code ("appears eligible for listing in the National Register").

Thirteen buildings were given a 5S1 National Register evaluation code ("not eligible for the National Register [but] eligible for listing or designation under a local ordinance"). This designation means that, in the consultant's opinion, these resources would be eligible for local listing under a local ordinance if the City of Walnut had one. Section 5024.1(e)(1)-(5) of the California Public Resources Code states that historical resources designated or listed on the local level pursuant to any city or county ordinance may be potentially eligible for listing on the California Register. To be determined eligible, they need to have been surveyed and documented in accordance with policies and procedures recognized by the State Office of Historic Preservation (SOHP) and formally nominated to the Register. To be actually listed on the Register, the resources' owner(s) must approve. The following buildings, in the consultant's opinion, should be given a provisional 5S1 coding:

Art Center/Gallery (Building 01 B/C)
Physical Education Center/Gym (Building 03)
Campus Inn (Building 08)
Staff Center (Building 10)
Biological Sciences; Biology/Hist.Geol. Pol. Sci.; Modern Languages; Social Sciences; Business Education (Buildings 13, 14N, 14S, 15, 16, 17, 18, 19B)
Stadium (Building 50)

The exteriors of all these buildings have good to excellent integrity, meaning that the physical characteristics that existed during their period of significance are still intact and have not been

removed, substantially altered, or lost due to neglect, etc. These 5S1 buildings have been further documented in Appendix 1.

Seven of the buildings were considered by the consultant to be sufficiently significant to merit a provisional 5S3 National Register evaluation code ("not eligible for separate listing or designation under an existing local ordinance, but eligible for special consideration in local planning"). This designation means that, in the consultant's opinion, the resources would not be eligible for listing under a local ordinance (if there was one) and thus would not be eligible for the California Register. However, they are still of some local historical interest:

Information Technology/Nursing (Building 05)
Oden House (Building 12A)
Child Development Center South (Building 19A)
Family and Consumer Sciences (Building 20)
Air Conditioning (Building 21)
Welding (Building 22)
Beef Unit (Building F9)

One building was considered of no particular architectural or historical interest and was given a 6Z rating (ineligible for listing of any kind):

Information Technology (Building 05A)

The 5S3 and 6Z buildings have been further documented in Appendix 2.

A map showing the locations of all of the above resources can be found in Appendix 3.

The removal of any of the 5S1 buildings would cause a negative impact on the inventory of historical resources on the campus. The removal of any of the 5S3 buildings would constitute a less than significant impact on the inventory. The removal of the 6Z building would have no impact on the inventory.

Recommendations:

1) It is recommended that an intensive district-level recordation be undertaken for all provisional 5S1 and 5S3 buildings on the campus. This requires that a detailed architectural description and historical documentation be recorded on DPR 523 forms and submitted to the State Office Of Historic Preservation for their records. Copies of the DPR 523 forms and of this survey report should be made available to the public in the collection of the College's library.

2) In the case of the 5S3 buildings, it is recommended that photo-documentation be undertaken if the decision is made to remove or demolish them. The College should enlist the services of a qualified architectural photographer who is knowledgeable regarding the Guidelines provided in the Photographic Specifications: Historic American Building Survey, Historic American

Engineering Record, Division of National Register Programs, National Park Service, Western Region. As in 1) above, copies of this photo-documentation should become part of the collection of the College's library.

3) In the case of the 5S1 buildings, it is recommended that alternatives to their removal be considered. These alternatives could include a redesign of the Master Plan to avoid impacting the resources or at least reducing the impacts to a less than significant level; a redesign of each phase of the project as the more detailed planning for each phase comes up for review; or a study of possible adaptive re-uses of the historical resources. (Note: In the case of the complex incorporating Buildings 13-19B, thought could be given to preserving a representative part of it.)

If studied alternatives are found to be infeasible and a Statement of Overriding Considerations is to be issued, prior to demolition or removal of the structures, the College should provide photo-documentation as discussed in 1) above.

V. Sources

General:

Advisory Council on Historic Preservation and the National Park Service, Department of the Interior

1986 Working with Section 106: 36 CFR Part 800: Protection of Historic Properties: Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process. The Council, Washington, D.C.

1988 Working with Section 106: Identification of Historic Properties: A Decisionmaking Guide for Managers. Primary author, Thomas F. King. The Council, Washington, D.C.

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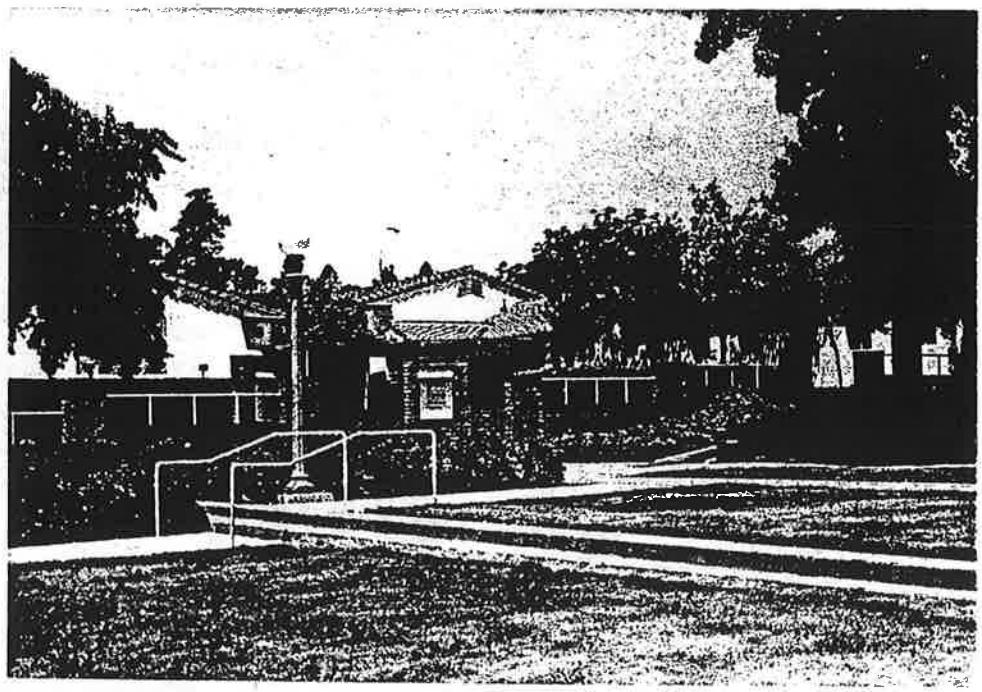
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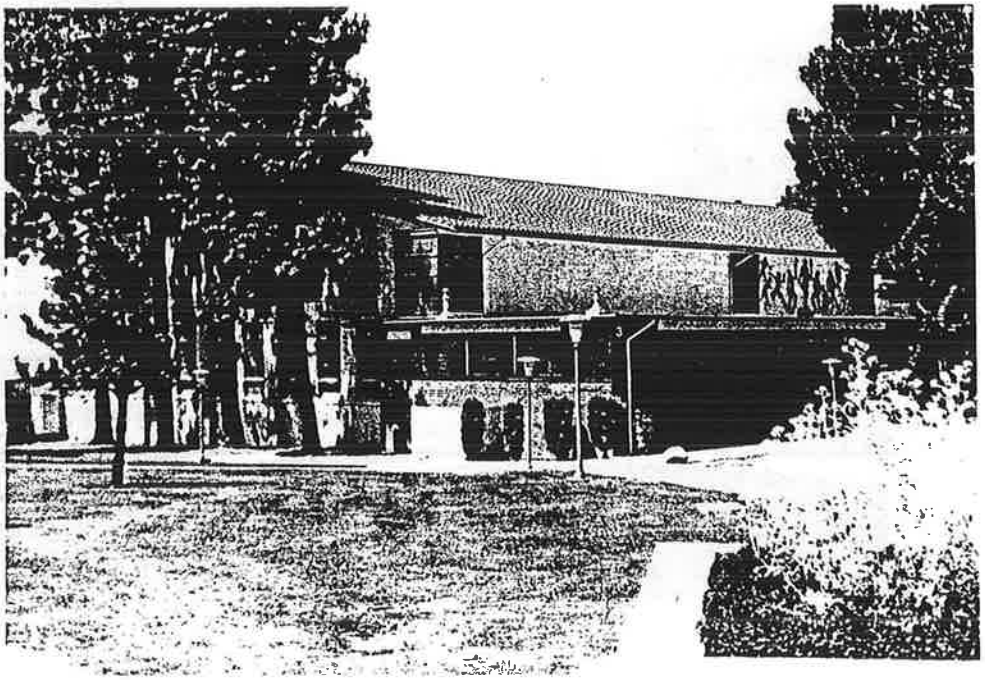
[No author]
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APPENDIX 1
Resource Descriptions
and Photographs
of 5S1 Buildings

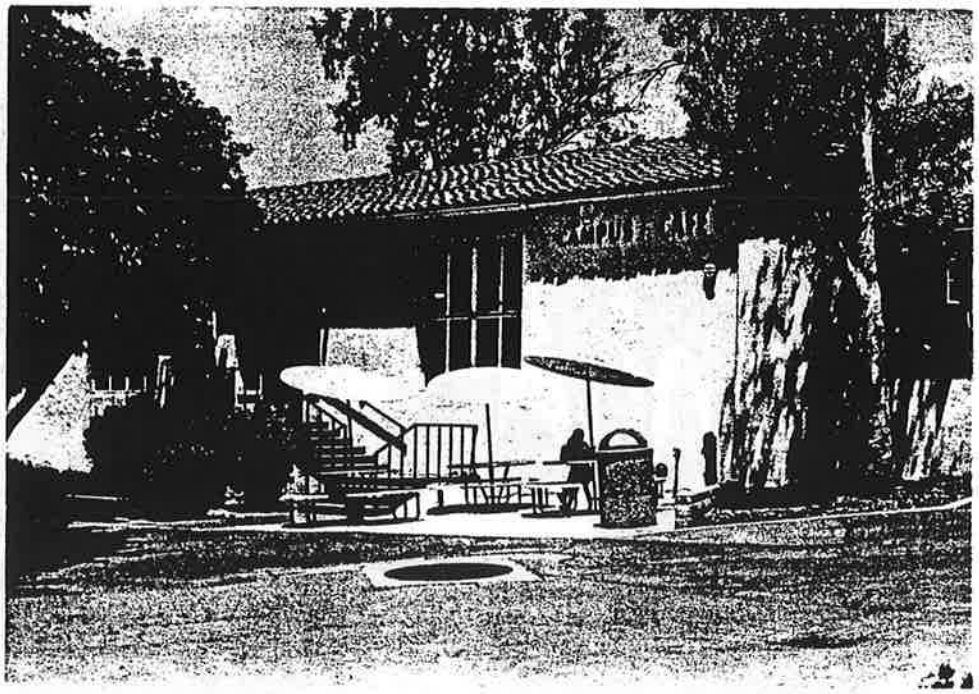
Building No.: 01B/C
Building Name: Art Center/Gallery
State Inventory Name: Art Center West
Year Built: 1931
Phase In Which Affected by Master Plan: n/a
Architect: State of California
Square Footage: 13,200
Summary: An inter-connected complex of tile-roofed buildings of Spanish Colonial Revival style. According to institutional records, these are the oldest still-extant structures on the campus, built when this was the site of a state narcotics hospital. Good integrity.
Significance Evaluation Code: 5S1



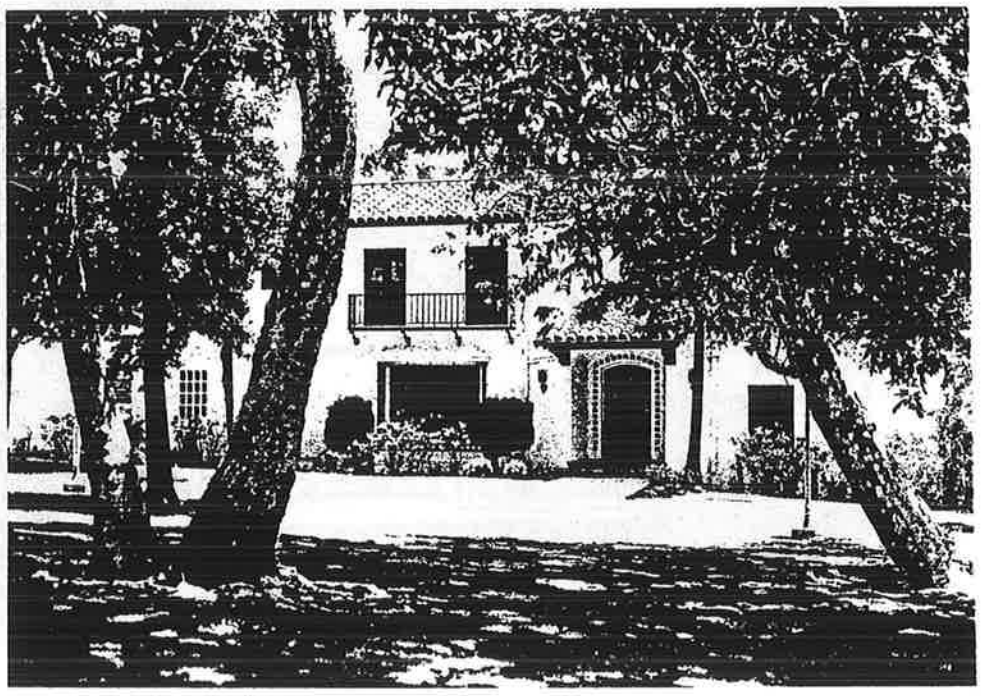
Building No.: 03
Building Name: Physical Education Center/Gym
State Inventory Name: Gymnasium
Year Built: 1950
Phase In Which Affected by Master Plan: 2
Architect: Frederick H. Kennedy, Jr.
Square Footage: 22,921
Summary: A tile-roofed contemporary neo-Romanesque building with a bas-relief of figures engaged in sports activities on its northerly wall. The largest still-extant building from the campus' earliest years, it was built in a style that blends the Mediterranean architecture prescribed in the campus' original general plan with more "modern" school design concepts. It represents a departure from architect Kennedy's usual output. Good integrity.
Significance Evaluation Code: 5S1



Building No.: 08
Building Name: Campus Inn
State Inventory Name: College Dining Hall
Year Built: 1941
Phase In Which Affected by Master Plan: 2
Architect: State of California
Square Footage: 10,473
Summary: A tile-roofed structure in a modern interpretation of the Spanish Colonial Revival style, built when this was the site of a state narcotics hospital. It is significant as a social gathering center for all three past tenants of the site: two hospitals and a school. Good integrity
Significance Evaluation Code: 5S1



Building No.: 10
Building Name: Staff Center
State Inventory Name: Faculty Center
Year Built: 1932
Phase In Which Affected by Master Plan: n/a
Architect: State of California
Square Footage: 3,769
Summary: A Spanish Colonial Revival-styled two-story residence–the second-oldest building on campus. Built originally as the home of the director of the state narcotics hospital and later used by the director(s) of the federal military hospitals that subsequently occupied the site, it also served as the home of the college's first president. It is significant for its fine design and its historical connection with all three uses of the site: two hospitals and a school. Moderate integrity (somewhat altered).
Significance Evaluation Code: 5S1



Building Nos.: 13, 14N, 14S, 15, 16, 17, 18, 19B
Building Names: Biological Sciences; Biology/Hist.Geol.Pol.Sci./Modern Languages; Social Sciences; Business Education
State Inventory Names: Biological Sciences; Liberal Arts 1, 2, and 3; Business Education 1 and 2
Years Built: 1949-1953
Phases In Which Affected by Master Plan: 1, 2, and 3
Architect: Frederick H. Kennedy, Jr.
Square Footage: 7,801-9,899
Summary: This complex was the historic academic center of the campus, its buildings among the first to be specifically designed to reflect the needs of one of California's first post-war colleges. Built over a period of four years as funds became available, they were designed as a single master-planned unit in a contemporary interpretation of the Spanish Colonial Revival style. In February 1976, *Los Angeles Times* columnist Jack Smith described his discovery of this tile-roofed complex "was like coming upon an unexpected village in the Italian countryside...low buildings on the west slope of the greening hills between the San Gabriel and Pomona Valleys."

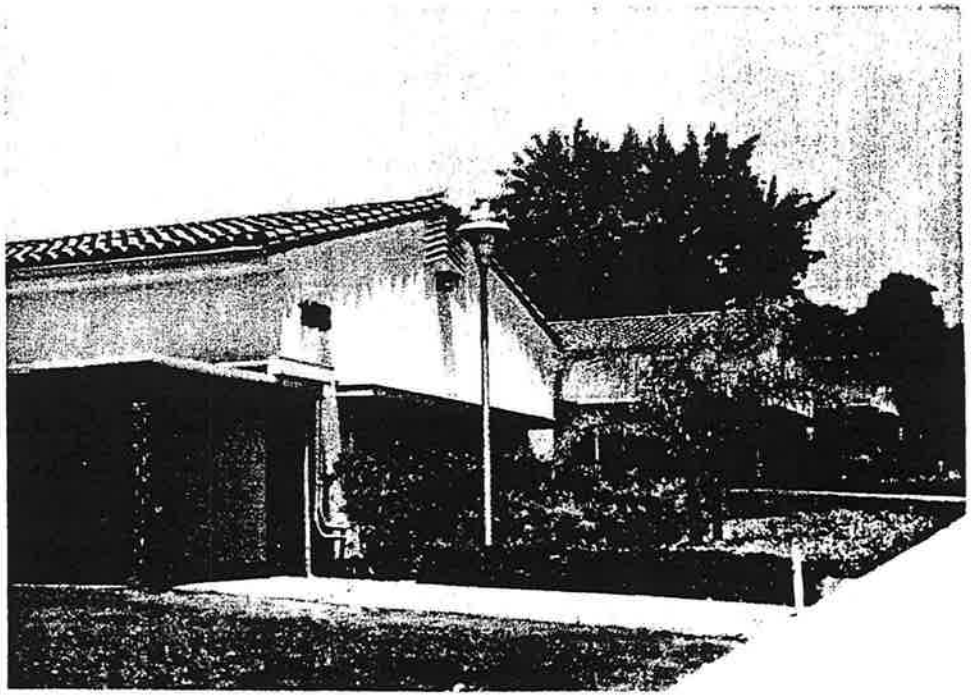
The lay-out reflected the emerging, rather revolutionary philosophy of educational architecture espoused by the designer Kennedy. It allowed for the introduction of as much natural light as possible and the opening up of both sides of the classroom to an outside environment of landscaped courts rather than the traditional practice of enclosing the entrances within an interior hallway. Fairly good integrity (the later installation of air-conditioning equipment in an insensitive manner has detracted from the appearance of the westerly ends of the buildings).
Significance Evaluation Code: 5S1

Three pages of photographs follow.

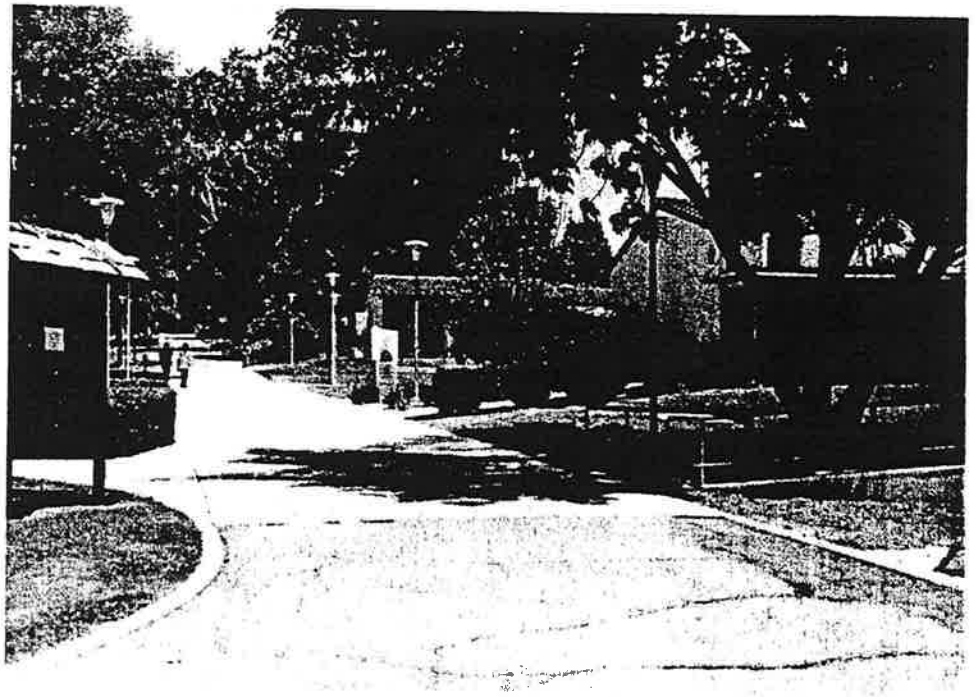


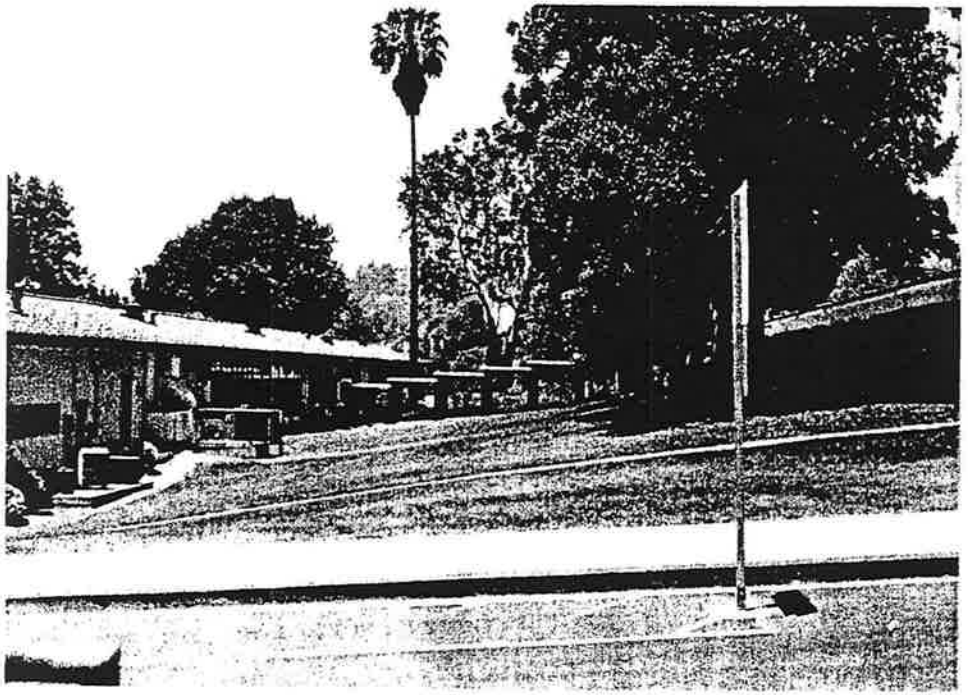


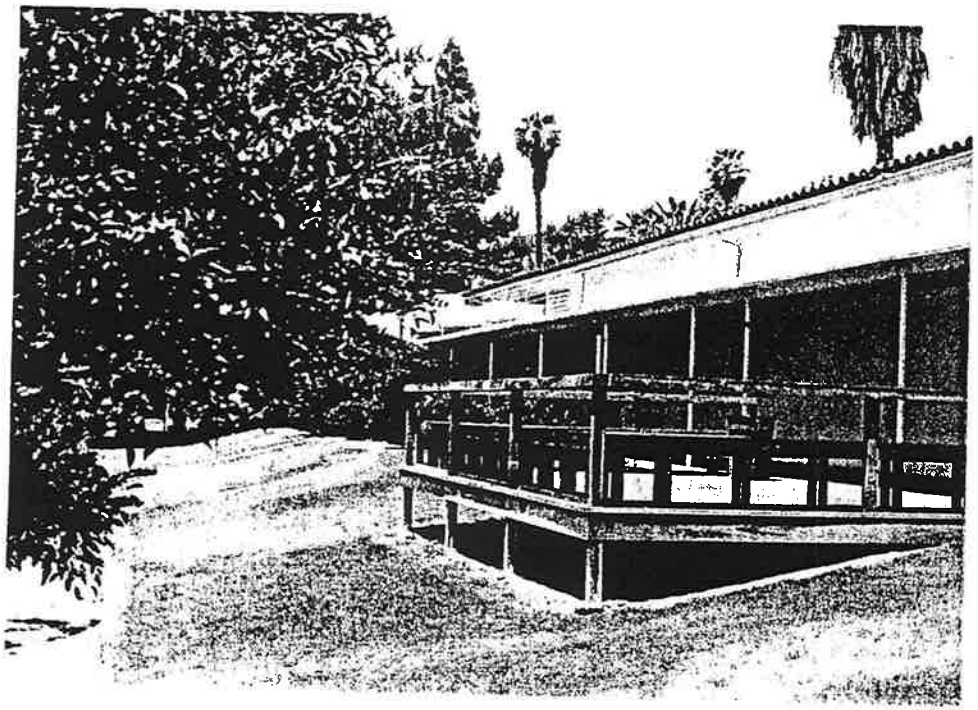


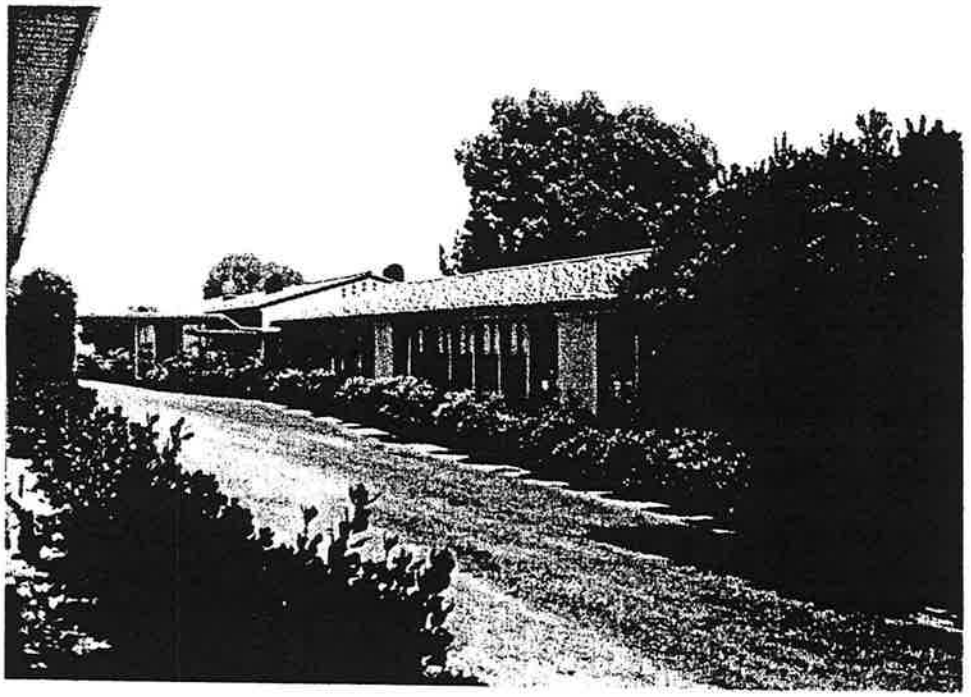


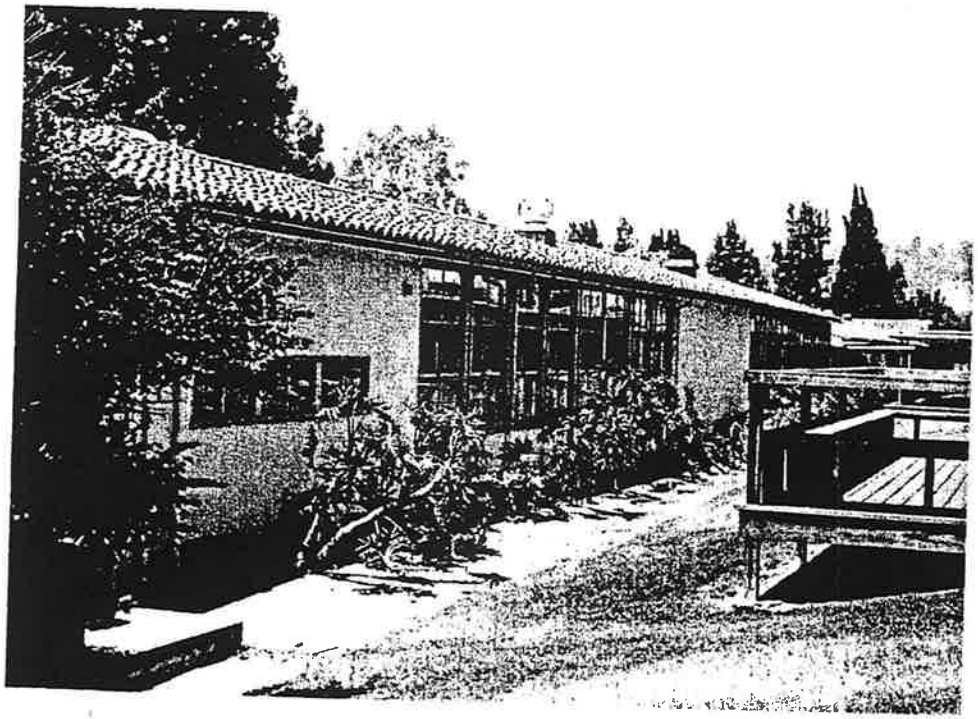


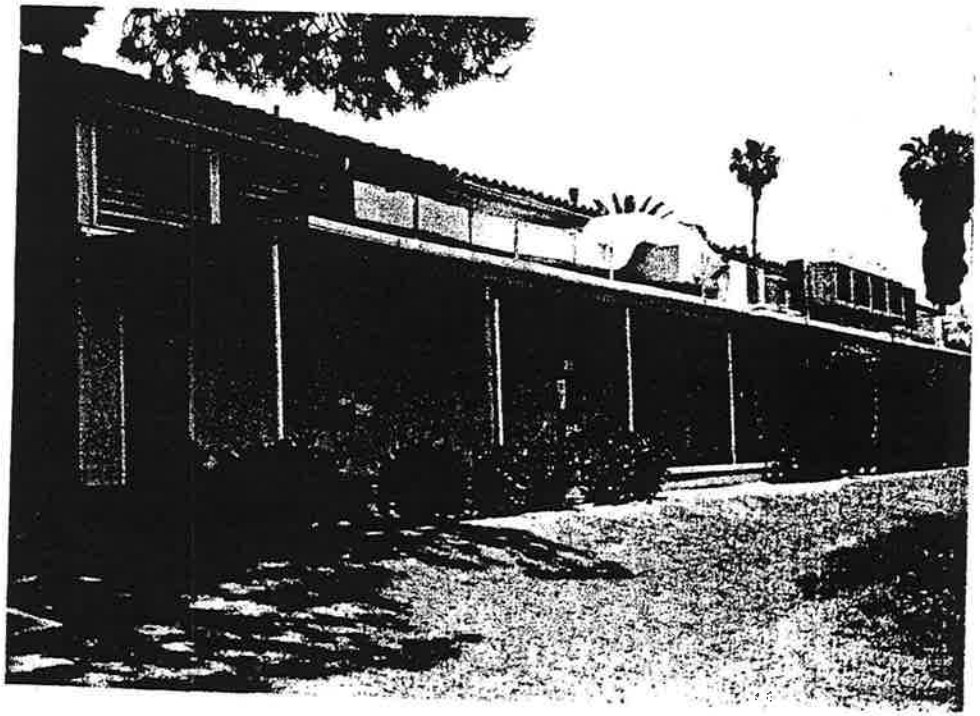












Building No.: 50
Building Name: Stadium
State Inventory Name: Stadium
Year Built: 1948
Phase In Which Affected by Master Plan: n/a
Architect: Frederick H. Kennedy, Jr.
Square Footage: n/a
Summary: The largest such stadium in the San Gabriel Valley and considered state-of-the-art when dedicated in 1948 by State Representative Richard M. Nixon. The annual amateur U.S. track and field meet is held at the stadium, bringing national attention. It has been a historical landmark over the last 54 years for the campus and the surrounding community. Good integrity.
Significance Evaluation Code: 5S1

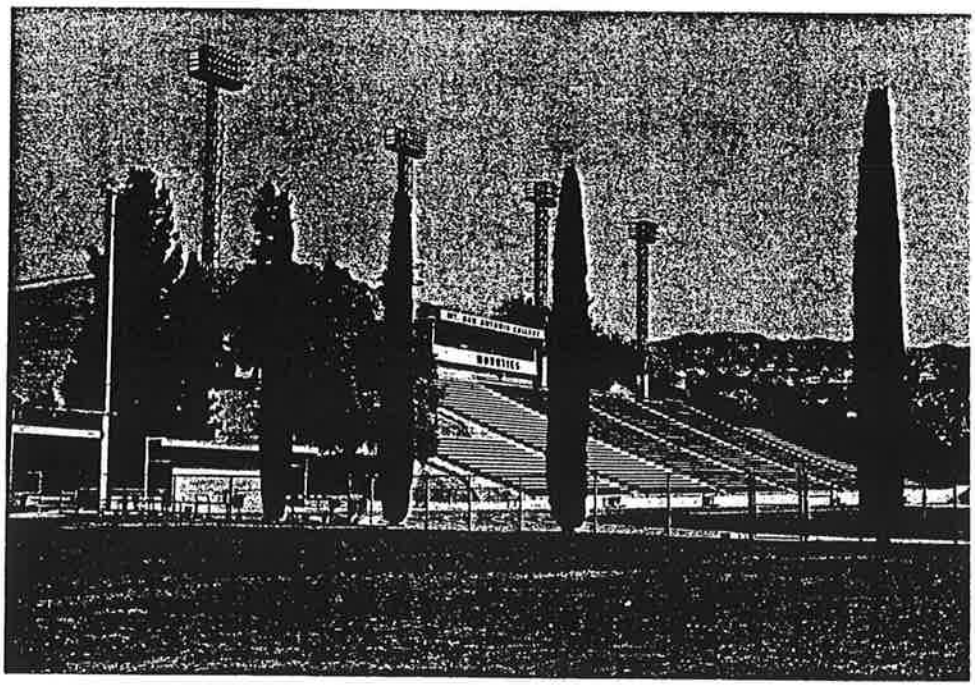
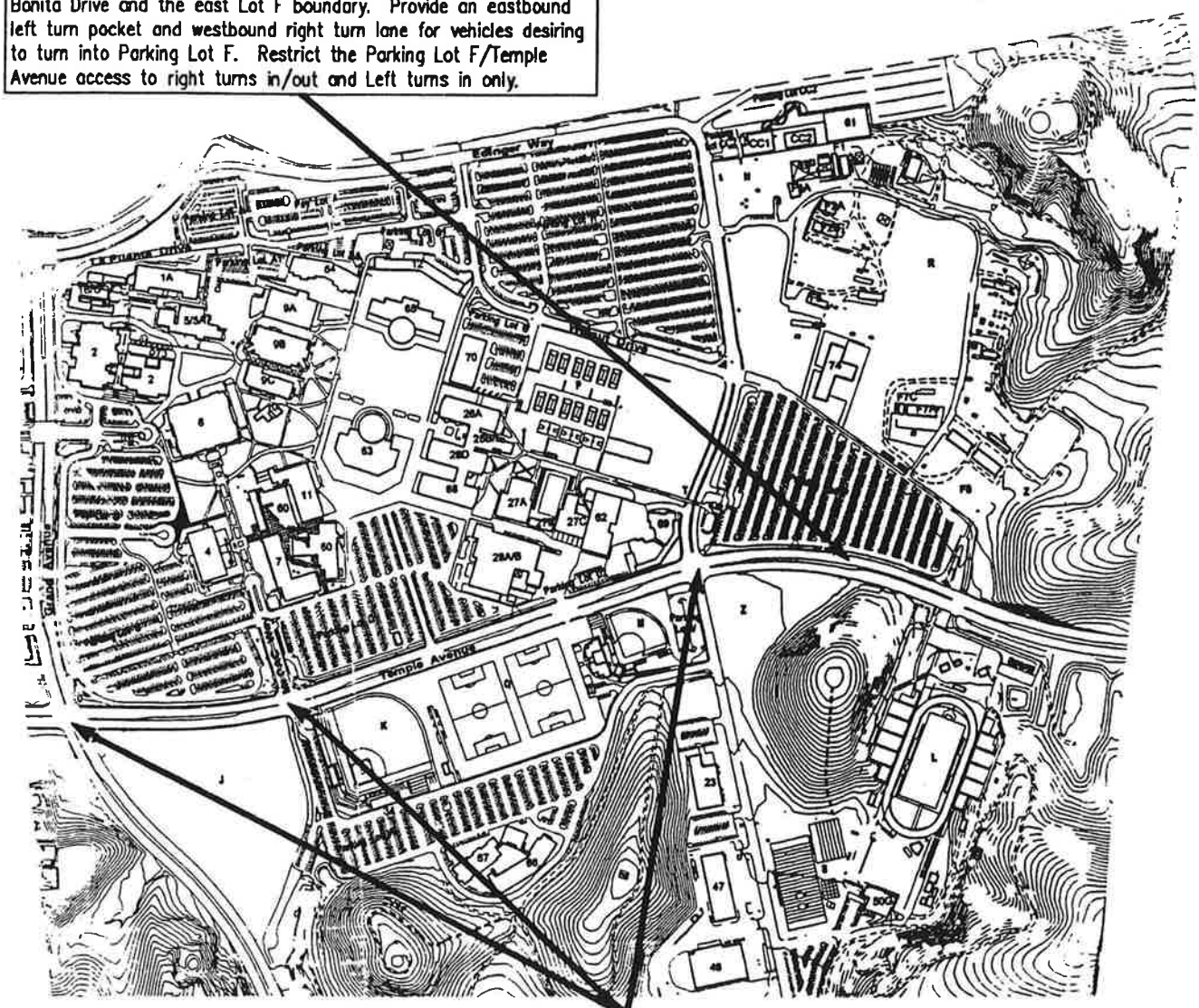


Figure 27
Circulation Recommendations

Realign the Parking Lot F access to Temple Avenue between Bonita Drive and the east Lot F boundary. Provide an eastbound left turn pocket and westbound right turn lane for vehicles desiring to turn into Parking Lot F. Restrict the Parking Lot F/Temple Avenue access to right turns in/out and Left turns in only.



It is recommended that the responsible governmental agencies construct, on land dedicated by Mt. San Antonio College, the following roadway improvements:

Grand Avenue (NS) at:
Temple Avenue (EW)
- Additional NB Through Lane
- Additional SB Through Lane
- Additional EB Through Lane
- Additional WB Through Lane

Mt. Sac. Way (NS) at:
Temple Avenue (EW)
- Additional EB Through Lane

Bonita Drive (NS) at:
Temple Avenue (EW)
- Additional EB Through Lane

N

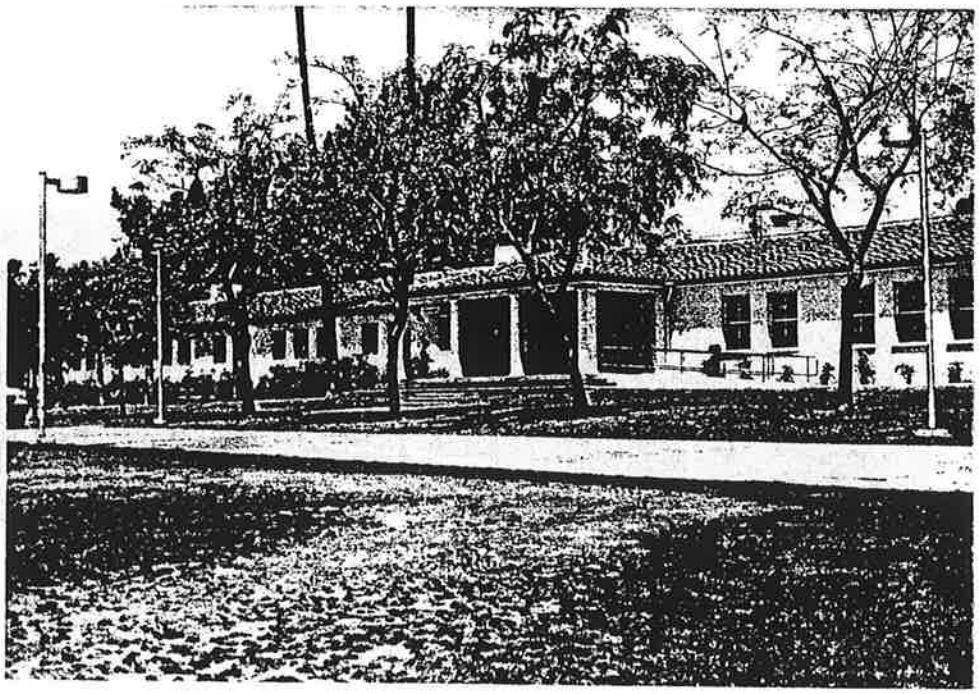
Kunzman Associates

2524/27

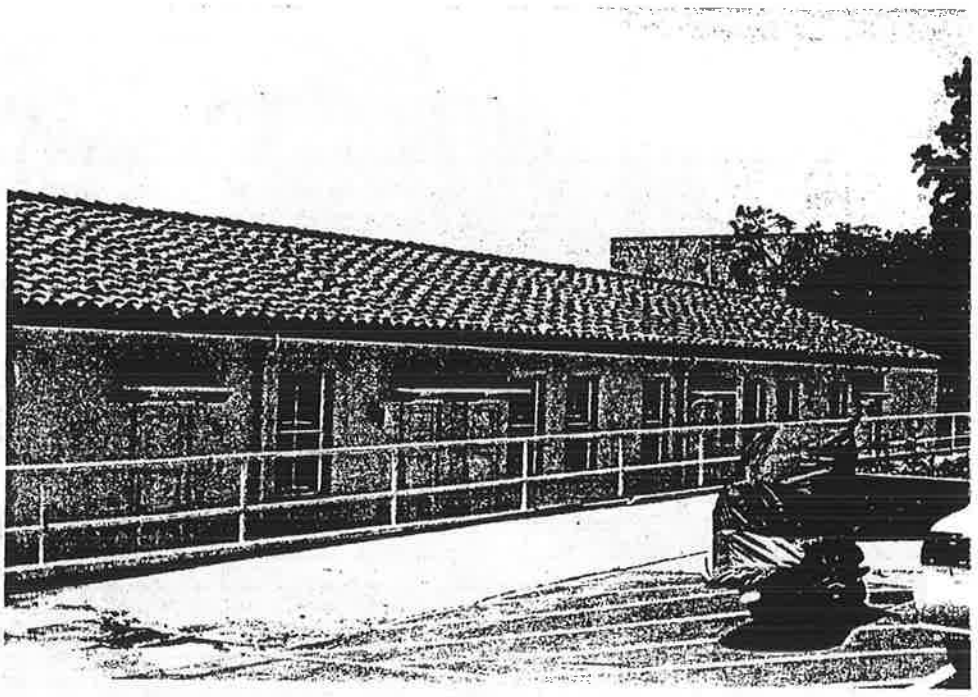
Appendices A-E are available upon request
at Facilities Planning and Management
Please contact Rebecca Mitchell
909/594-5611, Extension 5175

APPENDIX 2
Resource Descriptions
and Photographs
of 5S3 and 6Z Buildings

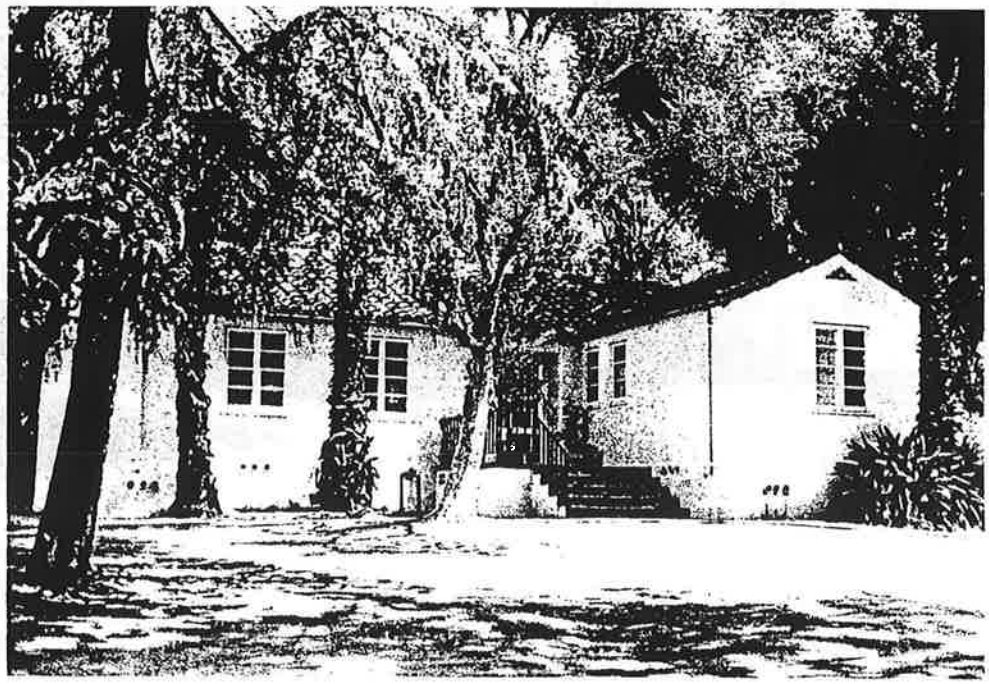
Building No.: 05
Building Name: Information Technology/Nursing
State Inventory Name: n/a
Year Built: 1941
Phase In Which Affected by Master Plan: n/a
Architect: State of California
Square Footage: 8,890
Summary: A tile-roofed structure in a modern interpretation of the Spanish Colonial Revival style, used originally as a treatment center for narcotics addicts and later as the campus' first administration building. It is architecturally undistinguished, but of some interest because of its early uses and dominant siting on campus. Good integrity.
Significance Evaluation Code: 5S3



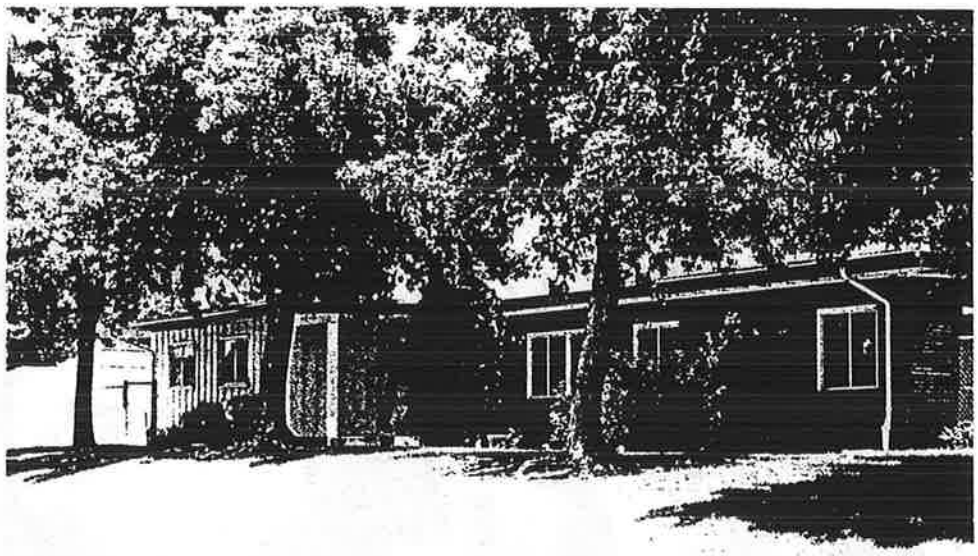
Building No.: 05A
Building Name: Information Technology
State Inventory Name: n/a
Year Built: 1955
Phase In Which Affected by Master Plan: n/a
Architect: Frederick H. Kennedy, Jr.
Square Footage: 2,469
Summary: A tile-roofed structure in a modern interpretation of the Spanish Colonial Revival style. Built as an annex to the older main Building 05, it is not architecturally distinguished and not significant as a stand-alone building. Good integrity.
Significance Evaluation Code: 6Z



Building No.: 12A
Building Name: Oden House
State Inventory Name: Custodial Center
Year Built: 1949 officially; but probably the 1930s
Phase In Which Affected by Master Plan: 2
Architect: State of California
Square Footage: 2,153
Summary: A Spanish Colonial Revival-styled "cottage." Although the "official" date of construction is 1949, there are historical references that the college's first maintenance supervisor moved into it as early as 1947. Its style is more indicative of the 1930s, which probably means it was built as part of the state narcotics hospital facility. Although of pleasing design, it is not architecturally significant and not as historically significant as the director's house–the other original residence on campus. Good integrity.
Significance Evaluation Code: 5S3



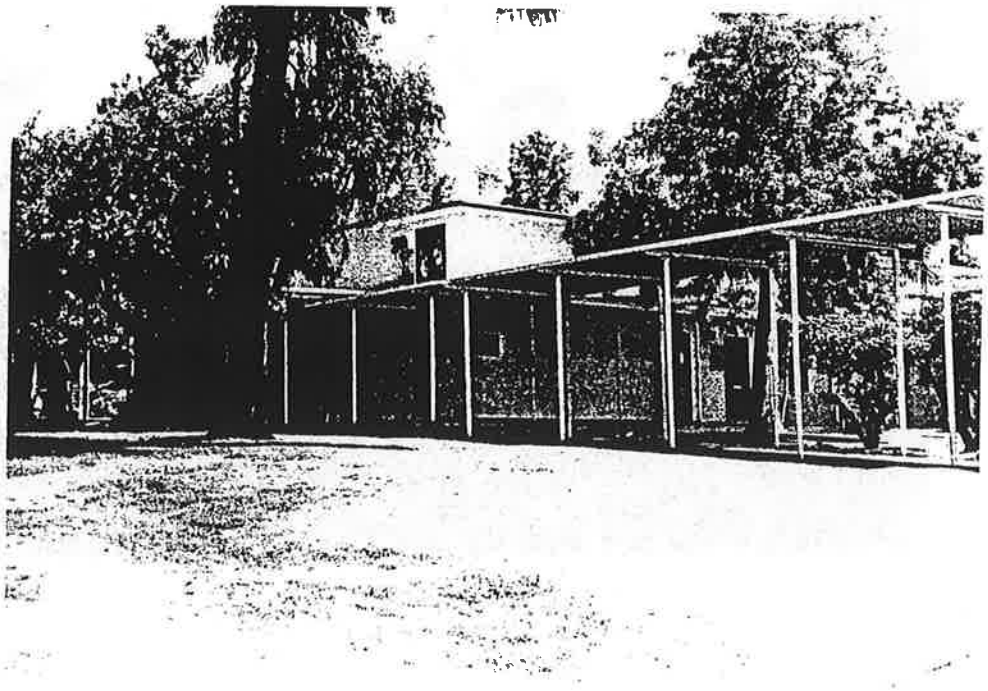
Building No.: 19A
Building Name: Child Development Center South
State Inventory Name: Nursery School
Year Built: 1952
Phase In Which Affected by Master Plan: 2
Architect: Frederick H. Kennedy, Jr.
Square Footage: 1,686
Summary: A flat-roofed small home-like brick building, this is one of the earlier college structures, probably built after the second financing election of 1950. It is of some historical interest, because the construction of a nursery school on the campus would have been a rather revolutionary concept in 1952. Fairly good integrity (there is a later addition on its westerly end).
Significance Evaluation Code: 5S3



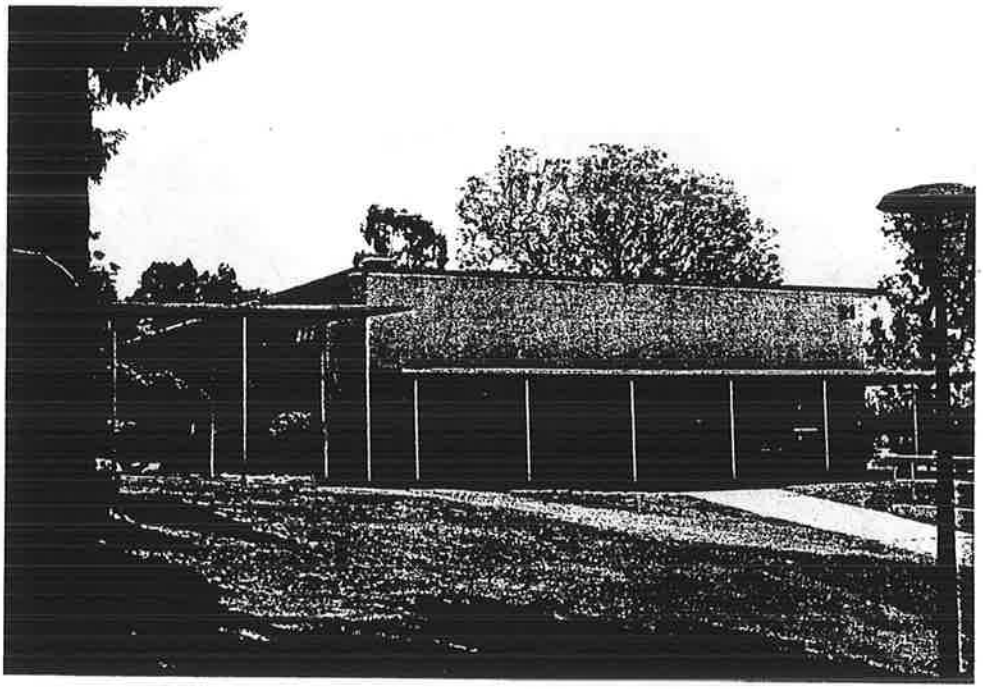
Building No.: 20
Building Name: Family and Consumer Sciences
State Inventory Name: Homemaking 2
Year Built: 1948
Phase In Which Affected by Master Plan: 3
Architect: Frederick H. Kennedy, Jr.
Square Footage: 7,095

Summary: One of the three oldest still-extant buildings, built with 21 and 22 specifically for the new college. Although it was designed in a contemporary style rather than in the Spanish Colonial Revival style prevalent in other campus structures that were built beginning just one year later, its open layout is similar to that of Buildings 13 through 19. Its stripped-down, industrial look is reminiscent of the elementary schools that the architect was designing for Southern California school districts at the time and is not particularly distinguished. For some unknown reason it did not follow the Mediterranean theme prescribed for the campus in the original master plan. Good integrity.

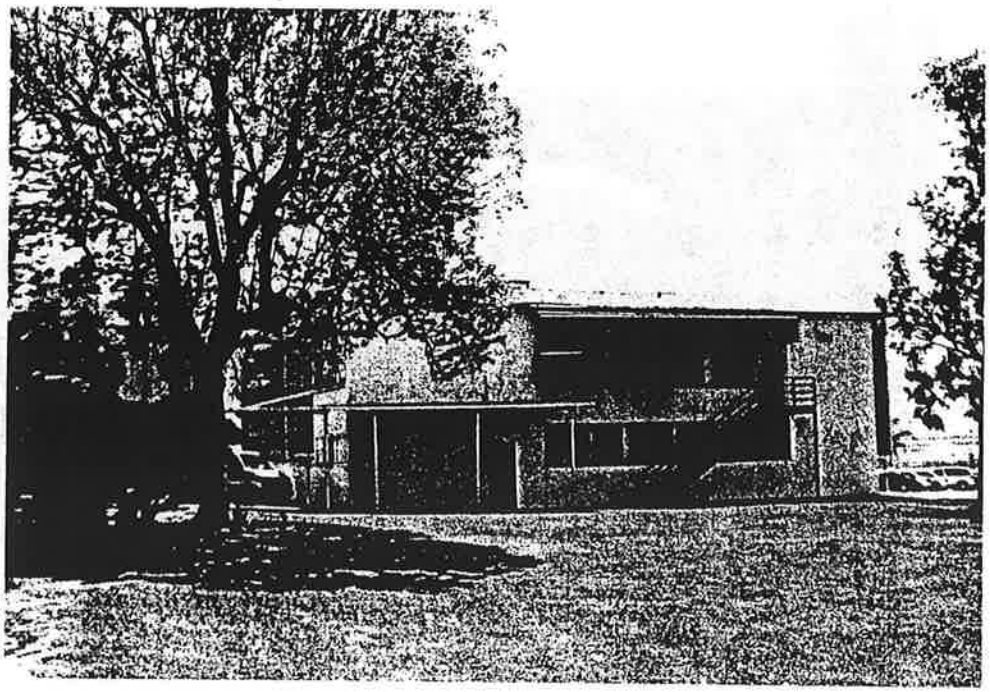
Significance Evaluation Code: 5S3



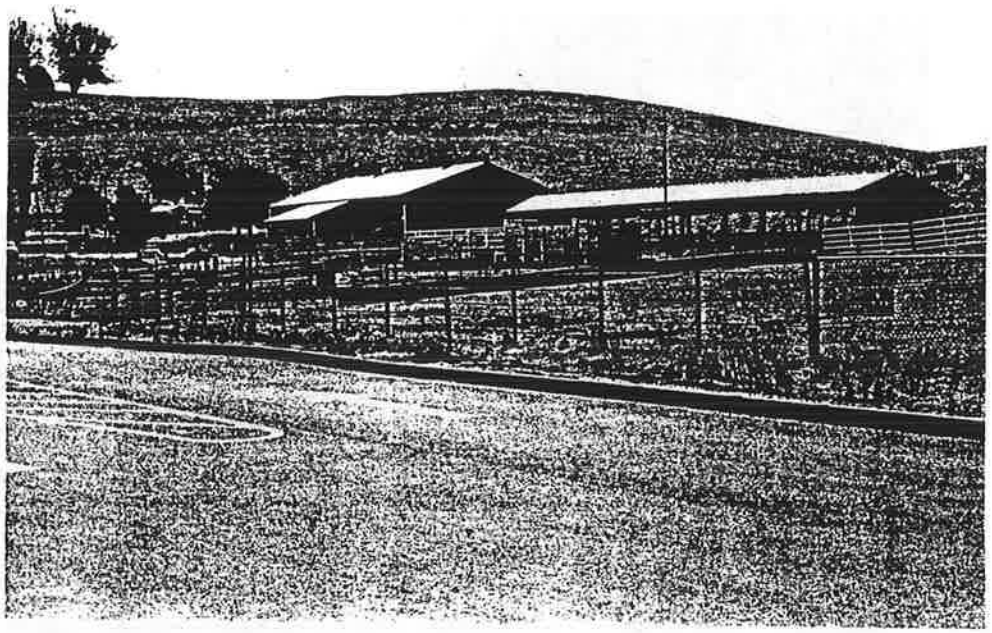
Building No.: 21
Building Name: Air Conditioning
State Inventory Name: Shop Building
Year Built: 1948
Phase In Which Affected by Master Plan: 1
Architect: Frederick H. Kennedy, Jr.
Square Footage: 7,205
Summary: Designed in a similar contemporary style to blend with the concurrently built Buildings 20 and 22 next door, this utilitarian structure was meant to reflect the idea of "form follows function." For some unknown reason it did not follow the Mediterranean theme prescribed for the campus in the original master plan. Good integrity.
Significance Evaluation Code: 5S3



Building No.: 22
Building Name: Welding
State Inventory Name: Welding Shop
Year Built: 1948
Phase In Which Affected by Master Plan: 1
Architect: Frederick H. Kennedy, Jr.
Square Footage: 6,419
Summary: Designed in a similar contemporary style to blend with the concurrently built Buildings 20 and 21 next door, this utilitarian structure was meant to reflect the idea of "form follows function." For some unknown reason it did not follow the Mediterranean theme prescribed for the campus in the original master plan. Good integrity.
Significance Evaluation Code: 5S3



Building No.: F9
Building Name: Beef Unit
State Inventory Name: Beef Unit
Year Built: 1954
Phase In Which Affected by Master Plan: 2
Architect: Frederick H. Kennedy, Jr.
Square Footage: 2,301
Summary: Built in a vernacular style, this complex of sheds and feeding structures surrounded by open space has some historical interest, being the oldest agricultural buildings still extant on campus. It harks back to the days when the college was still in the middle of a prosperous rural area.
Significance Evaluation Code: 5S3



APPENDIX 3

Location Map of Resources

APPENDIX 4

Biography of Architect
Frederick H. Kennedy, Jr.

FREDERICK H. KENNEDY, JR.
Architect

A native of Fort Payne, Alabama, Frederick Hunt Kennedy, Jr., was born on March 21, 1891, the son of Frederick Hunt Kennedy, a lawyer active in the real estate business, and his wife Clara Genevieve Kennedy. The younger Kennedy grew up in a creative family, his two sisters eventually becoming well-regarded playwrights in the motion picture business in Hollywood. He received his elementary education in Asheville, North Carolina, and was a graduate of M.I.T., receiving a B.A. in architecture in 1914. Kennedy began his professional career as a draftsman in the office of architect Frank Bourne in Boston. After moving to Pasadena, California with his family in 1915, Kennedy worked for three years as an instructor in drawing and mathematics in the Civil Engineering Department of Throop Polytechnic, the precursor of Caltech. He became a licensed architect in 1916. Then, for a period of two years, he was associated with the well-known and prolific local architect and builder, G. Lawrence Stimson. In 1921, Kennedy established his own practice in Pasadena, eventually opening an office at 15 South El Molino Avenue. He later moved to 1041 East Green Street.

Kennedy served in the U.S. Army during World War II and attained the rank of First Sergeant assigned to the Bureau of Aircraft Production. He was a member of the Pasadena chapter of the American Institute of Architects and was also active in the American Legion and the University Club of Pasadena.

He married Helen C. Smith, and they had a daughter Alice. The family first settled in Altadena in an English-style house designed by Kennedy in the early 1920s and later moved to San Dimas where Kennedy raised chickens as a hobby. The cultivation of iris was another of his avocations; he served as a Judge of the American Iris Society. Mr. and Mrs. Kennedy were both active in San Dimas civic affairs and in the San Dimas Community Church.

Kennedy designed commercial, religious, and residential buildings, but is often remembered for his school work in a number of Southern California communities, most of them in English and Mediterranean Revival styles. In Pasadena, he designed Willard Elementary School in 1925 (and the auditorium addition in 1929) and Wilson Junior High School in 1927. He was associated with Albert Schroeder in the 1938 design of Santa Paula High School and was the primary architect for the original Mount San Antonio Community College campus between 1948 and 1955. He was considered a specialist in school lighting and often lectured on that subject. Kennedy was also a strong advocate of concrete construction in the Los Angeles area.

Kennedy won an award from the San Diego Chapter of the American Institute of Architects for his design in 1928 of the Grace Lutheran Church in that city. He was responsible for selecting Carlton Winslow as the architect for the First Baptist Church of Pasadena, of which he was a member, and between 1927 and 1930 served as the supervising architect on the project. Kennedy also designed the Throop Memorial Unitarian-Universalist Church in 1923, the Trinity Lutheran Church in 1926, and the Third Church of Christ, Scientist in 1935 and 1951, all in Pasadena; a desert museum for 29 Palms in 1929; the Library of La Verne College in 1953; and the First National Bank of La Verne in 1954. He served as the consulting architect during the construction of the Mt. Palomar Astronomical Observatory in 1941 and 1942 and, during World War II, participated in the construction of buildings at Camp Pendleton. Kennedy retired in 1960.

Although an admirer of the innovative, Kennedy was definitely partial to historical style, having been quoted that old styles "link us to the past and have associations which...give aesthetic value and a charm analogous to that of the antique."

Sources:

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Pasadena Star-News, March 8, 1918
Southern California Magazine, November 1917; January 1918

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The Building Biographer
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Pasadena, CA 91106-3763
Phone/Fax: 626-792-7465
e-mail: timothygregory@earthlink.net

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Appendix 5

Identification of Existing Resources and Their Historic Context (Background)

A research methodology is developed to comply with federal and state mandates and guidelines for identifying cultural resources, be they in the form of buildings, sites, structures, objects, or contributors to historic districts. A thorough field visit, including the preparation of a written and photographic record, is the best foundation for identifying and later evaluating any cultural resources found on the project site.

An initial part of that process involves the development of a "historic context" organized by theme, place, and time. The National Register of Historic Places (NRHP) suggests that "a theme is the equivalent of a research problem, and an historic context is developed by placing the problem in an appropriate setting in both time and space" (Interagency Resources Division, , Bulletin 16A, 1991). For instance, a broad historic context might be identified as "Western U.S. Expansion Mid-19th Through 20th Centuries." A more focused historic context might be "Early to Mid 20th Century Agricultural Development of the (locality)."

A "historic context" is associated with identified cultural resources through the concept of a "property type." The NRHP defines property types as a group of individual historic properties that share physical and associative characteristics. Site types, including archaeological sites, are interpreted and evaluated within the realm of the "historic context." For instance, an appropriate property type for the sites associated with the contexts mentioned above, given the agricultural theme, might be "Farm/Ranch."

Major themes have evolved during the past two decades of cultural resources investigations at various 19th and 20th century sites in southern California. Possible research themes and their associated property types, adapted from the "Areas of Significance" and "Functions and Uses" for eligibility evaluations for the NRHP, are listed on the following page:

EXAMPLES OF POTENTIAL RESEARCH (HISTORIC CONTEXT) THEMES

Agriculture
Architecture
Archaeology: Prehistoric
Aboriginal
Non-aboriginal
Art
Chronology
Commerce/Trade
Communications
Community Planning and Development
Conservation
Defense
Demography
Economics
Education
Engineering
Entertainment/Recreation
Environmental Adaptation
Ethnic Heritage: Asian
Afro-American
European
Hispanic
Native-American
Pacific Islander
Exploration
Funerary
Government
Health/Medicine
Industry/Processing/Extraction
Irrigation
Land Use
Landscape Architecture
Law
Literature
Maritime History
Material Culture
Military
Performing Arts
Philosophy
Politics/Government
Religion
Residential
Science
Settlement Patterns
Social History
Subsistence
Technology
Tourism
Transportation
Other (e.g., Invention)

EXAMPLES OF POTENTIAL ASSOCIATED PROPERTY TYPES

Amusement Park
Ancillary Building
Bridge
Canal/Aqueduct
Cemetery
Civic Auditorium
Commercial Building, 1-3 stories
Commercial Building, over 3 stories
Community Center
Dam
Educational Building
Engineering Structure
Ethnic Minority Property
Farm/Ranch
Folk Art
Government Building
Highway/Trail
Hospital
Hotel/Motel
Industrial Building
Lake/River/Reservoir
Landscape Architecture
Lighthouse
Military Property
Mine
Monument/Mural/Gravestone
Multiple Family Property
New Deal Public Works Project
Public Utility Building
Railroad Depot
Religious Building
Rural Open Space
Ship
Single Family Property
Stadium/Sports Arena
Street Furniture
Theater
Train
Trees/Vegetation
Urban Open Space
Women's Property

More than one research theme might be applicable. Further research within and adjacent to the project area could build on these themes and develop them into a historic context that characterizes the cultural development of the entire community.

Research questions pertaining to the themes are developed prior to and during the course of fieldwork. Other research questions arise during the subsequent analysis of the field and historic research data.

Architectural components of extant or relic buildings, structures, and/or objects within the project area should be sufficiently preserved to contain data for research and interpretation. Ideally, the original design and subsequent alterations should be identifiable as discrete occupational episodes associated with a temporally defined occupation. Architecture should represent identifiable functional association. Archival materials should be available to reconstruct a partial or complete history of the project area.

Many of the research themes are inter-related. The analysis of architectural, archival, and oral history data for one theme will simultaneously address several other themes. For instance, the study of historical material culture (i.e., artifacts) provides a wealth of information concerning subsistence patterns, household composition (e.g., gender, adults, children, infants), socioeconomic status, trade networks and commodity flows (local, regional, national, and international), historical site use and activity, spatial inter-relationships of features and buildings, site evolution, and other themes. The documentary record by itself may not contain sufficient data to provide answers for all the research questions arrived at. Other data generated through architectural, archaeological, oral history and specialized analyses may provide complementary information which will provide answers to these and other research questions.

A multi-disciplinary approach is used during the identification and historic context phase of the cultural resource investigation project. Archival documents and cartographic sources, oral history interviews, as well as field surveys are all used to locate, define, and provide interpretations for the cultural resources within the project area. Furthermore, this data is combined to reconstruct the most accurate picture of the project area. In turn, the research data is useful in the construction of the historic context and in evaluating the significance of the sites identified within and adjacent to the project area.

Appendix 6

Evaluation of Historic Resources (Background)

Both CEQA and NHPA mandate that a cultural resource site's significance must be established before project impacts to the cultural resources can be assessed. This is the evaluation process. The first step, "Identification", has been accomplished through research, development of an historic context, and a field survey of cultural resources within the project area.

In making an evaluation of a resource's significance, the consultant refers to the following sources: the implementing regulations for the California Register (California Public Resources Code, section 4852), CEQA and Historical Resources (a technical bulletin issued by the Governor's Office of Planning and Research) and National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation. (As mentioned below, the California Register criteria mirror those for the National Register and this publication thoroughly addresses the evaluation process.)

CEQA mandates that a cultural resource's significance must be established before project impacts to the resource can be assessed. All data gained from the field survey, architectural analysis, research, and historic context will be assembled and interpreted with respect to each site. In turn, the multi-disciplinary data will be used to evaluate the individual site's potential eligibility for the California Register.

In order to accomplish this, evaluative investigations must begin at the sites themselves. Field investigations should document cultural features, site boundaries, and the nature and association of site features within each lot or property of the project area. The integrity of the cultural resource (i.e., its state of intactness and the extent of alteration from its original appearance either deliberately made or the result of deterioration over time) must also be addressed. Such changes will then be documented by historic research and, where applicable, architectural research. (It should be noted that while interior modifications of a historic property may affect its integrity, in most cases exterior integrity is considered the foremost determinant of whether a property still retains enough of its original significance.)

During the evaluation phase of the investigations, the resources are assessed and evaluated for their potential to address and exemplify important historic themes. The intent of the evaluation is to assess the presence/absence of data that is needed to answer research questions. A site that has lost substantial integrity through deterioration or alteration may thereby have lost much of its significance. If similar, more intact, sites have been identified in close proximity to the subject site, the site may be considered of lesser value than if it is the only such site found locally, and therefore unique, even if of poor integrity.

"Criteria for listing historical resources on the California Register are consistent with those developed by the National Park Service for listing properties on the National Register of Historic Places (NRHP), but have been modified for state use in order to include a range of historical resources which better reflect the history of California" (Department of Parks and Recreation 1998).

Criteria for Evaluating the Significance of Historical Resources

An eligibility evaluation for each cultural resource within the project area should be made under the following criteria for the California Register of Historical Resources as established by the revised CEQA Guidelines [15064.5(a)(3)(A-D)]:

"A resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria...including the following:

1. Be associated with events contributing to the broad patterns of the state's history and culture;

2. Be associated with historically important people;

3. Embody distinctive characteristics of a type, period, region, or construction method, or represent the work of a creative individual; or

4. Have the potential for yielding important information in California's history or prehistory."

Thus, Criterion 1 is usually associated with "events," Criterion 2 is associated with "persons," Criterion 3 is associated with "design/construction," and Criterion 4 is associated with "information potential." Some historical archaeological sites may be evaluated for eligibility under Criteria 1, 2, and/or 3, but most are evaluated under Criterion 4. (Please note that the criteria for the NRHP are worded very similarly, except that they put more emphasis on the resource's significance on the national level. The NRHP criteria are labeled A through D rather than 1 through 4 and are often found on DPR 523 forms.)

Criterion 1. Events. Properties are considered important if they are associated with significant events. Association through the historic context has to be demonstrated. Providing evidence of direct association of the events with the historic property is necessary. Properties can also be considered important if they are the best examples of the result of historic settlement patterns ("event," in this case, being rather broadly defined).

Criterion 2. Person. "Historically important people" refers to individuals whose activities are demonstrably important within a local or state context. Correlation of an individual within the framework of the historic context is crucial. Also, his/her ties with a specific property and/or an event is important.

Criterion 3. Design/Construction. Resources represented by extant architecture are evaluated under this criterion. Elements that are important under Criterion 3 include distinctive characteristics of a type, period, or method of construction, or the work of a master, possessing high artistic value. Integrity of the property is an especially important factor under this criterion.

Criterion 4. In order to qualify for eligibility for the California Register under this criterion, the archaeological site (i.e., historic property) has to meet two conditions: 1) the site must have

yielded or be likely to yield information such as archaeological data or historic data that will have potential to answer research questions; and 2) the yielded information must be important with respect to historical archaeology and other related historic preservation fields.

Related Criteria--Generally, a historic property, to be considered eligible, should be of a certain age, not be a reconstruction, and have never been moved from its original location. Federal guidelines have traditionally prescribed a 50-year age for cultural resources evaluated for eligibility for the NRHP (36 CFR 60.4); however, a 45-year age threshold is becoming increasingly acceptable due to delays in project implementation which can often stretch five years or more beyond the evaluation date. The California State Office of Historic Preservation has stated that, minimally, a site "must be at least 45 years of age" (1989:3). However, the National Park Service and the State Office of Historic Preservation do recognize special sites that have achieved significance even though they may be less than 45 years old, have been reconstructed, or have been relocated (Sherfey and Luce 1979; Interagency Resources Division 1987).

The NRHP has developed a chart of seven numerical evaluation codes for pinpointing the status of a historic resource. California Register regulations also recognize these codes and require that they be entered onto DPR 523 forms.

1 Listed in the NRHP
2 Determined eligible for the NRHP in a formal process involving federal or state agencies
3 Appears eligible for listing in the NRHP in the judgment of the professional evaluator
4 Might become eligible for listing in the NRHP when certain conditions are met
5 Not eligible for the NRHP but may be significant at the local level
6 None of the above
7 Undetermined

These initial numerical codes can be further sub-classified by adding a letter code. Among the most commonly used letter codes are:

S Resource is separately listed in the NRHP
D Resource is included as a contributor to a NHRP-listed district
B Both S and D above
M Resource may become eligible as a contributor to a NRHP-listed district when more documentation is found or restoration work performed

Refinements may be made to these alphanumeric codes by adding still more letters and/or digits to cover all categories of actual or potential National Register eligibility. These finer divisions are not listed here in view of space limitations.

Any historic resource given an initial NRHP code of 1 through 3 is eligible for listing on the

California Register. A resource given an initial code of 4 or 5 may be eligible for listing on the California Register, but only after undergoing a formal nomination process involving the agreement of the local jurisdiction and the State Historical Resources Commission. In any case, it is recommended that resources with an initial code of 4 or 5 be given special consideration in local planning.

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00342		1978	Taylor, Thomas T.	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District		19-000883
LA-00481		1979	Van Horn, David M.	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California	Archaeological Associates, Ltd.	
LA-00836		1977	Cottrell, Marie G.	Letter Report to Ronald Martin & Assoc. Inc.	Archaeological Resource Management Corp.	
LA-01268		1983	Mason, Roger D. and Nancy Whitney-Desautels	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca	Scientific Resource Surveys, Inc.	
LA-01346		1984	Brock, James P.	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)	Archaeological Advisory Group	
LA-01392		1980	Anonymous	Archaeological Assessment and Test Report on LAN-1070, LAN-1071,and LAN-1072 Located on Tt 36682 in the City of Walnut, Ca	Scientific Resource Surveys, Inc.	19-001070, 19-001071, 19-001072
LA-02135		1990	Mason, Roger D.	Cultural Resources Survey Report on a 25 Acre Parcel in the City of Walnut, Los Angeles County, California	The Keith Companies Archaeological Division	
LA-03835		1979	Cottrell, Marie G.	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California	Archaeological Resource Management Corp.	
LA-04337		1979		Cultural Resources Report T.t. 36682 Located in the City of Walnut, California	Scientific Resource Surveys, Inc.	19-001070, 19-001071, 19-001072
LA-05644	Cellular -	2002	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California	LSA Associates, Inc.	
LA-05646	Cellular -	2001	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California	LSA Associates, Inc.	
LA-05648		2000	Strudwick, Ivan	Results of a Cultural Resource Survey of the 315 Acre Forest Lawn Memorial Park, Covina Hills, Los Angeles County, California	LSA Associates, Inc.	
LA-06262	Cellular -	2002	Duke, Curt	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California	LSA Associates, Inc.	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-08249		2002	Peterson, Patricia A.	Cultural Resources Records Search and Survey Report for the Reclaimed Water Backbone Transmission Project, Los Angeles County, California	Chambers Group, Inc.	19-000179, 19-001044, 19-001045, 19-001046, 19-002805, 19-120031, 19-186112
LA-10043		2000	Strudwick, Ivan H.	Results of a Cultural Resource Survey of the 315 Acre Forest Lawn Memorial Park, Covina Hills, Los Angeles County, California	LSA Associates, Inc.	

PROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
156387		1046 ELKGROVE AVE	LINCOLN PLACE 2-STORY, 16-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156377		1049 ELKGROVE AVE	LINCOLN PLACE 2-STORY, 16-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156374		1056 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156378		1061 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156375		1064 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156376		1072 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 9	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
131069		1077 ELKGROVE AVE	LINCOLN PLACE APARTMENTS	VENICE	P	1949	TAX.CERT.	537.9-19-0394	01/04/11	7J	
							HIST.RES.	CR	08/05/05	2CS	AC
							CAL.REG.	19-0465	09/30/04	2CS	AC
							NAT.REG.	19-0394	02/07/03	7W	
156388		1080 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156389		1088 ELKGROVE AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 9	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156304		1403 ELKGROVE CR	LINCOLN PLACE MIXED 1 & 2 STORY, 7	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156311		1410 ELKGROVE CR	LINCOLN PLACE 2-STORY, 16-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156305		1411 ELKGROVE CR	LINCOLN PLACE 2-STORY, 14-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156306		1421 ELKGROVE CR	LINCOLN PLACE 2-STORY, 18-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156310		1422 ELKGROVE CR	LINCOLN PLACE 2-STORY, 12-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156308		1430 ELKGROVE CR	LINCOLN PLACE 2-STORY, 8-UNIT APAR	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156307		1431 ELKGROVE CR	LINCOLN PLACE 2-STORY, 14-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156309		1440 ELKGROVE CR	LINCOLN PLACE 2-STORY, 16-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156292		970 ELKHART PL	LINCOLN PLACE 2-STORY, 20-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156448		960 ELKLAND PL	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156449		972 ELKLAND PL	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156314		1070 FREDERICK ST	LINCOLN PLACE 2-STORY, 20-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156386		1030 LAKE ST	LINCOLN PLACE 2-STORY, 10-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156390		1110 LAKE ST	LINCOLN PLACE 2-STORY, 8-UNIT APAR	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156391		1118 LAKE ST	LINCOLN PLACE 2-STORY, 6-UNIT APAR	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156393		1130 LAKE ST	LINCOLN PLACE 2-STORY, 10-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156405		1505 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156408		1521 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 1	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156437		1601 PENMAR AVE	LINCOLN PLACE 2-STORY, 21-UNIT APA	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156430		1621 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 2	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156444		1701 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 2	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156446		1721 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 2	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
156447		1741 PENMAR AVE	LINCOLN PLACE MIXED 1 & 2 STORY, 2	VENICE	P	1949	HIST.RES.	CR	08/05/05	2CD	AC
166228		ATLANTIC AVE	ATLANTIC AVENUE BRIDGE	VERNON	M	1931	PROJ.REVW.	FHWA060814A	09/12/06	6Y	
092283		1830 E 25TH ST	GAUTIER LAND COMPANY FREIGHT OFFIC	VERNON	P	1937	HIST.RES.	DOE-19-94-0707-0000	10/27/94	6Y	
							PROJ.REVW.	FHWA940929A	10/27/94	6Y	
092284		1850 E 25TH ST	CA STUCCO CO. FACTORY	VERNON	P	1923	HIST.RES.	DOE-19-94-0708-0000	10/27/94	6Y	
							PROJ.REVW.	FHWA940929A	10/27/94	6Y	
156618		3049 E VERNON AVE	CLOUGHERTY BROTHERS PACKING COMPAN	VERNON	P	1931	PROJ.REVW.	FCC051026G	11/14/05	6Y	
089716		EXCHANGE AVE	LA MESA BATTLEFIELD	VERNON	P		HIST.RES.	SHL-0167-0000	03/06/35	7L	
150949		2525 FRUITLAND AVE		VERNON	P	1941	HIST.RES.	DOE-19-04-0364-0000	02/11/04	6Y	
							PROJ.REVW.	FCC040211D	02/11/04	6Y	
150947		2552 FRUITLAND AVE		VERNON	U	1928	HIST.RES.	DOE-19-04-0363-0000	02/11/04	6Y	
							PROJ.REVW.	FCC040211D	02/11/04	6Y	
027417	19-176741	MISSION ST	SOTO STREET BRIDGE	VERNON	C	1928	HIST.SURV.	0058-0001-0000		7R	
150946		5139 PACIFIC BLVD	SCE FRUITLAND SUBSTATION	VERNON	P	1914	HIST.RES.	DOE-19-04-0362-0000	02/11/04	6Y	
							PROJ.REVW.	FCC040211D	02/11/04	6Y	
166229		5122 S ATLANTIC BLVD		VERNON	P	1931	PROJ.REVW.	FHWA060814A	09/12/06	6Y	
090789		130 AVENIDA ALIPAZ	W.R. ROWLAND ADOBE REDWOOD RANCH H	WALNUT	U	1883	HIST.RES.	SPHI-LAN-021	10/01/75	7L	
165274		650 BREA CANYON RD		WALNUT	P	1910	PROJ.REVW.	FHWA010809A	10/30/01	6Y	
127673		2819 CUDAHY ST		WALNUT		1922	HIST.RES.	DOE-19-00-0374-0000	02/19/01	6Y	

ROPERTY-NUMBER	PRIMARY-#	STREET.ADDRESS.....	NAMES.....	CITY.NAME.....	OWN	YR-C	OHP-PROG..	PRG-REFERENCE-NUMBER	STAT-DAT	NRS	CRIT
							PROJ.REVW.	HUD010227G	02/19/01	6Y	
090790		20800 E COLIMA BLVD	CAPTAIN WILLIAM BANNING HOME	WALNUT	U		HIST.RES.	SPHI-LAN-022	02/27/76	7L	
083997		2719 HILL ST		WALNUT	U	1925	PROJ.REVW.	HUD920615Q	08/31/93	6Y	
168201			TRACT 16472	WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168209			TRACT 17547	WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168175			TRACT 15527	WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168195			TRACT 16738	WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168218			TRACT 19682	WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168220			TRACT 17045	WEST COVINA	P	1952	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168407		3576 E CRAIGLEE CIR		WEST COVINA	P	1952	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168408		3580 E CRAIGLEE CIR		WEST COVINA	P	1952	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168212		2200 E GARVEY AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168346		2003 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168348		2019 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168349		2023 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168350		2027 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168351		2033 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168352		2037 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168354		2043 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168355		2047 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168357		2053 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168359		2105 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168360		2111 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168361		2117 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168363		2123 E GARVEY AVE N		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168217		2451 E GARVEY AVE N		WEST COVINA	P	1955	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168214		2330 E GARVEY AVE S		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168216		2346 E GARVEY AVE S		WEST COVINA	P	1955	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168380		2447 E HILLHAVEN DR		WEST COVINA	P	1952	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168221		3712 E HOLT AVE		WEST COVINA	P	1952	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168367		2443 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168368		2449 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168369		2507 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168371		2521 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168372		2535 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168374		2536 E JAMES AVE		WEST COVINA	P	1954	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168192		1038 E MARDINA ST		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168193		1042 E MARDINA ST		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168194		1046 E MARDINA ST		WEST COVINA	P	1953	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168254		1222 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168255		1224 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168256		1230 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168257		1236 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168258		1242 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168259		1250 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168260		1302 E MARDINA ST		WEST COVINA	P	1951	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168298		1430 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168300		1434 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168301		1438 E MARDINA ST		WEST COVINA	P		PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168303		1442 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168304		1502 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168305		1506 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168306		1510 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	
168307		1514 E MARDINA ST		WEST COVINA	P	1950	PROJ.REVW.	FHWA020703A	09/06/02	6Y	

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

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NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

5 April 2018

Psomas
3 Hutton Centre Drive, Suite 200
Santa Ana, CA 92707-8794

Attn: Charles Cisneros, Senior Archaeologist / Project Manager

re: Paleontological Resources for the proposed Temple Avenue Project, Psomas Project 3MTS010200, in the City of Walnut, Los Angeles County, project area

Dear Charles:

I have conducted a thorough search of our Vertebrate Paleontology records for the proposed Temple Avenue Project, Psomas Project 3MTS010200, in the City of Walnut, Los Angeles County, project area as outlined on the portion of the San Dimas USGS topographic quadrangle map that you sent to me via e-mail on 22 March 2018. We have no vertebrate fossil localities that lie directly within the boundaries of the proposed project area, but we do have localities somewhat nearby from sedimentary deposits similar to those that may occur at depth in the proposed project area.

In the lower lying terrain in the southwestern portion and the eastern margin of the proposed project area the surface deposits consist of younger Quaternary Alluvium, derived as alluvial fan deposits from the San Jose Hills immediately to the north. These deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but they may be underlain by older sedimentary deposits that do contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from similar older Quaternary deposits is LACM 8014, east-southeast of the proposed project area in the northeastern Puente Hills just southwest of the intersection of the Riverside Freeway (Highway 60) and the Corona Freeway (Highway 71), that produced a fossil specimen of bison, *Bison*. A little farther to the east-southeast from the proposed project area, in English Canyon west of Chino, our older Quaternary locality LACM 1728 produced fossil specimens of horse, *Equus*, and camel, *Camelops*, at a depth of 15 to 20 feet below the surface.

In the surrounding elevated terrain there are exposures of the marine late Miocene Puente Formation, also sometimes considered to be part of the Monterey Formation in this area with the youngest member of the Puente Formation referred to as the Sycamore Canyon Formation. Our closest vertebrate fossil locality from the Puente Formation is LACM 6171, due west of the proposed project area in the hills on the west side of Collegewood Drive, that produced a fossil fish specimen of herring, *Ganolytes*. Our next closest fossil vertebrate locality from the Puente Formation is LACM 7153, just south of east of the proposed project area south of Temple Avenue and west of Valley Boulevard, that produced many specimens of fossil pipefish including the holotype (name bearing specimen of a species new to science) of the pipefish *Syngnathus emeritus*, published by R. A. Fritzsche in 1980 (Revision of the eastern Pacific Syngnathidae (Pisces: Syngnathiformes), including both Recent and fossil forms. Proceedings of the California Academy of Sciences, 42(6):181-227). Further to the southeast of the proposed project area, in Diamond Bar south and west of the intersection of the Pomona Freeway (Highway 60) and the Orange Freeway (Highway 57), our Puente Formation locality LACM 7190 produced a fauna of fossil fish including deep sea smelts, Bathylagidae, lantern fish, Myctophidae, jacks, Carangidae, and herrings, *Ganolytes* and *Etringus*.

Shallow excavations in the younger Quaternary Alluvium exposed throughout the proposed project area probably will not uncover significant vertebrate fossil remains. Deeper excavations there that extend down into older deposits, however, may well encounter significant fossil vertebrate specimens. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Vehicle Fuels

Construction Phase (gallons/construction period	**Gasoline**	**Diesel**
Construction Vehicles		174,173
Worker Trips	477	1
Vendor Trips	220	4
Haul Trucks	125	9,890
Total	821	184,068

Operations Phase (gallons/year)	**Gasoline**	**Diesel**	**Natural Gas (kBTU/yr)**	**Electricity (kWh/yr)**
City Park	0	0	9,701,050	5,305,650
Junior College (2Yr)	386,099	76,111	936,900	1,799,316
All Land Uses	386,099	76,111	10,637,950	7,104,966

Offroad VehicleFuel Use

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Horsepower Category	Load Factor	Num Days	Year	Fuel Consumption Rate (gal/hour)	Total Fuel Consumption (gal/construction period)
Stu Center Demolition	Concrete/Industrial Saws	1	8.00	81	100	0.73	210	2019	4.7	5,781
Stu Center Demolition	Excavators	3	8.00	158	175	0.38	210	2019	2.9	5,525
Stu Center Demolition	Rubber Tired Dozers	2	8.00	247	300	0.40	210	2019	4.5	5,992
Park R and Tennis Fine Grading	Excavators	2	8.00	158	175	0.38	27	2019	2.9	474
Park R and Tennis Fine Grading	Graders	1	8.00	187	175	0.41	27	2019	3.1	279
Park R and Tennis Fine Grading	Rubber Tired Dozers	1	8.00	247	300	0.40	27	2019	4.5	385
Park R and Tennis Fine Grading	Scrapers	2	8.00	367	300	0.48	27	2019	5.6	1,155
Park R and Tennis Fine Grading	Tractors/Loaders/Backhoes	2	8.00	97	100	0.37	27	2019	1.6	254
Park R and Tennis Building Cons	Cranes	1	7.00	231	300	0.29	269	2019	3.3	1,802
Park R and Tennis Building Cons	Forklifts	3	8.00	89	100	0.20	269	2019	2.0	2,582
Park R and Tennis Building Cons	Generator Sets	1	8.00	84	100	0.74	269	2019	5.2	8,311
Park R and Tennis Building Cons	Tractors/Loaders/Backhoes	3	8.00	97	100	0.37	269	2019	1.6	3,796
Park R and Tennis Building Cons	Welders	1	8.00	46	50	0.45	269	2019	2.4	2,337
Demolition	Concrete/Industrial Saws	1	8.00	81	100	0.73	158	2019	4.7	4,350
Demolition	Excavators	3	8.00	158	175	0.38	158	2019	2.9	4,157
Demolition	Rubber Tired Dozers	2	8.00	247	300	0.40	158	2019	4.5	4,508
Park S Demolition	Concrete/Industrial Saws	1	8.00	81	100	0.73	39	2019	4.7	1,074
Park S Demolition	Excavators	3	8.00	158	175	0.38	39	2019	2.9	1,026
Park S Demolition	Rubber Tired Dozers	2	8.00	247	300	0.40	39	2019	4.5	1,113
Park S Grading	Excavators	2	8.00	158	175	0.38	38	2019	2.9	667
Park S Grading	Graders	1	8.00	187	175	0.41	38	2019	3.1	392
Park S Grading	Rubber Tired Dozers	1	8.00	247	300	0.40	38	2019	4.5	542
Park S Grading	Scrapers	2	8.00	367	300	0.48	38	2019	5.6	1,626
Park S Grading	Tractors/Loaders/Backhoes	2	8.00	97	100	0.37	38	2019	1.6	357
Park S Building Construction	Cranes	1	7.00	231	300	0.29	260	2019	3.3	1,742
Park S Building Construction	Forklifts	3	8.00	89	100	0.20	260	2019	2.0	2,496
Park S Building Construction	Generator Sets	1	8.00	84	100	0.74	260	2019	5.2	8,033
Park S Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	100	0.37	260	2019	1.6	3,210
Park S Building Construction	Welders	1	8.00	46	50	0.45	260	2019	2.4	2,259
Stu Center Site Preparation	Rubber Tired Dozers	1	8.00	247	300	0.40	627	2020	4.5	8,958
Stu Center Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	100	0.37	627	2020	1.6	2,948
Stu Center Grading	Excavators	2	8.00	158	175	0.38	79	2020	2.9	1,386
Stu Center Grading	Graders	1	8.00	187	175	0.41	79	2020	3.1	815
Stu Center Grading	Rubber Tired Dozers	1	8.00	247	300	0.40	79	2020	4.5	1,129
Stu Center Grading	Scrapers	2	8.00	367	300	0.48	79	2020	5.6	3,383
Stu Center Grading	Tractors/Loaders/Backhoes	2	8.00	97	100	0.37	79	2020	1.6	743
Park R and Tennis Paving	Pavers	2	8.00	130	100	0.42	22	2020	1.7	256
Park R and Tennis Paving	Paving Equipment	2	8.00	132	100	0.36	22	2020	1.6	207
Park R and Tennis Paving	Rollers	2	8.00	80	100	0.38	22	2020	1.7	227
Park R and Tennis Architectural	Air Compressors	1	6.00	78	100	0.48	21	2020	1.3	80
Stu Center Building Construction	Cranes	1	7.00	231	300	0.29	523	2020	3.3	3,516
Stu Center Building Construction	Forklifts	3	8.00	89	100	0.20	523	2020	2.0	5,023
Stu Center Building Construction	Generator Sets	1	8.00	84	100	0.74	523	2020	5.2	16,129
Stu Center Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	100	0.37	523	2020	1.6	6,455
Stu Center Building Construction	Welders	1	8.00	46	50	0.45	523	2020	2.4	4,542
Park S Architectural Coating	Air Compressors	1	6.00	78	100	0.48	21	2020	1.3	80
Vball Demolition	Concrete/Industrial Saws	1	8.00	81	100	0.73	48	2020	4.7	1,321
Vball Demolition	Excavators	1	8.00	158	175	0.38	48	2020	2.9	421
Vball Demolition	Rubber Tired Dozers	1	8.00	247	300	0.40	48	2020	4.5	686
Vball Grading	Excavators	1	8.00	158	175	0.38	48	2021	2.9	421
Vball Grading	Graders	1	8.00	187	175	0.41	48	2021	3.1	496
Vball Grading	Rubber Tired Dozers	1	8.00	247	300	0.40	48	2021	4.5	686
Vball Grading	Scrapers	1	8.00	367	300	0.48	48	2021	5.6	1,024
Vball Grading	Tractors/Loaders/Backhoes	1	8.00	97	100	0.37	48	2021	1.6	226
Vball Site Preparation	Rubber Tired Dozers	1	8.00	247	300	0.40	48	2020	4.5	686
Vball Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	100	0.37	48	2020	1.6	226
Bookstore Site Preparation	Rubber Tired Dozers	1	8.00	247	300	0.40	78	2021	4.5	1,115
Bookstore Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	100	0.37	78	2021	1.6	367
Bookstore Grading	Excavators	2	8.00	158	175	0.38	78	2021	2.9	1,369
Bookstore Grading	Graders	1	8.00	187	175	0.41	78	2021	3.1	805
Bookstore Grading	Rubber Tired Dozers	1	8.00	247	300	0.40	78	2021	4.5	1,115
Bookstore Grading	Scrapers	0	8.00	367	300	0.48	78	2021	5.6	0
Bookstore Grading	Tractors/Loaders/Backhoes	2	8.00	97	100	0.37	78	2021	1.6	734
Stu Center Paving	Pavers	2	8.00	130	100	0.42	45	2021	1.7	524
Stu Center Paving	Paving Equipment	2	8.00	132	100	0.36	45	2021	1.6	426
Stu Center Paving	Rollers	2	8.00	80	100	0.38	45	2021	1.7	463
Bookstore Building Construction	Cranes	1	7.00	231	300	0.29	312	2021	3.3	2,083
Bookstore Building Construction	Forklifts	3	8.00	89	100	0.20	312	2021	2.0	2,999
Bookstore Building Construction	Generator Sets	1	8.00	84	100	0.74	312	2021	5.2	9,610
Bookstore Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	100	0.37	312	2021	1.6	3,852
Bookstore Building Construction	Welders	1	8.00	46	50	0.45	312	2021	2.4	2,706
Bookstore Paving	Pavers	1	8.00	130	100	0.42	338	2021	1.7	1,970
Bookstore Paving	Paving Equipment	1	8.00	132	100	0.36	338	2021	1.6	1,600
Bookstore Paving	Rollers	2	8.00	80	100	0.38	338	2021	1.7	3,480
Stu Center Architectural Coating	Air Compressors	1	6.00	78	100	0.48	80	2021	1.3	305
Communication Tower Paving	Pavers	0	8.00	130	100	0.42	36	2022	1.7	0
Communication Tower Paving	Paving Equipment	1	8.00	132	100	0.36	36	2022	1.6	170
Communication Tower Paving	Rollers	1	8.00	80	100	0.38	36	2022	1.7	185
										174,173

Immediate Improvements

Phase Name	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length
Stu Center Demolition	15	0	344	15	7	20
Park R and Tennis Fine Grad	20	0	0	15	7	20
Park R and Tennis Building C	100	156	0	15	7	20
Demolition	15	0	74	15	7	20
Park S Demolition	15	0	208	15	7	20
Park S Grading	20	0	0	15	7	20
Park S Building Construction	100	156	0	15	7	20
Stu Center Site Preparation	5	0	0	15	7	20
Stu Center Grading	20	0	2500	15	7	20
Park R and Tennis Paving	15	0	0	15	7	20
Park R and Tennis Architectu	80	0	0	15	7	20
Stu Center Building Construct	100	156	0	15	7	20
Park S Architectural Coating	80	0	0	15	7	20
Vball Demolition	8	0	17	15	7	20
Vball Site Preparation	13	0	0	15	7	20
Vball Site Preparation	5	0	0	15	7	20
Bookstore Site Preparation	5	0	0	15	7	20
Bookstore Grading	15	0	0	15	7	20
Stu Center Paving	15	0	0	15	7	20
Bookstore Building Construct	100	156	0	15	7	20
Bookstore Paving	10	0	0	15	7	20
Stu Center Architectural Coat	80	0	0	15	7	20
Communication Tower Paving	5	0	0	15	7	20
Vball Grading	13	0	0	15	7	20

Total Trips and VMT

Phase Name	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length
All Trips	854	624	3,143	15	7	20

	Fuel Consumption (Gasoline)			Fuel Consumption (Diesel)		
Phase Name	**Worker Trips**	**Vendor Trips**	**Hauling Trips**	**Worker Trips**	**Vendor Trips**	**Hauling Trips**
All Trips	477	220	125	1	4	9,890
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
Total	**477**	**220**	**125**	**1**	**4**	**9,890**

Gallons of Gasoline and Diesel

Year 2027

Vehicle Types	MPG by Fuel Type			Population by Fuel Type			
	GAS	DSL	ELEC	GAS	DSL	ELEC	Total
LDA	33.8	44.8		6,523,088	79,143	608,818	6,602,231
LDT1	28.8	33.6		550,688	423	308	551,111
LDT2	26.3	34.4		2,508,832	5,295		2,514,126
LHDT1	11.2	21.4		84,043	103,467		187,510
LHDT2	10.5	19.7		22,369	47,001		69,370
MCY	34.8			339,736			339,736
MDV	19.2	26.5		1,474,976	34,329		1,509,306
MH	7.5	10.4		33,033	9,165		42,198
MHDT	7.2	8.9		19,832	164,672		184,504
HHDT	4.9	6.3		963	97,431		98,394
OBUS	7.3	7.5		9,716	6,644		16,360
SBUS	11.5	7.3		3,000	5,216		8,217
UBUS	5.2	5.1		2,664	3,682		6,346

Trips/Day Land Use	Trips/day Weekday	Trips/day Saturday	Trips/day Sunday
City Park	0	0	0
Junior College (2Yr)	5,611	2,291	245
Unenclosed Parking with Elevator	0	0	0
Total	**5,611**	**2,291**	**245**

Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	Total
City Park	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.02104	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827	100.0%
Junior College (2Yr)	0.904015	0.012054	0.012054	0.001205	0.012054	0.007613	0.025361	0.012054	0.003135	0.002244	0.006361	0.000855	0.000997	100.0%
Unenclosed Parking with Elevator	0.543646	0.044284	0.209381	0.116714	0.014227	0.006316	0.02104	0.033117	0.002601	0.001862	0.005277	0.000709	0.000827	100.0%
														0.0%
														0.0%

Vehicle Trips

Weekday Trips	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	Obus	Ubus	MCY	Sbus	MH	Total
City Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior College (2Yr)	5072	68	68	7	68	43	142	68	18	13	36	5	6	5,611
Unenclosed Parking with Elevator	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**5072**	**68**	**68**	**7**	**68**	**43**	**142**	**68**	**18**	**13**	**36**	**5**	**6**	**5,611**

Saturday Trips	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	Obus	Ubus	MCY	Sbus	MH	Total
City Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior College (2Yr)	2071	28	28	3	28	17	58	28	7	5	15	2	2	2,291
Unenclosed Parking with Elevator	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**2071**	**28**	**28**	**3**	**28**	**17**	**58**	**28**	**7**	**5**	**15**	**2**	**2**	**2,291**

Sunday Trips	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	Obus	Ubus	MCY	Sbus	MH	Total
City Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior College (2Yr)	221	3	3	0	3	2	6	3	1	1	2	0	0	245
Unenclosed Parking with Elevator	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**221**	**3**	**3**	**0**	**3**	**2**	**6**	**3**	**1**	**1**	**2**	**0**	**0**	**245**

Gallons of Fuel

Gasoline	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHD	Obus	Ubus	MCY	Sbus	MH	Total
City Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior College (2Yr)	349,040	5,512	6,043	811	6,357	3,079	5,025	315	3,365	2,411	2,413	357	1,370	386,099
Unenclosed Parking with Elevator	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	349,040	**5,512**	**6,043**	**811**	**6,357**	**3,079**	**5,025**	**315**	**3,365**	**2,411**	**2,413**	**357**	**1,370**	**386,099**

Diesel	LDA	LDT1	LDT2	MDV	OBUS	LHDT2	MHDT	HHD	Obus	Ubus	MCY	Sbus	MH	Total
City Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Junior College (2Yr)	3,194	4	10	14	4,101	3,462	33,452	25,032	2,233	3,361	0	975	275	76,111
Unenclosed Parking with Elevator	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3,194	**4**	**10**	**14**	**4,101**	**3,462**	**33,452**	**25,032**	**2,233**	**3,361**	**0**	**975**	**275**	**76,111**

462,210

29

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Parking Structure at Parking Lot S
Mt. San Antonio College
Walnut, California

Converse Project No. 17-31-247-01

Prepared For:

Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Prepared By:

Converse Consultants
717 South Myrtle Avenue
Monrovia, California 91016

October 23, 2017

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

October 23, 2017

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Parking Structure at Parking Lot S
Mt. San Antonio College
Walnut, Los Angeles County, California
Converse Project No. 17-31-247-01

Dear Mr. Gidcumb:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geologic and geotechnical study for the Proposed Parking Structure Project located at Student Parking Lot S at Mt. San Antonio College (Mt. SAC) in Walnut, California. In accordance with California Education Code, Sections 17212 and 81033, this report was prepared consistent with the current edition of California Building Code, Title 24, Chapter 16A and Chapter 18A; California Administrative Code, Part 1, Title 24, CCR, Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings, for design and for the Division of the State Architect (DSA) submittal purposes. Converse evaluated the nature and engineering properties of the subsurface soils and sedimentary bedrock to provide recommendations for site earthwork, foundation design, grading, and construction for the proposed development. Our services were performed in accordance with our proposal dated August 10, 2017.

We appreciate the opportunity to be of continued service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

Sincerely,

CONVERSE CONSULTANTS

Sivathasan

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

Dist: 5Addressee

PROFESSIONAL CERTIFICATION

This report for the Proposed Parking Structure Project at Student Parking Lot S located within the campus of Mt. San Antonio College in the City of Walnut, Los Angeles County, California, has been prepared by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed, and the recommendations of this report are modified or verified in writing.

Parameswaran Ariram, EIT
Senior Staff Engineer



Mark B. Schluter, PG, CEG, CHG
Senior Engineering Geologist

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions and recommendations, as presented in the body of this report, please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed project consists of a 3-story parking structure to be constructed on existing Student Parking Lot S. The parking structure footprint measures approximately 380 feet long and 220 to 260 feet wide and is approximately 89,820 square feet. The parking structure consists of three (3) above-ground parking levels and will be founded on shallow spread foundations.

- Eight (8) exploratory borings (BH-1 through BH-8) were drilled within the project site from August 16 to August 24, 2017. The borings were advanced using a truck-mounted drill rig with an 8-inch diameter hollow-stem auger to depths ranging from 20.5 to 51.5 feet below the existing ground surface (bgs). Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and refusal to drilling penetration in hard sedimentary bedrock along the southern side of the proposed structure.

- Ten (10) exploratory Cone Penetration Tests (CPT-1 through CPT-10) were advanced to depths of 8 to 42 feet below the existing ground surface within the project site on September 6, 7 and 8, 2017. CPT Nos. CPT-1, CPT-2, CPT-3, CPT-5, CPT-6, CPT-7, CPT-8, CPT-9, and CPT-10 encountered very dense/stiff soil and sedimentary bedrock conditions, and were stopped short of their planned depths.

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is located within a mapped Seismic Hazard Zone for liquefaction. The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction-induced settlement ranges from 0.91 to 2.88 inches with potential differential settlement ranging from 0.46 to 1.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

- Local zones of groundwater seepage were encountered during subsurface exploration in the alluvium and bedrock at depths ranging from approximately 23

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feet bgs in boring BH-3 to approximately 36.8 feet bgs in BH-7. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Variable thicknesses of undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for slab or foundation support.

- Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and sedimentary bedrock is recommended for site grading to provide a minimum 5-foot-thick compacted fill blanket beneath the building foundations and floor slab. The over-excavation and re-compaction is recommended to extend approximately 7 feet to 10 feet below ground surface and 10 feet beyond the edge of the parking structure foundations. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock areas.

- The upper undocumented fill soils and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slab to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays.

- Shallow spread and continuous footings founded on compacted fill are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans and specifications, and are followed during site construction.

- Based on the proposed plan, over-excavation and re-compaction of the undocumented fills and upper alluvial soils is required for the building pad to achieve the planned finished grades.

- Different earth materials should be anticipated at excavation bottoms for the planned floor levels. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction below the bottom of foundations and slab-on-grades is recommended. We recommend the shallow foundations should be supported on a minimum 5-foot-thick layer of compacted fill benched into undisturbed native soil and bedrock materials for the building pad.

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

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- In general, the soluble sulfate concentration, pH and chloride content are not in the corrosive range. However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers (pebble conglomerates, sandstone layers, siliceous layers, etc.) may be encountered during excavation and grading and should be anticipated. Bedrock hardness will increase with depth within the sandstone (Tpss) and pebble conglomerate (Tpcg) layers. Earthwork and grading should be performed with suitable grading equipment for hard, cemented and gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project

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Appendix A ..... Field Exploration and Cone Penetration Test Data
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Appendix D ..... Earthwork Specifications

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1.0 INTRODUCTION

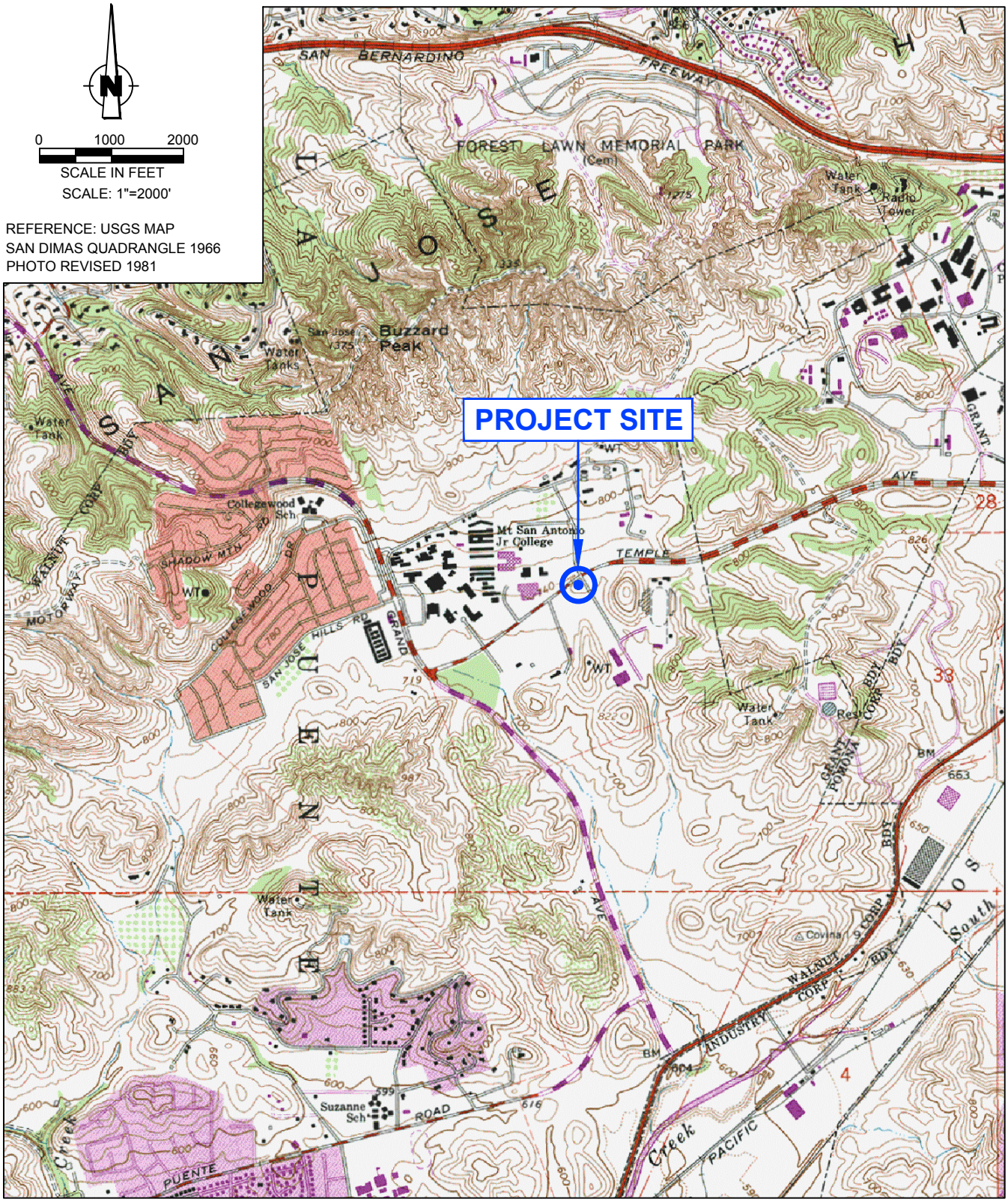
This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed Parking Structure at Parking Lot S located within the campus of Mt. San Antonio College, in the City of Walnut, Los Angeles County, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of the investigation was to generate a report for design and the Department of State Architect (DSA) submittal purposes, consistent with current edition of California Education Code, Sections 17212 and 81033, California Building Code, Title 24 CCR, Sections 4-317, 1803 and 1804 and CGS Note 48-Checklist for the review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

We have used a site plan provided to us by your office as a reference for this project. The site plan is included in this report as Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

This report is written for the project described herein and is intended for use solely by Mt. San Antonio College and its design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

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SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No.

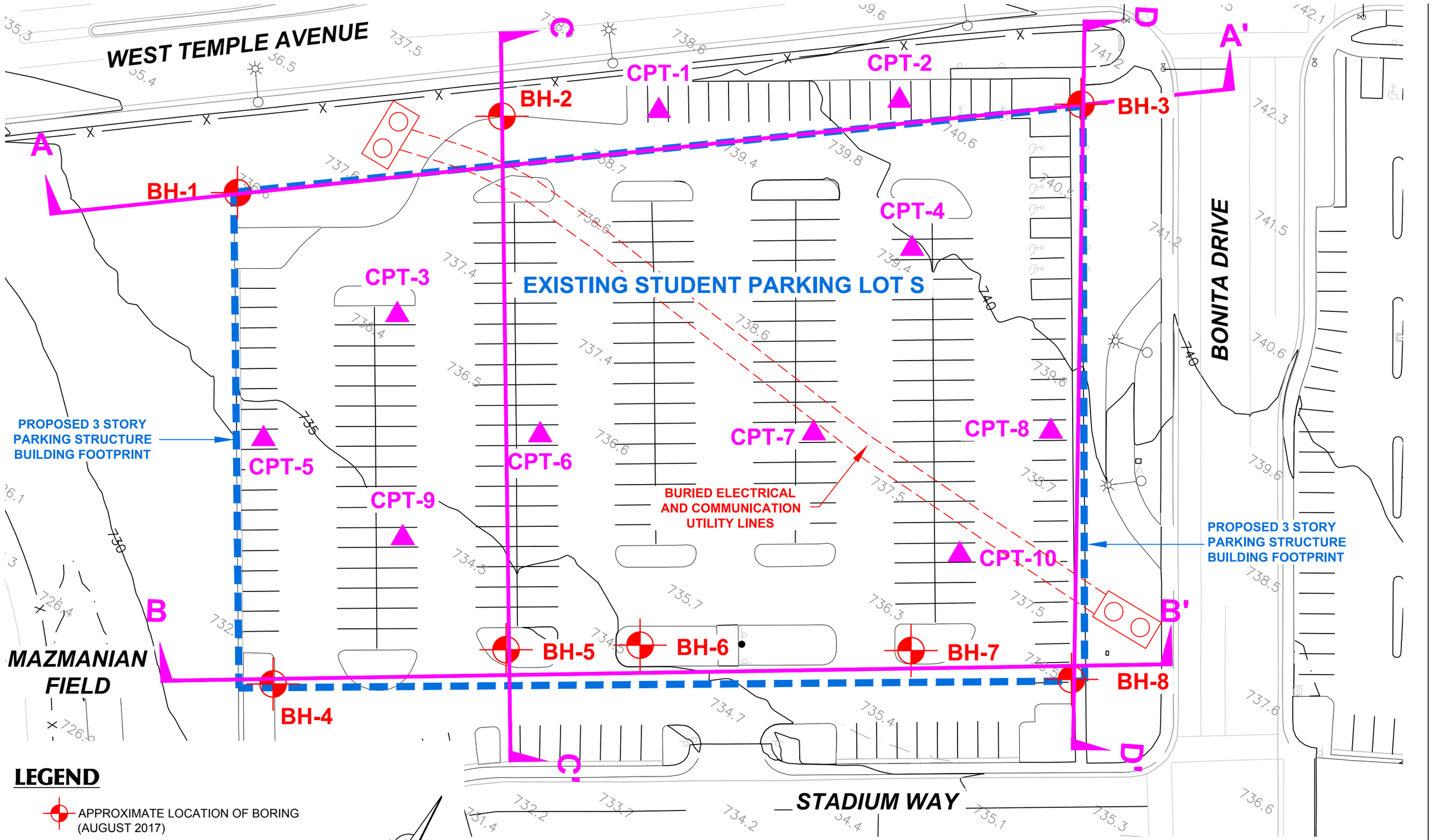
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LEGEND

- APPROXIMATE LOCATION OF BORING (AUGUST 2017)
- APPROXIMATE LOCATION OF CPT (SEPTEMBER 2017)
- GEOLOGIC CROSS SECTION A-A', B-B', C-C', AND D-D'

0 40 80

APPROXIMATE SCALE IN FEET

SITE PLAN AND APPROXIMATE LOCATION OF CPTs AND BORINGS

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MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

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2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed parking structure project is located at the current Student Parking Lot S located on at the southwest corner of the intersection of West Temple Avenue and Bonita Drive in Mt. San Antonio College. The existing parking lot dimensions are approximately 380 feet east-west by 310 feet north-south. The Student Parking Lot S is currently asphalt paved with concrete curbs and gutters and provides the campus with parking facilities. The site is bordered by West Temple Avenue to the north, Bonita Drive to the east, Stadium Way with hardscape to the south and the Mt. SAC Mazmanian baseball field to the west.

The subject site for the proposed parking structure has surface elevations ranging from approximately 730 to 741 feet relative to mean-sea-level (MSL) respectively, with surface gradients flowing down gradient toward the southwest. The site coordinates are: North latitude: 34.04599 degrees, West longitude: 117.84056 degrees.

The site coordinates were centered on the subject sites and used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

2.2 Project Description

The proposed Parking Structure at Parking Lot S consists of one new three-level parking structure building. The parking structure footprint measures approximately 380 feet long and 220 to 260 feet wide and is approximately 89,820 square feet. The structural loads are not known at this time, but are anticipated to be moderate. The structure is planned to be founded on shallow spread foundations or concrete mat foundations. The project site is shown on Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

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3.0 SCOPE OF WORK

The scope of our work included a site reconnaissance, subsurface exploration with soil sampling, laboratory testing, engineering analysis, and preparation of this report.

3.1 Site Reconnaissance

During the site reconnaissance from August 14 to August 15, 2017, the surface conditions were noted and the locations of the borings were determined so that drill rig and Cone Penetration Test (CPT) rig access to all the locations was available. The borings and CPT soundings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used. The proposed boring and CPT test sites were scanned by a private utility locator using electrical and ground penetrating radar systems to screen each site for buried utility lines. Underground Service Alert (USA) of Southern California was then notified of our proposed drilling and CPT test locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration

Eight (8) exploratory borings (BH-1 through BH-8) were drilled within the project site from August 16 to August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8- inch diameter hollow stem auger to depths ranging from 20.5 to 51.5 feet below the existing ground surface (bgs). It should be noted that borings were hand augered to depths of 5 feet below ground surface to locate and avoid underground utilities in the area. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. California Modified Sampler (Ring samples), Standard Penetration Test (SPT) samples, and bulk soil samples were obtained for laboratory testing.

Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The SPT sampler was driven into the ground with successive drops of a 140-pound hammer falling 30 inches by means of a mechanically driven drop hammer. The number of successive drops of the driving weight (“blows”) required for every 6-inches of penetration of the sampler are shown on the Logs of Borings in the “blows column. The bore holes were then backfilled and compacted with soil cuttings by reverse spinning of the auger following the completion of drilling and patched with asphalt patch where necessary to match existing conditions.

Ten (10) Cone Penetration Test soundings (CPT-1 through CPT-10) were advanced to depths of 8 feet to 42 feet below ground surface within project site on September 6, 7 and 8, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The cone penetration testing consisted of pushing an instrumented cone-tipped probe into the

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ground while simultaneously recording the resistance to penetration at the cone tip and along the friction sleeve. The test holes were stopped at plan depths or when the cone tip encountered refusal to penetration. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then patched with asphalt patch to match the existing pavement surface.

The approximate locations of the exploratory borings and CPT test soundings are shown in Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In Situ Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Fines Content/Passing No. 200 Sieve (ASTM D1140)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- R-value (ASTM Standard D2844)
- Soil Corrosivity Tests (Caltrans 643, 422, 417, and 532)

For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*. For *in-situ* moisture and density data, see the Logs of Borings in Appendix A, *Field Exploration*.

3.4 Engineering Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

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4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California along the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low angle reverse or reverse-oblique faults bounding the south margin of the Transverse Ranges. Faults in group one include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Group two faults include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

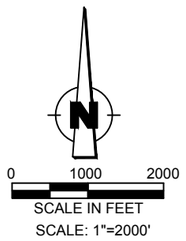
The Pomona Valley basin is bounded to the north by the San Jose fault and to the southwest by the Chino-Central Avenue fault. These two fault systems do not exhibit significant evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age faults, having exhibited displacement and movement within the past approximately 130,000 years.

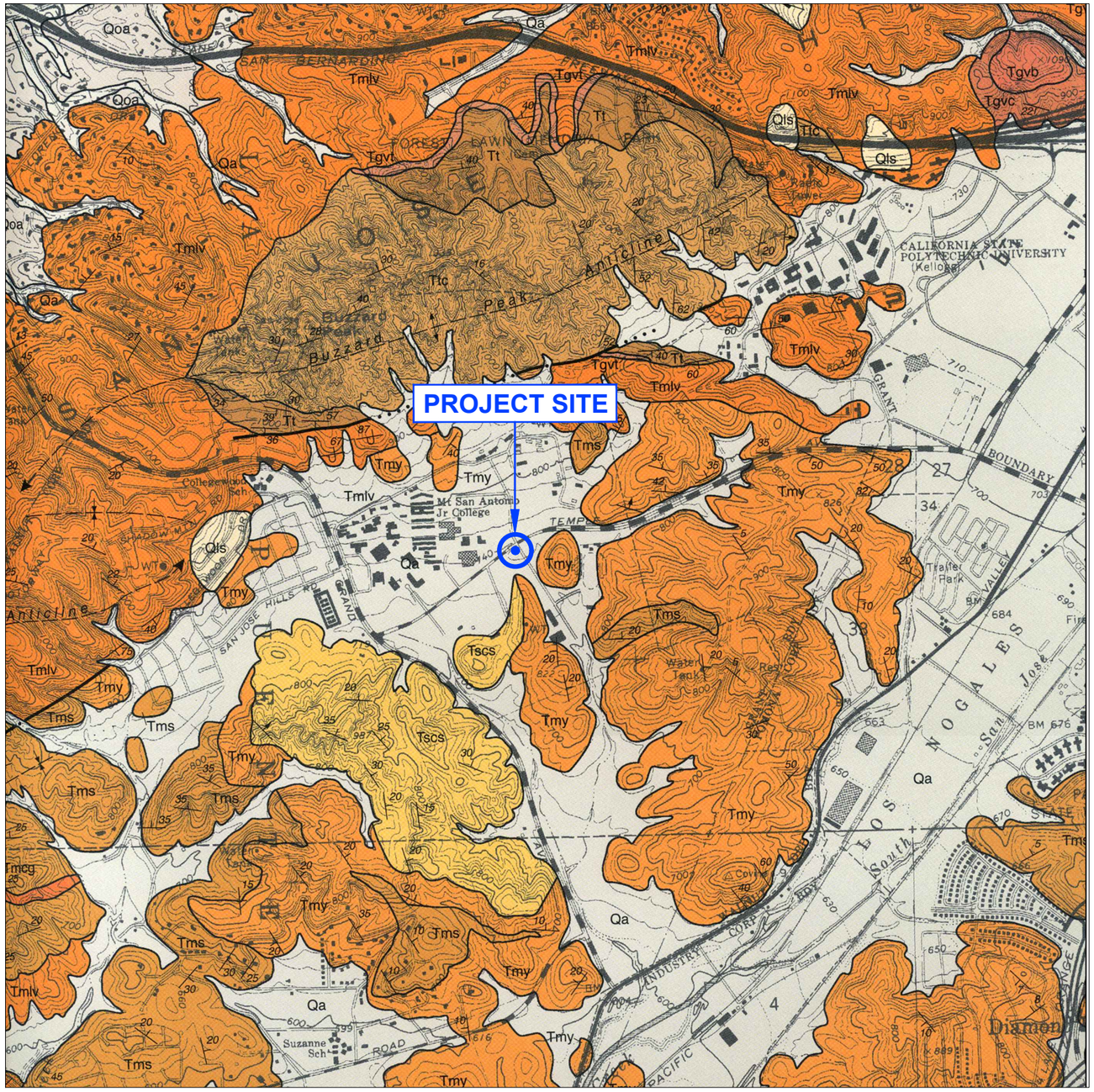
The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. Low lying sedimentary bedrock hillsides are depicted south and east of the subject site and have been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and minor sandstone and (Tscs) Sycamore Canyon Formation consisting of light gray sandstone that includes conglomerate and siltstone. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map.*

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our investigation consist of existing fill soils placed during previous site grading operations, natural alluvial soils and sedimentary bedrock of the Puente Formation. The project site area is covered by a layer of fill soils underlain by the alluvial soils and interbedded layers of sandstone, pebble conglomerate, siltstone, and claystone sedimentary bedrock of the Puente Formation. These earth materials consist primarily of silty sands, clayey sands, sands, silts and clays. Each of these earth materials is described in more detail below.

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SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic; latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg****, and siltstone.*

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964: Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

TOPANGA FORMATION

(of Shelton, 1955; Tan. 1998; marine clastic; middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late ? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999) extrusive volcanic rocks; middle Miocene age locally intertongued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

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CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite: plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.*

Holocene, Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No. 17-31-247-01

Drawing No. 3

Fill Soils

An undocumented fill layer of variable thickness was encountered in all of the soil borings drilled between August 16 to August 24, 2017, within the subject site. The depth of the fill ranges from approximately three (3) to eight (8) feet in thickness. Deeper fill soils may be encountered at the project site. The observed fill soils consist primarily of silty sand, clayey sand and clayey silt. Most of the fill soils appear to have been locally derived from the general site area. Documentation concerning the placement and degree of compaction of the fill soils was not available.

Alluvium

Alluvial deposits were encountered underlying the fill material at the project site. The native soil encountered in the borings consists of clayey sands, sandy clays, sandy silts, silty clays, silts and clays with occasional gravels and cobbles. The deepest alluvium was located on the east side of the project site along Bonita Drive. Sampling blow-counts correlate from loose and medium stiff to dense and very stiff. Dark brown, fine-grained silts and clays were encountered above the alluvium / bedrock contact. These natural soil materials are potentially expansive and not recommended for use as fill directly below footings and slabs. The soils also include occasional fragments of weathered bedrock. We expect that some cobbles and rocks are larger in size than the largest observed, (approximately four (4) inches in the maximum dimension) and were broken down in the hollow stem auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may be buried in the alluvial sediments below the site.

Sandstone, Pebble Conglomerate, Siltstone and Claystone Bedrock (Tmy and Tscs)

The project site on Parking Lot S is partially underlain by shallow sedimentary bedrock of Puente Formation (Tmy and Tscs) consisting of interbedded sandstone, pebble conglomerate, siltstone, and claystone layers. A hillside bedrock ridge descends northward beneath the southern side of the project site. The bedrock layers range from generally thinly bedded to thick and massive, and display varying degrees of cementation and hardness. The bedrock is weathered near the alluvium/bedrock contact and becomes less weathered and medium hard to hard with depth.

Sandstone and Pebble Conglomerate Bedrock (Tscs)

Hard sandstone and conglomerate bedrock layers consisting of gravel and cobble-sized rocks in a cemented sandstone matrix (Tscs) were encountered at shallow depths along the south side of the project site. The sandstone and conglomerate layers can be thick and massive and may contain boulder sized hard rock materials. Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and refusal to drilling

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penetration in the hard and cemented sedimentary bedrock layers along the southern side of the proposed parking structure. Cone Penetration Tests (CPT-3, CPT-5, CPT-6, CPT-7, CPT-8, CPT-9 and CPT-10 encountered very dense/stiff soil and sedimentary bedrock conditions and were stopped short of their planned depths. The sandstone and conglomerate bedrock materials were observed to be hard and will be more difficult to excavate during grading and construction.

Drawing No.4, *Geologic Cross Section A-A'*, Drawing No.5, *Geologic Cross Section B-B'*, Drawing No.6, *Geologic Cross Section C-C'* and Drawing No.7, *Geologic Cross Section D-D'*, have been drawn across the subject site to illustrate the subsurface conditions beneath the project site. For additional information on the subsurface conditions, see the Logs of Boring Data in Appendix A, *Field Exploration*.

4.3 Groundwater

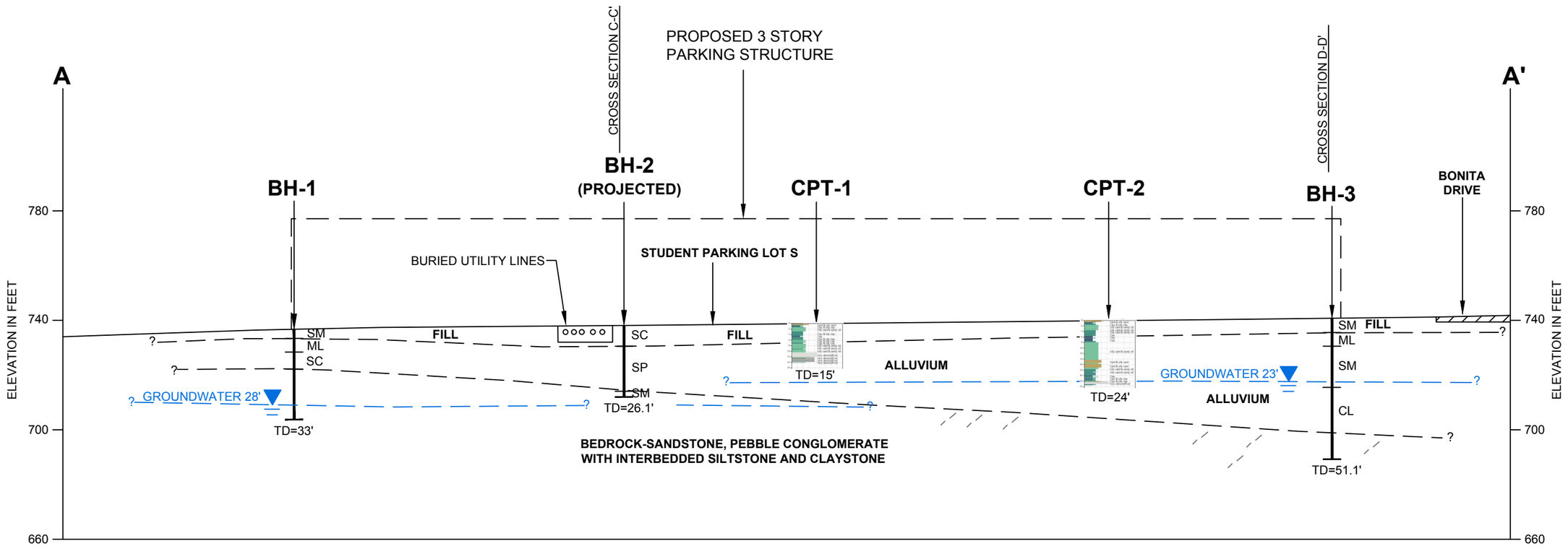
Local zones of groundwater seepage and groundwater were encountered during subsurface exploration in the alluvium and bedrock at depths ranging from approximately 23 feet below ground surface in boring BH-3 to approximately 36.8 feet in boring BH-7. The regional groundwater table is not expected to be encountered during the planned grading and construction. However, the possibility of groundwater being encountered during future grading and deeper excavations cannot be completely precluded.

Wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers from upslope infiltration of rainfall, surface flow, runoff and storm water recharge and should be anticipated during grading and construction. Local zones of perched groundwater may be present within the near-surface deposits due to buried alluvial channel features, channel remnants, alluvium/bedrock contacts, local recharge conditions or during the rainy season. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, storm water recharge and groundwater pumping, among other factors.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

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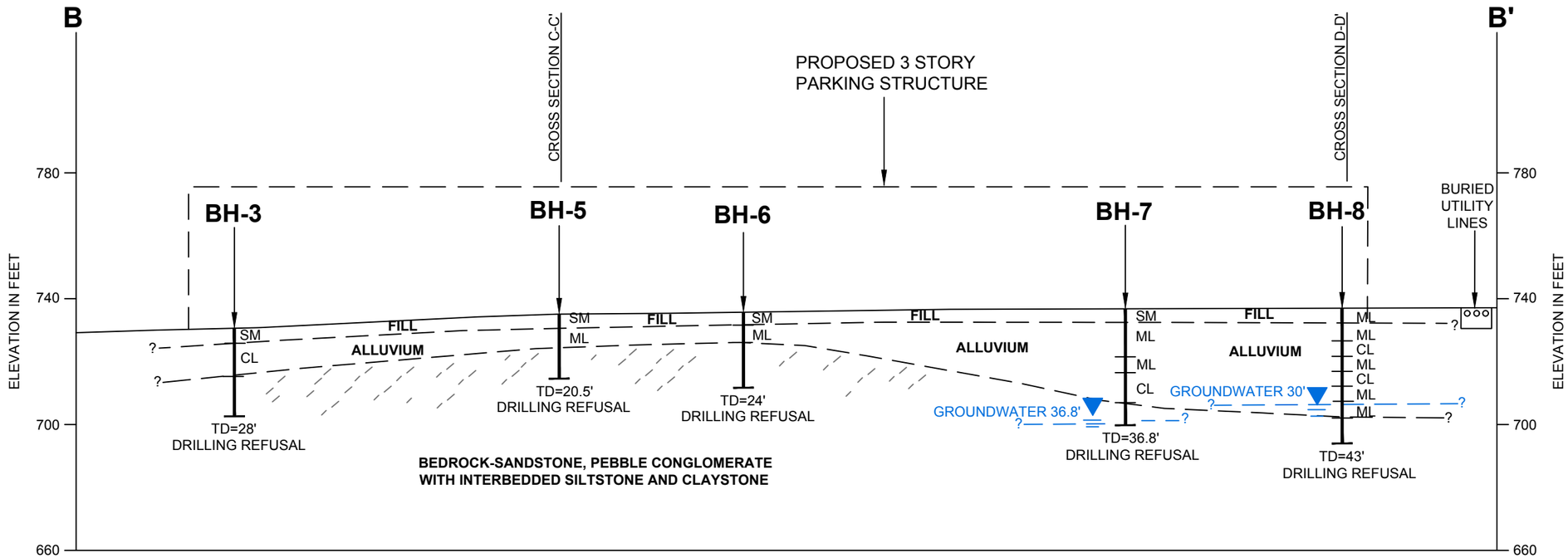
PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION A-A'

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Project No.	Drawing No.
17-31-247-01	4



PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

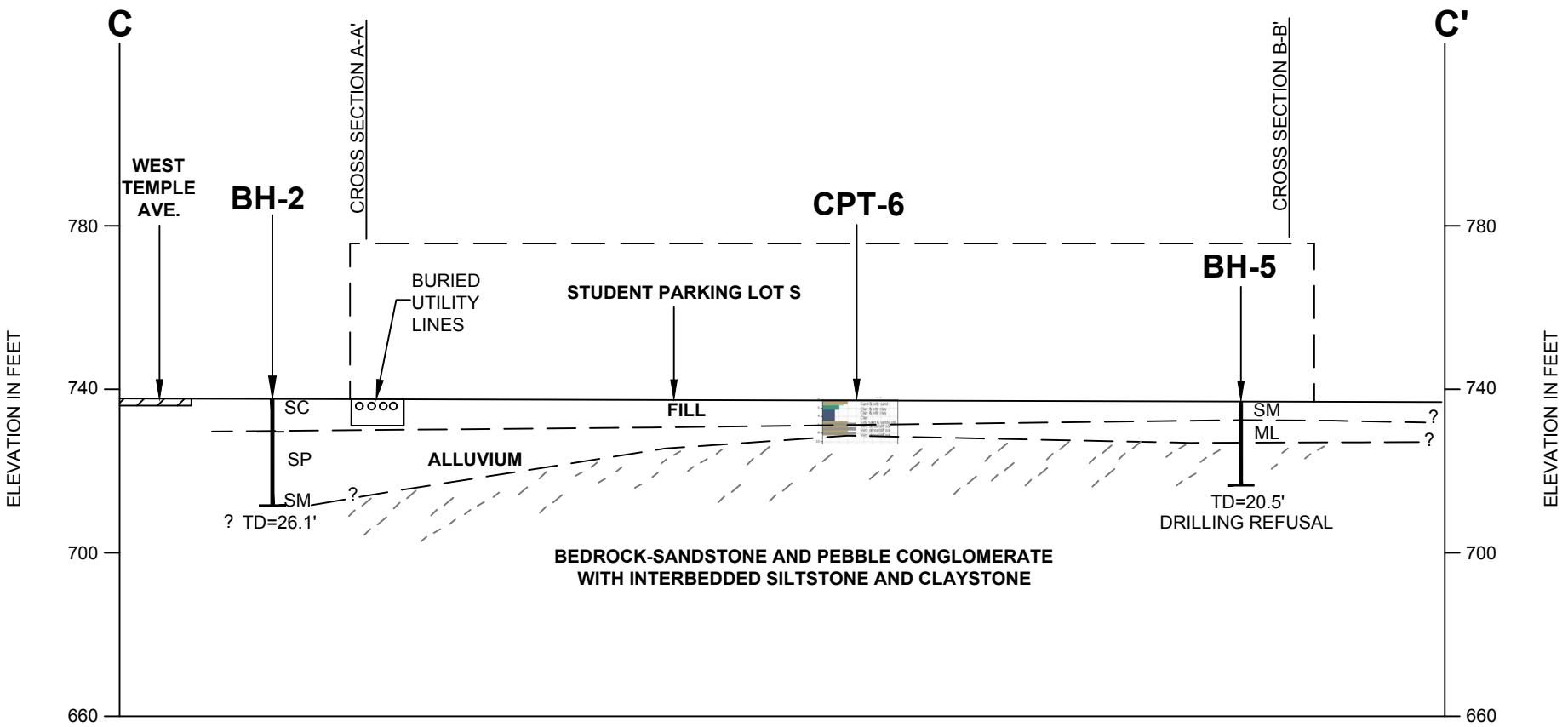
GEOLOGIC CROSS SECTION B-B'

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Project No. 17-31-247-01

Drawing No. 5



PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

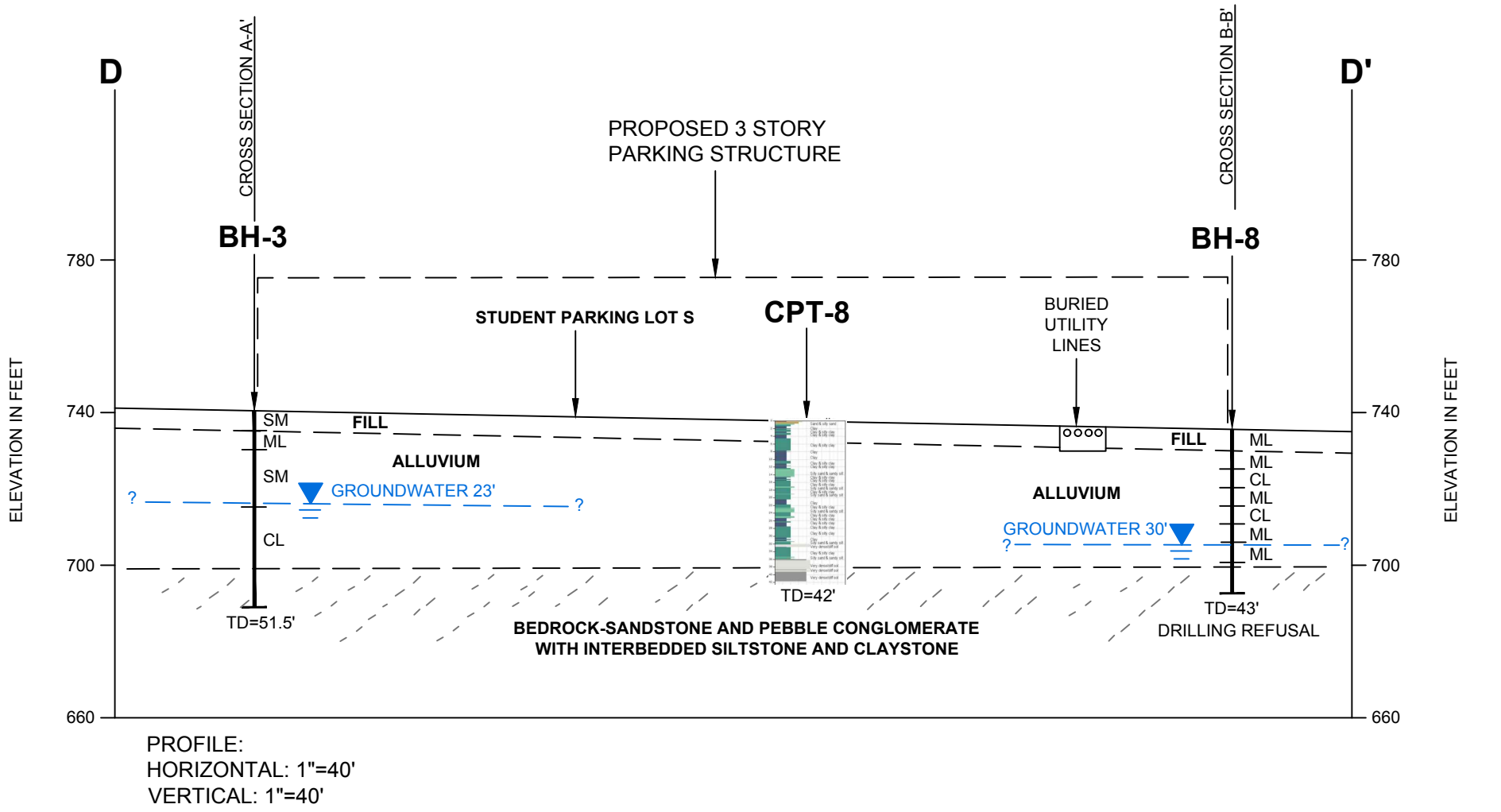
GEOLOGIC CROSS SECTION C-C'

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Project No.
17-31-247-01

Drawing No.
6



PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION D-D'

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Project No. 17-31-247-01

Drawing No. 7

5.0 FAULTING AND SEISMIC HAZARDS

Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (0.8 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults were included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown on Drawing No. 3, *Regional Geological Map* and Drawing No. 8, *Southern California Regional Fault Map*.

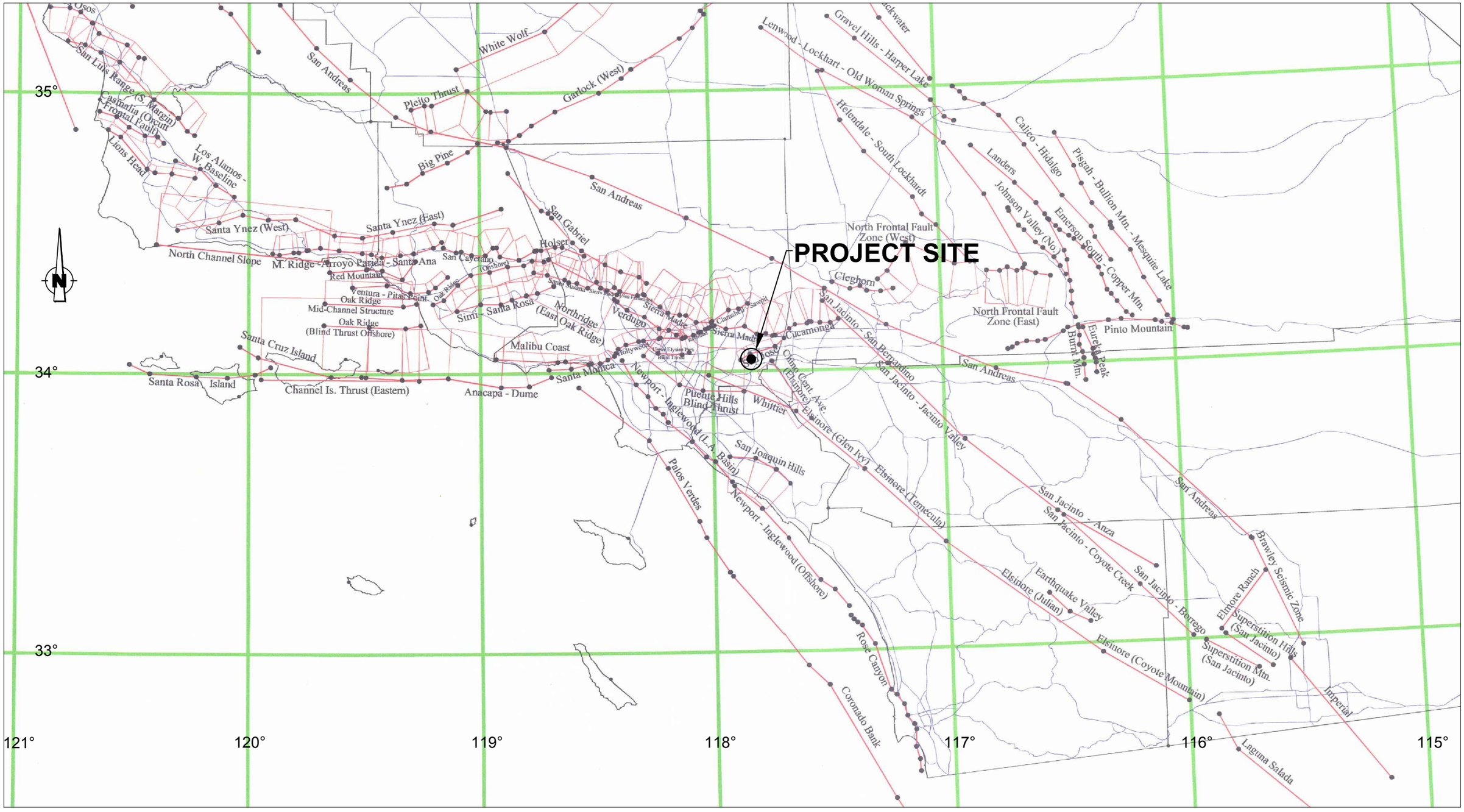
The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 738,000 years.

<u>San Jose Fault</u>

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 0.8 kilometer north of the project site.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating

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REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

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Drawing No. 8

of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault ties along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits. The Chino and Central Avenue faults converge southward into the much larger Elsinore fault system.

The July 29, 2008 Chino Hills earthquake was a magnitude 5.5 earthquake event that caused moderate ground shaking and some minor damage to the Mt. San Antonio College campus buildings. The earthquake epicenter was located approximately 15 miles southeast of the campus beneath the Chino Hills and at a depth of approximately 9.1 miles (14.6 km) below ground surface.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 1, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.8	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00
Clamshell-Sawpit	19.5	6.5	0.50

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Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

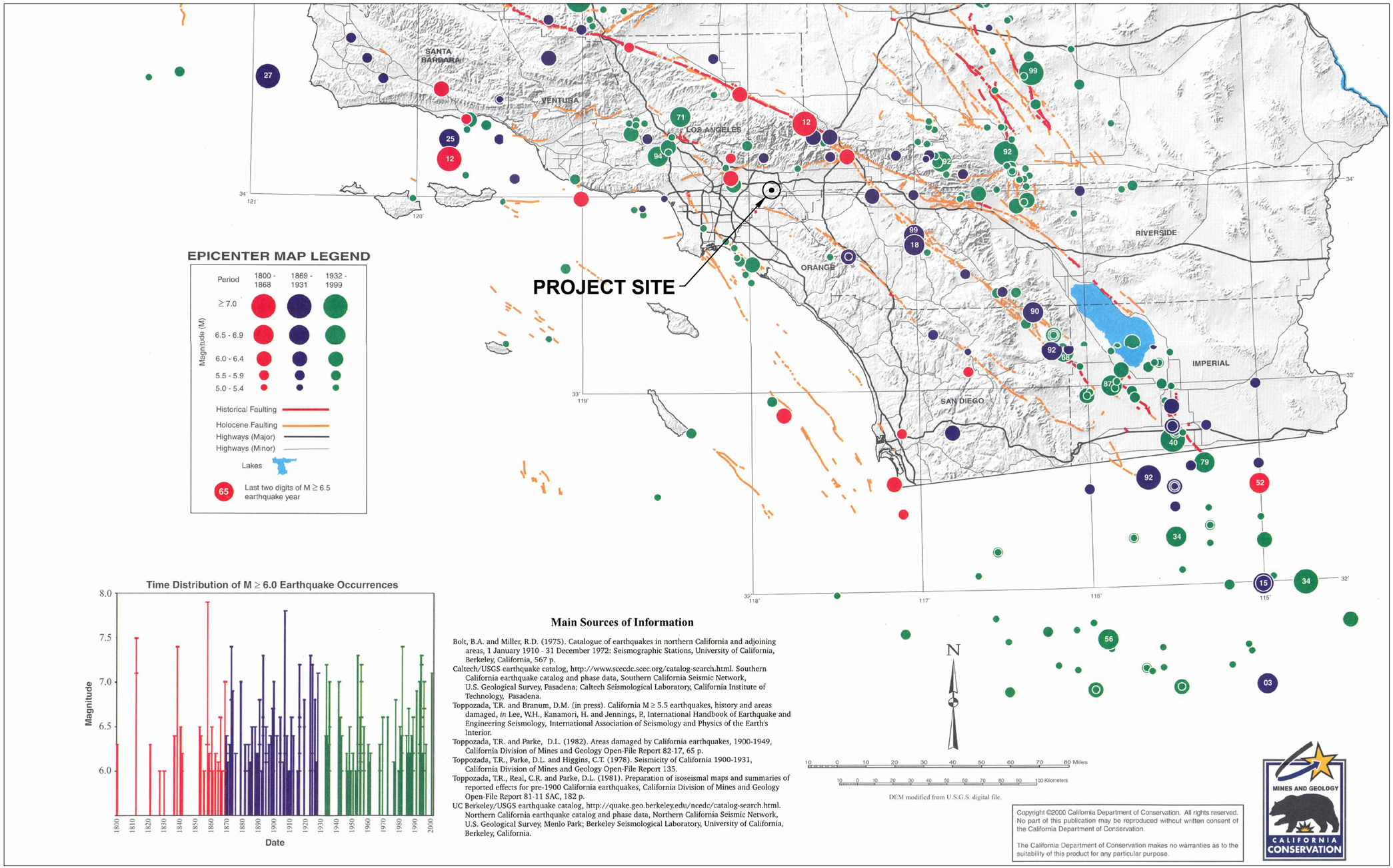
5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre and 1994 Northridge earthquakes. The epicenters for these earthquakes are shown on Drawing No. 9, *Epicenters Map of Southern California Earthquakes (1800-1999).*

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EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting

Holocene Faulting

Highways (Major)

Highways (Minor)

Lakes

65 Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

DEM modified from U.S.G.S. digital file.

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MINES AND GEOLOGY
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REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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Project No. 17-31-247-01

Drawing No. 9

5.3 Surface Fault Rupture

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. An “active fault” has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

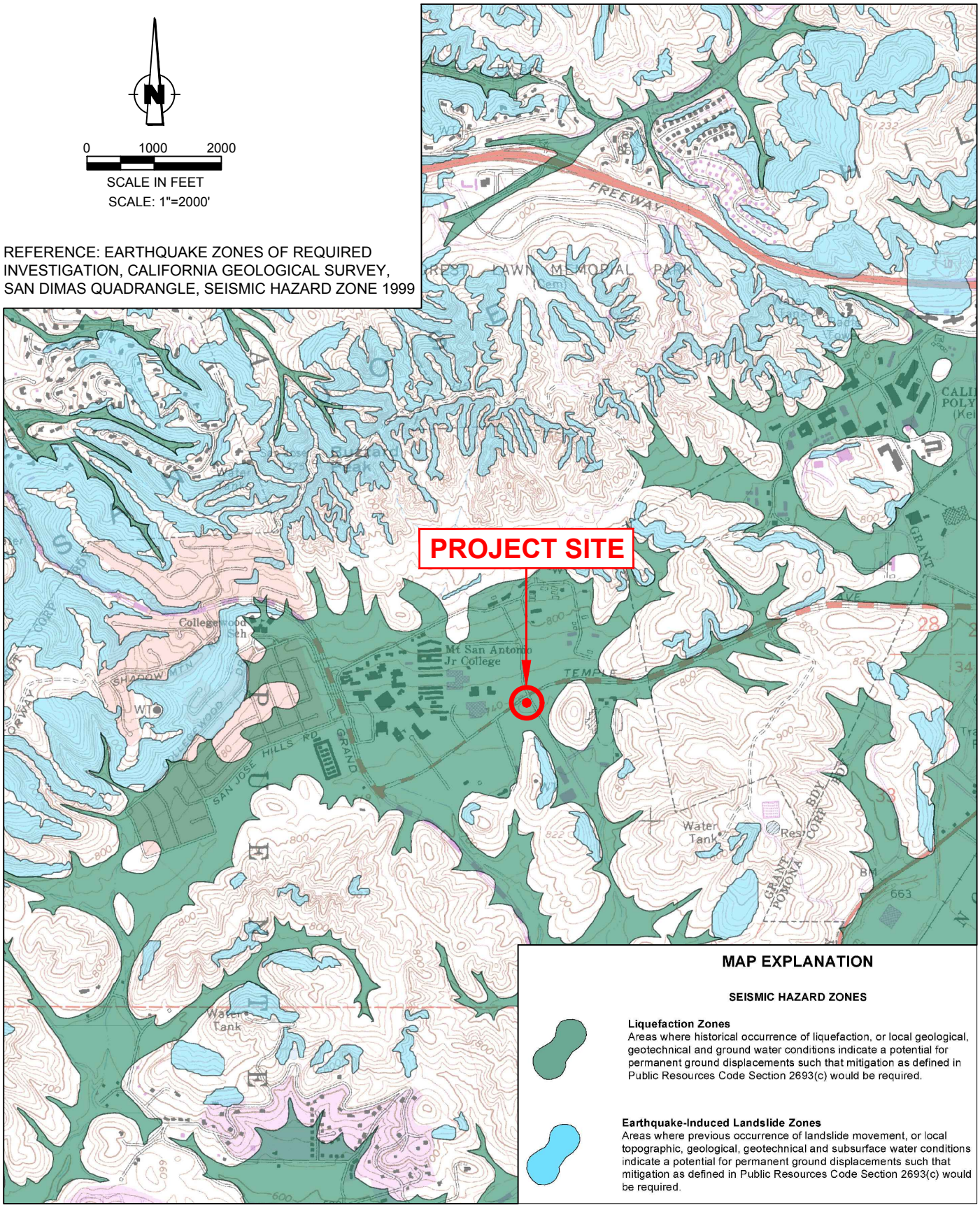
The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 10, *Seismic Hazard Zones Map*. Liquefaction analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software for the upper 50 feet below ground surface utilizing Boring BH-3 and CPT No. 8. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement ranges from 0.91 to 2.88 inches with potential differential settlement ranging from 0.46 to 1.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the

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SEISMIC HAZARD ZONES MAP

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Drawing No.
10

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project site and in the immediate vicinity of the site is gently sloping to the southwest, with no significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is also not shown with any earthquake-induced landslide areas due to the gently, southwest sloping ground condition of the site topography. In the absence of significant ground slopes, the potential for seismically induced landslides to affect the proposed site is considered to be very low.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Map Number 0637C1725F, Panel 1725 of 2350, dated September 26, 2008, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote. The potential of earthquake induced flooding of the subject site is considered to be remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

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6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.04599 degrees North Latitude, 117.84056 degrees West Longitude). The seismic parameters are presented below.

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2016 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.185 g
Mapped 1-second Spectral Response Acceleration, S_1	0.780 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.3
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.185 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.014 g
Design Spectral Response Acceleration for short period, S_{DS}	1.457 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.676 g
Seismic Design Category	D

6.2 Site-Specific Response Spectra

A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years). The controlling source was determined to be the USGS 2008 California Gridded Source, with an MCE of Mw 7.0 and a deterministic peak ground acceleration (PGA) of 1.01g.

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

The 2016 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S.*

Seismic Design Maps website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2016 CBC Mapped Acceleration Parameters

Site Class	C	Seismic Design Category	IV
S_S	2.185	C_{RS}	1.012
S_1	0.780	C_{R1}	1.023
F_a	1	**0.08 F_V/F_a**	0.104
F_v	1.3	**0.4 F_V/F_a**	0.520
S_{MS}	2.185	T_0	0.093
S_{M1}	1.014	T_S	0.464
S_{DS}	1.457	T_L	8
S_{D1}	0.676		

A Site-Specific response analysis, using faults within 200 kilometers of the sites, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 390 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

The probabilistic response spectrum results and peak ground acceleration for each attenuation relationship are presented in the following table.

Table No. 4, Probabilistic Response Spectrum Data

Attenuation Relationship	Probabilistic Mean	Boore-Atkinson (2008)	Campbell-Bozorgnia (2008)	Chiou-Youngs (2007)
Peak Ground Acceleration (g)	0.966	0.909	0.910	1.056

Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.03	1.040	0.987	0.979	1.138
0.05	1.187	1.095	1.130	1.318
0.10	1.712	1.570	1.637	1.908
0.20	2.144	1.998	2.077	2.337
0.30	2.036	1.936	1.918	2.210

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Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.40	1.894	1.854	1.785	2.027
0.50	1.764	1.737	1.702	1.851
0.75	1.406	1.418	1.357	1.442
1.00	1.149	1.136	1.119	1.193
2.00	0.570	0.601	0.569	0.535
3.00	0.369	0.398	0.371	0.330
4.00	0.270	0.286	0.283	0.234

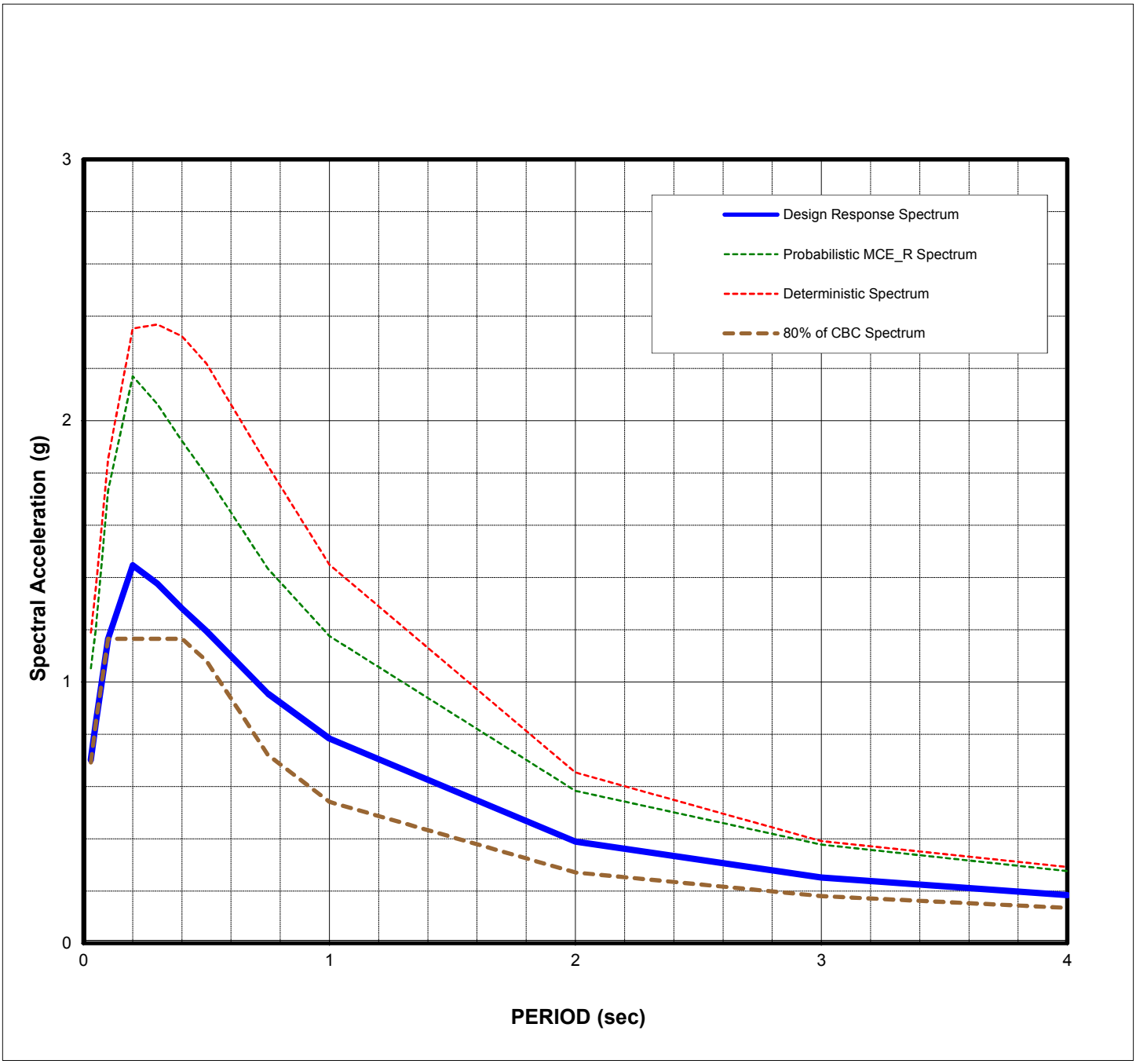
Applicable response spectra data are presented in the table below and on Drawing No. 11, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.

Table No. 5, Site Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.040	1.012	1.052	1.189	0.260	1.052	0.692	**0.70**
0.05	1.187	1.012	1.201	1.358	0.433	1.201	0.843	**0.84**
0.10	1.712	1.012	1.733	1.854	0.865	1.733	1.165	**1.17**
0.20	2.144	1.012	2.170	2.353	1.500	2.170	1.165	**1.45**
0.30	2.036	1.013	2.063	2.368	1.500	2.063	1.165	**1.38**
0.40	1.894	1.015	1.922	2.323	1.500	1.922	1.165	**1.28**
0.50	1.764	1.016	1.792	2.219	1.500	1.792	1.082	**1.19**
0.75	1.406	1.020	1.434	1.827	1.040	1.434	0.721	**0.96**
1.00	1.149	1.023	1.175	1.449	0.780	1.175	0.541	**0.78**
2.00	0.570	1.023	0.583	0.653	0.390	0.583	0.270	**0.39**
3.00	0.369	1.023	0.377	0.391	0.260	0.377	0.180	**0.25**
4.00	0.270	1.023	0.276	0.292	0.195	0.276	0.135	**0.18**

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

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Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE-SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Transit Center Parking Lot S

1100 N. Grand Avenue, Walnut, CA 91789

For : Mt. San Antonio College

Project Number:

17-31-247-01

Converse Consultants

Drawing No.

11

Table No. 6, Site-Specific Seismic Design Parameters

Parameter	Value (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-Second Period Spectral Response Acceleration, S_{MS}	2.170	1.748
Site-Specific 1-Second Period Spectral Response Acceleration, S_{M1}	1.175	0.811
Site-Specific Design Spectral Response Acceleration for Short Period, S_{DS}	1.446	1.165
Site-Specific Design Spectral Response Acceleration for 1-Second Period, S_{D1}	0.784	0.541

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7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site re-development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is located within a mapped Seismic Hazard Zone for liquefaction. Liquefaction analyses were performed for the upper 50 feet below ground surface utilizing BH-3 and CPT-8. Based on the results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement is on the order of 2.88 inches with potential differential settlement of 1.44 inches.

- Local zones of groundwater seepage and groundwater were encountered during subsurface exploration at depths ranging from approximately 23 feet bgs in boring BH-3 to approximately 36.8 feet bgs in BH-7. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Shallow spread and continuous footings are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans, specifications, and are followed during site construction.

- Variable thickness undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for any slab or foundation support.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- Over-excavation and re-compaction of the undocumented fill soils and upper alluvium is recommended for site grading to provide a compacted fill blanket beneath the building foundations and floor slab. The over-excavation and re-compaction is recommended to extend from approximately 7-feet to 10-feet below ground surface and 10-feet beyond the edge of the parking structure foundations. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot over-

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excavation to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock areas.

- Different earth materials should be anticipated at the bottom of excavations. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of existing alluvium and bedrock below the bottom of foundations and slab-on-grades are recommended. We recommend the spread foundations and slab-on-grades be supported on a minimum 5-foot thick layer of compacted fill that is be benched into native earth materials.

- The undocumented fills and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slab to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays.

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general, the pH value, chloride content, and saturated resistivity of the site soils are in the non-corrosive range. However, the saturated resistivity of samples taken at BH-4 indicates a “Corrosive” potential to ferrous metals.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers may be encountered in the excavation and should be anticipated. Earthwork should be performed with suitable equipment for gravelly materials and for hard, cemented, bedrock materials.

- The planned structure might have different structure heights and foundation elevations. Differential vertical and lateral deflections between structures should be anticipated. We recommend cold joints on slabs and walls at the transition between structures or where needed determined by the structural engineer should be constructed.

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8.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

8.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading is required to prepare the site for support of the proposed parking structure. The subject site has slight slope to the southwest. It is anticipated that the site preparation will include over-excavation and re-compaction of the upper earth materials. To reduce potential differential settlements, variations in the soil types, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce differential between the underlying alluvium and shallow sedimentary bedrock areas.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation.

Site preparation will require removal of existing pavements, structures, footings, slabs, sidewalks, curbs, trees and other improvements with their foundations and existing underground structures, vaults and utility lines. Buried electrical and communication main lines cross the parking lot to provide service to the south end of the campus and will have to be properly relocated. Top soils containing organic rich materials are not acceptable for reuse as compacted fill soils beneath the parking structure footings and floor slab.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing. The upper undocumented fill soils and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slabs to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays. Rocks larger than three (3) inches in the largest dimension should not be placed as fill. Rocks larger than one (1) inch should not be placed within the upper 12 inches of subgrade soils.

On-site clay and silt soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

8.2 Over-Excavation/Removal

Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and sedimentary bedrock is recommended for site grading to provide a minimum 5-foot thick

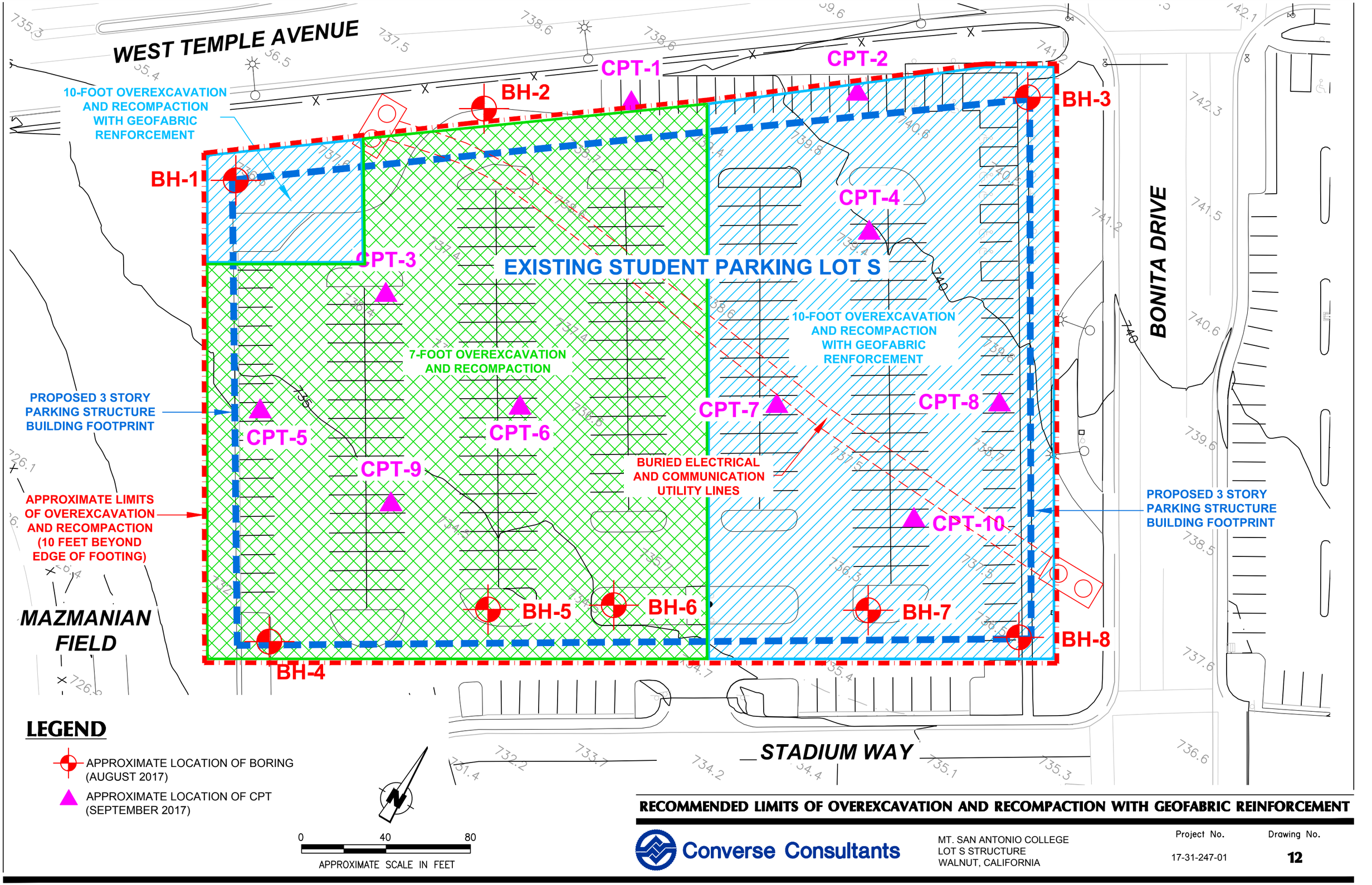
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layer of compacted fill beneath the bottom of the building foundations and floor slabs. Different earth materials will be encountered at the bottom of the excavations. In order to provide a relative uniform bearing material below parking structure foundations and floor slabs, and reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock earth materials, over-excavation and re-compaction below the foundations and slab-on-grades is recommended. The over-excavation and re-compaction should extend approximately 7-feet to 10-feet below ground surface and 10-feet beyond the edge of the parking structure foundations. Drawing No.12, *Recommended Limits of Over-excavation and Re-compaction with Geofabric Reinforcement*, shows the approximate limits and depths of over-excavation and re-compaction for the proposed parking structure. A geofabric reinforcement layer (Mirafi HP 570 or equivalent) is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce potential differential settlements between the underlying alluvium and shallow bedrock areas.

The bottom and edges of the excavations shall be cleaned, squared-off and leveled. If loose, soft, disturbed or otherwise unsuitable soil materials are encountered at the bottom of excavations, deeper removals will be required until firm and unyielding native soils are encountered. The final bottom surfaces and limits of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing compacted fill. The bottoms should be proof rolled with a loaded, heavy, rubber tired piece of grading equipment to identify any remaining loose or soft bottom areas. The bottom of excavation shall be observed, evaluated and approved during grading to determine that suitable firm and unyielding soils have been encountered. The exposed bottom shall then be scarified 6-8 inches in depth, mixed, moisture conditioned or dried back as necessary, and compacted to 90% relative maximum dry density compaction prior to smoothing and leveling for placement of the bottom geosynthetic reinforcement layer.

A geofabric reinforcement layer consisting of Mirafi HP 570 or equivalent, shall be placed across the prepared bottom of the deeper 10-foot depths of over-excavation as shown on Drawing No.12, *Recommended Limits of Over-Excavation and Re-compaction with Geofabric Reinforcement*. The bottom layer of Mirafi HP 570 geotextile reinforcement, or equivalent, shall be laid across the prepared soil subgrade in accordance with the manufacture's recommendations and project specifications. A minimum 1-foot side-to-side overlap should be provided for each fabric layer in accordance with project and manufacturer's specifications. An approximately 2-inch thick layer of moisture conditioned fill should be placed between the overlapping geotextile fabric layers to increase friction resistance between the overlapping sections of geotextile fabric. The installation should be observed and documented by the geotechnical engineer or his designated representative prior to backfill grading. Once placement of the geotextile reinforcement layers have been observed and documented by the geotechnical engineer or his designated representative, moisture conditioned backfill soils can be carefully placed, spread smoothed and level over the geotextile reinforcement layer without disturbing the geotextile layers or their positions. The remaining fill soils should then be placed, mixed, moisture conditioned and compacted to 90% relative compaction in 6-inch to 8-inch lifts

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RECOMMENDED LIMITS OF OVEREXCAVATION AND RECOMPACTION WITH GEOFABRIC REINFORCEMENT

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MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No.	Drawing No.
17-31-247-01	12

and compacted in accordance with project specifications to bring the fill soils up to plan grades.

We recommend a minimum 5 feet of onsite soils and bedrock below the bottom of foundations and floor slabs should be removed, moisture-conditioned if necessary and replaced as compacted fill for parking structure. All undocumented fill should be removed and replaced with compacted fill.

The excavations to remove undocumented fills, alluvium and bedrock to proposed subgrade levels should be extended to ten (10) feet laterally beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. Thickness of compacted fill underneath the buildings should not vary significantly. After the required removals have been made, the exposed native earth materials shall be excavated to provide a minimum 5-foot thick zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork.

For retaining walls, we recommend over-excavation be at least 5 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Mirafi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading by the project geotechnical engineer or his designated representative. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

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Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

8.3 Structural Fill

The approved bottom of the excavations should be scarified to a depth of at least six (6) inches. The scarified soils should be moisture conditioned and mixed to within three (3) percent of optimum moisture content for granular soils and to approximately three (3) percent above the optimum content to near-optimum moisture content for the fine-grained soils. Scarified soil shall be compacted to a minimum 90 percent of the laboratory maximum dry density as determined by the ASTM Standard D1557 test method to produce a firm and unyielding surface.

All structural fill should be placed on competent, scarified and compacted native materials as determined by a geotechnical engineer or his designated representative and in accordance with the specifications presented in this section.

Excavated site soils, free of deleterious materials and rock fragments larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any import fill should be tested and approved by Converse. The import fill should have an expansion potential less than 20.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within three (3) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory dry density in accordance with the ASTM Standard D1557 test method. The amount of processing required for proper moisture conditioning and mixing at the site will depend on the seasonal variations in the in-situ moisture conditions, the depth of cut, the equipment, weather and the processing method.

Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be keyed and benched into competent materials. The height and width of the benches shall be at least two (2) feet.

8.4 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The onsite materials contain about 5 to 30 percent gravels up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. The sandstone pebble conglomerate bedrock materials are cemented and moderately hard to hard. The excavation and rippability of these hard bedrock materials will be more difficult and should

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be anticipated during grading. Many of the soil borings drilled for the project site encountered difficult drilling and/or refusal in the sandstone and conglomerate bedrock materials along the south half of the project site. Standard Penetration Tests (SPT) blow counts in the sandstone and conglomerate bedrock materials were high and often times met refusal to sampler penetrations. Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and drilling penetration in hard sedimentary bedrock materials at shallow depths along the southern side of the project site. Localized areas of very hard bedrock requiring single shank ripping or hydraulic breakers should be anticipated. Directional ripping and downsizing breakers may be required in cemented sandstone and conglomerate beds. Earthwork should be performed with suitable equipment for gravelly materials and for hard and cemented bedrock materials.

8.5 Expansive Soil

Based on our laboratory testing results, the on-site fine-grained silt and clay earth materials are considered to have a low to moderate expansion potential. Medium to high expansion potential in fine-grained silt and clay materials may be anticipated. The on-site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading as slabs, foundations and pavement placed directly on expansive subgrade soil will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Removing about two (2) feet of the underlying soils throughout the site, and replacing with imported non-expansive sandy soil materials.
- Reinforce footings and place thicker concrete slabs with moisture barriers.
- Lime treat the upper two (2) feet of the subgrade soils.

8.6 Shrinkage and Subsidence

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

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- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.

- Subsidence would depend on the construction methods including type of equipment utilized. For estimation purposes, ground subsidence may be taken as 0.20 feet.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

8.7 Subgrade Preparation

Final subgrade soils for structures and streets should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 0.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

The various design recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. The proposed buildings may be supported by shallow continuous and isolated square footings.

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9.0 DESIGN RECOMMENDATIONS

9.1 Shallow Foundations

9.1.1 Vertical Capacity

Continuous and square footings should be founded at least 24 inches below lowest adjacent final grade on the recommended earth materials. A minimum footing width of 24 inches is recommended for continuous and square footings. The net allowable dead plus live load bearing value for isolated square and continuous footings is 2,500 psf. The net allowable bearing pressure can be increased by 400 psf for each additional foot of excavation depth and width up to a maximum value of 4,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

9.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 250 psf per foot of depth up to a maximum of 2,500 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

9.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

9.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

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9.2 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

9.3 Lateral Earth Pressure

The proposed retaining walls are anticipated to be up to 25 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Wall Type	Equivalent Fluid Pressure (pcf)
	Level Backfill
Cantilever Wall (Active pressure)	30 (Triangular Distribution)
Restrained Wall (At-rest pressure)	50 (Triangular Distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by free draining, uniformly graded, ¾ -inch washed, permeable aggregate material, and wrapped in filter fabric such as Mirafi 140N or equivalent, and should extend to about 2 feet below the finished grade. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, Schedule 40 PVC or rigid ABS (SDR-35), or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to surface drain or sump pump.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Cantilever retaining walls greater than 12 feet, as measured from the surface, should be designed to resist additional earth pressure caused by seismic ground shaking. A dynamic earth pressure of 18H (psf), based on an inverted triangular distribution, can be used for design of wall.

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9.4 Slabs-on-Grade

Slabs-on-grade should have a minimum thickness of five inches for support of nominal ground-floor live loads without hydrostatic uplift pressures. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer.

Slabs should be designed and constructed as promulgated by the American Concrete Institute (ACI) and the Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted. Care should be taken during concrete placement to avoid slab curling.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a 10-mil-thick moisture barrier between the slab and compacted subgrade that meets the performance criteria of ASTM E 1745 Class A material. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

9.5 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test one (1) selected soil sample taken in the general area of the proposed structures. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized on the following table:

Table No. 8, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-4	10	8.17	115	0.006	2,100

Based on our review of soil corrosivity test results (see Appendix B), the soluble sulfate concentration, pH, and chloride content are not in the corrosive range to concrete in accordance with the Caltrans Corrosive Guidelines (2012). However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated. Type I or II Portland Cement may be used for the construction of the foundations and slabs.

The test results presented herein are considered preliminary. Additional testing and evaluation of the as-graded soils is recommended. A corrosion engineer may be

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consulted for appropriate mitigation procedures and construction design, if needed. Conventional corrosion mitigation measures may include the following:

- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed. Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

9.6 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 9, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
46	4	3.0	4.5	5.0
	5	4.0	4.5	5.0
	6	5.0	4.5	6.5
	7	6.0	4.5	8.0
	8	7.0	4.5	8.0
	9	8.0	4.5	9.5

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be

placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.7 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 10, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
46	5.0	6.50
	6.0	6.50
	7.0	7.00
	8.0	7.00
	9.0	7.25

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard. Recommended maximum and minimum values of slump for pavement concrete are three (3) inches and one (1) inch, respectively.

Transverse contraction joints should not be spaced more than 15 feet and should be cut to a depth of ¼ the thickness of the slab. Longitudinal joints should not be spaced more than 12 feet apart. A longitudinal joint is not necessary in the pavement adjacent to the curb and gutter section.

All outside edges should conform to Section 201 of the Standard Specifications for Public Works Construction (SSPWC, latest edition), and should be constructed in accordance with Section 302-6 of the SSPWC. Pavement subgrade should be prepared in accordance with Section 9.7 of this report.

The PCCP materials should conform to Section 201 of the Specifications for Public Works Construction and should be constructed in accordance with Section 302-6 of the SSPWC.

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Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.8 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building per 2016 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils. Gutters and downspouts should be installed on the roof, and runoff should be directed to the storm drain through non-erosive devices. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

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10.0 CONSTRUCTION RECOMMENDATIONS

10.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 11.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required. For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

10.2 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in Table No. 11, *Slope Ratios for Temporary Excavation*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 11, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 5	vertical
5 – 10	1:1
10 +	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

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If the excavation occurs near existing structures, special construction considerations would be required during excavation to protect these existing structures during construction. The proposed excavation should not cause loss of bearing and/or lateral supports of the existing structures.

10.3 Shoring Design

Temporary shoring will be required for the recommended excavation due to space limitations and property line boundaries and because of nearby existing structures or facilities and traffic loading. Temporary shoring may consist of the use of a trench box (where feasible), or conventional soldier piles and lagging. Shoring should ultimately be designed by a qualified structural engineer considering the recommendations below in their final design and others which are applicable.

Drilled excavations for soldier piles, which are recommended to create the proposed 40-foot-high excavation, may require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation. Casing may be needed if granular earth material is located behind the existing retaining wall.

10.3.1 Cantilevered Shoring

Cantilevered shoring systems may include soldier piles with lagging to maintain temporary support of vertical wall excavations. Shoring design must consider the support of adjacent underground utilities and/or structures, and should consider the effects of shoring deflection on supported improvements. Due to sandy nature of on-site soils, some caving during the drilling of soldier-pile borings should be anticipated. A soldier pile system will require continuous lagging to control caving and sloughing in the excavation between soldier piles.

Temporary cantilevered shoring should be designed to resist a lateral earth pressure equivalent to a fluid density of 32 pounds per cubic foot (pcf) for non-surcharged condition. This pressure is valid only for shoring retaining level ground. This equivalent fluid pressure is valid only for shoring supporting level ground.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. Surcharge pressures from the existing structures should be added to the above earth pressures for surcharges within a horizontal distance less than or equal to the wall height. Surcharge coefficients of 50% of any uniform vertical surcharge should be added as a horizontal earth pressure for shoring design. All shoring should be designed and installed in accordance with state and federal safety regulations.

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The minimum embedment depth for piles is ten (10) feet from the lowest adjacent grade into firm alluvium, below the bottom of the excavation. Vertical skin friction against soldier piles for may be taken as 350 psf. Fixity may be assumed at two (2) feet below the excavation into firm native alluvium or bedrock. For the design of soldier piles spaced at least 3.0 diameters on-center, the passive resistance of the soils adjacent to the piles may be assumed to be 300 psf per foot of embedment depth. Soldier pile members placed in drilled holes should be properly backfilled with a sand/cement slurry or lean concrete in order to develop the required passive resistance.

Caving soils should be anticipated between the piles. To limit local sloughing, caving soils can be supported by continuous lagging or guniting. The lagging between the soldier piles may consist of pressure-treated wood members or solid steel sheets. In our opinion, steel sheeting is expected to be more expedient than wood lagging to install. Although soldier piles and any bracing used should be designed for the full-anticipated earth pressures and surcharge pressures, the pressures on the lagging are less because of the effect of arching between the soldier piles. Accordingly, the lagging between the piles may be designed for a nominal pressure of up to a maximum of 350 psf. All lumber to be left in the ground should be treated in accordance with Section 204-2 of the "Standard Specifications for Public Works Construction" (Latest Edition).

10.3.2 Tie-Back Shoring

A tie-back soldier-pile shoring system may be used to maintain temporary support of deep vertical walled excavations. Braced or tied-back shoring, retaining a level ground surface, should be designed for a uniform pressure of 20H psf, where H is the height of the retained cut in feet.

Surcharge pressures should be added to this earth pressure for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 50 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for braced shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation.

Tie-Backs

For design of tie-back shoring, it should be assumed that the potential wedge of failure is determined by a plane at 30 degrees from the vertical, through the bottom of the excavation. Tie-back anchors may be installed at angles of 15 to 40 degrees below a horizontal plane. Tie-back installation and testing guidelines and procedures are presented in Appendix E, *"Guide Specifications for Installation and Acceptance of Tie-back Anchors".* Soil friction values, for estimating the allowable capacity of drilled friction anchors, may be computed using the following equation:

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$q = 40H$; $q \leq$ *500 pounds-per-square-foot (psf)*

where:
H = average depth of anchor below ground surface, shown on Figure No. 12, *Schematic Tie-Back Design*
q = anchor surface area resistance, in psf (excluding tip),

Only the frictional resistance developed beyond the assumed failure plane should be included in the tie-back design for resisting lateral loads. After shoring/tie-back is no longer needed to support the excavation, stress should be carefully released and shoring system including tieback may be able to be left in place.

All shoring and tie-back should be designed by experienced California licensed Civil Engineer and installed by experienced contractors. Shoring/tie-back design should also be reviewed by a geotechnical consultant to verify the soil parameters used in the design are in conformance with geotechnical report.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by a competent person employed by the contractor. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

It is recommended that Converse review plans and specifications for proposed shoring and that a Converse representative observes the installation of shoring. A licensed surveyor should be retained to establish monuments on shoring and the surrounding ground prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) Engineer and Converse for review and evaluation. Adjacent building elements should be photo-documented prior to construction.

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11.0 PLAN REVIEW AND CONSTRUCTION INSPECTION SERVICES

This report has been prepared to aid in evaluation of the site, to prepare site-grading recommendations, and to assist the civil/structural engineer in the design of the proposed developments. It is recommended that this office be provided the opportunity to provide final site grading and design recommendations once the final grading plan is available.

All site grading and earthwork should be completed under the observation and testing of a qualified geotechnical consultant to verify compliance with the recommendations set forth in this report. All ground surfaces should be examined and approved by the project geotechnical consultant prior to placing any fill and/or structure. All footing excavations should be observed prior to placement of steel and concrete to see that footings are founded on satisfactory compacted soils and that excavations are free of loose, disturbed or deleterious materials.

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12.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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Appendix A

Field Exploration
and
Cone Penetration Test Data

APPENDIX A: FIELD EXPLORATION

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings and performing Cone Penetration Test (CPT) soundings. During the site reconnaissance on August 14, 2017, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Eight (8) borings (BH-1 through BH-8) were drilled from August 16 to August 24, 2017, extending between depths of approximately 20.5 to 51.5 feet below the existing ground surface (bgs). The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger for soil sampling. Soils and bedrock were logged by a Converse engineer and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. A-2a through A-18b, *Log of Borings*.

The cone penetration testing (CPT) conducted for this project consisted of pushing an instrumented Vertek cone-tipped probe into the ground while simultaneously recording

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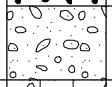
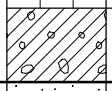
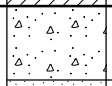
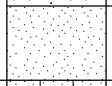
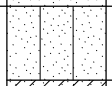
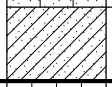
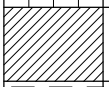
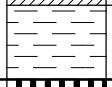
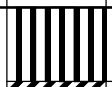
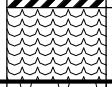
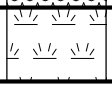
the resistance to penetration at the cone tip and along the friction sleeve. The cone penetration testing described in this report was conducted in general accordance with the current ASTM specifications (ASTM D5778-95 and D3441-94) using an electronic cone penetrometer.

Ten (10) Cone Penetration Test soundings (CPT-1 through CPT-10) were advanced to depths of 8 to 42 feet below ground surface within the project site on September 6, 7, and 8th, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The test holes were stopped at plan depths or when the cone tip encountered refusal to penetration. CPT Nos. CPT-1, CPT-2, CPT-3, CPT-5, CPT-6, CPT-7, CPT-9 and CPT-10 encountered very dense / stiff soil and hard sedimentary bedrock conditions and were stopped short of their planned depths. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then patched with asphalt patch and tamped to match existing pavement surfaces.

The Cone Penetration Test (CPT) test logs are presented at the end of Appendix A.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GRAB SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-1**

Log of Boring No. BH-1

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 28

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** gravel, brown.						ma
		ALLUVIUM (Qal):						
5		**SANDY SILT (ML):** with gravel, brown.	■		5/6/7	9	121	
		CLAYEY SAND (SC): fine to medium-grained, fine trace gravels, dark brown.	■		4/6/5	9	107	
10								ds
		BEDROCK-PUENTE FORMATION:						
15		**SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, some siltstone and claystone, weathered to intact, medium hard to hard, cemented, yellowish white	■		21/13/50(4")	10	114	
20			⊠		26/15/18			
25		-no recovery	■		50(4")			sampler refusal
		-groundwater at 28 feet.						
30			⊠		50(5")			spt refusal
		End of boring at 33 feet. Groundwater encountered at 28 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-17-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-2**

Log of Boring No. BH-2

Dates Drilled: 8/24/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 738 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, some gravel, brown.						c
5			■		6/11/17	5	110	
		ALLUVIUM (Qal): **GRAVELLY SAND (SP):** medium to coarse-grained, gravels, possible cobbles, black.						
10			■		15/50(3")			
15		-increasing amount of gravel, gravel lenses, gravels hard, subrounded	■		50(3")			
20			■		50(4")			
25		**SILTY SAND (SM):** fine-grained, reddish brown.	■		46/38/50(1")			
		End of boring at 26.1 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-24-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-3**

Log of Boring No. BH-3

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 23.4

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** clay silt with sand and gravel, brown.						max.wa
5		**ALLUVIUM (Qal):** **SILT (ML):** with gravel, dark brown.	■		4/6/5	11	114	
10		**SILTY SAND (SM):** fine trace gravels, moist, brown.	■		3/4/3	9	118	
15			■		3/5/7			wa
20			⊠		9/16/9			
		-groundwater						
25			■		8/13/16	7	115	wa
		SILTY CLAY (CL): wet, with gravels, dark brown.						
30			⊠		6/9/12			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4a**

Log of Boring No. BH-3

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 23.4

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SANDY CLAY (CL): with gravels, brown.	■		11/20/30			wa
40			⊠		50(5")			spt refusal
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, some siltstone and claystone, weathered to intact, medium hard to hard, cemented						
45			■		50(4")	9	107	sampler refusal
50			■		50(6")			sampler refusal
		End of boring at 51.5 feet. Groundwater encountered at 23.4 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-17-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4b**

Log of Boring No. BH-4

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, with clay and gravels, brown.						
5		**ALLUVIUM (Qal):** **SILTY CLAY (CL):** with gravel, dark brown.	■		7/6/6	9	118	
10			■		30/50(4")			
15		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, weathered to intact, medium hard to hard, cemented, yellowish white	■		33/50(4")			
20			⊠		22/35/50			
25		bedrock, yellowish white, hard, cemented -hard drilling; refusal	■		50/60	6	134	
		End of boring at 28 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-5**

Log of Boring No. BH-5

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** with sand and clay, gravels and rocks, light brown.						r
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** brown.			20/50(6")	17	110	ds
10		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium to hard to hard, cemented, yellowish brown			50(4")	4	112	
15					20/50(6")			
20		-hard drilling: refusal			50(6")			spt refusal
		End of boring at 20.5 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-6**

Log of Boring No. BH-6

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** gravels, light brown.						c,wa
5		**ALLUVIUM (Qal):** **SILT (ML):** small fine trace gravels, dark brown.			10/24/30	7	122	
10		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium hard to hard, cemented, yellowish white			27/50(6")			
15					50(3")			se sampler refusal
20					50(6")			spt refusal
		-hard drilling: refusal			50(5")			sampler refusal
		End of boring at 24 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-7**

Log of Boring No. BH-7

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 736 Depth to Water (ft): 36.8

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** fine gravel, brown.		■				ma
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** with gravel, brown.	■		9/10/13			
10			■		8/12/18			
15		**SILT (ML):** fine trace gravel, brown.	■		5/6/17	12	118	
20		**CLAY (CL):** with fine trace gravel, dark brown.	⊠		4/5/7	12	110	
25			■		50(6")	6	127	
30		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium hard to hard, cemented, yellowish light brown	⊠		53/39/50			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-8a**

Log of Boring No. BH-7

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 736 Depth to Water (ft): 36.8

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** medium hard to hard -hard drilling: refusal	■		50(5")	5	134	
		End of boring at 39 feet due to drilling refusal. Groundwater encountered at 36.8 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-8b**

Log of Boring No. BH-8

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 30

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SILT (ML):**.						
5		**ALLUVIUM (Qal):** **CLAYEY SILT (ML):** dark brown.	■		3/6/9	10	107	ds
10		**SANDY CLAY (CL):** coarse sand and gravel, brown to dark brown.	■		6/7/6	11	119	
15		**SILT (ML):** with gravel, brown.	■		5/6/8	13	117	
20		**SILTY CLAY (CL):** with gravel, brown.	⊠		3/2/3			
25		**SANDY SILT (ML):** brown.	■		5/5/5	15	112	
		groundwater seepage						
30		**SILT (ML):** brown.	⊠		4/8/12			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-9a**

Log of Boring No. BH-8

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 30

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravels and cobble size rocks, rocks hard, subrounded, some siltstone and claystone, weathered to intact, medium to hard to hard, cemented, yellowish brown	■		10/21/50			
40		-hard drilling: refusal	☒		30/50(5")			spt refusal
		End of boring at 43 feet due to drilling refusal. Groundwater encountered at 30 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-9b**

Cone Penetration Test Data

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Mount San Antonio College (Lot S)
1100 N. Grand Avenue
Walnut, CA
September 6-8, 2017

Prepared for:

Mr. Ram Ariram
Converse Consultants
717 S. Myrtle Avenue
Monrovia, CA 91016
Office (626) 930-1200 / Fax (626) 930-1212

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

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1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Interpretation Output (CPeT-IT)
- CPeT-IT Calculation Formulas

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Mount San Antonio College (Lot S) project located at 1100 N. Grand Avenue in Walnut, California. The work was performed by Kehoe Testing & Engineering (KTE) on September 6-8, 2017. The scope of work was performed as directed by Converse Consultants personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at ten locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	14	Refusal, hole open to 14.0 ft (dry)
CPT-2	23	Refusal, hole open to 23.0 ft (dry)
CPT-3	11	Refusal, hole open to 10.6 ft (dry)
CPT-4	27	Refusal, hole open to 27.0 ft (dry)
CPT-5	16	Refusal, hole open to 15.9 ft (dry)
CPT-6	8	Refusal, hole open to 9.0 ft (dry)
CPT-7	24	Refusal, hole open to 24.0 ft (dry)
CPT-8	42	Refusal, groundwater @ 23.5 ft
CPT-9	11	Refusal, hole open to 10.0 ft (dry)
CPT-10	42	Refusal, groundwater @ 25.0 ft

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the attached CPT Classification Chart (Robertson) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Tables of basic CPT output from the interpretation program CPeT-IT are provided for CPT data averaged over one foot intervals in the Appendix. We recommend a geotechnical engineer review the assumed input parameters and the calculated output from the CPeT-IT program. A summary of the equations used for the tabulated parameters is provided in the Appendix.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Richard W. Koester, Jr.
General Manager

09/13/17-kk-8632-2

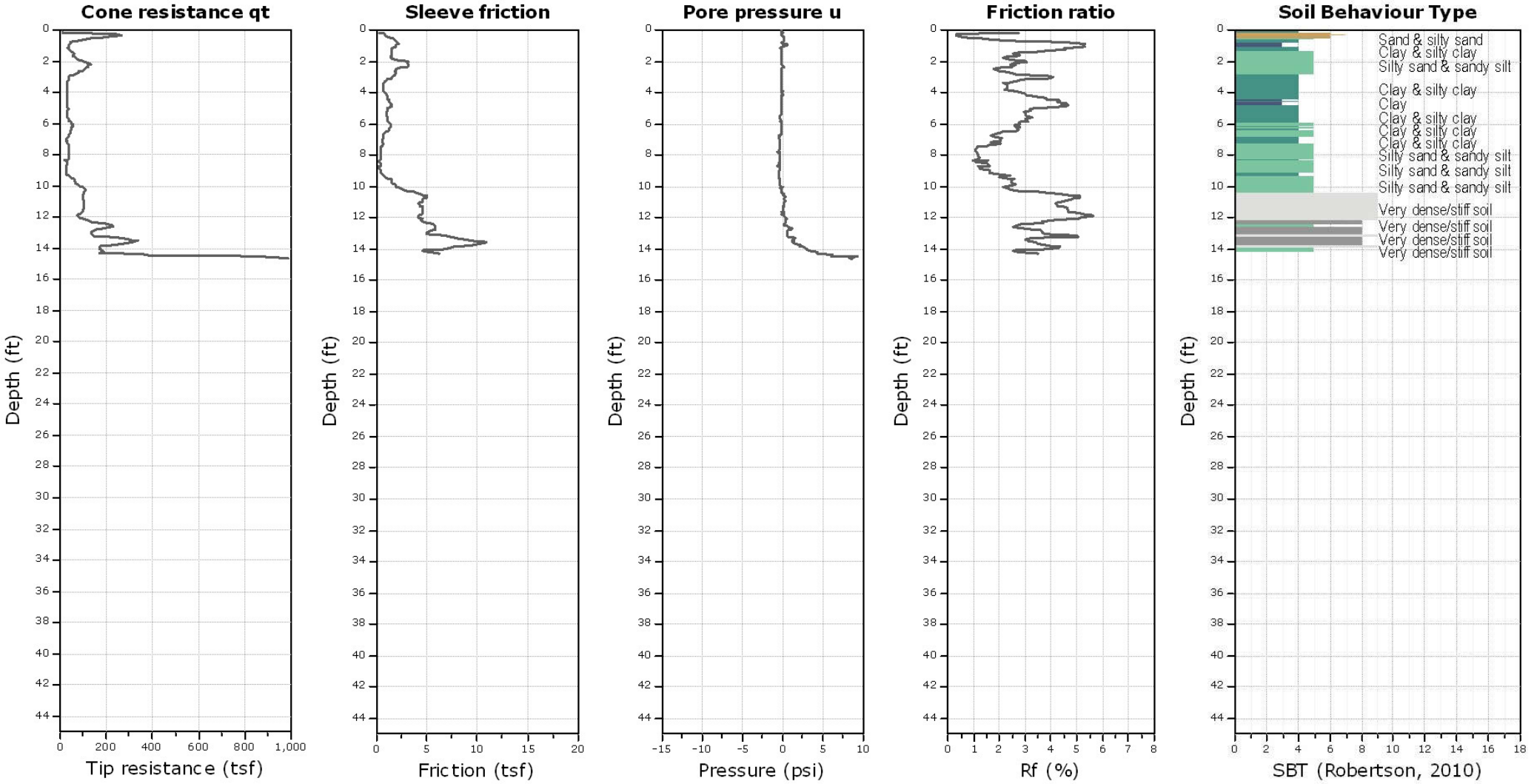
APPENDIX

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-1

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 14.63 ft, Date: 9/6/2017
Cone Type: Vertek

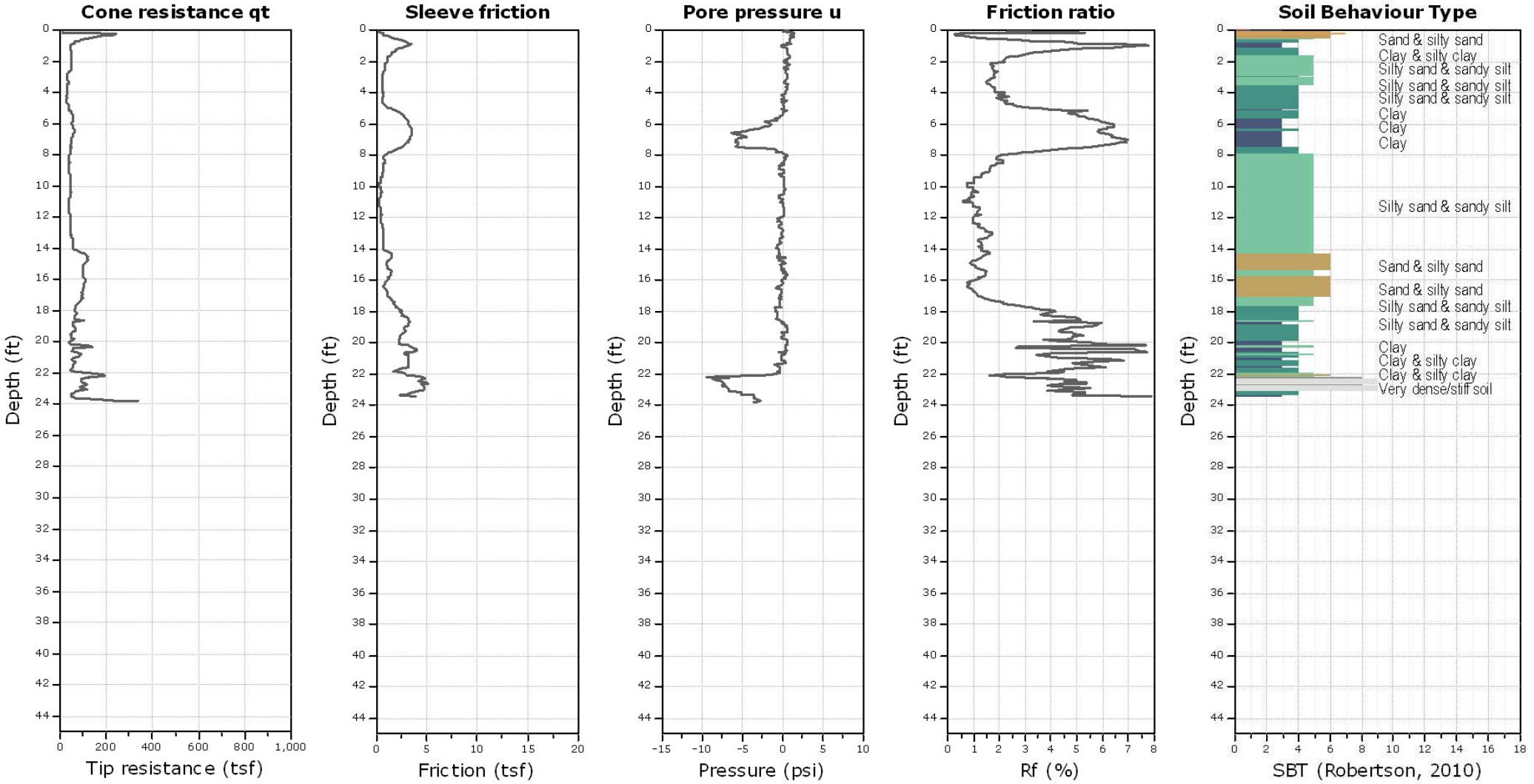


Kehoe Testing and Engineering
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CPT-2

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 23.82 ft, Date: 9/6/2017
Cone Type: Vertek

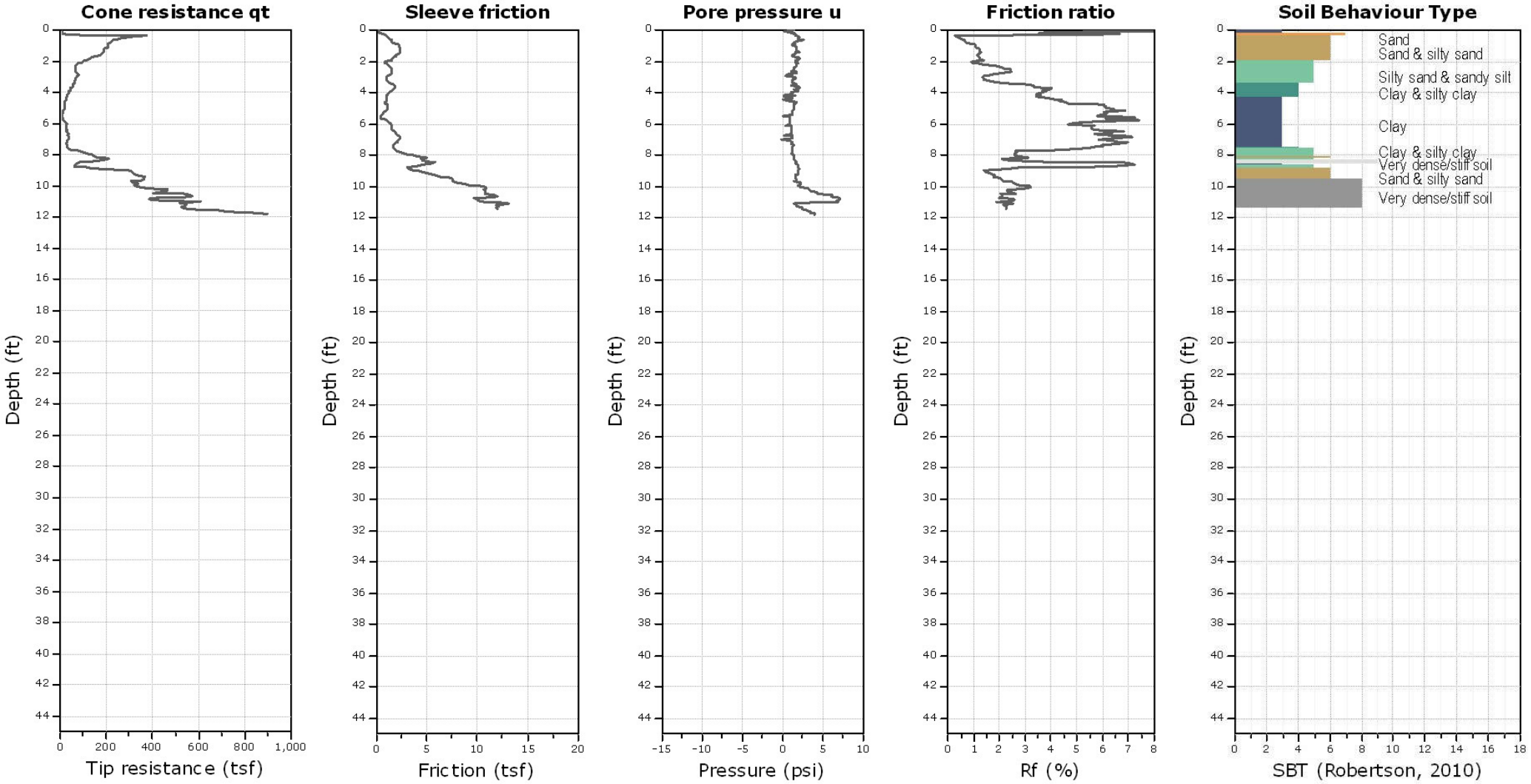


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CPT-3

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 11.82 ft, Date: 9/8/2017
Cone Type: Vertek

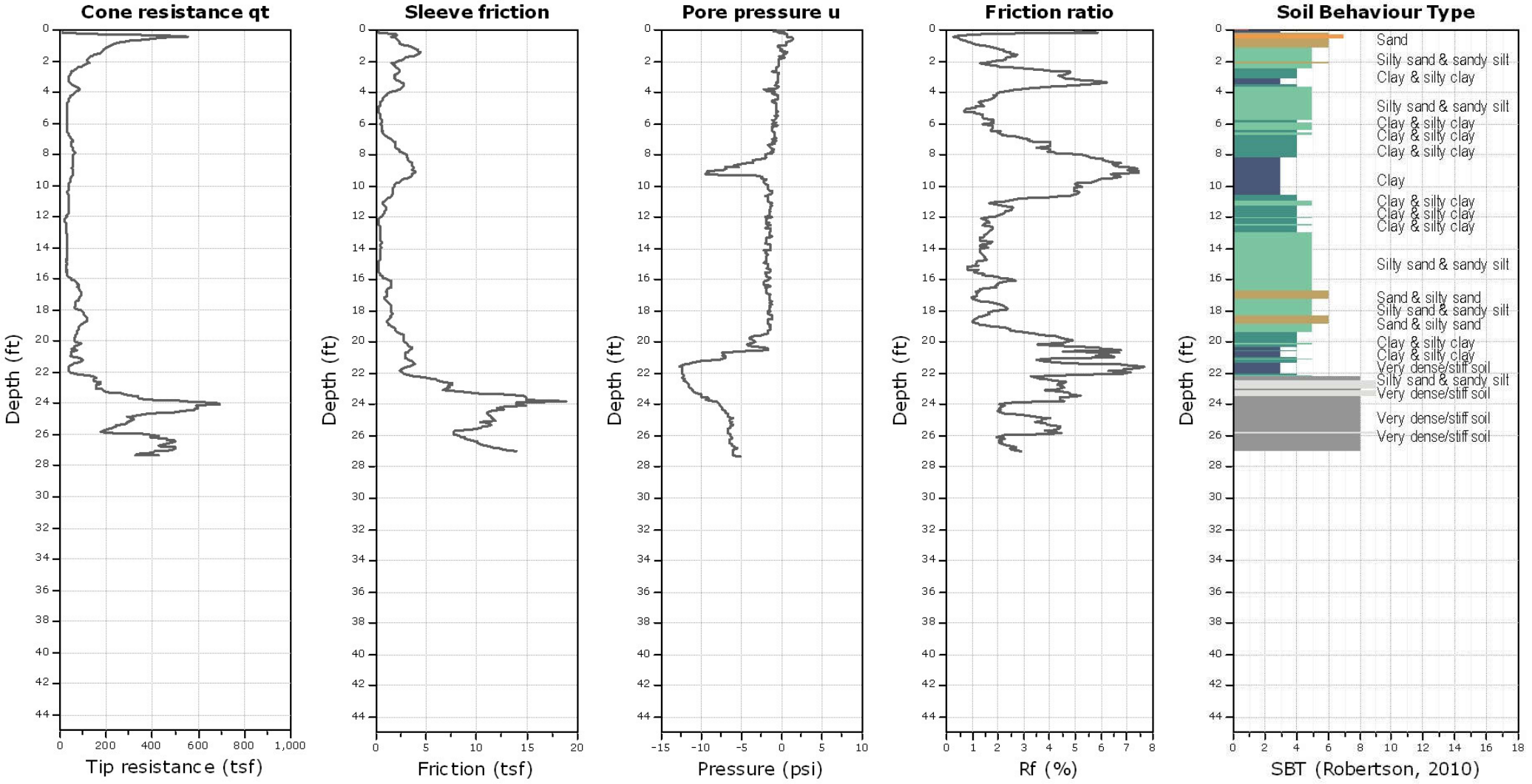


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CPT-4

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 27.37 ft, Date: 9/7/2017
Cone Type: Vertek

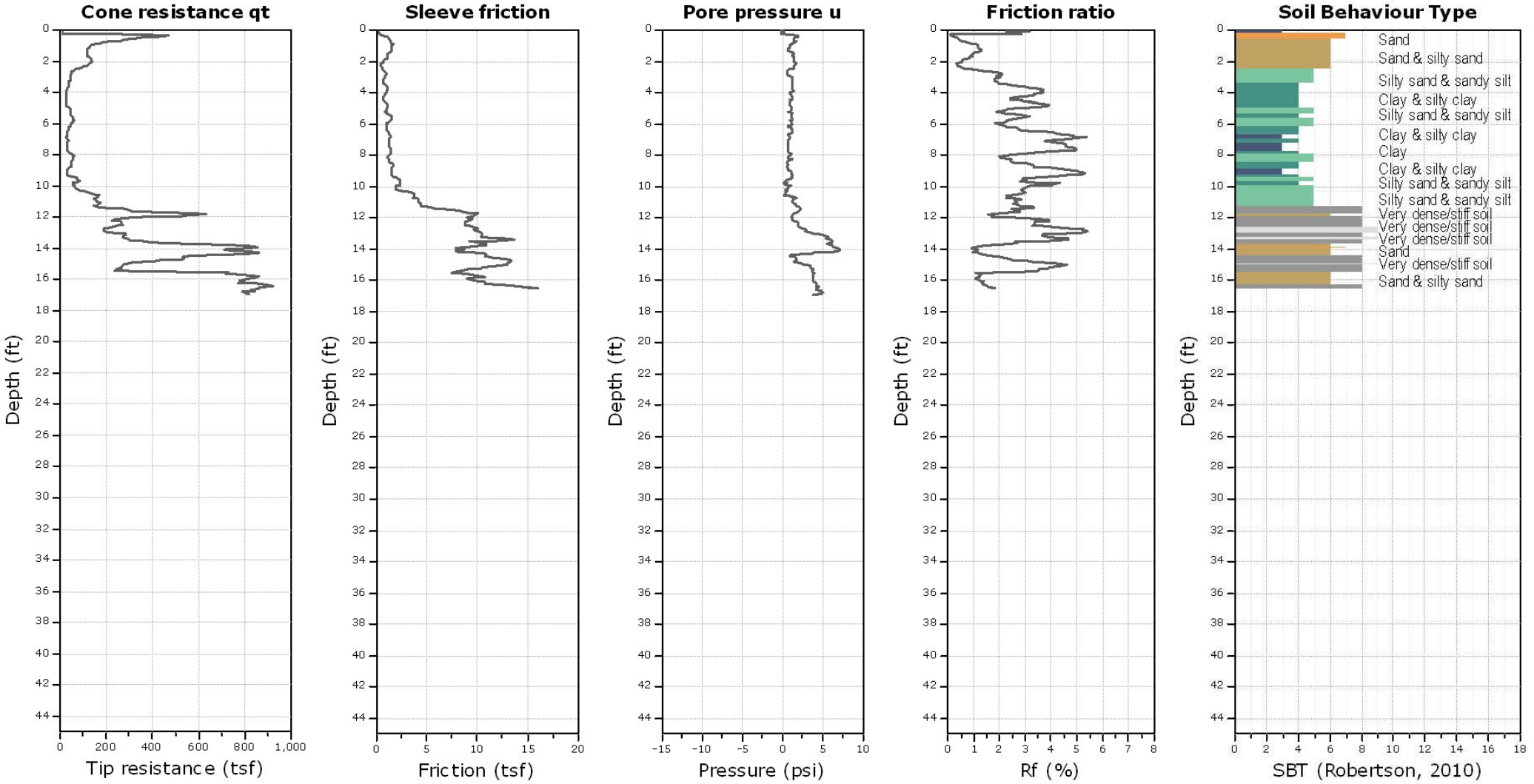


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CPT-5

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 16.94 ft, Date: 9/6/2017
Cone Type: Vertek

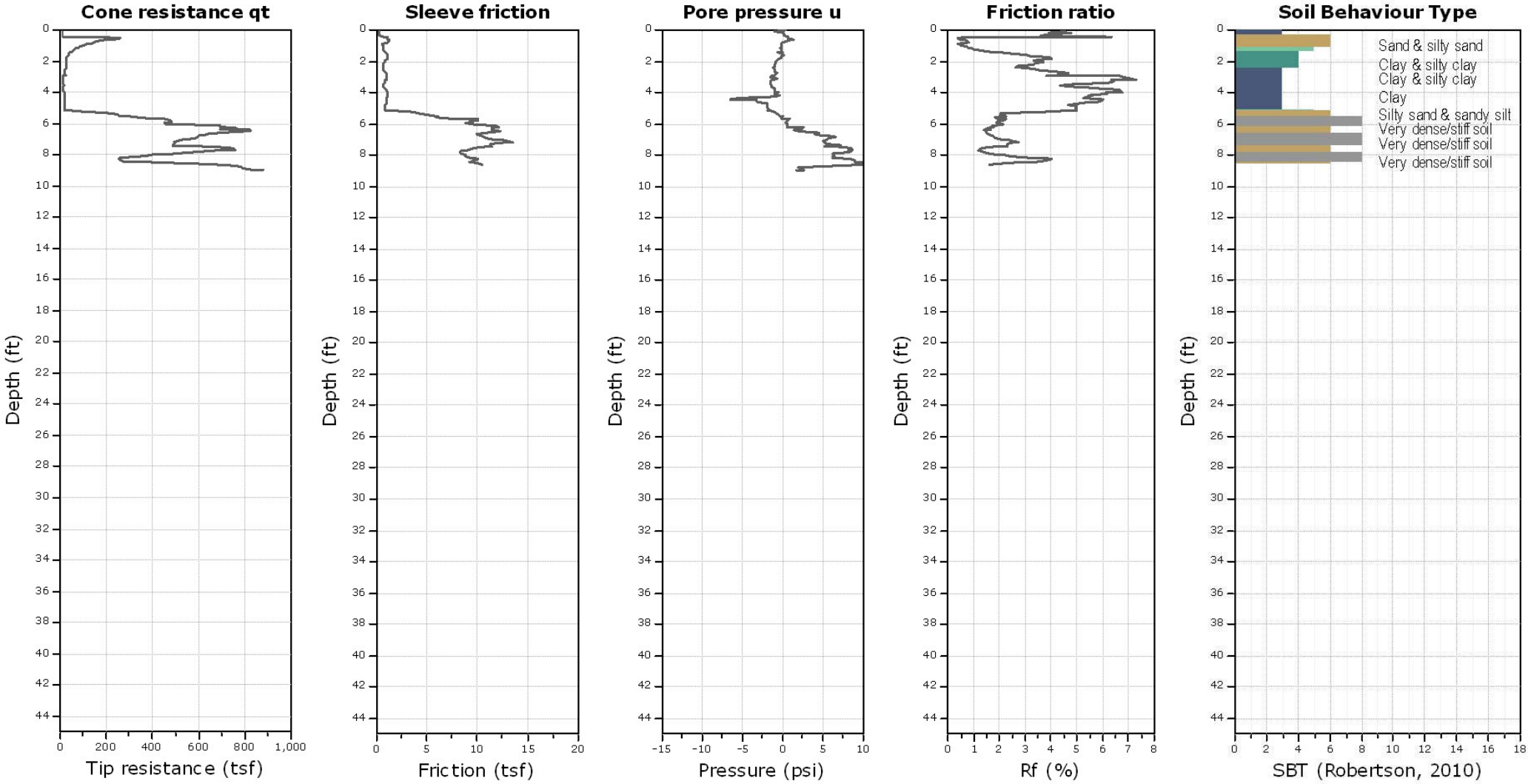


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CPT-6

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 8.99 ft, Date: 9/8/2017
Cone Type: Vertek

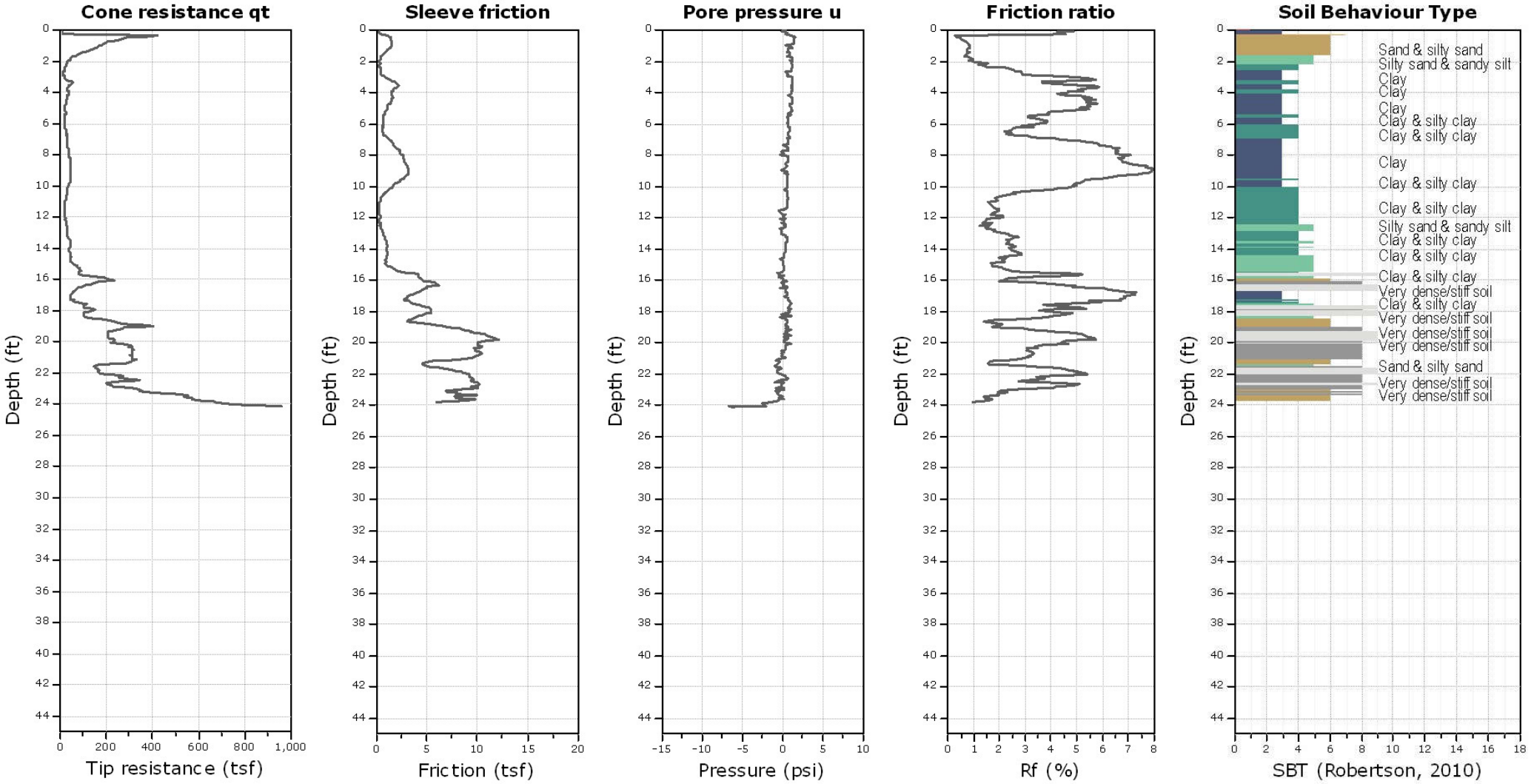


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CPT-7

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 24.15 ft, Date: 9/7/2017
Cone Type: Vertek

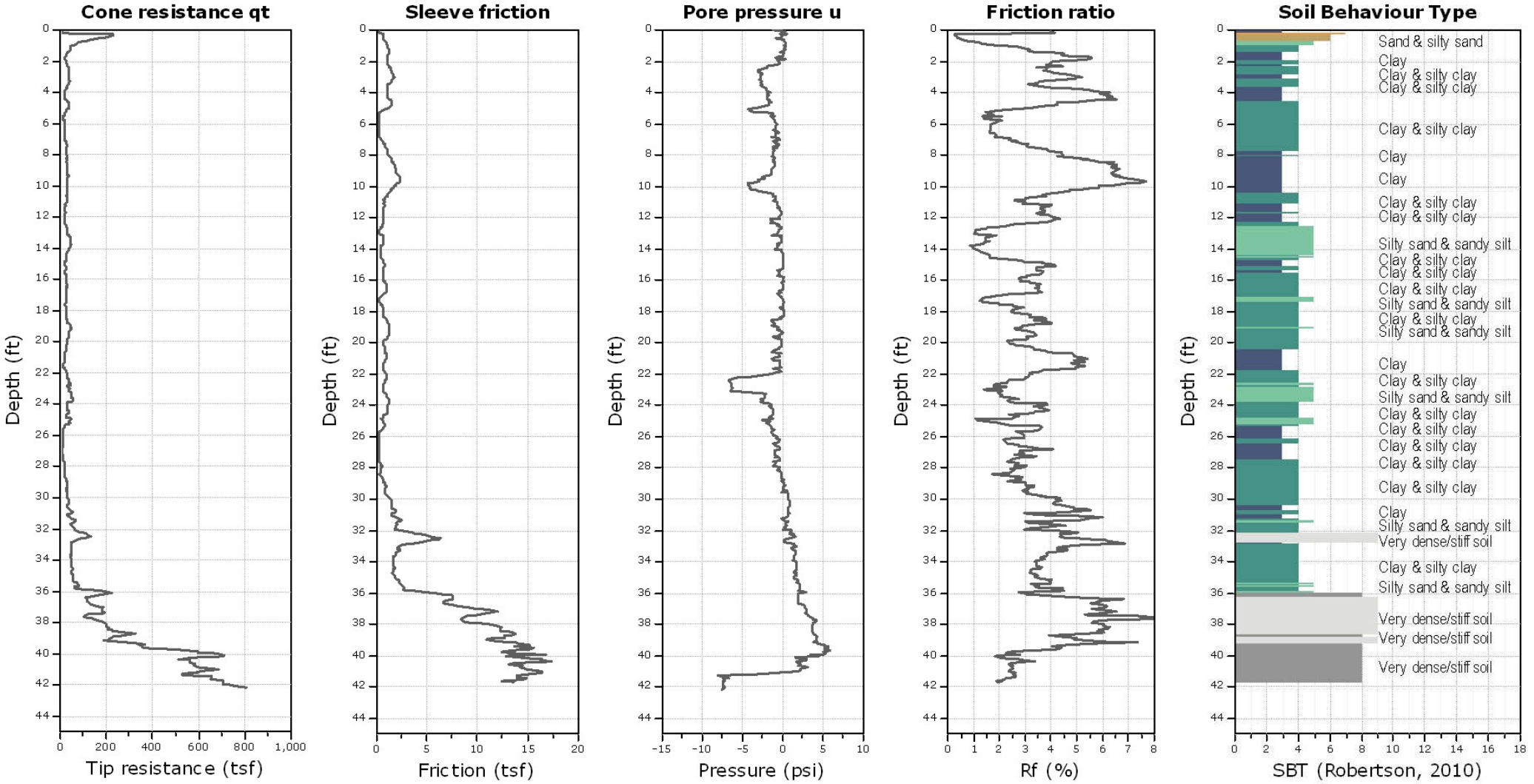


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CPT-8

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 42.13 ft, Date: 9/7/2017
Cone Type: Vertek

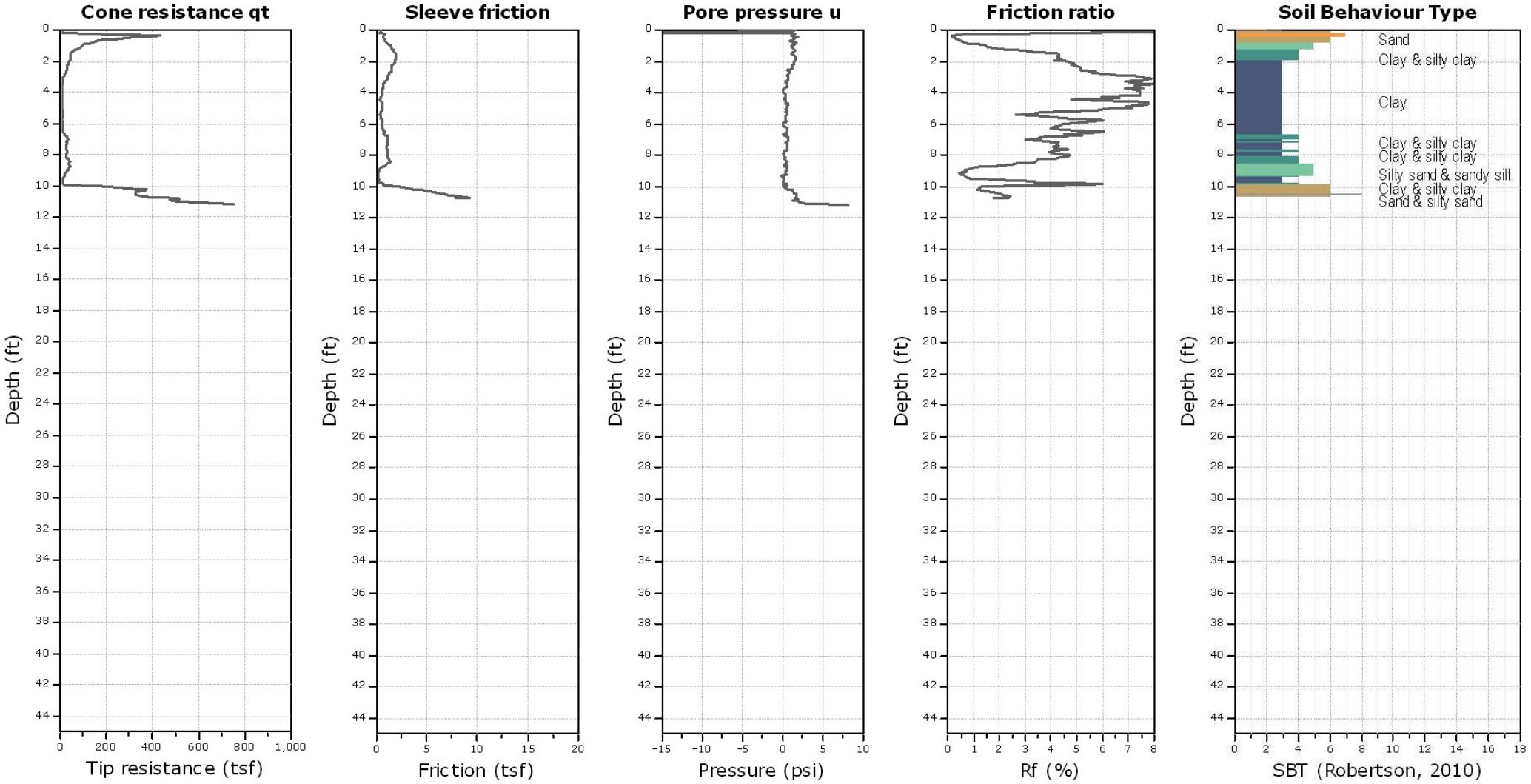


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CPT-9

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 11.16 ft, Date: 9/8/2017
Cone Type: Vertek

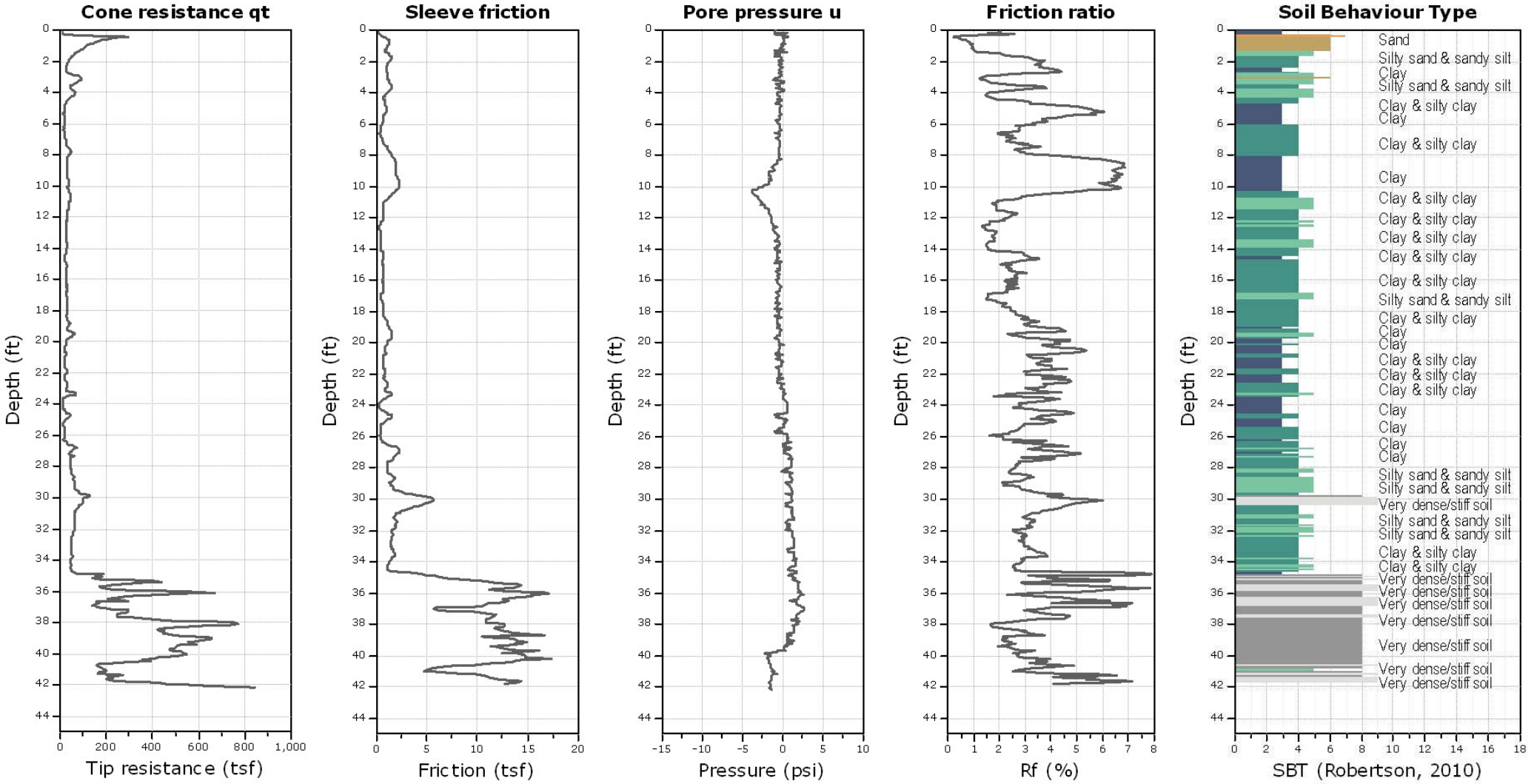


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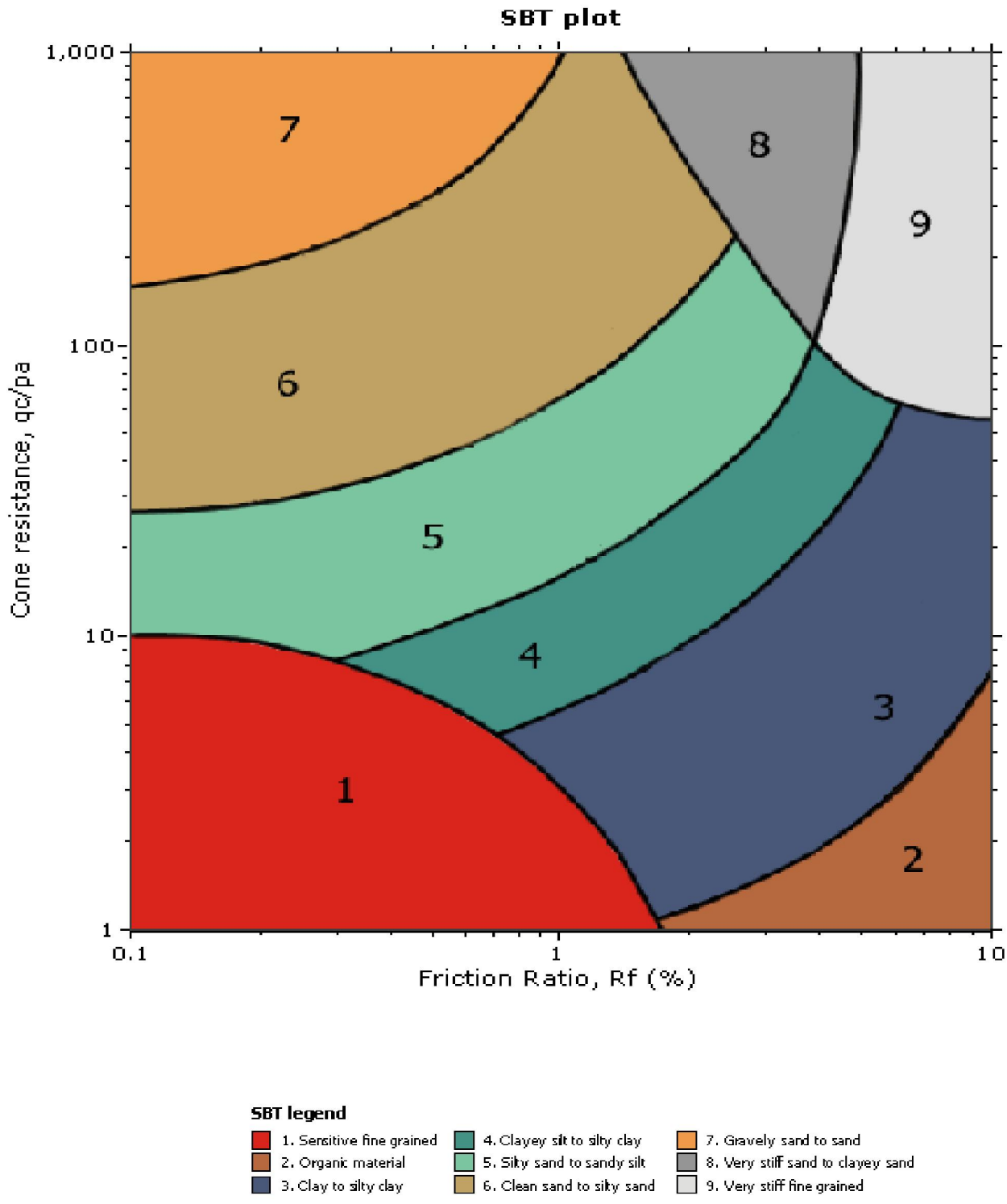
CPT-10

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 42.13 ft, Date: 9/7/2017
Cone Type: Vertek



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	CPT-1	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	37.59	1.78	0.51	-0.19	37.6	4.72	4	2.7	123.32	0.06	0	0.06	608.41	4.73	0	9	0.68	6.99	2.18	247.88	0.6	20.76	3
2	94.3	1.67	-0.19	0.03	94.3	1.77	5	2.11	125.12	0.12	0	0.12	757.62	1.77	0	6	0.54	3.17	1.79	281.74	-0.11	51.19	7
3	41.25	1.46	-0.1	0.48	41.25	3.54	4	2.58	122.12	0.19	0	0.19	221.72	3.56	0	8	0.71	3.42	2.23	132.6	-0.04	26.3	5
4	29.03	0.84	-0.06	0.55	29.03	2.88	4	2.64	117.17	0.24	0	0.24	118.06	2.9	0	5	0.74	2.95	2.3	80.14	-0.02	29.79	5
5	33	1.25	-0.1	0.63	33	3.8	4	2.67	120.45	0.3	0	0.3	107.51	3.83	0	4	0.77	2.62	2.39	80.98	-0.02	23.92	5
6	48.66	0.94	-0.19	0.65	48.66	1.93	5	2.35	119.29	0.36	0	0.36	132.77	1.95	0	5	0.68	2.06	2.13	93.98	-0.04	41.12	7
7	25.69	0.63	-0.39	0.43	25.68	2.44	4	2.63	114.77	0.42	0	0.42	59.98	2.48	0	5	0.78	2.06	2.4	49.19	-0.07	30.83	5
8	35.71	0.42	-0.39	0.22	35.71	1.17	5	2.33	112.6	0.48	0	0.48	73.81	1.19	0	5	0.69	1.73	2.14	57.62	-0.06	48.89	7
9	26	0.73	-0.47	0.33	26	2.81	4	2.67	115.92	0.54	0	0.54	47.56	2.87	0	4	0.83	1.75	2.49	42.22	-0.06	27.31	5
10	85	2.72	-0.2	0.5	85	3.19	5	2.33	128.42	0.6	0	0.6	140.76	3.22	0	5	0.72	1.51	2.22	120.27	-0.02	28.51	5
11	102.97	4.8	0.1	0.5	102.97	4.67	9	2.4	133.06	0.67	0	0.67	153.56	4.7	0	9	0.76	1.42	2.31	137.6	0.01	20.61	3
12	83.23	4.91	0.41	0.37	83.23	5.9	9	2.54	132.7	0.73	0	0.73	112.62	5.95	0	9	0.82	1.35	2.46	105.55	0.04	16.56	3
13	131.37	7.41	0.48	0.22	131.38	5.64	9	2.4	136.83	0.8	0	0.8	163.06	5.68	0	9	0.79	1.24	2.35	153.58	0.04	17.36	3
14	175.75	7.31	3.14	0.71	175.79	4.16	8	2.22	137.28	0.87	0	0.87	201.18	4.18	0	8	0.73	1.15	2.19	190.65	0.26	23.15	5
15	100.46	0	-2.06	-0.28	100.43	0	0	0	87.36	0.91	0	0.91	108.98	0	0	0	1	1.16	4.06	108.98	-0.16	169.97	0

	CPT-2	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	40.2	2.19	-0.18	0.47	40.2	5.45	3	2.72	125.03	0.06	0	0.06	641.68	5.46	0	9	0.7	7.18	2.21	272.55	-0.2	18.12	3
2	48.35	1.15	0.38	0.47	48.35	2.38	5	2.41	120.75	0.12	0	0.12	392.23	2.38	0	5	0.62	3.83	2.01	174.68	0.22	38	7
3	29.14	0.63	0.58	0.41	29.14	2.15	4	2.56	115.08	0.18	0	0.18	160.58	2.16	0	5	0.68	3.36	2.17	91.84	0.23	37.9	7
4	28.82	0.52	0.39	0.47	28.83	1.81	4	2.51	113.71	0.24	0	0.24	120.5	1.83	0	5	0.69	2.8	2.17	75.78	0.12	41.16	7
5	38.12	1.36	0.19	0.43	38.12	3.56	4	2.61	121.39	0.3	0	0.3	126.92	3.59	0	5	0.75	2.59	2.33	92.44	0.05	25.49	5
6	50.33	3.03	-1.54	0.47	50.32	6.02	3	2.69	127.94	0.36	0	0.36	138	6.06	0	9	0.8	2.37	2.46	111.67	-0.31	16.29	3
7	47.72	2.92	-5.7	0.27	47.65	6.14	3	2.71	127.55	0.43	0	0.43	110.91	6.19	-0.01	9	0.82	2.12	2.51	94.56	-0.96	15.95	3
8	40.1	1.46	0.47	0.37	40.11	3.65	4	2.6	122.05	0.49	0	0.49	81.41	3.69	0	4	0.79	1.85	2.42	69.38	0.07	24.35	5
9	38.95	0.63	0.19	0.21	38.95	1.61	5	2.38	115.78	0.54	0	0.54	70.53	1.63	0	5	0.72	1.62	2.22	58.68	0.03	41.44	7
10	42.29	0.42	0.19	0.36	42.3	0.99	5	2.23	113.02	0.6	0	0.6	69.36	1	0	5	0.68	1.47	2.1	57.82	0.02	53.01	7
11	34.88	0.42	-0.15	0.3	34.88	1.2	5	2.34	112.55	0.66	0	0.66	52.05	1.22	0	5	0.73	1.42	2.23	45.8	-0.02	44.32	7
12	42.82	0.52	-0.23	0.41	42.81	1.22	5	2.28	114.68	0.71	0	0.71	58.89	1.24	0	5	0.72	1.32	2.19	52.7	-0.02	46.32	7
13	42.29	0.63	-0.19	0.19	42.29	1.48	5	2.33	115.98	0.77	0	0.77	53.73	1.51	0	5	0.75	1.26	2.26	49.63	-0.02	41.15	7
14	56.7	1.04	-0.58	0.18	56.7	1.84	5	2.29	120.44	0.83	0	0.83	67.07	1.87	0	5	0.74	1.19	2.24	63.07	-0.05	38.89	7
15	100.98	1.46	-0.36	0.35	100.98	1.45	5	2.03	124.31	0.9	0	0.9	111.81	1.46	0	6	0.66	1.12	2	105.54	-0.03	51.54	7
16	107.04	1.25	-0.1	0.38	107.04	1.17	6	1.95	123.32	0.96	0	0.96	110.87	1.18	0	6	0.63	1.07	1.94	106.85	-0.01	59.55	7
17	91.06	1.25	-0.21	0.38	91.06	1.38	5	2.05	122.93	1.02	0	1.02	88.42	1.39	0	5	0.68	1.03	2.05	87.34	-0.01	50.81	7
18	60.05	2.4	-0.87	0.14	60.04	4	4	2.5	126.67	1.08	0	1.08	54.51	4.07	0	4	0.86	0.98	2.52	54.68	-0.06	22.09	5
19	56.5	3.03	0.4	0.48	56.5	5.36	4	2.61	128.22	1.15	0	1.15	48.32	5.47	0	4	0.91	0.93	2.65	48.65	0.03	17.45	3
20	38.95	2.51	0.48	0.49	38.96	6.43	3	2.78	125.93	1.21	0	1.21	31.23	6.64	0	3	0.99	0.88	2.84	31.28	0.03	14.87	3
21	58.37	2.82	-0.16	0.12	58.37	4.83	4	2.57	127.77	1.27	0	1.27	44.87	4.94	0	4	0.91	0.84	2.63	45.59	-0.01	18.84	3
22	146.09	3.45	-1.57	0.21	146.07	2.36	5	2.08	131.48	1.34	0	1.34	108.14	2.38	0	5	0.72	0.84	2.13	115.38	-0.08	36.37	7
23	106.72	1.98	-6.66	-0.04	106.64	1.86	5	2.09	126.67	1.4	0	1.4	75.09	1.89	0	5	0.74	0.81	2.16	80.77	-0.34	40.84	7

	CPT-3	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	203.63	1.57	1.18	0.9	203.65	0.77	6	1.62	126.52	0.06	0	0.06	3216.1	0.77	0	6	0.36	2.78	1.33	534.11	1.34	113.13	7
2	101.92	1.78	1.87	1.05	101.94	1.74	5	2.08	125.75	0.13	0	0.13	806.68	1.74	0	6	0.53	3.09	1.77	297.38	1.06	52.23	7
3	72.37	1.67	1.05	1.02	72.38	2.31	5	2.28	124.47	0.19	0	0.19	383.41	2.31	0	6	0.61	2.87	1.97	196.04	0.4	39.34	7
4	34.57	1.46	1.15	1.03	34.58	4.23	4	2.69	121.69	0.25	0	0.25	137.77	4.26	0	9	0.76	3.02	2.37	97.83	0.33	22.16	5
5	17.02	0.73	1.33	1.12	17.04	4.29	3	2.92	114.89	0.31	0	0.31	54.56	4.37	0.01	4	0.85	2.88	2.6	45.5	0.31	20.65	3
6	27.26	1.04	0.87	1.24	27.27	3.83	4	2.74	118.65	0.37	0	0.37	73.49	3.88	0	4	0.81	2.36	2.48	60.1	0.17	23.11	5
7	37.18	1.98	0.03	1.26	37.18	5.34	3	2.74	124.1	0.43	0	0.43	85.84	5.4	0	9	0.83	2.12	2.53	73.75	0.01	17.89	3
8	133.88	2.72	1.45	1.19	133.89	2.03	5	2.05	129.52	0.49	0	0.49	270.75	2.04	0	6	0.61	1.59	1.92	200.36	0.21	44.03	7
9	279.45	5.43	1.83	0.71	279.47	1.94	6	1.84	136.39	0.56	0	0.56	497.21	1.95	0	6	0.55	1.41	1.76	372.68	0.24	48.1	7
10	322.16	9.09	2.1	0.5	322.18	2.82	8	1.94	137.28	0.63	0	0.63	510.7	2.83	0	8	0.59	1.36	1.88	413.78	0.24	34.2	7
11	593.88	9.29	5.57	0.55	593.95	1.56	6	1.59	137.28	0.7	0	0.7	849.53	1.57	0	6	0.47	1.22	1.55	682.73	0.57	60.79	7
12	84.9	0	3.89	0.05	84.95	0	0	0	87.36	0.74	0	0.74	113.48	0	0	0	1	1.43	4.06	113.48	0.38	176.4	0

	CPT-4	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	219.61	2.72	-0.4	1.49	219.61	1.24	6	1.75	130.73	0.07	0	0.07	3356.5	1.24	0	6	0.41	3.15	1.47	653.98	-0.44	75.56	7
2	116.65	3.34	-0.29	1.58	116.64	2.86	5	2.2	130.71	0.13	0	0.13	890.73	2.87	0	8	0.58	3.37	1.9	371.58	-0.16	33.6	7
3	40	2.4	-0.46	1.61	39.99	6.01	3	2.75	125.68	0.19	0	0.19	205.69	6.04	0	9	0.77	3.72	2.4	139.73	-0.17	16.39	3
4	69.13	1.78	-0.9	1.64	69.12	2.57	5	2.32	124.8	0.26	0	0.26	269.08	2.58	0	5	0.65	2.5	2.06	162.79	-0.25	35.29	7
5	28.3	0.42	-0.77	1.72	28.29	1.48	5	2.47	112.04	0.31	0	0.31	89.68	1.49	0	5	0.69	2.34	2.18	61.79	-0.18	44.25	7
6	29.14	0.52	-0.84	1.8	29.12	1.79	4	2.51	113.74	0.37	0	0.37	77.95	1.82	0	5	0.73	2.15	2.26	58.42	-0.16	38.86	7
7	45.22	1.25	-1.15	1.9	45.2	2.77	4	2.48	121.22	0.43	0	0.43	104.24	2.8	0	5	0.74	1.95	2.28	82.34	-0.19	30.73	5
8	59.63	2.72	-1.87	1.98	59.61	4.56	4	2.55	127.55	0.49	0	0.49	119.87	4.59	0	9	0.78	1.82	2.38	101.46	-0.27	20.79	3
9	52	3.24	-9.05	2.01	51.89	6.24	3	2.69	128.5	0.56	0	0.56	92.09	6.31	-0.01	9	0.85	1.72	2.55	83.44	-1.17	15.67	3
10	34.15	2.19	-1.64	2.07	34.13	6.43	3	2.82	124.63	0.62	0	0.62	54.06	6.54	0	3	0.9	1.62	2.69	51.38	-0.19	15.11	3
11	37.8	1.25	-1.64	2.11	37.78	3.32	4	2.59	120.78	0.68	0	0.68	54.55	3.38	0	4	0.83	1.44	2.49	50.59	-0.17	25.15	5
12	25.38	0.63	-1.39	1.96	25.36	2.47	4	2.64	114.74	0.74	0	0.74	33.38	2.54	0	4	0.86	1.36	2.55	31.71	-0.14	27.68	5
13	26.84	0.42	-1.54	1.76	26.82	1.56	5	2.5	111.91	0.79	0	0.79	32.8	1.6	0	5	0.82	1.26	2.44	31.11	-0.14	34.28	7
14	32.69	0.52	-1.35	1.9	32.67	1.6	5	2.44	114.02	0.85	0	0.85	37.41	1.64	0	5	0.8	1.19	2.39	35.83	-0.11	35.58	7
15	28.09	0.42	-1.71	1.96	28.07	1.49	5	2.48	112.02	0.91	0	0.91	29.96	1.54	0	5	0.83	1.14	2.45	29.17	-0.14	34.1	7
16	47.31	0.63	-1.69	2.05	47.28	1.33	5	2.26	116.26	0.96	0	0.96	48.02	1.35	0	5	0.75	1.07	2.25	46.93	-0.13	42.65	7
17	87.61	1.15	-1.54	2.13	87.6	1.31	5	2.05	122.19	1.03	0	1.03	84.39	1.33	0	5	0.68	1.02	2.05	83.56	-0.11	51.73	7
18	78.74	1.36	-1.63	2.15	78.72	1.72	5	2.16	123.16	1.09	0	1.09	71.4	1.75	0	5	0.73	0.98	2.18	71.93	-0.11	41.85	7
19	86.05	1.78	-1.48	2.21	86.03	2.06	5	2.19	125.34	1.15	0	1.15	73.81	2.09	0	5	0.75	0.94	2.22	75.37	-0.09	37.5	7
20	64.43	2.92	-3.5	2.13	64.39	4.54	4	2.52	128.28	1.21	0	1.21	52.03	4.63	0	4	0.89	0.89	2.57	52.85	-0.21	19.98	3
21	52.84	3.03	-7.14	2.23	52.75	5.74	3	2.66	128.05	1.28	0	1.28	40.27	5.88	-0.01	3	0.95	0.84	2.72	40.67	-0.4	16.38	3
22	41.88	4.59	-12.35	2.19	41.72	11.01	3	2.94	130.53	1.34	0	1.34	30.06	11.38	-0.02	3	1	0.79	3.02	30.06	-0.66	9.72	2
23	159.15	10.13	-11.28	2.09	159.01	6.37	9	2.4	137.28	1.41	0	1.41	111.62	6.43	-0.01	9	0.86	0.78	2.47	116.33	-0.58	15.45	3
24	686.19	13.58	-7.73	2.43	686.1	1.98	8	1.65	137.28	1.48	0	1.48	462.37	1.98	0	8	0.56	0.83	1.69	535.44	-0.38	48.19	7
25	317.04	9.92	-6.46	2.63	316.96	3.13	8	1.98	137.28	1.55	0	1.55	203.58	3.15	0	8	0.7	0.76	2.05	227.98	-0.3	30.24	5
26	383.98	8.98	-6.37	2.43	383.9	2.34	8	1.83	137.28	1.62	0	1.62	236.27	2.35	0	6	0.65	0.76	1.9	274.25	-0.28	39.8	7
27	470.03	0	-5.98	2.69	469.95	0	0	0	87.36	1.66	0	1.66	281.81	0	0	0	1	0.64	4.06	281.81	-0.26	416.87	0

	CPT-5	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	137.01	1.25	0.92	-0.44	137.02	0.91	6	1.8	123.92	0.06	0	0.06	2208.9	0.91	0	6	0.41	3.18	1.46	411.72	1.07	94.41	7
2	134.29	1.04	1.45	-0.28	134.31	0.78	6	1.76	122.54	0.12	0	0.12	1088.2	0.78	0	6	0.42	2.47	1.48	313.2	0.85	103.02	7
3	41.35	0.84	0.97	-0.22	41.37	2.02	5	2.42	118.03	0.18	0	0.18	226.06	2.03	0	5	0.65	3.11	2.06	121.1	0.39	41.53	7
4	25.27	0.94	0.9	-0.37	25.28	3.72	4	2.75	117.7	0.24	0	0.24	103.88	3.75	0	4	0.78	3.15	2.4	74.54	0.27	24.17	5
5	35.92	1.04	0.97	-0.34	35.93	2.91	4	2.57	119.32	0.3	0	0.3	118.48	2.93	0	5	0.73	2.52	2.29	84.79	0.23	29.76	5
6	49.71	1.46	1.03	-0.4	49.72	2.94	4	2.47	122.58	0.36	0	0.36	136.31	2.96	0	5	0.72	2.16	2.24	100.9	0.2	30.07	5
7	28.93	1.36	0.68	-0.41	28.93	4.69	3	2.78	120.72	0.42	0	0.42	67.49	4.76	0	4	0.84	2.17	2.55	58.35	0.12	19.65	3
8	54.72	1.46	0.85	-0.34	54.73	2.67	5	2.41	122.81	0.48	0	0.48	112.14	2.7	0	5	0.73	1.76	2.24	90.49	0.13	32.02	5
9	31.22	1.88	0.9	-0.3	31.23	6.02	3	2.83	123.28	0.55	0	0.55	56.27	6.12	0	3	0.89	1.81	2.66	52.35	0.12	15.96	3
10	59.84	2.92	0.96	-0.08	59.85	4.89	4	2.57	128.1	0.61	0	0.61	97.19	4.94	0	9	0.81	1.56	2.45	87.6	0.11	19.43	3
11	161.86	5.43	1.29	-0.98	161.88	3.35	8	2.17	135.06	0.68	0	0.68	238.08	3.37	0	8	0.68	1.35	2.09	206.4	0.14	28.28	5
12	396.41	9.09	1.09	-0.2	396.42	2.29	8	1.82	137.28	0.75	0	0.75	530.56	2.3	0	8	0.56	1.22	1.78	455.24	0.11	41.71	7
13	241.85	10.23	3.86	0.26	241.9	4.23	8	2.15	137.28	0.81	0	0.81	296.09	4.24	0	8	0.7	1.2	2.12	273.37	0.34	23.03	5
14	769.52	11.38	7.08	0.95	769.61	1.48	6	1.52	137.28	0.88	0	0.88	870.67	1.48	0	6	0.46	1.09	1.5	790.26	0.58	64.53	7
15	283.94	11.59	2.74	1.34	283.97	4.08	8	2.11	137.28	0.95	0	0.95	297.42	4.1	0	8	0.69	1.08	2.09	287.86	0.21	23.85	5
16	793.12	6.37	3.77	1.42	793.17	0.8	7	1.27	137.28	1.02	0	1.02	776.4	0.8	0	7	0.38	1.01	1.27	759.14	0.27	113.03	7
17	86.67	0	-1.97	0.69	86.65	0	0	0	87.36	1.06	0	1.06	80.44	0	0	0	1	0.99	4.06	80.44	-0.13	129.2	0

	CPT-6	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	99.83	1.15	-0.19	0.49	99.83	1.15	6	1.97	122.51	0.06	0	0.06	1627.6	1.15	0	6	0.46	3.66	1.58	345.28	-0.22	75.99	7
2	24.02	0.94	-0.76	0.49	24.01	3.91	3	2.78	117.57	0.12	0	0.12	198.87	3.93	0	8	0.73	4.95	2.31	111.7	-0.46	23.89	5
3	13.89	0.84	-1.42	0.7	13.87	6.02	3	3.09	115.37	0.18	0	0.18	77.08	6.1	-0.01	3	0.86	4.62	2.62	59.76	-0.58	16.05	3
4	17.02	0.84	-0.6	0.53	17.01	4.91	3	2.96	115.87	0.24	0	0.24	71.21	4.98	0	4	0.84	3.54	2.58	56.15	-0.18	18.92	3
5	16.81	3.24	-1.82	0.85	16.79	19.28	3	3.38	125.75	0.3	0	0.3	55.24	19.63	-0.01	3	1	3.54	3.05	55.24	-0.44	5.65	2
6	453.95	8.25	0.53	1.13	453.95	1.82	6	1.7	137.28	0.37	0	0.37	1235.2	1.82	0	8	0.48	1.66	1.6	711.07	0.1	52.89	7
7	544.48	9.71	5.57	1.16	544.55	1.78	8	1.66	137.28	0.44	0	0.44	1248.2	1.78	0	8	0.47	1.52	1.58	782.04	0.92	54.03	7
8	416.77	6.47	6.37	1.63	416.85	1.55	6	1.66	137.28	0.5	0	0.5	825.47	1.56	0	6	0.48	1.42	1.59	560.61	0.91	60.59	7
9	34.36	0	1.38	0.08	34.37	0	0	0	87.36	0.55	0	0.55	61.72	0	0	0	1	1.93	4.06	61.72	0.18	102.45	0

	CPT-7	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	173.14	1.04	0.83	1.06	173.15	0.6	6	1.61	123.16	0.06	0	0.06	2809	0.6	0	7	0.35	2.68	1.3	438.22	0.97	134.04	7
2	34.04	0.42	0.99	0.87	34.06	1.23	5	2.36	112.49	0.12	0	0.12	287.85	1.23	0	6	0.59	3.64	1.92	116.86	0.6	59.33	7
3	16.08	1.04	0.8	0.91	16.09	6.49	3	3.06	117.36	0.18	0	0.18	90.21	6.56	0	9	0.85	4.6	2.61	69.12	0.33	15.11	3
4	33.63	1.88	1.07	1.01	33.64	5.59	3	2.78	123.46	0.24	0	0.24	140.22	5.63	0	9	0.79	3.27	2.45	103.15	0.32	17.39	3
5	20.36	1.15	1.06	1.08	20.38	5.64	3	2.94	118.64	0.3	0	0.3	67.48	5.72	0	4	0.86	2.98	2.62	56.6	0.26	16.91	3
6	17.65	0.63	0.77	1.11	17.66	3.55	3	2.86	113.85	0.35	0	0.35	48.81	3.62	0	4	0.85	2.52	2.57	41.22	0.16	23.36	5
7	28.4	1.15	0.66	1.25	28.41	4.04	4	2.74	119.45	0.41	0	0.41	67.58	4.1	0	4	0.82	2.17	2.51	57.35	0.11	22.06	5
8	36.97	2.4	-0.09	1.36	36.97	6.5	3	2.8	125.49	0.48	0	0.48	76.52	6.58	0	9	0.87	2	2.61	68.84	-0.01	15.07	3
9	39.79	2.72	0.35	1.37	39.79	6.82	3	2.79	126.56	0.54	0	0.54	72.66	6.92	0	9	0.88	1.81	2.64	67.04	0.05	14.43	3
10	33.1	1.67	0.49	1.44	33.11	5.05	3	2.76	122.56	0.6	0	0.6	54.04	5.14	0	4	0.88	1.64	2.62	50.4	0.06	18.36	3
11	21.09	0.42	0.58	1.6	21.1	1.98	4	2.65	111.32	0.66	0	0.66	31.11	2.04	0	4	0.84	1.49	2.53	28.87	0.06	30.14	5
12	20.47	0.31	0.21	1.61	20.47	1.53	4	2.6	109.14	0.71	0	0.71	27.76	1.59	0	5	0.84	1.39	2.5	26.01	0.02	32.37	7
13	30.7	0.63	-0.19	1.66	30.7	2.04	4	2.52	115.2	0.77	0	0.77	38.91	2.09	0	5	0.82	1.3	2.45	36.74	-0.02	31.81	5
14	38.12	0.94	0.39	1.87	38.12	2.47	4	2.5	118.7	0.83	0	0.83	45	2.52	0	5	0.82	1.22	2.45	43.09	0.03	29.73	5
15	56.6	1.98	0.06	2.19	56.6	3.51	4	2.48	125.13	0.89	0	0.89	62.51	3.56	0	4	0.82	1.15	2.45	60.65	0	24.7	5
16	220.97	4.18	0.32	1.63	220.97	1.89	6	1.89	133.9	0.96	0	0.96	229.6	1.9	0	6	0.61	1.06	1.87	220.88	0.02	47.18	7
17	46.89	4.49	0.56	0.87	46.89	9.58	3	2.86	130.65	1.02	0	1.02	44.81	9.79	0	3	0.99	1.03	2.86	44.8	0.04	10.78	3
18	136.9	3.97	0.82	1	136.91	2.9	5	2.16	132.35	1.09	0	1.09	124.65	2.92	0	5	0.73	0.98	2.17	125.65	0.05	31.03	5
19	393.69	5.85	0.66	0.61	393.7	1.49	6	1.66	137.28	1.16	0	1.16	338.89	1.49	0	6	0.54	0.95	1.67	353.25	0.04	60.92	7
20	224.21	11.07	0.75	1.02	224.21	4.94	9	2.23	137.28	1.23	0	1.23	181.74	4.96	0	9	0.77	0.89	2.26	188.07	0.04	19.74	3
21	312.76	9.19	-0.4	0.8	312.75	2.94	8	1.96	137.28	1.3	0	1.3	240.38	2.95	0	8	0.67	0.87	1.99	256.93	-0.02	32.24	7
22	171.37	7.83	-0.18	0.59	171.36	4.57	9	2.26	137.28	1.36	0	1.36	124.6	4.61	0	9	0.8	0.82	2.32	131.17	-0.01	20.94	3
23	329.05	10.13	0.04	1.02	329.05	3.08	8	1.97	137.28	1.43	0	1.43	228.65	3.09	0	8	0.69	0.81	2.02	251.45	0	30.85	5
24	769	0	-2.17	0.99	768.98	0	0	0	87.36	1.48	0	1.48	519.8	0	0	0	1	0.72	4.06	519.8	-0.11	756.86	0

	CPT-8	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	50.75	0.94	0.21	0.02	50.75	1.85	5	2.33	119.4	0.06	0	0.06	848.63	1.85	0	6	0.56	4.94	1.85	236.87	0.25	48.49	7
2	23.81	1.25	-0.56	0.24	23.8	5.26	3	2.87	119.65	0.12	0	0.12	198.01	5.29	0	9	0.77	5.33	2.39	119.24	-0.34	18.44	3
3	34.04	1.36	-2.8	0.22	34.01	3.99	4	2.68	121.11	0.18	0	0.18	187.94	4.01	-0.01	9	0.73	3.66	2.3	117.12	-1.12	23.54	5
4	18.59	1.25	-1.72	0.23	18.57	6.75	3	3.03	119.05	0.24	0	0.24	76.5	6.84	-0.01	9	0.87	3.64	2.65	63.04	-0.52	14.58	3
5	35.61	1.15	-4	0.26	35.56	3.23	4	2.6	120	0.3	0	0.3	117.69	3.26	-0.01	5	0.75	2.56	2.32	85.45	-0.96	27.4	5
6	18.07	0.21	-0.83	0.24	18.06	1.16	4	2.58	105.87	0.35	0	0.35	50.21	1.18	0	5	0.74	2.25	2.29	37.69	-0.17	41.66	7
7	18.38	0.52	-0.63	0.37	18.37	2.84	4	2.79	112.62	0.41	0	0.41	43.93	2.91	0	4	0.83	2.21	2.54	37.55	-0.11	26.54	5
8	27.05	1.25	-1.26	0.37	27.03	4.64	3	2.8	119.96	0.47	0	0.47	56.67	4.72	0	4	0.86	2.01	2.59	50.51	-0.19	19.63	3
9	29.03	1.98	-1.45	0.39	29.01	6.84	3	2.89	123.5	0.53	0	0.53	53.69	6.97	0	3	0.91	1.87	2.72	50.47	-0.2	14.34	3
10	29.97	1.78	-4.08	0.33	29.92	5.93	3	2.84	122.76	0.59	0	0.59	49.55	6.05	-0.01	3	0.9	1.69	2.69	46.86	-0.5	16.08	3
11	27.78	0.84	-0.97	0.35	27.77	3.01	4	2.66	117.06	0.65	0	0.65	41.68	3.08	0	4	0.85	1.51	2.54	38.74	-0.11	25.74	5
12	17.23	0.63	-0.43	0.32	17.23	3.64	3	2.88	113.79	0.71	0	0.71	23.35	3.79	0	4	0.94	1.46	2.77	22.8	-0.04	20.96	3
13	30.81	0.52	-0.77	0.29	30.8	1.7	5	2.47	113.88	0.76	0	0.76	39.3	1.74	0	5	0.8	1.3	2.4	36.83	-0.07	34.94	7
14	39.37	0.63	-1.02	0.3	39.36	1.59	5	2.37	115.81	0.82	0	0.82	46.87	1.63	0	5	0.77	1.22	2.32	44.25	-0.09	38.22	7
15	20.05	0.63	0	0.3	20.05	3.13	4	2.78	114.16	0.88	0	0.88	21.8	3.27	0	4	0.94	1.19	2.75	21.56	0	22.47	5
16	25.9	0.84	0.06	0.34	25.9	3.23	4	2.71	116.89	0.94	0	0.94	26.62	3.35	0	4	0.92	1.12	2.69	26.36	0	22.98	5
17	25.17	0.84	-0.43	0.36	25.16	3.32	4	2.72	116.82	1	0	1	24.26	3.46	0	4	0.94	1.06	2.73	24.16	-0.03	22.25	5
18	25.38	0.73	0.1	0.29	25.38	2.88	4	2.68	115.87	1.05	0	1.05	23.08	3.01	0	4	0.93	1	2.71	23.07	0.01	23.73	5
19	43.44	1.04	-0.63	0.4	43.43	2.4	5	2.45	119.79	1.11	0	1.11	37.99	2.47	0	4	0.85	0.96	2.48	38.29	-0.04	29.36	5
20	30.81	1.04	-0.1	0.34	30.8	3.39	4	2.66	118.95	1.17	0	1.17	25.25	3.52	0	4	0.94	0.91	2.72	25.41	-0.01	22.19	5
21	17.65	0.84	-1.25	0.36	17.63	4.74	3	2.94	115.95	1.23	0	1.23	13.32	5.09	-0.01	3	1	0.86	3.04	13.32	-0.07	16.92	3
22	28.61	0.73	-1.34	0.41	28.6	2.56	4	2.61	116.16	1.29	0	1.29	21.17	2.68	0	4	0.94	0.83	2.7	21.43	-0.07	24.68	5
23	42.5	0.94	-6.4	0.33	42.42	2.22	5	2.44	118.96	1.35	0	1.35	30.45	2.29	-0.01	4	0.88	0.81	2.53	31.37	-0.34	29.18	5
24	30.08	1.04	-1.45	0.31	30.06	3.47	4	2.68	118.89	1.41	0	1.41	20.34	3.65	0	3	0.98	0.75	2.8	20.44	-0.07	21.06	3
25	42.5	0.63	-1.64	0.27	42.48	1.47	5	2.33	115.99	1.47	0	1.47	27.97	1.53	0	5	0.85	0.76	2.45	29.36	-0.08	34.27	7
26	10.55	0.31	-0.83	0.33	10.54	2.97	3	3	107.52	1.52	0	1.52	5.93	3.47	-0.01	3	1	0.7	3.22	5.93	-0.04	17.58	2
27	7.41	0.31	-1.06	0.34	7.4	4.23	3	3.21	106.66	1.57	0	1.57	3.7	5.38	-0.01	3	1	0.67	3.5	3.7	-0.05	15.24	2
28	17.44	0.42	-0.48	0.35	17.43	2.4	4	2.76	110.86	1.63	0	1.63	9.7	2.64	0	3	1	0.65	2.98	9.7	-0.02	20.6	2
29	27.57	0.63	0.19	0.37	27.57	2.27	4	2.59	114.94	1.69	0	1.69	15.35	2.42	0	4	0.99	0.63	2.79	15.4	0.01	23.68	4
30	32.79	1.15	0.78	0.41	32.8	3.5	4	2.65	119.8	1.75	0	1.75	17.78	3.7	0	3	1	0.61	2.85	17.78	0.03	20.46	3
31	43.76	1.78	0.77	0.46	43.76	4.06	4	2.6	123.69	1.81	0	1.81	23.2	4.23	0	3	1	0.59	2.8	23.2	0.03	19.74	3
32	59.73	3.24	1.02	0.46	59.74	5.42	4	2.6	128.84	1.87	0	1.87	30.9	5.59	0	3	1	0.57	2.79	30.9	0.04	16.84	3
33	48.87	4.18	1.54	0.5	48.89	8.54	3	2.81	130.22	1.94	0	1.94	24.23	8.9	0	3	1	0.55	3.01	24.23	0.06	11.99	3
34	49.08	1.67	1.56	0.47	49.1	3.4	4	2.51	123.52	2	0	2	23.56	3.55	0	4	0.99	0.53	2.74	23.7	0.06	21.87	3
35	52.63	1.98	1.45	0.4	52.65	3.77	4	2.52	124.95	2.06	0	2.06	24.53	3.92	0	4	1	0.51	2.76	24.55	0.05	20.78	3
36	188.07	4.07	2.41	0.53	188.1	2.17	6	1.98	133.32	2.13	0	2.13	87.37	2.19	0	5	0.76	0.59	2.13	103.03	0.08	38.23	7
37	182.75	7.31	3	0.01	182.78	4	8	2.2	137.28	2.2	0	2.2	82.19	4.05	0	4	0.86	0.53	2.37	91.24	0.1	23.04	5
38	183.27	10.34	3.77	-0.33	183.32	5.64	9	2.32	137.28	2.27	0	2.27	79.91	5.71	0	9	0.91	0.5	2.5	85.45	0.12	17.11	3
39	219.4	13.47	4.13	0.02	219.45	6.14	9	2.32	137.28	2.33	0	2.33	93.01	6.2	0	9	0.91	0.49	2.49	99.82	0.13	15.93	3
40	674.39	13.68	3.93	0.9	674.44	2.03	8	1.67	137.28	2.4	0	2.4	279.65	2.04	0	6	0.64	0.59	1.77	376.18	0.12	46.21	7
41	672.3	13.89	1.97	1.03	672.33	2.07	8	1.67	137.28	2.47	0	2.47	270.99	2.07	0	6	0.65	0.58	1.78	365.7	0.06	45.36	7
42	732.77	0	-7.26	0.75	732.68	0	0	0	87.36	2.52	0	2.52	290.26	0	0	0	1	0.42	4.06	290.26	-0.21	428.94	0

	CPT-9	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	93.67	1.15	1.14	-0.99	93.69	1.23	6	2.01	122.36	0.06	0	0.06	1529.3	1.23	0	6	0.47	3.79	1.61	334.98	1.34	71.72	7
2	38.74	1.67	1.46	-0.8	38.76	4.31	4	2.66	122.95	0.12	0	0.12	314.81	4.32	0	9	0.71	4.59	2.23	167.77	0.85	22.35	5
3	14.83	1.15	0.68	-0.6	14.84	7.74	3	3.14	117.86	0.18	0	0.18	80.74	7.84	0	9	0.88	4.72	2.68	65.41	0.27	12.94	3
4	7	0.63	0	-0.51	7	8.96	3	3.43	111.6	0.24	0	0.24	28.48	9.27	0	3	0.99	4.42	2.98	28.24	0	11.53	3
5	7.94	0.42	0.58	-0.52	7.94	5.26	3	3.24	108.94	0.29	0	0.29	26.22	5.46	0.01	3	0.95	3.41	2.85	24.67	0.14	16.94	3
6	11.07	0.52	0	-0.61	11.07	4.72	3	3.1	111.38	0.35	0	0.35	30.85	4.87	0	3	0.92	2.8	2.78	28.35	0	18.43	3
7	37.28	0.94	0.68	-0.56	37.29	2.52	4	2.52	118.64	0.41	0	0.41	90.63	2.55	0	5	0.74	2.03	2.29	70.91	0.12	32.27	7
8	24.75	1.04	0.08	-0.45	24.75	4.22	3	2.8	118.41	0.47	0	0.47	52.11	4.3	0	4	0.86	2.02	2.59	46.36	0.01	20.92	3
9	30.18	0.63	0.31	-0.42	30.18	2.08	4	2.53	115.16	0.52	0	0.52	56.64	2.11	0	5	0.77	1.72	2.36	48.33	0.04	33.89	7
10	83.02	3.13	0.34	-0.49	83.02	3.77	4	2.39	129.41	0.59	0	0.59	140.11	3.8	0	8	0.74	1.55	2.27	120.56	0.04	24.72	5
11	492.9	0	1.95	-0.71	492.92	0	0	0	87.36	0.63	0	0.63	778.86	0	0	0	1	1.67	4.06	778.86	0.22	1126.94	0

	CPT-10	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	117.06	1.25	-0.05	0.94	117.06	1.07	6	1.9	123.54	0.06	0	0.06	1892.9	1.07	0	6	0.44	3.48	1.53	384.78	-0.06	81.88	7
2	35.61	1.25	-0.14	1.07	35.61	3.52	4	2.63	120.64	0.12	0	0.12	290.47	3.53	0	8	0.69	4.45	2.19	149.28	-0.08	26.67	5
3	79.26	1.15	-0.33	1.09	79.26	1.45	5	2.11	121.95	0.18	0	0.18	432.14	1.45	0	6	0.55	2.63	1.82	196.48	-0.13	58.09	7
4	64.01	1.36	-0.68	1.11	64.01	2.12	5	2.29	122.65	0.24	0	0.24	260.94	2.13	0	5	0.63	2.51	2.02	151.25	-0.2	41.13	7
5	17.23	0.73	-0.29	1.2	17.23	4.24	3	2.92	114.92	0.3	0	0.3	56.07	4.32	0	4	0.85	2.9	2.59	46.43	-0.07	20.86	3
6	15.87	0.52	-0.64	1.19	15.87	3.29	3	2.88	112.26	0.36	0	0.36	43.31	3.37	0	4	0.85	2.51	2.58	36.85	-0.13	24.14	5
7	21.3	0.63	-0.55	1.26	21.3	2.94	4	2.75	114.31	0.42	0	0.42	50.29	3	0	4	0.82	2.16	2.5	42.62	-0.1	26.59	5
8	39.26	1.46	-0.37	1.34	39.26	3.72	4	2.61	122	0.48	0	0.48	81.47	3.77	0	4	0.8	1.89	2.43	69.24	-0.06	23.94	5
9	29.03	1.98	-1.41	1.48	29.01	6.84	3	2.89	123.5	0.54	0	0.54	52.94	6.97	0	3	0.91	1.85	2.72	49.89	-0.19	14.34	3
10	33.31	1.88	-2.44	1.52	33.28	5.65	3	2.79	123.44	0.6	0	0.6	54.51	5.75	-0.01	3	0.89	1.66	2.65	51.16	-0.29	16.79	3
11	39.37	1.04	-2.79	1.48	39.33	2.65	4	2.51	119.54	0.66	0	0.66	58.65	2.7	-0.01	5	0.8	1.46	2.4	53.26	-0.3	29.59	5
12	29.97	0.52	-1.45	1.56	29.95	1.74	5	2.49	113.81	0.72	0	0.72	40.81	1.79	0	5	0.8	1.36	2.4	37.71	-0.15	34.74	7
13	22.66	0.31	-0.78	1.58	22.65	1.38	5	2.54	109.39	0.77	0	0.77	28.38	1.43	0	5	0.82	1.3	2.46	26.85	-0.07	33.98	6
14	26.84	0.42	-0.79	1.64	26.83	1.56	5	2.5	111.91	0.83	0	0.83	31.44	1.61	0	5	0.82	1.22	2.45	30.1	-0.07	33.88	7
15	25.38	0.63	-0.36	1.6	25.37	2.47	4	2.64	114.74	0.88	0	0.88	27.69	2.56	0	4	0.89	1.17	2.61	27.13	-0.03	26.63	5
16	23.39	0.63	-0.78	1.7	23.38	2.68	4	2.69	114.54	0.94	0	0.94	23.83	2.79	0	4	0.91	1.11	2.68	23.6	-0.06	24.72	5
17	26.84	0.63	-0.48	1.6	26.83	2.34	4	2.61	114.87	1	0	1	25.86	2.43	0	4	0.89	1.05	2.61	25.7	-0.03	26.98	5
18	29.03	0.84	-0.77	1.59	29.02	2.88	4	2.64	117.17	1.06	0	1.06	26.44	2.99	0	4	0.91	1	2.66	26.44	-0.05	24.46	5
19	34.15	1.15	-0.68	1.76	34.14	3.36	4	2.63	119.9	1.12	0	1.12	29.55	3.48	0	4	0.92	0.95	2.66	29.68	-0.04	22.9	5
20	24.75	1.25	-0.46	1.9	24.74	5.06	3	2.85	119.75	1.18	0	1.18	20.02	5.32	0	3	1	0.9	2.91	20.02	-0.03	17.01	3
21	15.87	0.84	-0.83	2.09	15.86	5.27	3	3.01	115.7	1.24	0	1.24	11.84	5.71	0	3	1	0.86	3.11	11.84	-0.05	15.87	3
22	26.42	0.84	-0.24	2.17	26.42	3.16	4	2.69	116.94	1.29	0	1.29	19.42	3.33	0	4	0.97	0.82	2.79	19.52	-0.01	21.88	3
23	25.38	0.94	0.09	2.31	25.38	3.7	4	2.75	117.7	1.35	0	1.35	17.76	3.91	0	3	1	0.78	2.87	17.76	0	19.9	3
24	11.17	1.04	0.48	2.61	11.18	9.34	3	3.28	116.48	1.41	0	1.41	6.92	10.69	0	2	1	0.75	3.46	6.92	0.02	11.75	1
25	20.05	1.15	0.22	2.86	20.05	5.73	3	2.95	118.6	1.47	0	1.47	12.64	6.18	0	3	1	0.72	3.11	12.64	0.01	15.28	3
26	19.53	0.94	0.62	3.05	19.54	4.81	3	2.91	117.07	1.53	0	1.53	11.78	5.22	0	3	1	0.69	3.08	11.78	0.03	16.56	3
27	46.89	1.57	0.17	3.27	46.89	3.34	4	2.52	122.94	1.59	0	1.59	28.49	3.46	0	4	0.94	0.68	2.67	29.17	0.01	22.92	5
28	40.41	1.36	0.69	3.29	40.42	3.36	4	2.57	121.53	1.65	0	1.65	23.49	3.5	0	4	0.97	0.65	2.74	23.79	0.03	22.04	5
29	59.21	2.19	0.45	3.31	59.22	3.7	4	2.48	125.97	1.71	0	1.71	33.55	3.81	0	4	0.94	0.64	2.64	34.58	0.02	22.08	5
30	104.43	3.03	1.06	3.35	104.44	2.9	5	2.24	129.72	1.78	0	1.78	57.72	2.95	0	5	0.84	0.65	2.38	62.7	0.04	28.51	5
31	59.31	2.61	1.16	3.53	59.33	4.4	4	2.54	127.25	1.84	0	1.84	31.2	4.54	0	4	0.97	0.58	2.72	31.66	0.05	19.49	3
32	57.96	1.67	0.74	3.67	57.97	2.88	5	2.41	123.93	1.9	0	1.9	29.44	2.98	0	4	0.93	0.58	2.61	30.59	0.03	25.19	5
33	46.57	1.46	1.38	3.65	46.59	3.14	4	2.51	122.42	1.97	0	1.97	22.71	3.28	0	4	0.98	0.54	2.73	22.94	0.05	22.69	5
34	43.76	1.67	1.55	3.65	43.77	3.82	4	2.58	123.24	2.03	0	2.03	20.59	4	0	3	1	0.52	2.82	20.59	0.05	20.07	3
35	151.94	5.74	1.16	3.55	151.96	3.78	8	2.23	135.31	2.09	0	2.09	71.54	3.83	0	4	0.86	0.56	2.39	78.62	0.04	23.87	5
36	526.1	12.74	2.28	4.01	526.13	2.42	8	1.78	137.28	2.16	0	2.16	242.19	2.43	0	8	0.67	0.62	1.88	306.72	0.08	38.82	7
37	153.3	11.28	2.51	4.23	153.33	7.36	9	2.46	137.28	2.23	0	2.23	67.69	7.46	0	9	0.97	0.49	2.65	69.43	0.08	13.5	3
38	753.44	12.64	1.91	4.31	753.47	1.68	8	1.57	137.28	2.3	0	2.3	326.5	1.68	0	6	0.59	0.63	1.66	448.3	0.06	55.61	7
39	656.01	15.35	0.66	4.72	656.02	2.34	8	1.73	137.28	2.37	0	2.37	275.88	2.35	0	8	0.66	0.59	1.83	362.76	0.02	40.43	7
40	540.93	12.43	-1.64	5.06	540.91	2.3	8	1.75	137.28	2.44	0	2.44	220.87	2.31	0	6	0.68	0.57	1.88	288.28	-0.05	40.57	7
41	190.79	10.86	-1.23	5.44	190.77	5.69	9	2.32	137.28	2.51	0	2.51	75.11	5.77	0	9	0.93	0.45	2.53	79.66	-0.04	16.93	3
42	544.59	0	-1.54	5.52	544.57	0	0	0	87.36	2.55	0	2.55	212.52	0	0	0	1	0.41	4.06	212.52	-0.04	317.89	0

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236 \right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a} \right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$

(applicable only to $I_c < I_{c_cutoff}$)

:: Relative Density, Dr (%) ::

$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$ (applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c_cutoff}$)

:: State Parameter, ψ ::

$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$

:: Peak drained friction angle, φ (°) ::

$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$

$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \leq 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho} \right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))} \right]^{1.25}$$ or user defined

$OCR = k_{OCR} \cdot Q_{tn}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: In situ Stress Ratio, Ko ::

$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Effective Stress Friction Angle, φ' (°) ::

$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$

(applicable for $0.10 < B_q < 1.00$)

References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012
- Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

B.1 Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

B.2 Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses were performed on Two (2) selected samples. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

B.3 Percent Finer than Sieve No. 200

The percent finer than sieve No. 200 tests were performed on six (6) representative soil samples to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM Standard D1140 test method. Test results are presented in the Logs of Borings in Appendix A, *Field Exploration*.

Table No. B-1, Percent Passing Sieve # 200 Results

Boring No.	Depth (feet)	Soil Classification	Percent Passing Sieve No. 200
BH-3	0-5	Silty Sand (SM)	43%
BH-3	15	Silty Sand (SM) with trace gravels	34%
BH-3	25	Silty Sand (SM) with trace gravels	45%
BH-3	35	Sandy Clay (CL)	55%
BH-4	5	Silty Sand (SM)	38%
BH-6	5	Silty Sand (SM) with trace silt	29 %

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B.4 Maximum Dry Density Test

One (1) laboratory maximum dry density-moisture content relationship test was performed on one representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented on Drawing No. B-2, *Moisture-Density Relationship Results*.

B.5 Direct Shear

Direct shear tests were performed on three (3) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-3 through B-5, *Direct Shear Test Results,* and in the following table:

Table No. B-2, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-1	10	Clayey Sand (SC)	34	110
BH-5	5	Sandy Silt (ML)	25	240
BH - 8	5	Clayey Silt (ML)	27	360

B.6 Consolidation Test

Consolidation tests were performed on two (2) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-6 through B-7, *Consolidation Test Results*.

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B.7 R-Value Test

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with ASTM D2844 Standard. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-3, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-5	1-5	Silty Sand (SM)	46

B.8 Soil Corrosivity

One (1) representative soil sample was tested to determine minimum electrical resistivity, pH, and chemical content, including chloride concentrations, and soluble sulfate. The purpose of these tests is to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by EGL in Arcadia, California. The test results received from EGL are included in the following table:

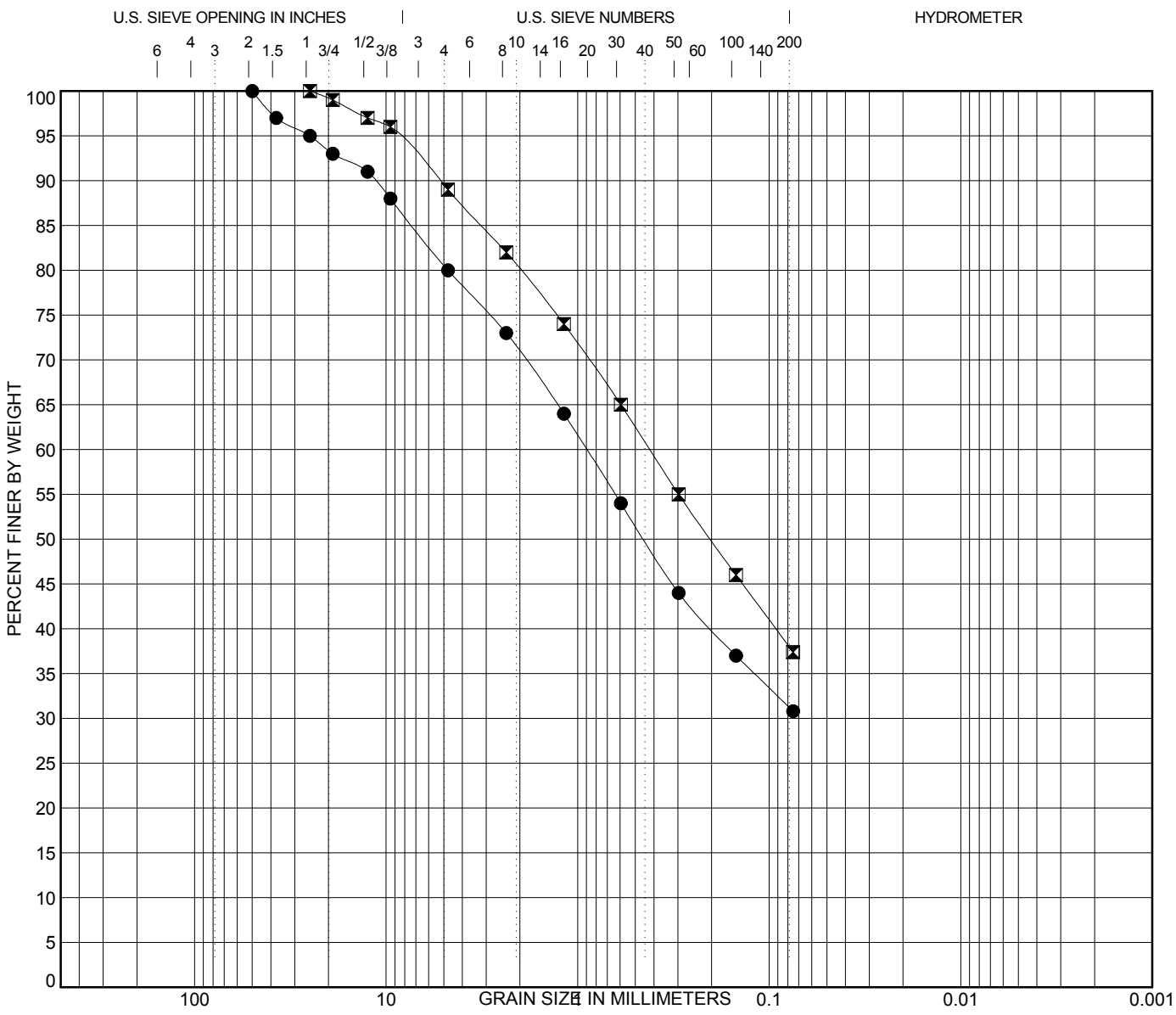
Table No. B-4, Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-4	10	8.17	115	0.006	2,100

B.9 Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-1**	**0-5**	**SANDY SILT (ML)**					
⧓	**BH-7**	**0-5**	**SILTY SAND (SM)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-1**	**0-5**	**50**	**0.897**			**20.0**	**49.2**	**30.8**	
⧓	**BH-7**	**0-5**	**25**	**0.42**			**11.0**	**51.6**	**37.4**	

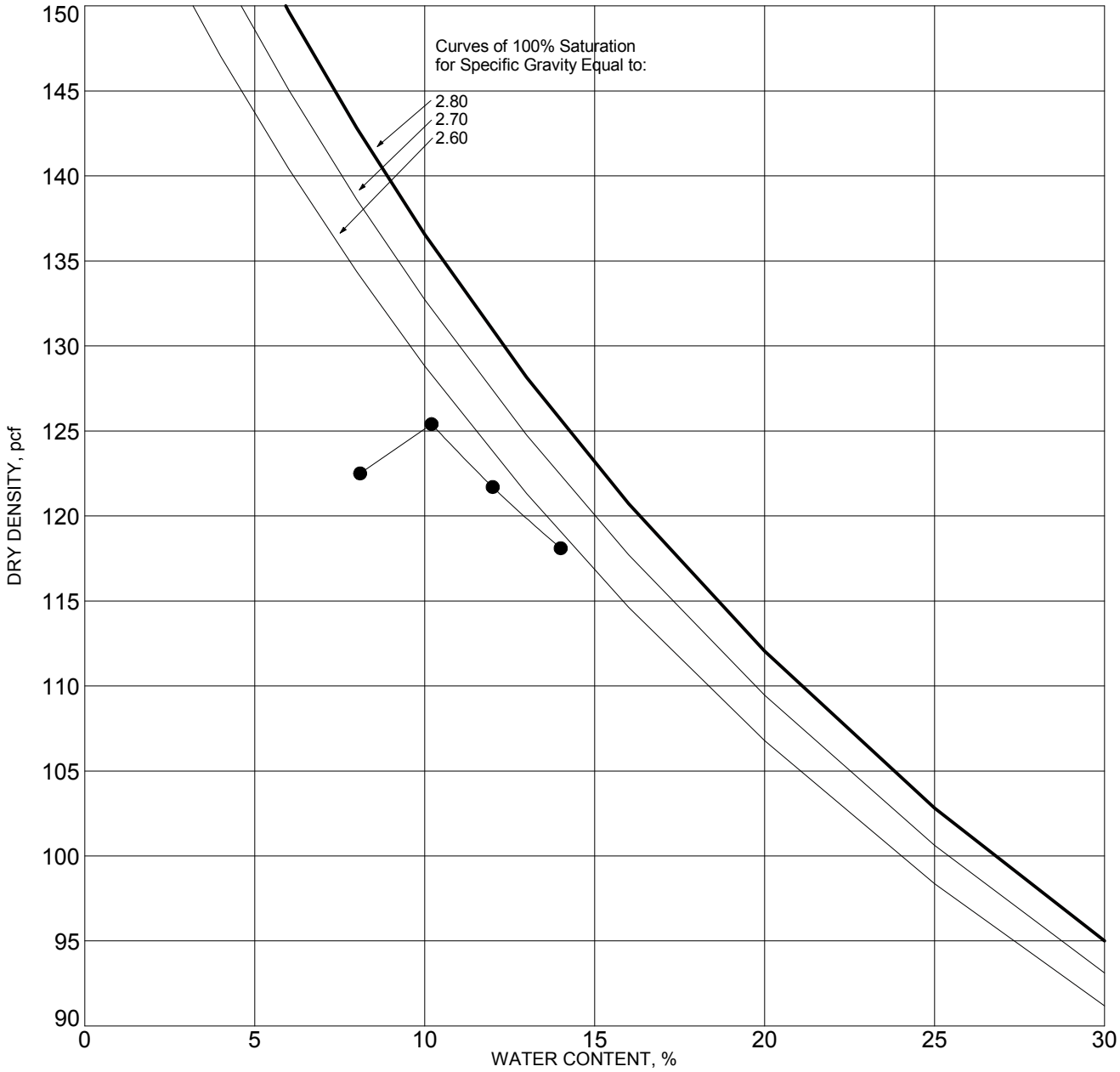
GRAIN SIZE DISTRIBUTION RESULTS

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PARKING LOT S
WALNUT, CALIFORNIA

Project No.
17-31-247-01

Figure No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-3	0-5	SILTY SAND (SM)	D1557 Method B	10.2	125.4

NOTE:

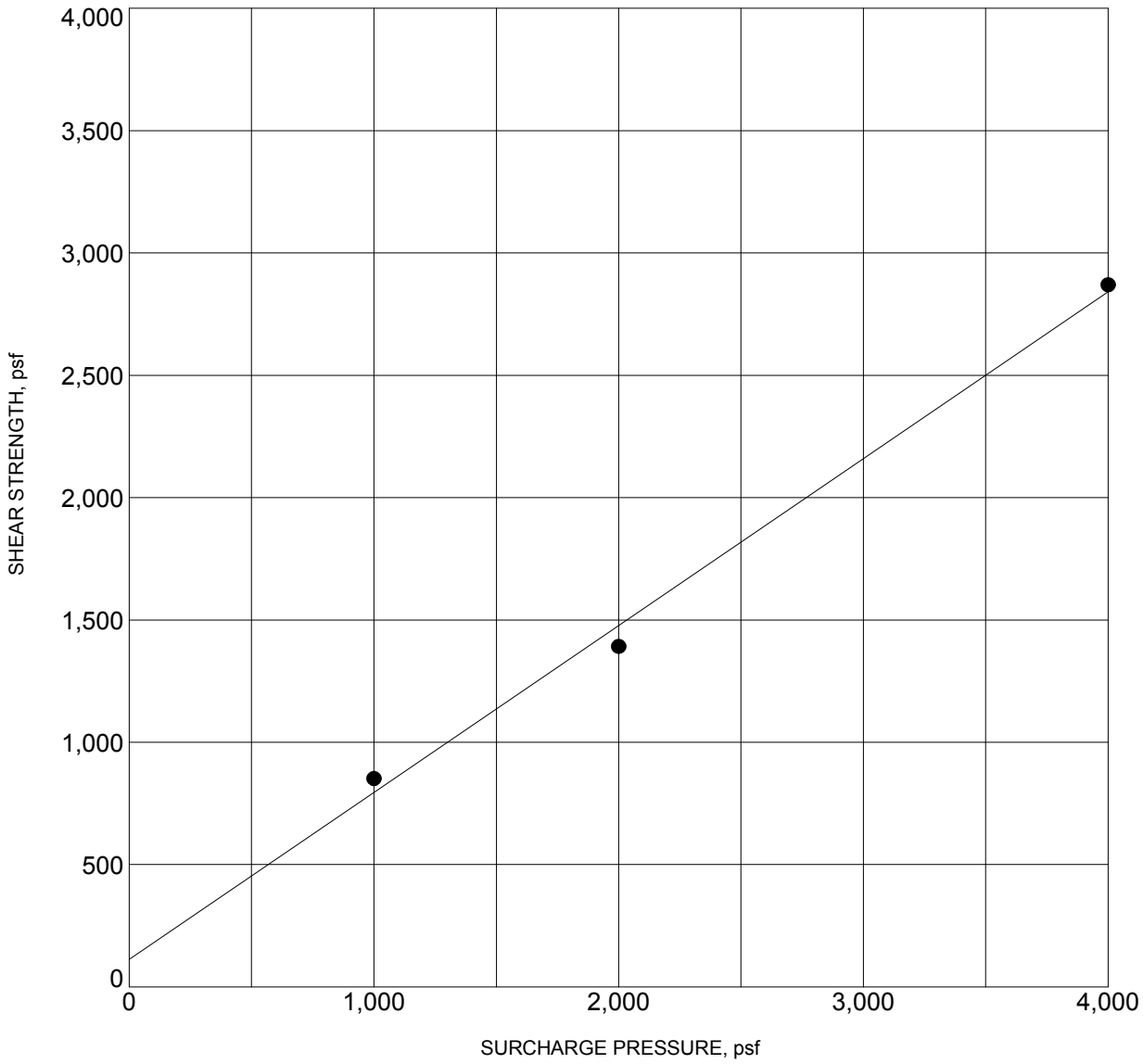
MOISTURE-DENSITY RELATIONSHIP RESULTS

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Figure No.
B-2



BORING NO.	:	**BH-1**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**110**	FRICTION ANGLE (degrees):		**34**
MOISTURE CONTENT (%)	:	**9.0**	DRY DENSITY (pcf)	:	**107.0**

NOTE: Ultimate Strength.

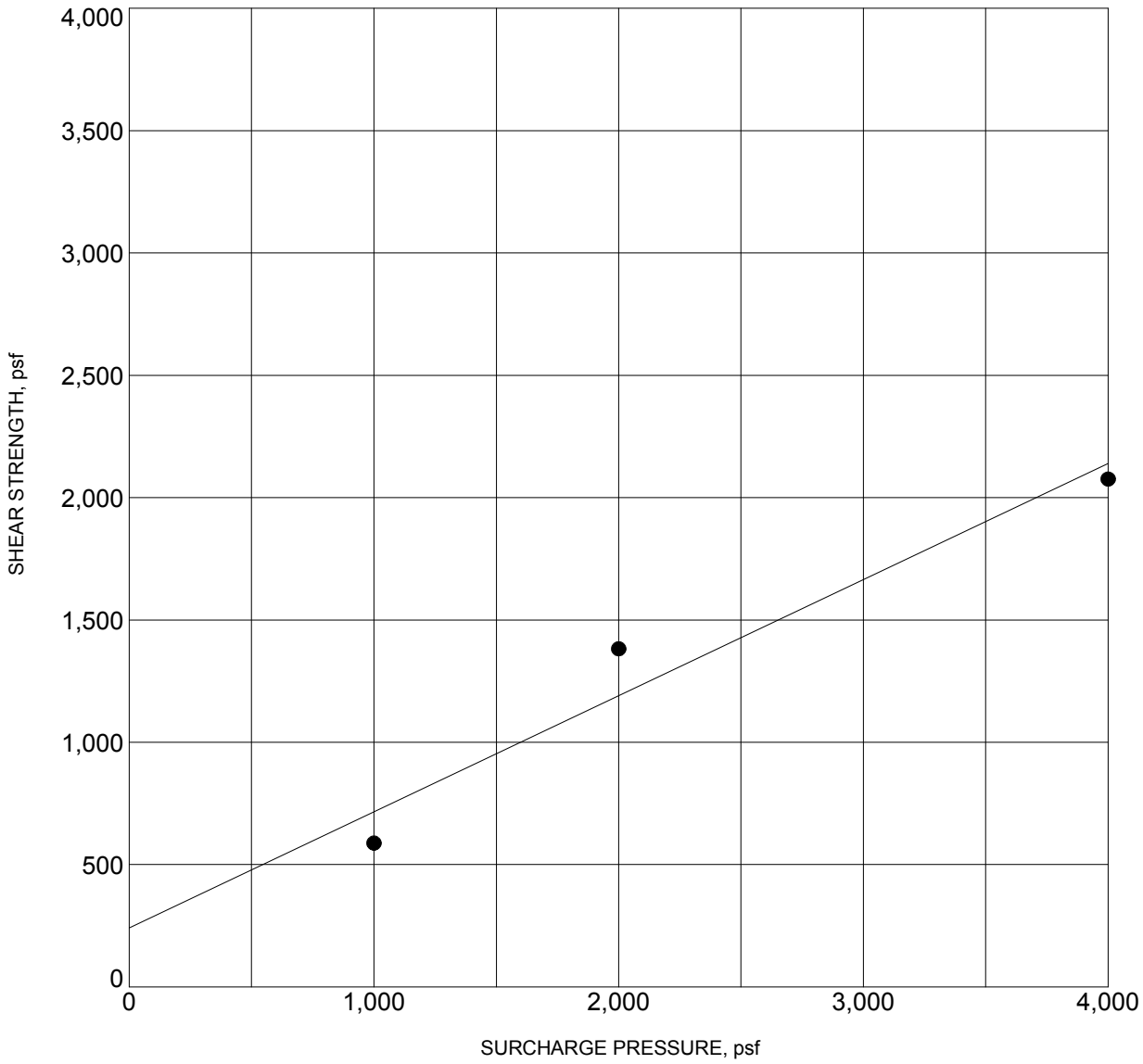
DIRECT SHEAR TEST RESULTS

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Figure No. **B-3**



BORING NO.	:	**BH-5**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**SANDY SILT (ML)**			
COHESION (psf)	:	**240**	FRICTION ANGLE (degrees):		**25**
MOISTURE CONTENT (%)	:	**17.0**	DRY DENSITY (pcf)	:	**110.0**

NOTE: Ultimate Strength.

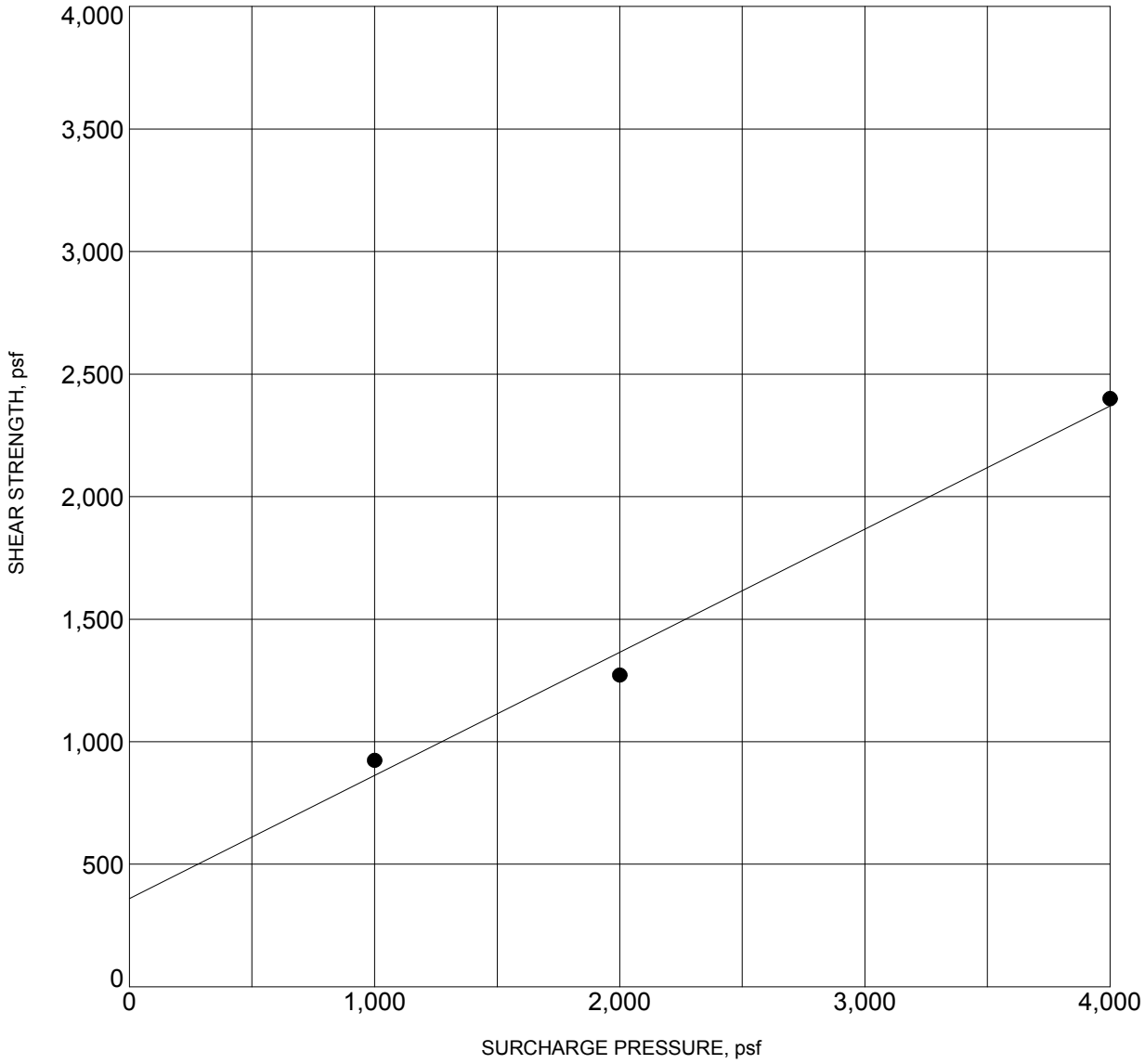
DIRECT SHEAR TEST RESULTS

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Figure No. **B-4**



BORING NO.	:	**BH-8**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**CLAYEY SILT (ML)**			
COHESION (psf)	:	**360**	FRICTION ANGLE (degrees):		**27**
MOISTURE CONTENT (%)	:	**9.5**	DRY DENSITY (pcf)	:	**107.0**

NOTE: Ultimate Strength.

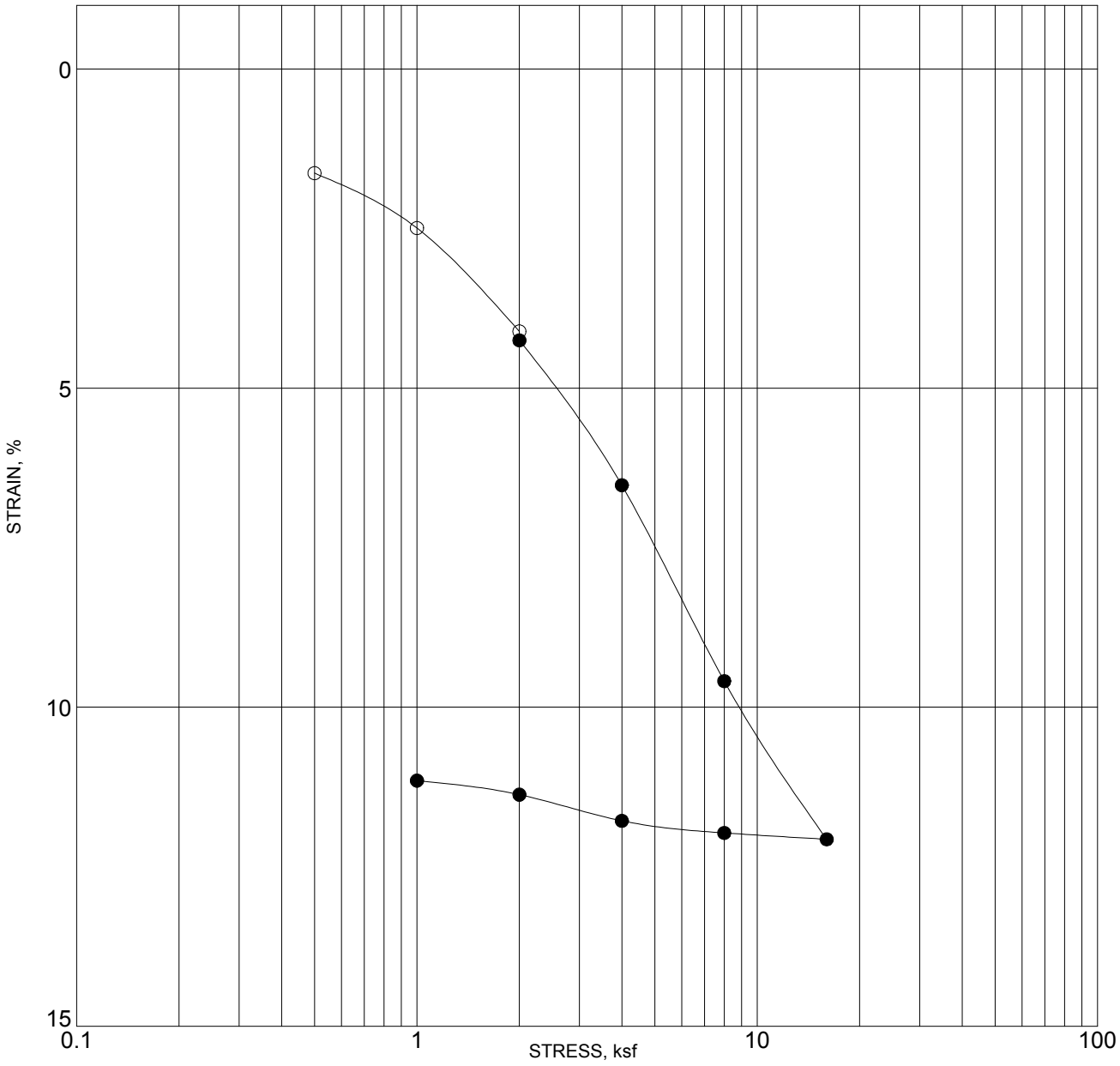
DIRECT SHEAR TEST RESULTS

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17-31-247-01

Figure No.
B-5



BORING NO. :	**BH-2**	DEPTH (ft) :	**5**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**5**	**110**	**27**	**0.475**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

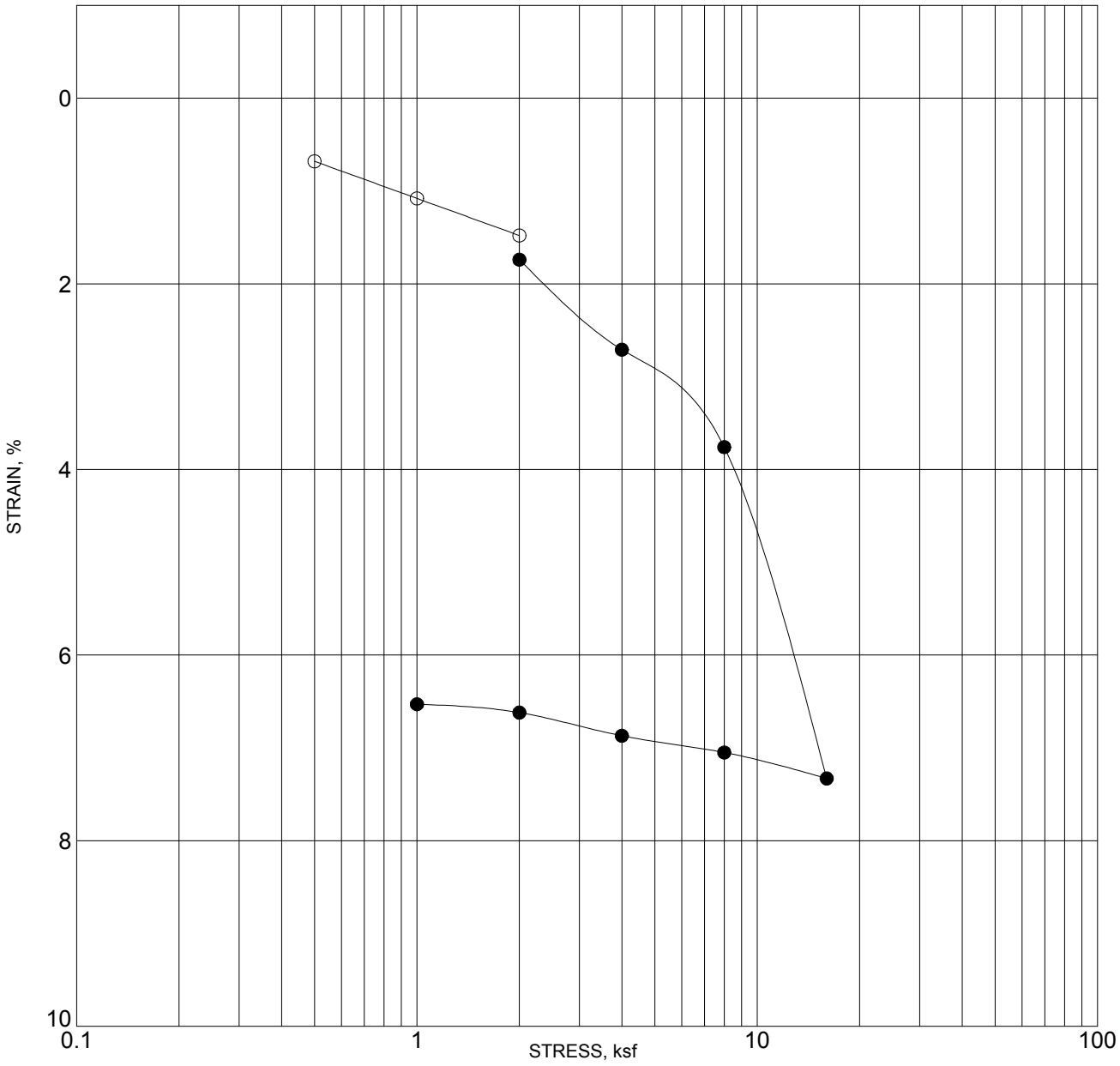
CONSOLIDATION TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-6**



BORING NO. :	BH-6	DEPTH (ft) :	5
DESCRIPTION :	**BEDROCK-PUENTE FORMATION:** SANDSTONE		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	7	122	53	0.340
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-7**

Appendix C

Liquefaction/Seismic Settlement Analysis

APPENDIX C: LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from borings BH-3 and CPT-8 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** (Mw)	Peak Ground Acceleration*** (g)
23	6.51	0.777

* Based on research of Los Angeles County Groundwater Wells No. 3145, No. 3155 and No. 3155A
** Based on the 2008 NSHMP PSHA Interactive Deaggregation web site for a return period of 2475 years
***Based on S_{DS}/2.5 per CBC 2013

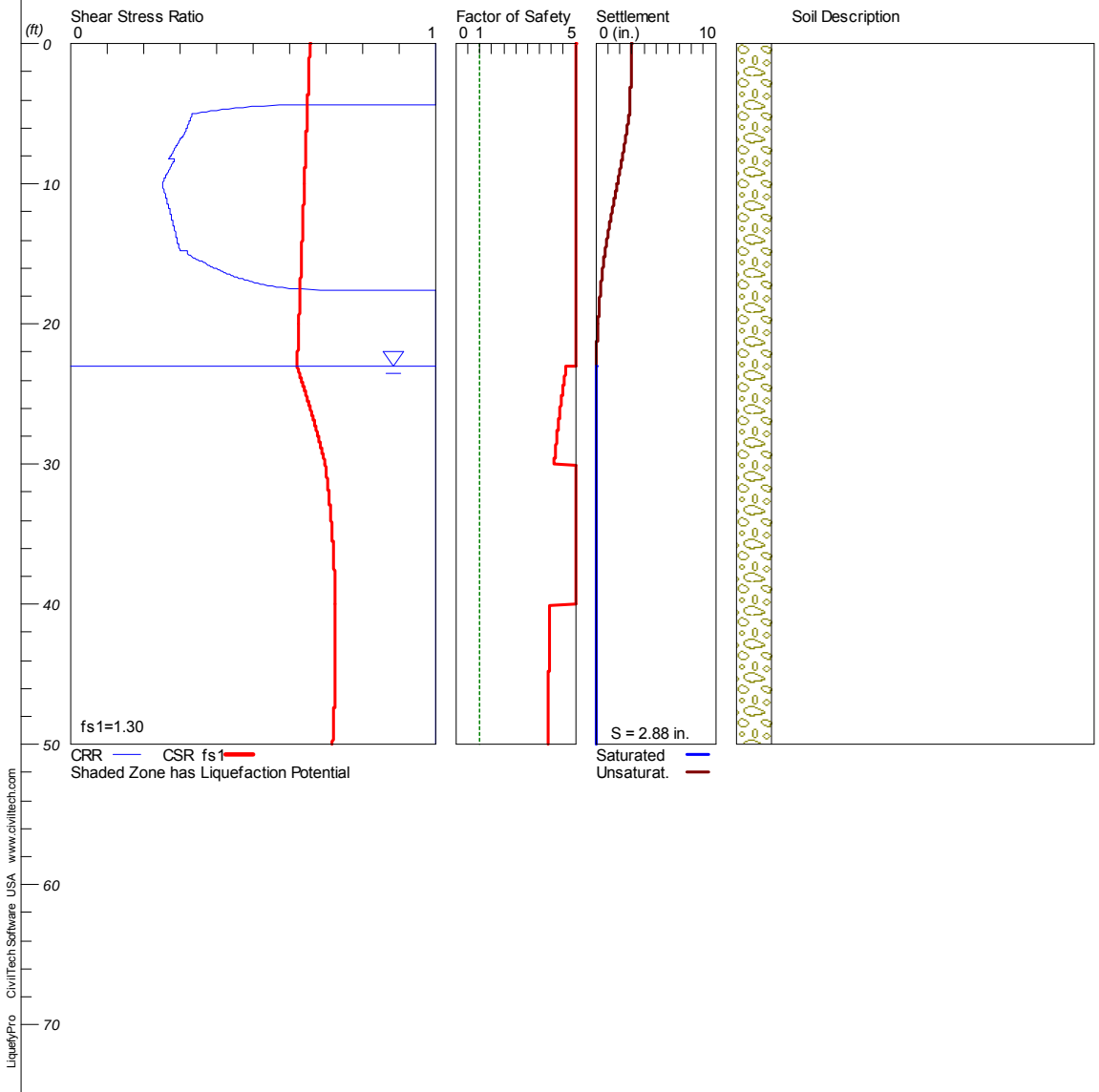
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LIQUEFACTION ANALYSIS

Parking Lot S MT Sac

Hole No.=BH 3 Water Depth=23 ft

Magnitude=6.51
Acceleration=0.777g



****

LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot S\BH3 rev.liq
Title: Parking Lot S MT Sac
Subtitle: 17-31-247-01

Surface Elev.=
Hole No.=3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 23.00 ft
Water Table during In-Situ Testing= 23.40 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.51

Input Data:
Surface Elev.=
Hole No.=3
Depth of Hole=50.00 ft
Water Table during Earthquake= 23.00 ft
Water Table during In-Situ Testing= 23.40 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.51
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	114.00	43.00
5.00	7.70	114.00	43.00
10.00	4.90	118.00	43.00
15.00	8.40	115.00	45.00
20.00	25.00	115.00	45.00
25.00	20.30	115.00	45.00
30.00	21.00	110.00	NoLiq
35.00	35.00	110.00	NoLiq
40.00	50.00	110.00	NoLiq
45.00	50.00	107.00	55.00
50.00	50.00	107.00	55.00

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=2.88 in.
Total Settlement of Saturated and Unsaturated Sands=2.88 in.
Differential Settlement=1.442 to 1.904 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	BH3 rev.sum in.
0.00	2.87	0.66	5.00	0.00	2.88	2.88
0.05	2.87	0.66	5.00	0.00	2.88	2.88
0.10	2.87	0.66	5.00	0.00	2.88	2.88
0.15	2.87	0.66	5.00	0.00	2.88	2.88
0.20	2.87	0.66	5.00	0.00	2.88	2.88
0.25	2.87	0.66	5.00	0.00	2.88	2.88
0.30	2.87	0.66	5.00	0.00	2.88	2.88
0.35	2.87	0.66	5.00	0.00	2.88	2.88
0.40	2.87	0.66	5.00	0.00	2.88	2.88
0.45	2.87	0.66	5.00	0.00	2.88	2.88
0.50	2.87	0.66	5.00	0.00	2.88	2.88
0.55	2.87	0.66	5.00	0.00	2.88	2.88
0.60	2.87	0.66	5.00	0.00	2.88	2.88
0.65	2.87	0.66	5.00	0.00	2.88	2.88
0.70	2.87	0.66	5.00	0.00	2.88	2.88
0.75	2.87	0.66	5.00	0.00	2.88	2.88
0.80	2.87	0.66	5.00	0.00	2.88	2.88
0.85	2.87	0.66	5.00	0.00	2.88	2.88
0.90	2.87	0.66	5.00	0.00	2.88	2.88
0.95	2.87	0.66	5.00	0.00	2.88	2.88
1.00	2.87	0.66	5.00	0.00	2.88	2.88
1.05	2.87	0.65	5.00	0.00	2.88	2.88
1.10	2.87	0.65	5.00	0.00	2.88	2.88
1.15	2.87	0.65	5.00	0.00	2.88	2.88
1.20	2.87	0.65	5.00	0.00	2.88	2.88
1.25	2.87	0.65	5.00	0.00	2.88	2.88
1.30	2.87	0.65	5.00	0.00	2.88	2.88
1.35	2.87	0.65	5.00	0.00	2.88	2.88
1.40	2.87	0.65	5.00	0.00	2.88	2.88
1.45	2.87	0.65	5.00	0.00	2.88	2.88
1.50	2.87	0.65	5.00	0.00	2.88	2.88
1.55	2.87	0.65	5.00	0.00	2.88	2.88
1.60	2.87	0.65	5.00	0.00	2.88	2.88
1.65	2.87	0.65	5.00	0.00	2.88	2.88
1.70	2.87	0.65	5.00	0.00	2.88	2.88
1.75	2.87	0.65	5.00	0.00	2.88	2.88
1.80	2.87	0.65	5.00	0.00	2.88	2.88
1.85	2.87	0.65	5.00	0.00	2.88	2.88
1.90	2.87	0.65	5.00	0.00	2.88	2.88
1.95	2.87	0.65	5.00	0.00	2.88	2.88
2.00	2.87	0.65	5.00	0.00	2.88	2.88
2.05	2.87	0.65	5.00	0.00	2.88	2.88
2.10	2.87	0.65	5.00	0.00	2.88	2.88
2.15	2.87	0.65	5.00	0.00	2.88	2.88
2.20	2.87	0.65	5.00	0.00	2.88	2.88
2.25	2.87	0.65	5.00	0.00	2.88	2.88
2.30	2.87	0.65	5.00	0.00	2.88	2.88
2.35	2.87	0.65	5.00	0.00	2.88	2.88
2.40	2.87	0.65	5.00	0.00	2.88	2.88
2.45	2.87	0.65	5.00	0.00	2.88	2.88
2.50	2.87	0.65	5.00	0.00	2.88	2.88
2.55	2.87	0.65	5.00	0.00	2.88	2.88
2.60	2.87	0.65	5.00	0.00	2.88	2.88
2.65	2.87	0.65	5.00	0.00	2.88	2.88
2.70	2.87	0.65	5.00	0.00	2.88	2.88
2.75	2.87	0.65	5.00	0.00	2.88	2.88
2.80	2.87	0.65	5.00	0.00	2.88	2.88
2.85	2.87	0.65	5.00	0.00	2.88	2.88
2.90	2.87	0.65	5.00	0.00	2.88	2.88
2.95	2.87	0.65	5.00	0.00	2.88	2.88
3.00	2.87	0.65	5.00	0.00	2.88	2.88
3.05	2.87	0.65	5.00	0.00	2.88	2.88
3.10	2.87	0.65	5.00	0.00	2.88	2.88
3.15	2.87	0.65	5.00	0.00	2.88	2.88
3.20	2.87	0.65	5.00	0.00	2.88	2.88

3.25	2.87	0.65	5.00	0.00	2.88	2.88
3.30	2.87	0.65	5.00	0.00	2.88	2.88
3.35	2.87	0.65	5.00	0.00	2.88	2.88
3.40	2.87	0.65	5.00	0.00	2.88	2.88
3.45	2.87	0.65	5.00	0.00	2.88	2.88
3.50	2.87	0.65	5.00	0.00	2.88	2.88
3.55	2.87	0.65	5.00	0.00	2.87	2.87
3.60	2.87	0.65	5.00	0.00	2.87	2.87
3.65	2.87	0.65	5.00	0.00	2.87	2.87
3.70	2.87	0.65	5.00	0.00	2.87	2.87
3.75	2.87	0.65	5.00	0.00	2.87	2.87
3.80	2.87	0.65	5.00	0.00	2.86	2.86
3.85	2.87	0.65	5.00	0.00	2.86	2.86
3.90	2.87	0.65	5.00	0.00	2.85	2.85
3.95	2.87	0.65	5.00	0.00	2.85	2.85
4.00	2.87	0.65	5.00	0.00	2.85	2.85
4.05	2.87	0.65	5.00	0.00	2.84	2.84
4.10	2.87	0.65	5.00	0.00	2.84	2.84
4.15	2.87	0.65	5.00	0.00	2.83	2.83
4.20	2.87	0.65	5.00	0.00	2.83	2.83
4.25	2.87	0.65	5.00	0.00	2.83	2.83
4.30	2.87	0.65	5.00	0.00	2.82	2.82
4.35	2.87	0.65	5.00	0.00	2.82	2.82
4.40	0.57	0.65	5.00	0.00	2.82	2.82
4.45	0.53	0.65	5.00	0.00	2.82	2.82
4.50	0.50	0.65	5.00	0.00	2.82	2.82
4.55	0.47	0.65	5.00	0.00	2.81	2.81
4.60	0.45	0.65	5.00	0.00	2.81	2.81
4.65	0.43	0.65	5.00	0.00	2.81	2.81
4.70	0.42	0.65	5.00	0.00	2.81	2.81
4.75	0.40	0.65	5.00	0.00	2.80	2.80
4.80	0.39	0.65	5.00	0.00	2.80	2.80
4.85	0.37	0.65	5.00	0.00	2.79	2.79
4.90	0.36	0.65	5.00	0.00	2.79	2.79
4.95	0.35	0.65	5.00	0.00	2.78	2.78
5.00	0.33	0.65	5.00	0.00	2.77	2.77
5.05	0.33	0.65	5.00	0.00	2.76	2.76
5.10	0.33	0.65	5.00	0.00	2.75	2.75
5.15	0.33	0.65	5.00	0.00	2.75	2.75
5.20	0.33	0.65	5.00	0.00	2.74	2.74
5.25	0.33	0.65	5.00	0.00	2.73	2.73
5.30	0.33	0.65	5.00	0.00	2.72	2.72
5.35	0.33	0.65	5.00	0.00	2.71	2.71
5.40	0.33	0.65	5.00	0.00	2.70	2.70
5.45	0.33	0.65	5.00	0.00	2.69	2.69
5.50	0.33	0.65	5.00	0.00	2.69	2.69
5.55	0.33	0.65	5.00	0.00	2.68	2.68
5.60	0.32	0.65	5.00	0.00	2.67	2.67
5.65	0.32	0.65	5.00	0.00	2.66	2.66
5.70	0.32	0.65	5.00	0.00	2.65	2.65
5.75	0.32	0.65	5.00	0.00	2.64	2.64
5.80	0.32	0.65	5.00	0.00	2.63	2.63
5.85	0.32	0.65	5.00	0.00	2.63	2.63
5.90	0.32	0.65	5.00	0.00	2.62	2.62
5.95	0.32	0.65	5.00	0.00	2.61	2.61
6.00	0.32	0.65	5.00	0.00	2.60	2.60
6.05	0.32	0.65	5.00	0.00	2.59	2.59
6.10	0.32	0.65	5.00	0.00	2.58	2.58
6.15	0.32	0.65	5.00	0.00	2.57	2.57
6.20	0.32	0.65	5.00	0.00	2.56	2.56
6.25	0.32	0.65	5.00	0.00	2.55	2.55
6.30	0.31	0.65	5.00	0.00	2.55	2.55
6.35	0.31	0.65	5.00	0.00	2.54	2.54
6.40	0.31	0.65	5.00	0.00	2.53	2.53
6.45	0.31	0.65	5.00	0.00	2.52	2.52
6.50	0.31	0.65	5.00	0.00	2.51	2.51
6.55	0.31	0.65	5.00	0.00	2.50	2.50

6.60	0.31	0.65	5.00	0.00	2.49	2.49
6.65	0.31	0.65	5.00	0.00	2.48	2.48
6.70	0.30	0.65	5.00	0.00	2.47	2.47
6.75	0.30	0.65	5.00	0.00	2.46	2.46
6.80	0.30	0.65	5.00	0.00	2.45	2.45
6.85	0.30	0.65	5.00	0.00	2.44	2.44
6.90	0.30	0.65	5.00	0.00	2.43	2.43
6.95	0.30	0.65	5.00	0.00	2.42	2.42
7.00	0.30	0.65	5.00	0.00	2.41	2.41
7.05	0.30	0.65	5.00	0.00	2.41	2.41
7.10	0.29	0.65	5.00	0.00	2.40	2.40
7.15	0.29	0.65	5.00	0.00	2.39	2.39
7.20	0.29	0.65	5.00	0.00	2.38	2.38
7.25	0.29	0.65	5.00	0.00	2.37	2.37
7.30	0.29	0.65	5.00	0.00	2.36	2.36
7.35	0.29	0.65	5.00	0.00	2.35	2.35
7.40	0.29	0.65	5.00	0.00	2.34	2.34
7.45	0.29	0.65	5.00	0.00	2.33	2.33
7.50	0.29	0.65	5.00	0.00	2.32	2.32
7.55	0.28	0.65	5.00	0.00	2.31	2.31
7.60	0.28	0.64	5.00	0.00	2.30	2.30
7.65	0.28	0.64	5.00	0.00	2.28	2.28
7.70	0.28	0.64	5.00	0.00	2.27	2.27
7.75	0.28	0.64	5.00	0.00	2.26	2.26
7.80	0.28	0.64	5.00	0.00	2.25	2.25
7.85	0.28	0.64	5.00	0.00	2.24	2.24
7.90	0.28	0.64	5.00	0.00	2.23	2.23
7.95	0.28	0.64	5.00	0.00	2.22	2.22
8.00	0.27	0.64	5.00	0.00	2.21	2.21
8.05	0.27	0.64	5.00	0.00	2.20	2.20
8.10	0.27	0.64	5.00	0.00	2.19	2.19
8.15	0.27	0.64	5.00	0.00	2.18	2.18
8.20	0.27	0.64	5.00	0.00	2.17	2.17
8.25	0.29	0.64	5.00	0.00	2.16	2.16
8.30	0.29	0.64	5.00	0.00	2.15	2.15
8.35	0.28	0.64	5.00	0.00	2.14	2.14
8.40	0.28	0.64	5.00	0.00	2.13	2.13
8.45	0.28	0.64	5.00	0.00	2.12	2.12
8.50	0.28	0.64	5.00	0.00	2.11	2.11
8.55	0.28	0.64	5.00	0.00	2.10	2.10
8.60	0.28	0.64	5.00	0.00	2.08	2.08
8.65	0.28	0.64	5.00	0.00	2.07	2.07
8.70	0.28	0.64	5.00	0.00	2.06	2.06
8.75	0.28	0.64	5.00	0.00	2.05	2.05
8.80	0.27	0.64	5.00	0.00	2.04	2.04
8.85	0.27	0.64	5.00	0.00	2.03	2.03
8.90	0.27	0.64	5.00	0.00	2.02	2.02
8.95	0.27	0.64	5.00	0.00	2.01	2.01
9.00	0.27	0.64	5.00	0.00	2.00	2.00
9.05	0.27	0.64	5.00	0.00	1.99	1.99
9.10	0.27	0.64	5.00	0.00	1.98	1.98
9.15	0.27	0.64	5.00	0.00	1.97	1.97
9.20	0.27	0.64	5.00	0.00	1.95	1.95
9.25	0.27	0.64	5.00	0.00	1.94	1.94
9.30	0.26	0.64	5.00	0.00	1.93	1.93
9.35	0.26	0.64	5.00	0.00	1.92	1.92
9.40	0.26	0.64	5.00	0.00	1.91	1.91
9.45	0.26	0.64	5.00	0.00	1.90	1.90
9.50	0.26	0.64	5.00	0.00	1.89	1.89
9.55	0.26	0.64	5.00	0.00	1.88	1.88
9.60	0.26	0.64	5.00	0.00	1.86	1.86
9.65	0.26	0.64	5.00	0.00	1.85	1.85
9.70	0.26	0.64	5.00	0.00	1.84	1.84
9.75	0.26	0.64	5.00	0.00	1.83	1.83
9.80	0.25	0.64	5.00	0.00	1.82	1.82
9.85	0.25	0.64	5.00	0.00	1.80	1.80
9.90	0.25	0.64	5.00	0.00	1.79	1.79

9.95	0.25	0.64	5.00	0.00	1.78	1.78
10.00	0.25	0.64	5.00	0.00	1.77	1.77
10.05	0.25	0.64	5.00	0.00	1.76	1.76
10.10	0.25	0.64	5.00	0.00	1.74	1.74
10.15	0.25	0.64	5.00	0.00	1.73	1.73
10.20	0.25	0.64	5.00	0.00	1.72	1.72
10.25	0.25	0.64	5.00	0.00	1.71	1.71
10.30	0.25	0.64	5.00	0.00	1.70	1.70
10.35	0.25	0.64	5.00	0.00	1.69	1.69
10.40	0.26	0.64	5.00	0.00	1.67	1.67
10.45	0.26	0.64	5.00	0.00	1.66	1.66
10.50	0.26	0.64	5.00	0.00	1.65	1.65
10.55	0.26	0.64	5.00	0.00	1.64	1.64
10.60	0.26	0.64	5.00	0.00	1.63	1.63
10.65	0.26	0.64	5.00	0.00	1.61	1.61
10.70	0.26	0.64	5.00	0.00	1.60	1.60
10.75	0.26	0.64	5.00	0.00	1.59	1.59
10.80	0.26	0.64	5.00	0.00	1.58	1.58
10.85	0.26	0.64	5.00	0.00	1.57	1.57
10.90	0.26	0.64	5.00	0.00	1.56	1.56
10.95	0.26	0.64	5.00	0.00	1.55	1.55
11.00	0.26	0.64	5.00	0.00	1.53	1.53
11.05	0.26	0.64	5.00	0.00	1.52	1.52
11.10	0.26	0.64	5.00	0.00	1.51	1.51
11.15	0.26	0.64	5.00	0.00	1.50	1.50
11.20	0.26	0.64	5.00	0.00	1.49	1.49
11.25	0.26	0.64	5.00	0.00	1.48	1.48
11.30	0.27	0.64	5.00	0.00	1.47	1.47
11.35	0.27	0.64	5.00	0.00	1.45	1.45
11.40	0.27	0.64	5.00	0.00	1.44	1.44
11.45	0.27	0.64	5.00	0.00	1.43	1.43
11.50	0.27	0.64	5.00	0.00	1.42	1.42
11.55	0.27	0.64	5.00	0.00	1.41	1.41
11.60	0.27	0.64	5.00	0.00	1.40	1.40
11.65	0.27	0.64	5.00	0.00	1.39	1.39
11.70	0.27	0.64	5.00	0.00	1.38	1.38
11.75	0.27	0.64	5.00	0.00	1.37	1.37
11.80	0.27	0.64	5.00	0.00	1.36	1.36
11.85	0.27	0.64	5.00	0.00	1.34	1.34
11.90	0.27	0.64	5.00	0.00	1.33	1.33
11.95	0.27	0.64	5.00	0.00	1.32	1.32
12.00	0.27	0.64	5.00	0.00	1.31	1.31
12.05	0.27	0.64	5.00	0.00	1.30	1.30
12.10	0.27	0.64	5.00	0.00	1.29	1.29
12.15	0.27	0.64	5.00	0.00	1.28	1.28
12.20	0.27	0.64	5.00	0.00	1.27	1.27
12.25	0.28	0.64	5.00	0.00	1.26	1.26
12.30	0.28	0.64	5.00	0.00	1.25	1.25
12.35	0.28	0.64	5.00	0.00	1.24	1.24
12.40	0.28	0.64	5.00	0.00	1.23	1.23
12.45	0.28	0.64	5.00	0.00	1.22	1.22
12.50	0.28	0.64	5.00	0.00	1.20	1.20
12.55	0.28	0.64	5.00	0.00	1.19	1.19
12.60	0.28	0.64	5.00	0.00	1.18	1.18
12.65	0.28	0.64	5.00	0.00	1.17	1.17
12.70	0.28	0.64	5.00	0.00	1.16	1.16
12.75	0.28	0.64	5.00	0.00	1.15	1.15
12.80	0.28	0.64	5.00	0.00	1.14	1.14
12.85	0.28	0.64	5.00	0.00	1.13	1.13
12.90	0.28	0.64	5.00	0.00	1.12	1.12
12.95	0.28	0.64	5.00	0.00	1.11	1.11
13.00	0.28	0.64	5.00	0.00	1.10	1.10
13.05	0.28	0.64	5.00	0.00	1.09	1.09
13.10	0.28	0.64	5.00	0.00	1.08	1.08
13.15	0.28	0.64	5.00	0.00	1.07	1.07
13.20	0.28	0.64	5.00	0.00	1.06	1.06
13.25	0.29	0.64	5.00	0.00	1.05	1.05

13.30	0.29	0.64	5.00	0.00	1.04	1.04
13.35	0.29	0.64	5.00	0.00	1.03	1.03
13.40	0.29	0.64	5.00	0.00	1.02	1.02
13.45	0.29	0.64	5.00	0.00	1.01	1.01
13.50	0.29	0.64	5.00	0.00	1.00	1.00
13.55	0.29	0.64	5.00	0.00	0.99	0.99
13.60	0.29	0.64	5.00	0.00	0.98	0.98
13.65	0.29	0.64	5.00	0.00	0.97	0.97
13.70	0.29	0.64	5.00	0.00	0.96	0.96
13.75	0.29	0.64	5.00	0.00	0.95	0.95
13.80	0.29	0.64	5.00	0.00	0.94	0.94
13.85	0.29	0.64	5.00	0.00	0.93	0.93
13.90	0.29	0.64	5.00	0.00	0.92	0.92
13.95	0.29	0.64	5.00	0.00	0.91	0.91
14.00	0.29	0.64	5.00	0.00	0.90	0.90
14.05	0.29	0.64	5.00	0.00	0.89	0.89
14.10	0.29	0.63	5.00	0.00	0.88	0.88
14.15	0.29	0.63	5.00	0.00	0.87	0.87
14.20	0.29	0.63	5.00	0.00	0.86	0.86
14.25	0.29	0.63	5.00	0.00	0.85	0.85
14.30	0.30	0.63	5.00	0.00	0.84	0.84
14.35	0.30	0.63	5.00	0.00	0.83	0.83
14.40	0.30	0.63	5.00	0.00	0.82	0.82
14.45	0.30	0.63	5.00	0.00	0.81	0.81
14.50	0.30	0.63	5.00	0.00	0.80	0.80
14.55	0.30	0.63	5.00	0.00	0.79	0.79
14.60	0.30	0.63	5.00	0.00	0.78	0.78
14.65	0.30	0.63	5.00	0.00	0.77	0.77
14.70	0.30	0.63	5.00	0.00	0.76	0.76
14.75	0.30	0.63	5.00	0.00	0.75	0.75
14.80	0.32	0.63	5.00	0.00	0.74	0.74
14.85	0.32	0.63	5.00	0.00	0.73	0.73
14.90	0.32	0.63	5.00	0.00	0.72	0.72
14.95	0.32	0.63	5.00	0.00	0.72	0.72
15.00	0.32	0.63	5.00	0.00	0.71	0.71
15.05	0.32	0.63	5.00	0.00	0.70	0.70
15.10	0.33	0.63	5.00	0.00	0.69	0.69
15.15	0.33	0.63	5.00	0.00	0.68	0.68
15.20	0.33	0.63	5.00	0.00	0.67	0.67
15.25	0.34	0.63	5.00	0.00	0.66	0.66
15.30	0.34	0.63	5.00	0.00	0.65	0.65
15.35	0.34	0.63	5.00	0.00	0.65	0.65
15.40	0.35	0.63	5.00	0.00	0.64	0.64
15.45	0.35	0.63	5.00	0.00	0.63	0.63
15.50	0.36	0.63	5.00	0.00	0.62	0.62
15.55	0.36	0.63	5.00	0.00	0.61	0.61
15.60	0.36	0.63	5.00	0.00	0.61	0.61
15.65	0.37	0.63	5.00	0.00	0.60	0.60
15.70	0.37	0.63	5.00	0.00	0.59	0.59
15.75	0.37	0.63	5.00	0.00	0.58	0.58
15.80	0.38	0.63	5.00	0.00	0.58	0.58
15.85	0.38	0.63	5.00	0.00	0.57	0.57
15.90	0.39	0.63	5.00	0.00	0.56	0.56
15.95	0.39	0.63	5.00	0.00	0.56	0.56
16.00	0.39	0.63	5.00	0.00	0.55	0.55
16.05	0.40	0.63	5.00	0.00	0.54	0.54
16.10	0.40	0.63	5.00	0.00	0.53	0.53
16.15	0.41	0.63	5.00	0.00	0.53	0.53
16.20	0.41	0.63	5.00	0.00	0.52	0.52
16.25	0.42	0.63	5.00	0.00	0.51	0.51
16.30	0.42	0.63	5.00	0.00	0.51	0.51
16.35	0.43	0.63	5.00	0.00	0.50	0.50
16.40	0.43	0.63	5.00	0.00	0.49	0.49
16.45	0.43	0.63	5.00	0.00	0.49	0.49
16.50	0.44	0.63	5.00	0.00	0.48	0.48
16.55	0.45	0.63	5.00	0.00	0.47	0.47
16.60	0.45	0.63	5.00	0.00	0.47	0.47

16.65	0.46	0.63	5.00	0.00	0.46	0.46
16.70	0.46	0.63	5.00	0.00	0.46	0.46
16.75	0.47	0.63	5.00	0.00	0.45	0.45
16.80	0.47	0.63	5.00	0.00	0.44	0.44
16.85	0.48	0.63	5.00	0.00	0.44	0.44
16.90	0.48	0.63	5.00	0.00	0.43	0.43
16.95	0.49	0.63	5.00	0.00	0.43	0.43
17.00	0.50	0.63	5.00	0.00	0.42	0.42
17.05	0.51	0.63	5.00	0.00	0.41	0.41
17.10	0.51	0.63	5.00	0.00	0.41	0.41
17.15	0.52	0.63	5.00	0.00	0.40	0.40
17.20	0.53	0.63	5.00	0.00	0.40	0.40
17.25	0.54	0.63	5.00	0.00	0.39	0.39
17.30	0.55	0.63	5.00	0.00	0.39	0.39
17.35	0.56	0.63	5.00	0.00	0.38	0.38
17.40	0.58	0.63	5.00	0.00	0.37	0.37
17.45	0.60	0.63	5.00	0.00	0.37	0.37
17.50	0.63	0.63	5.00	0.00	0.36	0.36
17.55	0.69	0.63	5.00	0.00	0.36	0.36
17.60	2.87	0.63	5.00	0.00	0.35	0.35
17.65	2.87	0.63	5.00	0.00	0.35	0.35
17.70	2.87	0.63	5.00	0.00	0.34	0.34
17.75	2.87	0.63	5.00	0.00	0.34	0.34
17.80	2.87	0.63	5.00	0.00	0.33	0.33
17.85	2.87	0.63	5.00	0.00	0.33	0.33
17.90	2.87	0.63	5.00	0.00	0.32	0.32
17.95	2.87	0.63	5.00	0.00	0.32	0.32
18.00	2.87	0.63	5.00	0.00	0.31	0.31
18.05	2.87	0.63	5.00	0.00	0.31	0.31
18.10	2.87	0.63	5.00	0.00	0.30	0.30
18.15	2.87	0.63	5.00	0.00	0.30	0.30
18.20	2.87	0.63	5.00	0.00	0.29	0.29
18.25	2.87	0.63	5.00	0.00	0.29	0.29
18.30	2.87	0.63	5.00	0.00	0.28	0.28
18.35	2.87	0.63	5.00	0.00	0.28	0.28
18.40	2.87	0.63	5.00	0.00	0.27	0.27
18.45	2.87	0.63	5.00	0.00	0.27	0.27
18.50	2.87	0.63	5.00	0.00	0.27	0.27
18.55	2.87	0.63	5.00	0.00	0.26	0.26
18.60	2.87	0.63	5.00	0.00	0.26	0.26
18.65	2.87	0.63	5.00	0.00	0.25	0.25
18.70	2.87	0.63	5.00	0.00	0.25	0.25
18.75	2.87	0.63	5.00	0.00	0.24	0.24
18.80	2.87	0.63	5.00	0.00	0.24	0.24
18.85	2.87	0.63	5.00	0.00	0.24	0.24
18.90	2.87	0.63	5.00	0.00	0.23	0.23
18.95	2.87	0.63	5.00	0.00	0.23	0.23
19.00	2.87	0.63	5.00	0.00	0.22	0.22
19.05	2.87	0.63	5.00	0.00	0.22	0.22
19.10	2.87	0.63	5.00	0.00	0.21	0.21
19.15	2.87	0.63	5.00	0.00	0.21	0.21
19.20	2.87	0.63	5.00	0.00	0.21	0.21
19.25	2.87	0.63	5.00	0.00	0.20	0.20
19.30	2.87	0.63	5.00	0.00	0.20	0.20
19.35	2.87	0.63	5.00	0.00	0.19	0.19
19.40	2.87	0.63	5.00	0.00	0.19	0.19
19.45	2.87	0.63	5.00	0.00	0.19	0.19
19.50	2.87	0.63	5.00	0.00	0.18	0.18
19.55	2.87	0.63	5.00	0.00	0.18	0.18
19.60	2.87	0.63	5.00	0.00	0.18	0.18
19.65	2.87	0.63	5.00	0.00	0.17	0.17
19.70	2.87	0.63	5.00	0.00	0.17	0.17
19.75	2.87	0.63	5.00	0.00	0.17	0.17
19.80	2.87	0.63	5.00	0.00	0.16	0.16
19.85	2.87	0.63	5.00	0.00	0.16	0.16
19.90	2.87	0.63	5.00	0.00	0.15	0.15
19.95	2.87	0.63	5.00	0.00	0.15	0.15

20.00	2.87	0.63	5.00	0.00	0.15	0.15
20.05	2.87	0.63	5.00	0.00	0.14	0.14
20.10	2.87	0.63	5.00	0.00	0.14	0.14
20.15	2.87	0.63	5.00	0.00	0.14	0.14
20.20	2.87	0.63	5.00	0.00	0.13	0.13
20.25	2.87	0.63	5.00	0.00	0.13	0.13
20.30	2.87	0.63	5.00	0.00	0.13	0.13
20.35	2.87	0.63	5.00	0.00	0.12	0.12
20.40	2.87	0.63	5.00	0.00	0.12	0.12
20.45	2.87	0.63	5.00	0.00	0.12	0.12
20.50	2.87	0.63	5.00	0.00	0.11	0.11
20.55	2.87	0.63	5.00	0.00	0.11	0.11
20.60	2.87	0.63	5.00	0.00	0.11	0.11
20.65	2.87	0.62	5.00	0.00	0.10	0.10
20.70	2.87	0.62	5.00	0.00	0.10	0.10
20.75	2.87	0.62	5.00	0.00	0.10	0.10
20.80	2.87	0.62	5.00	0.00	0.09	0.09
20.85	2.87	0.62	5.00	0.00	0.09	0.09
20.90	2.87	0.62	5.00	0.00	0.08	0.08
20.95	2.87	0.62	5.00	0.00	0.08	0.08
21.00	2.87	0.62	5.00	0.00	0.08	0.08
21.05	2.87	0.62	5.00	0.00	0.07	0.07
21.10	2.87	0.62	5.00	0.00	0.07	0.07
21.15	2.87	0.62	5.00	0.00	0.07	0.07
21.20	2.87	0.62	5.00	0.00	0.06	0.06
21.25	2.87	0.62	5.00	0.00	0.06	0.06
21.30	2.87	0.62	5.00	0.00	0.06	0.06
21.35	2.87	0.62	5.00	0.00	0.06	0.06
21.40	2.87	0.62	5.00	0.00	0.06	0.06
21.45	2.87	0.62	5.00	0.00	0.06	0.06
21.50	2.87	0.62	5.00	0.00	0.05	0.05
21.55	2.87	0.62	5.00	0.00	0.05	0.05
21.60	2.87	0.62	5.00	0.00	0.05	0.05
21.65	2.87	0.62	5.00	0.00	0.05	0.05
21.70	2.87	0.62	5.00	0.00	0.05	0.05
21.75	2.87	0.62	5.00	0.00	0.05	0.05
21.80	2.87	0.62	5.00	0.00	0.04	0.04
21.85	2.87	0.62	5.00	0.00	0.04	0.04
21.90	2.87	0.62	5.00	0.00	0.04	0.04
21.95	2.87	0.62	5.00	0.00	0.04	0.04
22.00	2.87	0.62	5.00	0.00	0.04	0.04
22.05	2.87	0.62	5.00	0.00	0.04	0.04
22.10	2.87	0.62	5.00	0.00	0.04	0.04
22.15	2.87	0.62	5.00	0.00	0.03	0.03
22.20	2.87	0.62	5.00	0.00	0.03	0.03
22.25	2.87	0.62	5.00	0.00	0.03	0.03
22.30	2.87	0.62	5.00	0.00	0.03	0.03
22.35	2.87	0.62	5.00	0.00	0.03	0.03
22.40	2.87	0.62	5.00	0.00	0.02	0.02
22.45	2.87	0.62	5.00	0.00	0.02	0.02
22.50	2.87	0.62	5.00	0.00	0.02	0.02
22.55	2.87	0.62	5.00	0.00	0.02	0.02
22.60	2.87	0.62	5.00	0.00	0.02	0.02
22.65	2.87	0.62	5.00	0.00	0.02	0.02
22.70	2.87	0.62	5.00	0.00	0.01	0.01
22.75	2.87	0.62	5.00	0.00	0.01	0.01
22.80	2.87	0.62	5.00	0.00	0.01	0.01
22.85	2.87	0.62	5.00	0.00	0.01	0.01
22.90	2.87	0.62	5.00	0.00	0.01	0.01
22.95	2.87	0.62	5.00	0.00	0.00	0.00
23.00	2.87	0.62	5.00	0.00	0.00	0.00
23.05	2.87	0.62	4.62	0.00	0.00	0.00
23.10	2.87	0.62	4.62	0.00	0.00	0.00
23.15	2.87	0.62	4.61	0.00	0.00	0.00
23.20	2.87	0.62	4.61	0.00	0.00	0.00
23.25	2.87	0.62	4.60	0.00	0.00	0.00
23.30	2.87	0.62	4.60	0.00	0.00	0.00

23.35	2.87	0.63	4.59	0.00	0.00	0.00
23.40	2.87	0.63	4.59	0.00	0.00	0.00
23.45	2.87	0.63	4.59	0.00	0.00	0.00
23.50	2.87	0.63	4.58	0.00	0.00	0.00
23.55	2.87	0.63	4.58	0.00	0.00	0.00
23.60	2.87	0.63	4.57	0.00	0.00	0.00
23.65	2.87	0.63	4.57	0.00	0.00	0.00
23.70	2.87	0.63	4.56	0.00	0.00	0.00
23.75	2.87	0.63	4.56	0.00	0.00	0.00
23.80	2.87	0.63	4.55	0.00	0.00	0.00
23.85	2.87	0.63	4.55	0.00	0.00	0.00
23.90	2.87	0.63	4.54	0.00	0.00	0.00
23.95	2.87	0.63	4.54	0.00	0.00	0.00
24.00	2.87	0.63	4.54	0.00	0.00	0.00
24.05	2.87	0.63	4.53	0.00	0.00	0.00
24.10	2.87	0.63	4.53	0.00	0.00	0.00
24.15	2.87	0.64	4.52	0.00	0.00	0.00
24.20	2.87	0.64	4.52	0.00	0.00	0.00
24.25	2.87	0.64	4.51	0.00	0.00	0.00
24.30	2.87	0.64	4.51	0.00	0.00	0.00
24.35	2.87	0.64	4.50	0.00	0.00	0.00
24.40	2.87	0.64	4.50	0.00	0.00	0.00
24.45	2.87	0.64	4.50	0.00	0.00	0.00
24.50	2.87	0.64	4.49	0.00	0.00	0.00
24.55	2.87	0.64	4.49	0.00	0.00	0.00
24.60	2.87	0.64	4.48	0.00	0.00	0.00
24.65	2.87	0.64	4.48	0.00	0.00	0.00
24.70	2.87	0.64	4.47	0.00	0.00	0.00
24.75	2.87	0.64	4.47	0.00	0.00	0.00
24.80	2.87	0.64	4.47	0.00	0.00	0.00
24.85	2.87	0.64	4.46	0.00	0.00	0.00
24.90	2.87	0.64	4.46	0.00	0.00	0.00
24.95	2.87	0.64	4.45	0.00	0.00	0.00
25.00	2.87	0.65	4.45	0.00	0.00	0.00
25.05	2.87	0.65	4.45	0.00	0.00	0.00
25.10	2.87	0.65	4.44	0.00	0.00	0.00
25.15	2.87	0.65	4.44	0.00	0.00	0.00
25.20	2.87	0.65	4.43	0.00	0.00	0.00
25.25	2.87	0.65	4.43	0.00	0.00	0.00
25.30	2.87	0.65	4.43	0.00	0.00	0.00
25.35	2.87	0.65	4.42	0.00	0.00	0.00
25.40	2.87	0.65	4.42	0.00	0.00	0.00
25.45	2.87	0.65	4.41	0.00	0.00	0.00
25.50	2.87	0.65	4.41	0.00	0.00	0.00
25.55	2.87	0.65	4.41	0.00	0.00	0.00
25.60	2.87	0.65	4.40	0.00	0.00	0.00
25.65	2.87	0.65	4.40	0.00	0.00	0.00
25.70	2.87	0.65	4.39	0.00	0.00	0.00
25.75	2.87	0.65	4.39	0.00	0.00	0.00
25.80	2.87	0.65	4.39	0.00	0.00	0.00
25.85	2.87	0.66	4.38	0.00	0.00	0.00
25.90	2.87	0.66	4.38	0.00	0.00	0.00
25.95	2.87	0.66	4.38	0.00	0.00	0.00
26.00	2.87	0.66	4.37	0.00	0.00	0.00
26.05	2.87	0.66	4.37	0.00	0.00	0.00
26.10	2.87	0.66	4.36	0.00	0.00	0.00
26.15	2.87	0.66	4.36	0.00	0.00	0.00
26.20	2.87	0.66	4.36	0.00	0.00	0.00
26.25	2.87	0.66	4.35	0.00	0.00	0.00
26.30	2.87	0.66	4.35	0.00	0.00	0.00
26.35	2.87	0.66	4.35	0.00	0.00	0.00
26.40	2.87	0.66	4.34	0.00	0.00	0.00
26.45	2.87	0.66	4.34	0.00	0.00	0.00
26.50	2.87	0.66	4.33	0.00	0.00	0.00
26.55	2.87	0.66	4.33	0.00	0.00	0.00
26.60	2.87	0.66	4.33	0.00	0.00	0.00
26.65	2.87	0.66	4.32	0.00	0.00	0.00

26.70	2.87	0.66	4.32	0.00	0.00	0.00
26.75	2.87	0.67	4.32	0.00	0.00	0.00
26.80	2.87	0.67	4.31	0.00	0.00	0.00
26.85	2.87	0.67	4.31	0.00	0.00	0.00
26.90	2.87	0.67	4.31	0.00	0.00	0.00
26.95	2.87	0.67	4.30	0.00	0.00	0.00
27.00	2.87	0.67	4.30	0.00	0.00	0.00
27.05	2.87	0.67	4.30	0.00	0.00	0.00
27.10	2.87	0.67	4.29	0.00	0.00	0.00
27.15	2.87	0.67	4.29	0.00	0.00	0.00
27.20	2.87	0.67	4.29	0.00	0.00	0.00
27.25	2.87	0.67	4.28	0.00	0.00	0.00
27.30	2.87	0.67	4.28	0.00	0.00	0.00
27.35	2.87	0.67	4.28	0.00	0.00	0.00
27.40	2.87	0.67	4.27	0.00	0.00	0.00
27.45	2.87	0.67	4.27	0.00	0.00	0.00
27.50	2.87	0.67	4.26	0.00	0.00	0.00
27.55	2.87	0.67	4.26	0.00	0.00	0.00
27.60	2.87	0.67	4.26	0.00	0.00	0.00
27.65	2.87	0.68	4.25	0.00	0.00	0.00
27.70	2.87	0.68	4.25	0.00	0.00	0.00
27.75	2.87	0.68	4.25	0.00	0.00	0.00
27.80	2.87	0.68	4.25	0.00	0.00	0.00
27.85	2.87	0.68	4.24	0.00	0.00	0.00
27.90	2.87	0.68	4.24	0.00	0.00	0.00
27.95	2.87	0.68	4.24	0.00	0.00	0.00
28.00	2.87	0.68	4.23	0.00	0.00	0.00
28.05	2.87	0.68	4.23	0.00	0.00	0.00
28.10	2.87	0.68	4.23	0.00	0.00	0.00
28.15	2.87	0.68	4.22	0.00	0.00	0.00
28.20	2.87	0.68	4.22	0.00	0.00	0.00
28.25	2.87	0.68	4.22	0.00	0.00	0.00
28.30	2.87	0.68	4.21	0.00	0.00	0.00
28.35	2.87	0.68	4.21	0.00	0.00	0.00
28.40	2.87	0.68	4.21	0.00	0.00	0.00
28.45	2.87	0.68	4.20	0.00	0.00	0.00
28.50	2.87	0.68	4.20	0.00	0.00	0.00
28.55	2.87	0.68	4.20	0.00	0.00	0.00
28.60	2.87	0.68	4.19	0.00	0.00	0.00
28.65	2.87	0.69	4.19	0.00	0.00	0.00
28.70	2.87	0.69	4.19	0.00	0.00	0.00
28.75	2.87	0.69	4.19	0.00	0.00	0.00
28.80	2.87	0.69	4.18	0.00	0.00	0.00
28.85	2.87	0.69	4.18	0.00	0.00	0.00
28.90	2.87	0.69	4.18	0.00	0.00	0.00
28.95	2.87	0.69	4.17	0.00	0.00	0.00
29.00	2.87	0.69	4.17	0.00	0.00	0.00
29.05	2.87	0.69	4.17	0.00	0.00	0.00
29.10	2.87	0.69	4.16	0.00	0.00	0.00
29.15	2.87	0.69	4.16	0.00	0.00	0.00
29.20	2.87	0.69	4.16	0.00	0.00	0.00
29.25	2.87	0.69	4.16	0.00	0.00	0.00
29.30	2.87	0.69	4.15	0.00	0.00	0.00
29.35	2.87	0.69	4.15	0.00	0.00	0.00
29.40	2.87	0.69	4.15	0.00	0.00	0.00
29.45	2.87	0.69	4.14	0.00	0.00	0.00
29.50	2.87	0.69	4.14	0.00	0.00	0.00
29.55	2.87	0.69	4.14	0.00	0.00	0.00
29.60	2.87	0.69	4.13	0.00	0.00	0.00
29.65	2.87	0.70	4.13	0.00	0.00	0.00
29.70	2.87	0.70	4.13	0.00	0.00	0.00
29.75	2.87	0.70	4.13	0.00	0.00	0.00
29.80	2.87	0.70	4.12	0.00	0.00	0.00
29.85	2.87	0.70	4.12	0.00	0.00	0.00
29.90	2.87	0.70	4.12	0.00	0.00	0.00
29.95	2.87	0.70	4.11	0.00	0.00	0.00
30.00	2.87	0.70	4.11	0.00	0.00	0.00

30.05	2.00	0.70	5.00	0.00	0.00	0.00
30.10	2.00	0.70	5.00	0.00	0.00	0.00
30.15	2.00	0.70	5.00	0.00	0.00	0.00
30.20	2.00	0.70	5.00	0.00	0.00	0.00
30.25	2.00	0.70	5.00	0.00	0.00	0.00
30.30	2.00	0.70	5.00	0.00	0.00	0.00
30.35	2.00	0.70	5.00	0.00	0.00	0.00
30.40	2.00	0.70	5.00	0.00	0.00	0.00
30.45	2.00	0.70	5.00	0.00	0.00	0.00
30.50	2.00	0.70	5.00	0.00	0.00	0.00
30.55	2.00	0.70	5.00	0.00	0.00	0.00
30.60	2.00	0.70	5.00	0.00	0.00	0.00
30.65	2.00	0.70	5.00	0.00	0.00	0.00
30.70	2.00	0.70	5.00	0.00	0.00	0.00
30.75	2.00	0.70	5.00	0.00	0.00	0.00
30.80	2.00	0.70	5.00	0.00	0.00	0.00
30.85	2.00	0.70	5.00	0.00	0.00	0.00
30.90	2.00	0.70	5.00	0.00	0.00	0.00
30.95	2.00	0.70	5.00	0.00	0.00	0.00
31.00	2.00	0.70	5.00	0.00	0.00	0.00
31.05	2.00	0.70	5.00	0.00	0.00	0.00
31.10	2.00	0.70	5.00	0.00	0.00	0.00
31.15	2.00	0.70	5.00	0.00	0.00	0.00
31.20	2.00	0.70	5.00	0.00	0.00	0.00
31.25	2.00	0.70	5.00	0.00	0.00	0.00
31.30	2.00	0.70	5.00	0.00	0.00	0.00
31.35	2.00	0.70	5.00	0.00	0.00	0.00
31.40	2.00	0.71	5.00	0.00	0.00	0.00
31.45	2.00	0.71	5.00	0.00	0.00	0.00
31.50	2.00	0.71	5.00	0.00	0.00	0.00
31.55	2.00	0.71	5.00	0.00	0.00	0.00
31.60	2.00	0.71	5.00	0.00	0.00	0.00
31.65	2.00	0.71	5.00	0.00	0.00	0.00
31.70	2.00	0.71	5.00	0.00	0.00	0.00
31.75	2.00	0.71	5.00	0.00	0.00	0.00
31.80	2.00	0.71	5.00	0.00	0.00	0.00
31.85	2.00	0.71	5.00	0.00	0.00	0.00
31.90	2.00	0.71	5.00	0.00	0.00	0.00
31.95	2.00	0.71	5.00	0.00	0.00	0.00
32.00	2.00	0.71	5.00	0.00	0.00	0.00
32.05	2.00	0.71	5.00	0.00	0.00	0.00
32.10	2.00	0.71	5.00	0.00	0.00	0.00
32.15	2.00	0.71	5.00	0.00	0.00	0.00
32.20	2.00	0.71	5.00	0.00	0.00	0.00
32.25	2.00	0.71	5.00	0.00	0.00	0.00
32.30	2.00	0.71	5.00	0.00	0.00	0.00
32.35	2.00	0.71	5.00	0.00	0.00	0.00
32.40	2.00	0.71	5.00	0.00	0.00	0.00
32.45	2.00	0.71	5.00	0.00	0.00	0.00
32.50	2.00	0.71	5.00	0.00	0.00	0.00
32.55	2.00	0.71	5.00	0.00	0.00	0.00
32.60	2.00	0.71	5.00	0.00	0.00	0.00
32.65	2.00	0.71	5.00	0.00	0.00	0.00
32.70	2.00	0.71	5.00	0.00	0.00	0.00
32.75	2.00	0.71	5.00	0.00	0.00	0.00
32.80	2.00	0.71	5.00	0.00	0.00	0.00
32.85	2.00	0.71	5.00	0.00	0.00	0.00
32.90	2.00	0.71	5.00	0.00	0.00	0.00
32.95	2.00	0.71	5.00	0.00	0.00	0.00
33.00	2.00	0.71	5.00	0.00	0.00	0.00
33.05	2.00	0.71	5.00	0.00	0.00	0.00
33.10	2.00	0.71	5.00	0.00	0.00	0.00
33.15	2.00	0.71	5.00	0.00	0.00	0.00
33.20	2.00	0.71	5.00	0.00	0.00	0.00
33.25	2.00	0.71	5.00	0.00	0.00	0.00
33.30	2.00	0.71	5.00	0.00	0.00	0.00
33.35	2.00	0.71	5.00	0.00	0.00	0.00

33.40	2.00	0.71	5.00	0.00	0.00	0.00
33.45	2.00	0.71	5.00	0.00	0.00	0.00
33.50	2.00	0.71	5.00	0.00	0.00	0.00
33.55	2.00	0.71	5.00	0.00	0.00	0.00
33.60	2.00	0.71	5.00	0.00	0.00	0.00
33.65	2.00	0.71	5.00	0.00	0.00	0.00
33.70	2.00	0.71	5.00	0.00	0.00	0.00
33.75	2.00	0.71	5.00	0.00	0.00	0.00
33.80	2.00	0.71	5.00	0.00	0.00	0.00
33.85	2.00	0.71	5.00	0.00	0.00	0.00
33.90	2.00	0.71	5.00	0.00	0.00	0.00
33.95	2.00	0.71	5.00	0.00	0.00	0.00
34.00	2.00	0.71	5.00	0.00	0.00	0.00
34.05	2.00	0.72	5.00	0.00	0.00	0.00
34.10	2.00	0.72	5.00	0.00	0.00	0.00
34.15	2.00	0.72	5.00	0.00	0.00	0.00
34.20	2.00	0.72	5.00	0.00	0.00	0.00
34.25	2.00	0.72	5.00	0.00	0.00	0.00
34.30	2.00	0.72	5.00	0.00	0.00	0.00
34.35	2.00	0.72	5.00	0.00	0.00	0.00
34.40	2.00	0.72	5.00	0.00	0.00	0.00
34.45	2.00	0.72	5.00	0.00	0.00	0.00
34.50	2.00	0.72	5.00	0.00	0.00	0.00
34.55	2.00	0.72	5.00	0.00	0.00	0.00
34.60	2.00	0.72	5.00	0.00	0.00	0.00
34.65	2.00	0.72	5.00	0.00	0.00	0.00
34.70	2.00	0.72	5.00	0.00	0.00	0.00
34.75	2.00	0.72	5.00	0.00	0.00	0.00
34.80	2.00	0.72	5.00	0.00	0.00	0.00
34.85	2.00	0.72	5.00	0.00	0.00	0.00
34.90	2.00	0.72	5.00	0.00	0.00	0.00
34.95	2.00	0.72	5.00	0.00	0.00	0.00
35.00	2.00	0.72	5.00	0.00	0.00	0.00
35.05	2.00	0.72	5.00	0.00	0.00	0.00
35.10	2.00	0.72	5.00	0.00	0.00	0.00
35.15	2.00	0.72	5.00	0.00	0.00	0.00
35.20	2.00	0.72	5.00	0.00	0.00	0.00
35.25	2.00	0.72	5.00	0.00	0.00	0.00
35.30	2.00	0.72	5.00	0.00	0.00	0.00
35.35	2.00	0.72	5.00	0.00	0.00	0.00
35.40	2.00	0.72	5.00	0.00	0.00	0.00
35.45	2.00	0.72	5.00	0.00	0.00	0.00
35.50	2.00	0.72	5.00	0.00	0.00	0.00
35.55	2.00	0.72	5.00	0.00	0.00	0.00
35.60	2.00	0.72	5.00	0.00	0.00	0.00
35.65	2.00	0.72	5.00	0.00	0.00	0.00
35.70	2.00	0.72	5.00	0.00	0.00	0.00
35.75	2.00	0.72	5.00	0.00	0.00	0.00
35.80	2.00	0.72	5.00	0.00	0.00	0.00
35.85	2.00	0.72	5.00	0.00	0.00	0.00
35.90	2.00	0.72	5.00	0.00	0.00	0.00
35.95	2.00	0.72	5.00	0.00	0.00	0.00
36.00	2.00	0.72	5.00	0.00	0.00	0.00
36.05	2.00	0.72	5.00	0.00	0.00	0.00
36.10	2.00	0.72	5.00	0.00	0.00	0.00
36.15	2.00	0.72	5.00	0.00	0.00	0.00
36.20	2.00	0.72	5.00	0.00	0.00	0.00
36.25	2.00	0.72	5.00	0.00	0.00	0.00
36.30	2.00	0.72	5.00	0.00	0.00	0.00
36.35	2.00	0.72	5.00	0.00	0.00	0.00
36.40	2.00	0.72	5.00	0.00	0.00	0.00
36.45	2.00	0.72	5.00	0.00	0.00	0.00
36.50	2.00	0.72	5.00	0.00	0.00	0.00
36.55	2.00	0.72	5.00	0.00	0.00	0.00
36.60	2.00	0.72	5.00	0.00	0.00	0.00
36.65	2.00	0.72	5.00	0.00	0.00	0.00
36.70	2.00	0.72	5.00	0.00	0.00	0.00

36.75	2.00	0.72	5.00	0.00	0.00	0.00
36.80	2.00	0.72	5.00	0.00	0.00	0.00
36.85	2.00	0.72	5.00	0.00	0.00	0.00
36.90	2.00	0.72	5.00	0.00	0.00	0.00
36.95	2.00	0.72	5.00	0.00	0.00	0.00
37.00	2.00	0.72	5.00	0.00	0.00	0.00
37.05	2.00	0.72	5.00	0.00	0.00	0.00
37.10	2.00	0.72	5.00	0.00	0.00	0.00
37.15	2.00	0.72	5.00	0.00	0.00	0.00
37.20	2.00	0.72	5.00	0.00	0.00	0.00
37.25	2.00	0.72	5.00	0.00	0.00	0.00
37.30	2.00	0.72	5.00	0.00	0.00	0.00
37.35	2.00	0.72	5.00	0.00	0.00	0.00
37.40	2.00	0.72	5.00	0.00	0.00	0.00
37.45	2.00	0.72	5.00	0.00	0.00	0.00
37.50	2.00	0.72	5.00	0.00	0.00	0.00
37.55	2.00	0.72	5.00	0.00	0.00	0.00
37.60	2.00	0.72	5.00	0.00	0.00	0.00
37.65	2.00	0.72	5.00	0.00	0.00	0.00
37.70	2.00	0.72	5.00	0.00	0.00	0.00
37.75	2.00	0.72	5.00	0.00	0.00	0.00
37.80	2.00	0.72	5.00	0.00	0.00	0.00
37.85	2.00	0.72	5.00	0.00	0.00	0.00
37.90	2.00	0.72	5.00	0.00	0.00	0.00
37.95	2.00	0.72	5.00	0.00	0.00	0.00
38.00	2.00	0.72	5.00	0.00	0.00	0.00
38.05	2.00	0.72	5.00	0.00	0.00	0.00
38.10	2.00	0.72	5.00	0.00	0.00	0.00
38.15	2.00	0.72	5.00	0.00	0.00	0.00
38.20	2.00	0.72	5.00	0.00	0.00	0.00
38.25	2.00	0.72	5.00	0.00	0.00	0.00
38.30	2.00	0.72	5.00	0.00	0.00	0.00
38.35	2.00	0.72	5.00	0.00	0.00	0.00
38.40	2.00	0.72	5.00	0.00	0.00	0.00
38.45	2.00	0.72	5.00	0.00	0.00	0.00
38.50	2.00	0.72	5.00	0.00	0.00	0.00
38.55	2.00	0.72	5.00	0.00	0.00	0.00
38.60	2.00	0.72	5.00	0.00	0.00	0.00
38.65	2.00	0.72	5.00	0.00	0.00	0.00
38.70	2.00	0.72	5.00	0.00	0.00	0.00
38.75	2.00	0.72	5.00	0.00	0.00	0.00
38.80	2.00	0.72	5.00	0.00	0.00	0.00
38.85	2.00	0.73	5.00	0.00	0.00	0.00
38.90	2.00	0.73	5.00	0.00	0.00	0.00
38.95	2.00	0.73	5.00	0.00	0.00	0.00
39.00	2.00	0.73	5.00	0.00	0.00	0.00
39.05	2.00	0.73	5.00	0.00	0.00	0.00
39.10	2.00	0.73	5.00	0.00	0.00	0.00
39.15	2.00	0.73	5.00	0.00	0.00	0.00
39.20	2.00	0.73	5.00	0.00	0.00	0.00
39.25	2.00	0.73	5.00	0.00	0.00	0.00
39.30	2.00	0.73	5.00	0.00	0.00	0.00
39.35	2.00	0.73	5.00	0.00	0.00	0.00
39.40	2.00	0.73	5.00	0.00	0.00	0.00
39.45	2.00	0.73	5.00	0.00	0.00	0.00
39.50	2.00	0.73	5.00	0.00	0.00	0.00
39.55	2.00	0.73	5.00	0.00	0.00	0.00
39.60	2.00	0.73	5.00	0.00	0.00	0.00
39.65	2.00	0.73	5.00	0.00	0.00	0.00
39.70	2.00	0.73	5.00	0.00	0.00	0.00
39.75	2.00	0.73	5.00	0.00	0.00	0.00
39.80	2.00	0.73	5.00	0.00	0.00	0.00
39.85	2.00	0.73	5.00	0.00	0.00	0.00
39.90	2.00	0.73	5.00	0.00	0.00	0.00
39.95	2.00	0.73	5.00	0.00	0.00	0.00
40.00	2.00	0.73	5.00	0.00	0.00	0.00
40.05	2.85	0.73	3.93	0.00	0.00	0.00

40.10	2.85	0.73	3.93	0.00	0.00	0.00
40.15	2.85	0.73	3.93	0.00	0.00	0.00
40.20	2.85	0.73	3.93	0.00	0.00	0.00
40.25	2.85	0.73	3.93	0.00	0.00	0.00
40.30	2.85	0.73	3.93	0.00	0.00	0.00
40.35	2.85	0.73	3.93	0.00	0.00	0.00
40.40	2.85	0.73	3.93	0.00	0.00	0.00
40.45	2.85	0.73	3.93	0.00	0.00	0.00
40.50	2.85	0.73	3.93	0.00	0.00	0.00
40.55	2.85	0.73	3.92	0.00	0.00	0.00
40.60	2.85	0.73	3.92	0.00	0.00	0.00
40.65	2.85	0.73	3.92	0.00	0.00	0.00
40.70	2.85	0.73	3.92	0.00	0.00	0.00
40.75	2.85	0.73	3.92	0.00	0.00	0.00
40.80	2.85	0.73	3.92	0.00	0.00	0.00
40.85	2.85	0.73	3.92	0.00	0.00	0.00
40.90	2.85	0.73	3.92	0.00	0.00	0.00
40.95	2.85	0.73	3.92	0.00	0.00	0.00
41.00	2.85	0.73	3.92	0.00	0.00	0.00
41.05	2.85	0.73	3.92	0.00	0.00	0.00
41.10	2.85	0.73	3.92	0.00	0.00	0.00
41.15	2.85	0.73	3.92	0.00	0.00	0.00
41.20	2.85	0.73	3.92	0.00	0.00	0.00
41.25	2.85	0.73	3.92	0.00	0.00	0.00
41.30	2.85	0.73	3.92	0.00	0.00	0.00
41.35	2.85	0.73	3.92	0.00	0.00	0.00
41.40	2.85	0.73	3.92	0.00	0.00	0.00
41.45	2.85	0.73	3.92	0.00	0.00	0.00
41.50	2.84	0.73	3.91	0.00	0.00	0.00
41.55	2.84	0.73	3.91	0.00	0.00	0.00
41.60	2.84	0.73	3.91	0.00	0.00	0.00
41.65	2.84	0.73	3.91	0.00	0.00	0.00
41.70	2.84	0.73	3.91	0.00	0.00	0.00
41.75	2.84	0.73	3.91	0.00	0.00	0.00
41.80	2.84	0.73	3.91	0.00	0.00	0.00
41.85	2.84	0.73	3.91	0.00	0.00	0.00
41.90	2.84	0.73	3.91	0.00	0.00	0.00
41.95	2.84	0.73	3.91	0.00	0.00	0.00
42.00	2.84	0.73	3.91	0.00	0.00	0.00
42.05	2.84	0.73	3.91	0.00	0.00	0.00
42.10	2.84	0.73	3.91	0.00	0.00	0.00
42.15	2.84	0.73	3.91	0.00	0.00	0.00
42.20	2.84	0.73	3.91	0.00	0.00	0.00
42.25	2.84	0.73	3.91	0.00	0.00	0.00
42.30	2.84	0.73	3.91	0.00	0.00	0.00
42.35	2.84	0.73	3.91	0.00	0.00	0.00
42.40	2.84	0.73	3.91	0.00	0.00	0.00
42.45	2.84	0.73	3.91	0.00	0.00	0.00
42.50	2.84	0.73	3.91	0.00	0.00	0.00
42.55	2.84	0.73	3.91	0.00	0.00	0.00
42.60	2.84	0.73	3.90	0.00	0.00	0.00
42.65	2.84	0.73	3.90	0.00	0.00	0.00
42.70	2.84	0.73	3.90	0.00	0.00	0.00
42.75	2.84	0.73	3.90	0.00	0.00	0.00
42.80	2.84	0.73	3.90	0.00	0.00	0.00
42.85	2.84	0.73	3.90	0.00	0.00	0.00
42.90	2.84	0.73	3.90	0.00	0.00	0.00
42.95	2.84	0.73	3.90	0.00	0.00	0.00
43.00	2.84	0.73	3.90	0.00	0.00	0.00
43.05	2.84	0.73	3.90	0.00	0.00	0.00
43.10	2.83	0.73	3.90	0.00	0.00	0.00
43.15	2.83	0.73	3.90	0.00	0.00	0.00
43.20	2.83	0.73	3.90	0.00	0.00	0.00
43.25	2.83	0.73	3.90	0.00	0.00	0.00
43.30	2.83	0.73	3.90	0.00	0.00	0.00
43.35	2.83	0.73	3.90	0.00	0.00	0.00
43.40	2.83	0.73	3.90	0.00	0.00	0.00

43.45	2.83	0.73	3.90	0.00	0.00	0.00
43.50	2.83	0.73	3.90	0.00	0.00	0.00
43.55	2.83	0.73	3.90	0.00	0.00	0.00
43.60	2.83	0.73	3.90	0.00	0.00	0.00
43.65	2.83	0.73	3.90	0.00	0.00	0.00
43.70	2.83	0.73	3.90	0.00	0.00	0.00
43.75	2.83	0.73	3.90	0.00	0.00	0.00
43.80	2.83	0.73	3.90	0.00	0.00	0.00
43.85	2.83	0.73	3.90	0.00	0.00	0.00
43.90	2.83	0.73	3.90	0.00	0.00	0.00
43.95	2.83	0.73	3.90	0.00	0.00	0.00
44.00	2.83	0.73	3.90	0.00	0.00	0.00
44.05	2.83	0.73	3.89	0.00	0.00	0.00
44.10	2.83	0.73	3.89	0.00	0.00	0.00
44.15	2.83	0.73	3.89	0.00	0.00	0.00
44.20	2.83	0.73	3.89	0.00	0.00	0.00
44.25	2.83	0.73	3.89	0.00	0.00	0.00
44.30	2.83	0.73	3.89	0.00	0.00	0.00
44.35	2.83	0.73	3.89	0.00	0.00	0.00
44.40	2.83	0.73	3.89	0.00	0.00	0.00
44.45	2.83	0.73	3.89	0.00	0.00	0.00
44.50	2.83	0.73	3.89	0.00	0.00	0.00
44.55	2.83	0.73	3.89	0.00	0.00	0.00
44.60	2.83	0.73	3.89	0.00	0.00	0.00
44.65	2.83	0.73	3.89	0.00	0.00	0.00
44.70	2.83	0.73	3.89	0.00	0.00	0.00
44.75	2.82	0.73	3.89	0.00	0.00	0.00
44.80	2.82	0.73	3.89	0.00	0.00	0.00
44.85	2.82	0.73	3.89	0.00	0.00	0.00
44.90	2.82	0.73	3.89	0.00	0.00	0.00
44.95	2.82	0.73	3.89	0.00	0.00	0.00
45.00	2.82	0.73	3.89	0.00	0.00	0.00
45.05	2.82	0.73	3.89	0.00	0.00	0.00
45.10	2.82	0.73	3.89	0.00	0.00	0.00
45.15	2.82	0.73	3.89	0.00	0.00	0.00
45.20	2.82	0.73	3.89	0.00	0.00	0.00
45.25	2.82	0.73	3.89	0.00	0.00	0.00
45.30	2.82	0.73	3.89	0.00	0.00	0.00
45.35	2.82	0.73	3.89	0.00	0.00	0.00
45.40	2.82	0.73	3.89	0.00	0.00	0.00
45.45	2.82	0.73	3.89	0.00	0.00	0.00
45.50	2.82	0.73	3.89	0.00	0.00	0.00
45.55	2.82	0.73	3.89	0.00	0.00	0.00
45.60	2.82	0.73	3.89	0.00	0.00	0.00
45.65	2.82	0.73	3.89	0.00	0.00	0.00
45.70	2.82	0.73	3.89	0.00	0.00	0.00
45.75	2.82	0.73	3.89	0.00	0.00	0.00
45.80	2.82	0.73	3.89	0.00	0.00	0.00
45.85	2.82	0.73	3.89	0.00	0.00	0.00
45.90	2.82	0.72	3.89	0.00	0.00	0.00
45.95	2.82	0.72	3.89	0.00	0.00	0.00
46.00	2.82	0.72	3.89	0.00	0.00	0.00
46.05	2.82	0.72	3.89	0.00	0.00	0.00
46.10	2.82	0.72	3.89	0.00	0.00	0.00
46.15	2.82	0.72	3.89	0.00	0.00	0.00
46.20	2.82	0.72	3.89	0.00	0.00	0.00
46.25	2.82	0.72	3.89	0.00	0.00	0.00
46.30	2.82	0.72	3.89	0.00	0.00	0.00
46.35	2.82	0.72	3.89	0.00	0.00	0.00
46.40	2.81	0.72	3.89	0.00	0.00	0.00
46.45	2.81	0.72	3.89	0.00	0.00	0.00
46.50	2.81	0.72	3.89	0.00	0.00	0.00
46.55	2.81	0.72	3.89	0.00	0.00	0.00
46.60	2.81	0.72	3.89	0.00	0.00	0.00
46.65	2.81	0.72	3.89	0.00	0.00	0.00
46.70	2.81	0.72	3.89	0.00	0.00	0.00
46.75	2.81	0.72	3.89	0.00	0.00	0.00

46.80	2.81	0.72	3.88	0.00	0.00	0.00
46.85	2.81	0.72	3.88	0.00	0.00	0.00
46.90	2.81	0.72	3.88	0.00	0.00	0.00
46.95	2.81	0.72	3.88	0.00	0.00	0.00
47.00	2.81	0.72	3.88	0.00	0.00	0.00
47.05	2.81	0.72	3.88	0.00	0.00	0.00
47.10	2.81	0.72	3.88	0.00	0.00	0.00
47.15	2.81	0.72	3.88	0.00	0.00	0.00
47.20	2.81	0.72	3.88	0.00	0.00	0.00
47.25	2.81	0.72	3.88	0.00	0.00	0.00
47.30	2.81	0.72	3.88	0.00	0.00	0.00
47.35	2.81	0.72	3.88	0.00	0.00	0.00
47.40	2.81	0.72	3.88	0.00	0.00	0.00
47.45	2.81	0.72	3.88	0.00	0.00	0.00
47.50	2.81	0.72	3.88	0.00	0.00	0.00
47.55	2.81	0.72	3.88	0.00	0.00	0.00
47.60	2.81	0.72	3.88	0.00	0.00	0.00
47.65	2.81	0.72	3.88	0.00	0.00	0.00
47.70	2.81	0.72	3.88	0.00	0.00	0.00
47.75	2.81	0.72	3.88	0.00	0.00	0.00
47.80	2.81	0.72	3.88	0.00	0.00	0.00
47.85	2.81	0.72	3.88	0.00	0.00	0.00
47.90	2.81	0.72	3.88	0.00	0.00	0.00
47.95	2.81	0.72	3.88	0.00	0.00	0.00
48.00	2.81	0.72	3.88	0.00	0.00	0.00
48.05	2.81	0.72	3.88	0.00	0.00	0.00
48.10	2.80	0.72	3.88	0.00	0.00	0.00
48.15	2.80	0.72	3.88	0.00	0.00	0.00
48.20	2.80	0.72	3.88	0.00	0.00	0.00
48.25	2.80	0.72	3.88	0.00	0.00	0.00
48.30	2.80	0.72	3.88	0.00	0.00	0.00
48.35	2.80	0.72	3.88	0.00	0.00	0.00
48.40	2.80	0.72	3.88	0.00	0.00	0.00
48.45	2.80	0.72	3.88	0.00	0.00	0.00
48.50	2.80	0.72	3.88	0.00	0.00	0.00
48.55	2.80	0.72	3.88	0.00	0.00	0.00
48.60	2.80	0.72	3.88	0.00	0.00	0.00
48.65	2.80	0.72	3.88	0.00	0.00	0.00
48.70	2.80	0.72	3.88	0.00	0.00	0.00
48.75	2.80	0.72	3.88	0.00	0.00	0.00
48.80	2.80	0.72	3.89	0.00	0.00	0.00
48.85	2.80	0.72	3.89	0.00	0.00	0.00
48.90	2.80	0.72	3.89	0.00	0.00	0.00
48.95	2.80	0.72	3.89	0.00	0.00	0.00
49.00	2.80	0.72	3.89	0.00	0.00	0.00
49.05	2.80	0.72	3.89	0.00	0.00	0.00
49.10	2.80	0.72	3.89	0.00	0.00	0.00
49.15	2.80	0.72	3.89	0.00	0.00	0.00
49.20	2.80	0.72	3.89	0.00	0.00	0.00
49.25	2.80	0.72	3.89	0.00	0.00	0.00
49.30	2.80	0.72	3.89	0.00	0.00	0.00
49.35	2.80	0.72	3.89	0.00	0.00	0.00
49.40	2.80	0.72	3.89	0.00	0.00	0.00
49.45	2.80	0.72	3.89	0.00	0.00	0.00
49.50	2.80	0.72	3.89	0.00	0.00	0.00
49.55	2.80	0.72	3.89	0.00	0.00	0.00
49.60	2.80	0.72	3.89	0.00	0.00	0.00
49.65	2.80	0.72	3.89	0.00	0.00	0.00
49.70	2.80	0.72	3.89	0.00	0.00	0.00
49.75	2.80	0.72	3.89	0.00	0.00	0.00
49.80	2.79	0.72	3.89	0.00	0.00	0.00
49.85	2.79	0.72	3.89	0.00	0.00	0.00
49.90	2.79	0.72	3.89	0.00	0.00	0.00
49.95	2.79	0.72	3.89	0.00	0.00	0.00
50.00	2.79	0.72	3.89	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

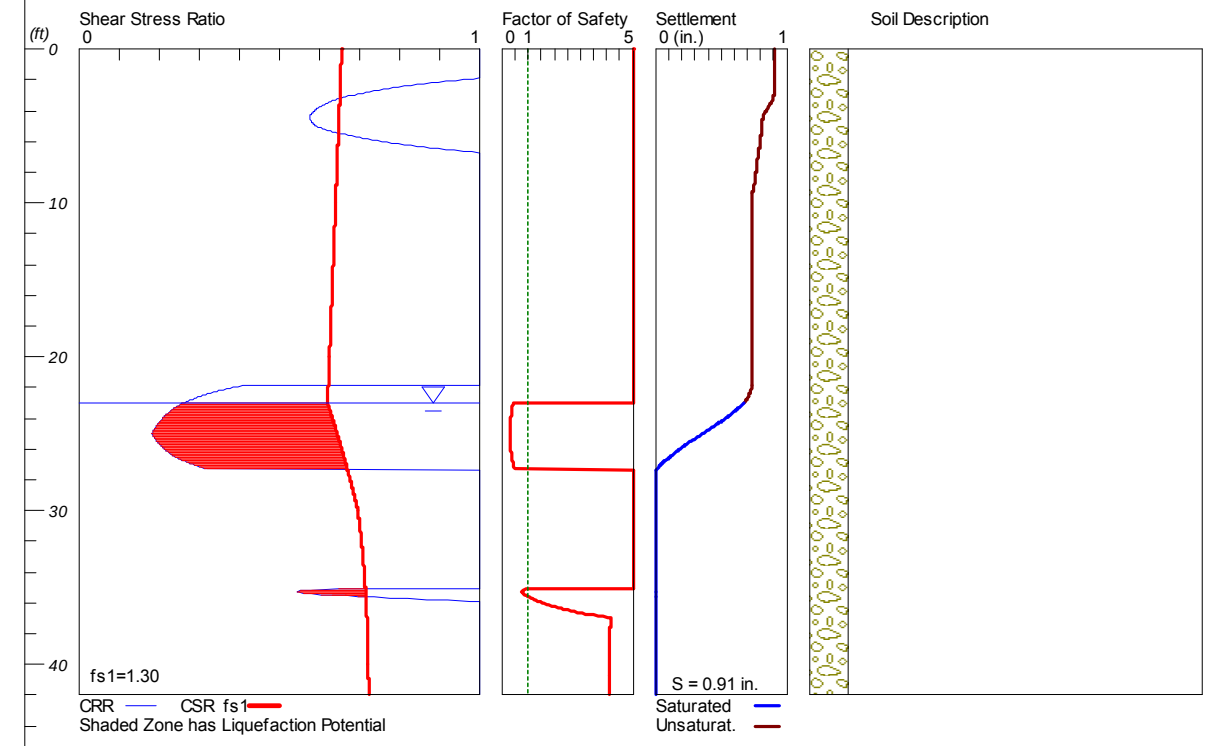
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Parking Lot S MT Sac

Hole No.=CPT 8 Water Depth=23 ft

Magnitude=6.51
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.

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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot S\UNTITLED CPT.liq

Title: Parking Lot S MT Sac

Subtitle: 17-31-247-01

Surface Elev.=

Hole No.=CPT 8

Depth of Hole= 42.00 ft

Water Table during Earthquake= 23.00 ft

Water Table during In-Situ Testing= 23.00 ft

Max. Acceleration= 0.78 g

Earthquake Magnitude= 6.51

Input Data:

Surface Elev.=

Hole No.=CPT 8

Depth of Hole=42.00 ft

Water Table during Earthquake= 23.00 ft

Water Table during In-Situ Testing= 23.00 ft

Max. Acceleration=0.78 g

Earthquake Magnitude=6.51

No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	50.75	0.94	1.85	114.00	0.00	0.50
5.00	35.61	1.15	3.23	114.00	0.00	0.50
10.00	29.97	1.78	5.94	118.00	0.00	0.50
15.00	20.05	0.63	3.14	118.00	0.00	0.50
20.00	30.81	1.04	3.38	118.00	0.00	0.50
25.00	42.50	0.63	1.48	118.00	0.00	0.50
30.00	32.79	1.15	3.51	113.00	0.00	0.50
35.00	52.63	1.98	3.76	112.00	0.00	0.50
40.00	674.30	13.68	2.03	110.00	0.00	0.50
42.00	732.00	13.80	1.89	110.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=0.67 in.

Settlement of Unsaturated Sands=0.24 in.

Total Settlement of Saturated and Unsaturated Sands=0.91 in.

Differential Settlement=0.454 to 0.600 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.67	0.24	0.91

0.05	2.99	0.66	5.00	0.67	0.24	0.91
0.10	2.99	0.66	5.00	0.67	0.24	0.91
0.15	2.99	0.66	5.00	0.67	0.24	0.91
0.20	2.99	0.66	5.00	0.67	0.24	0.91
0.25	2.99	0.66	5.00	0.67	0.24	0.91
0.30	2.99	0.66	5.00	0.67	0.24	0.91
0.35	2.99	0.66	5.00	0.67	0.24	0.91
0.40	2.99	0.66	5.00	0.67	0.24	0.91
0.45	2.99	0.66	5.00	0.67	0.24	0.91
0.50	2.99	0.66	5.00	0.67	0.24	0.91
0.55	2.99	0.66	5.00	0.67	0.24	0.91
0.60	2.99	0.66	5.00	0.67	0.24	0.91
0.65	2.99	0.66	5.00	0.67	0.24	0.91
0.70	2.99	0.66	5.00	0.67	0.24	0.91
0.75	2.92	0.66	5.00	0.67	0.24	0.91
0.80	2.69	0.66	5.00	0.67	0.24	0.91
0.85	2.50	0.66	5.00	0.67	0.24	0.91
0.90	2.33	0.66	5.00	0.67	0.24	0.91
0.95	2.19	0.66	5.00	0.67	0.24	0.91
1.00	2.06	0.66	5.00	0.67	0.24	0.91
1.05	1.94	0.65	5.00	0.67	0.24	0.91
1.10	1.84	0.65	5.00	0.67	0.24	0.91
1.15	1.75	0.65	5.00	0.67	0.24	0.91
1.20	1.66	0.65	5.00	0.67	0.24	0.91
1.25	1.59	0.65	5.00	0.67	0.24	0.91
1.30	1.52	0.65	5.00	0.67	0.24	0.91
1.35	1.46	0.65	5.00	0.67	0.24	0.91
1.40	1.40	0.65	5.00	0.67	0.24	0.91
1.45	1.35	0.65	5.00	0.67	0.24	0.91
1.50	1.30	0.65	5.00	0.67	0.24	0.91
1.55	1.25	0.65	5.00	0.67	0.24	0.91
1.60	1.21	0.65	5.00	0.67	0.24	0.91
1.65	1.17	0.65	5.00	0.67	0.24	0.91
1.70	1.14	0.65	5.00	0.67	0.24	0.91
1.75	1.10	0.65	5.00	0.67	0.24	0.91
1.80	1.07	0.65	5.00	0.67	0.24	0.91
1.85	1.04	0.65	5.00	0.67	0.24	0.91
1.90	1.01	0.65	5.00	0.67	0.24	0.91
1.95	0.99	0.65	5.00	0.67	0.24	0.91
2.00	0.96	0.65	5.00	0.67	0.24	0.91
2.05	0.94	0.65	5.00	0.67	0.23	0.91
2.10	0.92	0.65	5.00	0.67	0.23	0.91
2.15	0.90	0.65	5.00	0.67	0.23	0.91
2.20	0.88	0.65	5.00	0.67	0.23	0.91
2.25	0.86	0.65	5.00	0.67	0.23	0.91
2.30	0.84	0.65	5.00	0.67	0.23	0.91
2.35	0.83	0.65	5.00	0.67	0.23	0.91
2.40	0.81	0.65	5.00	0.67	0.23	0.91
2.45	0.80	0.65	5.00	0.67	0.23	0.91
2.50	0.79	0.65	5.00	0.67	0.23	0.90
2.55	0.77	0.65	5.00	0.67	0.23	0.90
2.60	0.76	0.65	5.00	0.67	0.23	0.90
2.65	0.75	0.65	5.00	0.67	0.23	0.90
2.70	0.74	0.65	5.00	0.67	0.23	0.90
2.75	0.73	0.65	5.00	0.67	0.23	0.90
2.80	0.72	0.65	5.00	0.67	0.23	0.90
2.85	0.71	0.65	5.00	0.67	0.23	0.90
2.90	0.70	0.65	5.00	0.67	0.23	0.90
2.95	0.69	0.65	5.00	0.67	0.23	0.90
3.00	0.68	0.65	5.00	0.67	0.23	0.90
3.05	0.67	0.65	5.00	0.67	0.23	0.90
3.10	0.67	0.65	5.00	0.67	0.23	0.90
3.15	0.66	0.65	5.00	0.67	0.23	0.90
3.20	0.65	0.65	5.00	0.67	0.22	0.90
3.25	0.65	0.65	5.00	0.67	0.22	0.89
3.30	0.64	0.65	5.00	0.67	0.22	0.89
3.35	0.63	0.65	5.00	0.67	0.22	0.89

3.40	0.63	0.65	5.00	0.67	0.22	0.89
3.45	0.62	0.65	5.00	0.67	0.21	0.88
3.50	0.62	0.65	5.00	0.67	0.21	0.88
3.55	0.62	0.65	5.00	0.67	0.20	0.88
3.60	0.61	0.65	5.00	0.67	0.20	0.87
3.65	0.61	0.65	5.00	0.67	0.20	0.87
3.70	0.60	0.65	5.00	0.67	0.19	0.86
3.75	0.60	0.65	5.00	0.67	0.19	0.86
3.80	0.60	0.65	5.00	0.67	0.18	0.86
3.85	0.59	0.65	5.00	0.67	0.18	0.85
3.90	0.59	0.65	5.00	0.67	0.18	0.85
3.95	0.59	0.65	5.00	0.67	0.17	0.84
4.00	0.59	0.65	5.00	0.67	0.17	0.84
4.05	0.59	0.65	5.00	0.67	0.17	0.84
4.10	0.58	0.65	5.00	0.67	0.16	0.83
4.15	0.58	0.65	5.00	0.67	0.16	0.83
4.20	0.58	0.65	5.00	0.67	0.15	0.82
4.25	0.58	0.65	5.00	0.67	0.15	0.82
4.30	0.58	0.65	5.00	0.67	0.15	0.82
4.35	0.58	0.65	5.00	0.67	0.15	0.82
4.40	0.58	0.65	5.00	0.67	0.14	0.82
4.45	0.58	0.65	5.00	0.67	0.14	0.82
4.50	0.58	0.65	5.00	0.67	0.14	0.82
4.55	0.58	0.65	5.00	0.67	0.14	0.81
4.60	0.58	0.65	5.00	0.67	0.14	0.81
4.65	0.58	0.65	5.00	0.67	0.14	0.81
4.70	0.58	0.65	5.00	0.67	0.14	0.81
4.75	0.58	0.65	5.00	0.67	0.14	0.81
4.80	0.58	0.65	5.00	0.67	0.14	0.81
4.85	0.59	0.65	5.00	0.67	0.14	0.81
4.90	0.59	0.65	5.00	0.67	0.14	0.81
4.95	0.59	0.65	5.00	0.67	0.14	0.81
5.00	0.59	0.65	5.00	0.67	0.14	0.81
5.05	0.60	0.65	5.00	0.67	0.14	0.81
5.10	0.60	0.65	5.00	0.67	0.14	0.81
5.15	0.61	0.65	5.00	0.67	0.14	0.81
5.20	0.61	0.65	5.00	0.67	0.14	0.81
5.25	0.62	0.65	5.00	0.67	0.14	0.81
5.30	0.63	0.65	5.00	0.67	0.14	0.81
5.35	0.63	0.65	5.00	0.67	0.13	0.81
5.40	0.64	0.65	5.00	0.67	0.13	0.81
5.45	0.65	0.65	5.00	0.67	0.13	0.80
5.50	0.66	0.65	5.00	0.67	0.13	0.80
5.55	0.66	0.65	5.00	0.67	0.13	0.80
5.60	0.67	0.65	5.00	0.67	0.13	0.80
5.65	0.68	0.65	5.00	0.67	0.13	0.80
5.70	0.69	0.65	5.00	0.67	0.13	0.80
5.75	0.70	0.65	5.00	0.67	0.13	0.80
5.80	0.71	0.65	5.00	0.67	0.13	0.80
5.85	0.72	0.65	5.00	0.67	0.13	0.80
5.90	0.73	0.65	5.00	0.67	0.13	0.80
5.95	0.74	0.65	5.00	0.67	0.13	0.80
6.00	0.76	0.65	5.00	0.67	0.13	0.80
6.05	0.77	0.65	5.00	0.67	0.12	0.80
6.10	0.78	0.65	5.00	0.67	0.12	0.80
6.15	0.80	0.65	5.00	0.67	0.12	0.79
6.20	0.81	0.65	5.00	0.67	0.12	0.79
6.25	0.83	0.65	5.00	0.67	0.12	0.79
6.30	0.84	0.65	5.00	0.67	0.12	0.79
6.35	0.86	0.65	5.00	0.67	0.12	0.79
6.40	0.88	0.65	5.00	0.67	0.12	0.79
6.45	0.90	0.65	5.00	0.67	0.12	0.79
6.50	0.92	0.65	5.00	0.67	0.12	0.79
6.55	0.94	0.65	5.00	0.67	0.12	0.79
6.60	0.96	0.65	5.00	0.67	0.12	0.79
6.65	0.98	0.65	5.00	0.67	0.11	0.79
6.70	1.01	0.65	5.00	0.67	0.11	0.79

6.75	1.03	0.65	5.00	0.67	0.11	0.78
6.80	1.06	0.65	5.00	0.67	0.11	0.78
6.85	1.09	0.65	5.00	0.67	0.11	0.78
6.90	1.12	0.65	5.00	0.67	0.11	0.78
6.95	1.15	0.65	5.00	0.67	0.11	0.78
7.00	1.19	0.65	5.00	0.67	0.11	0.78
7.05	1.22	0.65	5.00	0.67	0.11	0.78
7.10	1.26	0.65	5.00	0.67	0.11	0.78
7.15	1.30	0.65	5.00	0.67	0.11	0.78
7.20	1.34	0.65	5.00	0.67	0.11	0.78
7.25	1.39	0.65	5.00	0.67	0.10	0.78
7.30	1.44	0.65	5.00	0.67	0.10	0.78
7.35	1.49	0.65	5.00	0.67	0.10	0.77
7.40	1.55	0.65	5.00	0.67	0.10	0.77
7.45	1.61	0.65	5.00	0.67	0.10	0.77
7.50	1.67	0.65	5.00	0.67	0.10	0.77
7.55	1.74	0.65	5.00	0.67	0.10	0.77
7.60	1.81	0.64	5.00	0.67	0.10	0.77
7.65	1.89	0.64	5.00	0.67	0.10	0.77
7.70	1.98	0.64	5.00	0.67	0.10	0.77
7.75	2.07	0.64	5.00	0.67	0.10	0.77
7.80	2.17	0.64	5.00	0.67	0.10	0.77
7.85	2.17	0.64	5.00	0.67	0.10	0.77
7.90	2.14	0.64	5.00	0.67	0.10	0.77
7.95	1.79	0.64	5.00	0.67	0.10	0.77
8.00	1.85	0.64	5.00	0.67	0.09	0.77
8.05	1.92	0.64	5.00	0.67	0.09	0.76
8.10	2.00	0.64	5.00	0.67	0.09	0.76
8.15	2.08	0.64	5.00	0.67	0.09	0.76
8.20	2.16	0.64	5.00	0.67	0.09	0.76
8.25	2.25	0.64	5.00	0.67	0.09	0.76
8.30	2.35	0.64	5.00	0.67	0.09	0.76
8.35	2.46	0.64	5.00	0.67	0.09	0.76
8.40	2.58	0.64	5.00	0.67	0.09	0.76
8.45	2.71	0.64	5.00	0.67	0.09	0.76
8.50	2.84	0.64	5.00	0.67	0.09	0.76
8.55	2.77	0.64	5.00	0.67	0.09	0.76
8.60	2.72	0.64	5.00	0.67	0.08	0.76
8.65	2.68	0.64	5.00	0.67	0.08	0.76
8.70	2.63	0.64	5.00	0.67	0.08	0.75
8.75	2.59	0.64	5.00	0.67	0.08	0.75
8.80	2.55	0.64	5.00	0.67	0.08	0.75
8.85	2.50	0.64	5.00	0.67	0.08	0.75
8.90	2.46	0.64	5.00	0.67	0.08	0.75
8.95	2.42	0.64	5.00	0.67	0.08	0.75
9.00	2.38	0.64	5.00	0.67	0.08	0.75
9.05	2.34	0.64	5.00	0.67	0.08	0.75
9.10	2.30	0.64	5.00	0.67	0.08	0.75
9.15	2.27	0.64	5.00	0.67	0.07	0.75
9.20	2.23	0.64	5.00	0.67	0.07	0.74
9.25	2.19	0.64	5.00	0.67	0.07	0.74
9.30	2.16	0.64	5.00	0.67	0.07	0.74
9.35	2.13	0.64	5.00	0.67	0.07	0.74
9.40	2.00	0.64	5.00	0.67	0.07	0.74
9.45	2.00	0.64	5.00	0.67	0.07	0.74
9.50	2.00	0.64	5.00	0.67	0.07	0.74
9.55	2.00	0.64	5.00	0.67	0.07	0.74
9.60	2.00	0.64	5.00	0.67	0.07	0.74
9.65	2.00	0.64	5.00	0.67	0.07	0.74
9.70	2.00	0.64	5.00	0.67	0.07	0.74
9.75	2.00	0.64	5.00	0.67	0.07	0.74
9.80	2.00	0.64	5.00	0.67	0.07	0.74
9.85	2.00	0.64	5.00	0.67	0.07	0.74
9.90	2.00	0.64	5.00	0.67	0.07	0.74
9.95	2.00	0.64	5.00	0.67	0.07	0.74
10.00	2.00	0.64	5.00	0.67	0.07	0.74
10.05	2.00	0.64	5.00	0.67	0.07	0.74

10.10	2.00	0.64	5.00	0.67	0.07	0.74
10.15	2.00	0.64	5.00	0.67	0.07	0.74
10.20	2.00	0.64	5.00	0.67	0.07	0.74
10.25	2.00	0.64	5.00	0.67	0.07	0.74
10.30	2.00	0.64	5.00	0.67	0.07	0.74
10.35	2.00	0.64	5.00	0.67	0.07	0.74
10.40	2.00	0.64	5.00	0.67	0.07	0.74
10.45	2.00	0.64	5.00	0.67	0.07	0.74
10.50	2.00	0.64	5.00	0.67	0.07	0.74
10.55	2.00	0.64	5.00	0.67	0.07	0.74
10.60	2.00	0.64	5.00	0.67	0.07	0.74
10.65	2.00	0.64	5.00	0.67	0.07	0.74
10.70	2.00	0.64	5.00	0.67	0.07	0.74
10.75	2.00	0.64	5.00	0.67	0.07	0.74
10.80	2.00	0.64	5.00	0.67	0.07	0.74
10.85	2.00	0.64	5.00	0.67	0.07	0.74
10.90	2.00	0.64	5.00	0.67	0.07	0.74
10.95	2.00	0.64	5.00	0.67	0.07	0.74
11.00	2.00	0.64	5.00	0.67	0.07	0.74
11.05	2.00	0.64	5.00	0.67	0.07	0.74
11.10	2.00	0.64	5.00	0.67	0.07	0.74
11.15	2.00	0.64	5.00	0.67	0.07	0.74
11.20	2.00	0.64	5.00	0.67	0.07	0.74
11.25	2.00	0.64	5.00	0.67	0.07	0.74
11.30	2.00	0.64	5.00	0.67	0.07	0.74
11.35	2.00	0.64	5.00	0.67	0.07	0.74
11.40	2.00	0.64	5.00	0.67	0.07	0.74
11.45	2.00	0.64	5.00	0.67	0.07	0.74
11.50	2.00	0.64	5.00	0.67	0.07	0.74
11.55	2.00	0.64	5.00	0.67	0.07	0.74
11.60	2.00	0.64	5.00	0.67	0.07	0.74
11.65	2.00	0.64	5.00	0.67	0.07	0.74
11.70	2.00	0.64	5.00	0.67	0.07	0.74
11.75	2.00	0.64	5.00	0.67	0.07	0.74
11.80	2.00	0.64	5.00	0.67	0.07	0.74
11.85	2.00	0.64	5.00	0.67	0.07	0.74
11.90	2.00	0.64	5.00	0.67	0.07	0.74
11.95	2.00	0.64	5.00	0.67	0.07	0.74
12.00	2.00	0.64	5.00	0.67	0.07	0.74
12.05	2.00	0.64	5.00	0.67	0.07	0.74
12.10	2.00	0.64	5.00	0.67	0.07	0.74
12.15	2.00	0.64	5.00	0.67	0.07	0.74
12.20	2.00	0.64	5.00	0.67	0.07	0.74
12.25	2.00	0.64	5.00	0.67	0.07	0.74
12.30	2.00	0.64	5.00	0.67	0.07	0.74
12.35	2.00	0.64	5.00	0.67	0.07	0.74
12.40	2.00	0.64	5.00	0.67	0.07	0.74
12.45	2.00	0.64	5.00	0.67	0.07	0.74
12.50	2.00	0.64	5.00	0.67	0.07	0.74
12.55	2.00	0.64	5.00	0.67	0.07	0.74
12.60	2.00	0.64	5.00	0.67	0.07	0.74
12.65	2.00	0.64	5.00	0.67	0.07	0.74
12.70	2.00	0.64	5.00	0.67	0.07	0.74
12.75	2.00	0.64	5.00	0.67	0.07	0.74
12.80	2.00	0.64	5.00	0.67	0.07	0.74
12.85	2.00	0.64	5.00	0.67	0.07	0.74
12.90	2.00	0.64	5.00	0.67	0.07	0.74
12.95	2.00	0.64	5.00	0.67	0.07	0.74
13.00	2.00	0.64	5.00	0.67	0.07	0.74
13.05	2.00	0.64	5.00	0.67	0.07	0.74
13.10	2.00	0.64	5.00	0.67	0.07	0.74
13.15	2.00	0.64	5.00	0.67	0.07	0.74
13.20	2.00	0.64	5.00	0.67	0.07	0.74
13.25	2.00	0.64	5.00	0.67	0.07	0.74
13.30	2.00	0.64	5.00	0.67	0.07	0.74
13.35	2.00	0.64	5.00	0.67	0.07	0.74
13.40	2.00	0.64	5.00	0.67	0.07	0.74

13.45	2.00	0.64	5.00	0.67	0.07	0.74
13.50	2.00	0.64	5.00	0.67	0.07	0.74
13.55	2.00	0.64	5.00	0.67	0.07	0.74
13.60	2.00	0.64	5.00	0.67	0.07	0.74
13.65	2.00	0.64	5.00	0.67	0.07	0.74
13.70	2.00	0.64	5.00	0.67	0.07	0.74
13.75	2.00	0.64	5.00	0.67	0.07	0.74
13.80	2.00	0.64	5.00	0.67	0.07	0.74
13.85	2.00	0.64	5.00	0.67	0.07	0.74
13.90	2.00	0.64	5.00	0.67	0.07	0.74
13.95	2.00	0.64	5.00	0.67	0.07	0.74
14.00	2.00	0.64	5.00	0.67	0.07	0.74
14.05	2.00	0.64	5.00	0.67	0.07	0.74
14.10	2.00	0.63	5.00	0.67	0.07	0.74
14.15	2.00	0.63	5.00	0.67	0.07	0.74
14.20	2.00	0.63	5.00	0.67	0.07	0.74
14.25	2.00	0.63	5.00	0.67	0.07	0.74
14.30	2.00	0.63	5.00	0.67	0.07	0.74
14.35	2.00	0.63	5.00	0.67	0.07	0.74
14.40	2.00	0.63	5.00	0.67	0.07	0.74
14.45	2.00	0.63	5.00	0.67	0.07	0.74
14.50	2.00	0.63	5.00	0.67	0.07	0.74
14.55	2.00	0.63	5.00	0.67	0.07	0.74
14.60	2.00	0.63	5.00	0.67	0.07	0.74
14.65	2.00	0.63	5.00	0.67	0.07	0.74
14.70	2.00	0.63	5.00	0.67	0.07	0.74
14.75	2.00	0.63	5.00	0.67	0.07	0.74
14.80	2.00	0.63	5.00	0.67	0.07	0.74
14.85	2.00	0.63	5.00	0.67	0.07	0.74
14.90	2.00	0.63	5.00	0.67	0.07	0.74
14.95	2.00	0.63	5.00	0.67	0.07	0.74
15.00	2.00	0.63	5.00	0.67	0.07	0.74
15.05	2.00	0.63	5.00	0.67	0.07	0.74
15.10	2.00	0.63	5.00	0.67	0.07	0.74
15.15	2.00	0.63	5.00	0.67	0.07	0.74
15.20	2.00	0.63	5.00	0.67	0.07	0.74
15.25	2.00	0.63	5.00	0.67	0.07	0.74
15.30	2.00	0.63	5.00	0.67	0.07	0.74
15.35	2.00	0.63	5.00	0.67	0.07	0.74
15.40	2.00	0.63	5.00	0.67	0.07	0.74
15.45	2.00	0.63	5.00	0.67	0.07	0.74
15.50	2.00	0.63	5.00	0.67	0.07	0.74
15.55	2.00	0.63	5.00	0.67	0.07	0.74
15.60	2.00	0.63	5.00	0.67	0.07	0.74
15.65	2.00	0.63	5.00	0.67	0.07	0.74
15.70	2.00	0.63	5.00	0.67	0.07	0.74
15.75	2.00	0.63	5.00	0.67	0.07	0.74
15.80	2.00	0.63	5.00	0.67	0.07	0.74
15.85	2.00	0.63	5.00	0.67	0.07	0.74
15.90	2.00	0.63	5.00	0.67	0.07	0.74
15.95	2.00	0.63	5.00	0.67	0.07	0.74
16.00	2.00	0.63	5.00	0.67	0.07	0.74
16.05	2.00	0.63	5.00	0.67	0.07	0.74
16.10	2.00	0.63	5.00	0.67	0.07	0.74
16.15	2.00	0.63	5.00	0.67	0.07	0.74
16.20	2.00	0.63	5.00	0.67	0.07	0.74
16.25	2.00	0.63	5.00	0.67	0.07	0.74
16.30	2.00	0.63	5.00	0.67	0.07	0.74
16.35	2.00	0.63	5.00	0.67	0.07	0.74
16.40	2.00	0.63	5.00	0.67	0.07	0.74
16.45	2.00	0.63	5.00	0.67	0.07	0.74
16.50	2.00	0.63	5.00	0.67	0.07	0.74
16.55	2.00	0.63	5.00	0.67	0.07	0.74
16.60	2.00	0.63	5.00	0.67	0.07	0.74
16.65	2.00	0.63	5.00	0.67	0.07	0.74
16.70	2.00	0.63	5.00	0.67	0.07	0.74
16.75	2.00	0.63	5.00	0.67	0.07	0.74

16.80	2.00	0.63	5.00	0.67	0.07	0.74
16.85	2.00	0.63	5.00	0.67	0.07	0.74
16.90	2.00	0.63	5.00	0.67	0.07	0.74
16.95	2.00	0.63	5.00	0.67	0.07	0.74
17.00	2.00	0.63	5.00	0.67	0.07	0.74
17.05	2.00	0.63	5.00	0.67	0.07	0.74
17.10	2.00	0.63	5.00	0.67	0.07	0.74
17.15	2.00	0.63	5.00	0.67	0.07	0.74
17.20	2.00	0.63	5.00	0.67	0.07	0.74
17.25	2.00	0.63	5.00	0.67	0.07	0.74
17.30	2.00	0.63	5.00	0.67	0.07	0.74
17.35	2.00	0.63	5.00	0.67	0.07	0.74
17.40	2.00	0.63	5.00	0.67	0.07	0.74
17.45	2.00	0.63	5.00	0.67	0.07	0.74
17.50	2.00	0.63	5.00	0.67	0.07	0.74
17.55	2.00	0.63	5.00	0.67	0.07	0.74
17.60	2.00	0.63	5.00	0.67	0.07	0.74
17.65	2.00	0.63	5.00	0.67	0.07	0.74
17.70	2.00	0.63	5.00	0.67	0.07	0.74
17.75	2.00	0.63	5.00	0.67	0.07	0.74
17.80	2.00	0.63	5.00	0.67	0.07	0.74
17.85	2.00	0.63	5.00	0.67	0.07	0.74
17.90	2.00	0.63	5.00	0.67	0.07	0.74
17.95	2.00	0.63	5.00	0.67	0.07	0.74
18.00	2.00	0.63	5.00	0.67	0.07	0.74
18.05	2.00	0.63	5.00	0.67	0.07	0.74
18.10	2.00	0.63	5.00	0.67	0.07	0.74
18.15	2.00	0.63	5.00	0.67	0.07	0.74
18.20	2.00	0.63	5.00	0.67	0.07	0.74
18.25	2.00	0.63	5.00	0.67	0.07	0.74
18.30	2.00	0.63	5.00	0.67	0.07	0.74
18.35	2.00	0.63	5.00	0.67	0.07	0.74
18.40	2.00	0.63	5.00	0.67	0.07	0.74
18.45	2.00	0.63	5.00	0.67	0.07	0.74
18.50	2.00	0.63	5.00	0.67	0.07	0.74
18.55	2.00	0.63	5.00	0.67	0.07	0.74
18.60	2.00	0.63	5.00	0.67	0.07	0.74
18.65	2.00	0.63	5.00	0.67	0.07	0.74
18.70	2.00	0.63	5.00	0.67	0.07	0.74
18.75	2.00	0.63	5.00	0.67	0.07	0.74
18.80	2.00	0.63	5.00	0.67	0.07	0.74
18.85	2.00	0.63	5.00	0.67	0.07	0.74
18.90	2.00	0.63	5.00	0.67	0.07	0.74
18.95	2.00	0.63	5.00	0.67	0.07	0.74
19.00	2.00	0.63	5.00	0.67	0.07	0.74
19.05	2.00	0.63	5.00	0.67	0.07	0.74
19.10	2.00	0.63	5.00	0.67	0.07	0.74
19.15	2.00	0.63	5.00	0.67	0.07	0.74
19.20	2.00	0.63	5.00	0.67	0.07	0.74
19.25	2.00	0.63	5.00	0.67	0.07	0.74
19.30	2.00	0.63	5.00	0.67	0.07	0.74
19.35	2.00	0.63	5.00	0.67	0.07	0.74
19.40	2.00	0.63	5.00	0.67	0.07	0.74
19.45	2.00	0.63	5.00	0.67	0.07	0.74
19.50	2.00	0.63	5.00	0.67	0.07	0.74
19.55	2.00	0.63	5.00	0.67	0.07	0.74
19.60	2.00	0.63	5.00	0.67	0.07	0.74
19.65	2.00	0.63	5.00	0.67	0.07	0.74
19.70	2.00	0.63	5.00	0.67	0.07	0.74
19.75	2.00	0.63	5.00	0.67	0.07	0.74
19.80	2.00	0.63	5.00	0.67	0.07	0.74
19.85	2.00	0.63	5.00	0.67	0.07	0.74
19.90	2.00	0.63	5.00	0.67	0.07	0.74
19.95	2.00	0.63	5.00	0.67	0.07	0.74
20.00	2.00	0.63	5.00	0.67	0.07	0.74
20.05	2.00	0.63	5.00	0.67	0.07	0.74
20.10	2.00	0.63	5.00	0.67	0.07	0.74

20.15	2.00	0.63	5.00	0.67	0.07	0.74
20.20	2.00	0.63	5.00	0.67	0.07	0.74
20.25	2.00	0.63	5.00	0.67	0.07	0.74
20.30	2.00	0.63	5.00	0.67	0.07	0.74
20.35	2.00	0.63	5.00	0.67	0.07	0.74
20.40	2.00	0.63	5.00	0.67	0.07	0.74
20.45	2.00	0.63	5.00	0.67	0.07	0.74
20.50	2.00	0.63	5.00	0.67	0.07	0.74
20.55	2.00	0.63	5.00	0.67	0.07	0.74
20.60	2.00	0.63	5.00	0.67	0.07	0.74
20.65	2.00	0.62	5.00	0.67	0.07	0.74
20.70	2.00	0.62	5.00	0.67	0.07	0.74
20.75	2.00	0.62	5.00	0.67	0.07	0.74
20.80	2.00	0.62	5.00	0.67	0.07	0.74
20.85	2.00	0.62	5.00	0.67	0.07	0.74
20.90	2.00	0.62	5.00	0.67	0.07	0.74
20.95	2.00	0.62	5.00	0.67	0.07	0.74
21.00	2.00	0.62	5.00	0.67	0.07	0.74
21.05	2.00	0.62	5.00	0.67	0.07	0.74
21.10	2.00	0.62	5.00	0.67	0.07	0.74
21.15	2.00	0.62	5.00	0.67	0.07	0.74
21.20	2.00	0.62	5.00	0.67	0.07	0.74
21.25	2.00	0.62	5.00	0.67	0.07	0.74
21.30	2.00	0.62	5.00	0.67	0.07	0.74
21.35	2.00	0.62	5.00	0.67	0.07	0.74
21.40	2.00	0.62	5.00	0.67	0.07	0.74
21.45	2.00	0.62	5.00	0.67	0.07	0.74
21.50	2.00	0.62	5.00	0.67	0.07	0.74
21.55	2.00	0.62	5.00	0.67	0.07	0.74
21.60	2.00	0.62	5.00	0.67	0.07	0.74
21.65	2.00	0.62	5.00	0.67	0.07	0.74
21.70	2.00	0.62	5.00	0.67	0.07	0.74
21.75	2.00	0.62	5.00	0.67	0.07	0.74
21.80	2.00	0.62	5.00	0.67	0.07	0.74
21.85	2.00	0.62	5.00	0.67	0.07	0.74
21.90	0.41	0.62	5.00	0.67	0.07	0.74
21.95	0.40	0.62	5.00	0.67	0.06	0.74
22.00	0.39	0.62	5.00	0.67	0.06	0.73
22.05	0.38	0.62	5.00	0.67	0.06	0.73
22.10	0.37	0.62	5.00	0.67	0.06	0.73
22.15	0.36	0.62	5.00	0.67	0.06	0.73
22.20	0.35	0.62	5.00	0.67	0.06	0.73
22.25	0.34	0.62	5.00	0.67	0.05	0.72
22.30	0.34	0.62	5.00	0.67	0.05	0.72
22.35	0.33	0.62	5.00	0.67	0.05	0.72
22.40	0.32	0.62	5.00	0.67	0.05	0.72
22.45	0.32	0.62	5.00	0.67	0.04	0.71
22.50	0.31	0.62	5.00	0.67	0.04	0.71
22.55	0.30	0.62	5.00	0.67	0.04	0.71
22.60	0.30	0.62	5.00	0.67	0.03	0.71
22.65	0.29	0.62	5.00	0.67	0.03	0.70
22.70	0.29	0.62	5.00	0.67	0.03	0.70
22.75	0.28	0.62	5.00	0.67	0.02	0.70
22.80	0.28	0.62	5.00	0.67	0.02	0.69
22.85	0.27	0.62	5.00	0.67	0.02	0.69
22.90	0.27	0.62	5.00	0.67	0.01	0.68
22.95	0.27	0.62	5.00	0.67	0.01	0.68
23.00	0.26	0.62	5.00	0.67	0.00	0.68
23.05	0.26	0.62	0.41*	0.67	0.00	0.67
23.10	0.25	0.62	0.41*	0.66	0.00	0.66
23.15	0.25	0.62	0.40*	0.66	0.00	0.66
23.20	0.25	0.62	0.40*	0.65	0.00	0.65
23.25	0.24	0.62	0.39*	0.64	0.00	0.64
23.30	0.24	0.62	0.39*	0.64	0.00	0.64
23.35	0.24	0.63	0.38*	0.63	0.00	0.63
23.40	0.24	0.63	0.38*	0.62	0.00	0.62
23.45	0.23	0.63	0.37*	0.62	0.00	0.62

23.50	0.23	0.63	0.37*	0.61	0.00	0.61
23.55	0.23	0.63	0.36*	0.60	0.00	0.60
23.60	0.23	0.63	0.36*	0.59	0.00	0.59
23.65	0.22	0.63	0.35*	0.59	0.00	0.59
23.70	0.22	0.63	0.35*	0.58	0.00	0.58
23.75	0.22	0.63	0.35*	0.57	0.00	0.57
23.80	0.22	0.63	0.34*	0.56	0.00	0.56
23.85	0.21	0.63	0.34*	0.56	0.00	0.56
23.90	0.21	0.63	0.34*	0.55	0.00	0.55
23.95	0.21	0.63	0.33*	0.54	0.00	0.54
24.00	0.21	0.63	0.33*	0.53	0.00	0.53
24.05	0.21	0.63	0.33*	0.52	0.00	0.52
24.10	0.20	0.63	0.32*	0.52	0.00	0.52
24.15	0.20	0.64	0.32*	0.51	0.00	0.51
24.20	0.20	0.64	0.32*	0.50	0.00	0.50
24.25	0.20	0.64	0.31*	0.49	0.00	0.49
24.30	0.20	0.64	0.31*	0.48	0.00	0.48
24.35	0.20	0.64	0.31*	0.47	0.00	0.47
24.40	0.20	0.64	0.31*	0.46	0.00	0.46
24.45	0.19	0.64	0.30*	0.46	0.00	0.46
24.50	0.19	0.64	0.30*	0.45	0.00	0.45
24.55	0.19	0.64	0.30*	0.44	0.00	0.44
24.60	0.19	0.64	0.30*	0.43	0.00	0.43
24.65	0.19	0.64	0.30*	0.42	0.00	0.42
24.70	0.19	0.64	0.29*	0.41	0.00	0.41
24.75	0.19	0.64	0.29*	0.40	0.00	0.40
24.80	0.19	0.64	0.29*	0.39	0.00	0.39
24.85	0.18	0.64	0.29*	0.38	0.00	0.38
24.90	0.18	0.64	0.29*	0.38	0.00	0.38
24.95	0.18	0.64	0.28*	0.37	0.00	0.37
25.00	0.18	0.65	0.28*	0.36	0.00	0.36
25.05	0.18	0.65	0.28*	0.35	0.00	0.35
25.10	0.18	0.65	0.28*	0.34	0.00	0.34
25.15	0.19	0.65	0.29*	0.33	0.00	0.33
25.20	0.19	0.65	0.29*	0.32	0.00	0.32
25.25	0.19	0.65	0.29*	0.31	0.00	0.31
25.30	0.19	0.65	0.29*	0.30	0.00	0.30
25.35	0.19	0.65	0.29*	0.29	0.00	0.29
25.40	0.19	0.65	0.30*	0.28	0.00	0.28
25.45	0.19	0.65	0.30*	0.28	0.00	0.28
25.50	0.19	0.65	0.30*	0.27	0.00	0.27
25.55	0.20	0.65	0.30*	0.26	0.00	0.26
25.60	0.20	0.65	0.30*	0.25	0.00	0.25
25.65	0.20	0.65	0.31*	0.24	0.00	0.24
25.70	0.20	0.65	0.31*	0.23	0.00	0.23
25.75	0.20	0.65	0.31*	0.22	0.00	0.22
25.80	0.21	0.65	0.31*	0.22	0.00	0.22
25.85	0.21	0.65	0.32*	0.21	0.00	0.21
25.90	0.21	0.66	0.32*	0.20	0.00	0.20
25.95	0.21	0.66	0.32*	0.19	0.00	0.19
26.00	0.21	0.66	0.33*	0.18	0.00	0.18
26.05	0.22	0.66	0.33*	0.17	0.00	0.17
26.10	0.22	0.66	0.33*	0.17	0.00	0.17
26.15	0.22	0.66	0.33*	0.16	0.00	0.16
26.20	0.22	0.66	0.34*	0.15	0.00	0.15
26.25	0.23	0.66	0.34*	0.14	0.00	0.14
26.30	0.23	0.66	0.35*	0.14	0.00	0.14
26.35	0.23	0.66	0.35*	0.13	0.00	0.13
26.40	0.23	0.66	0.35*	0.12	0.00	0.12
26.45	0.24	0.66	0.36*	0.11	0.00	0.11
26.50	0.24	0.66	0.36*	0.11	0.00	0.11
26.55	0.24	0.66	0.37*	0.10	0.00	0.10
26.60	0.25	0.66	0.37*	0.09	0.00	0.09
26.65	0.25	0.66	0.38*	0.09	0.00	0.09
26.70	0.26	0.66	0.38*	0.08	0.00	0.08
26.75	0.26	0.66	0.39*	0.07	0.00	0.07
26.80	0.26	0.67	0.40*	0.07	0.00	0.07

26.85	0.27	0.67	0.40*	0.06	0.00	0.06
26.90	0.27	0.67	0.41*	0.05	0.00	0.05
26.95	0.28	0.67	0.42*	0.05	0.00	0.05
27.00	0.28	0.67	0.42*	0.04	0.00	0.04
27.05	0.29	0.67	0.43*	0.03	0.00	0.03
27.10	0.29	0.67	0.44*	0.03	0.00	0.03
27.15	0.30	0.67	0.45*	0.02	0.00	0.02
27.20	0.31	0.67	0.46*	0.02	0.00	0.02
27.25	0.31	0.67	0.47*	0.01	0.00	0.01
27.30	0.32	0.67	0.48*	0.01	0.00	0.01
27.35	2.00	0.67	5.00	0.01	0.00	0.01
27.40	2.00	0.67	5.00	0.01	0.00	0.01
27.45	2.00	0.67	5.00	0.01	0.00	0.01
27.50	2.00	0.67	5.00	0.01	0.00	0.01
27.55	2.00	0.67	5.00	0.01	0.00	0.01
27.60	2.00	0.67	5.00	0.01	0.00	0.01
27.65	2.00	0.67	5.00	0.01	0.00	0.01
27.70	2.00	0.67	5.00	0.01	0.00	0.01
27.75	2.00	0.68	5.00	0.01	0.00	0.01
27.80	2.00	0.68	5.00	0.01	0.00	0.01
27.85	2.00	0.68	5.00	0.01	0.00	0.01
27.90	2.00	0.68	5.00	0.01	0.00	0.01
27.95	2.00	0.68	5.00	0.01	0.00	0.01
28.00	2.00	0.68	5.00	0.01	0.00	0.01
28.05	2.00	0.68	5.00	0.01	0.00	0.01
28.10	2.00	0.68	5.00	0.01	0.00	0.01
28.15	2.00	0.68	5.00	0.01	0.00	0.01
28.20	2.00	0.68	5.00	0.01	0.00	0.01
28.25	2.00	0.68	5.00	0.01	0.00	0.01
28.30	2.00	0.68	5.00	0.01	0.00	0.01
28.35	2.00	0.68	5.00	0.01	0.00	0.01
28.40	2.00	0.68	5.00	0.01	0.00	0.01
28.45	2.00	0.68	5.00	0.01	0.00	0.01
28.50	2.00	0.68	5.00	0.01	0.00	0.01
28.55	2.00	0.68	5.00	0.01	0.00	0.01
28.60	2.00	0.68	5.00	0.01	0.00	0.01
28.65	2.00	0.68	5.00	0.01	0.00	0.01
28.70	2.00	0.68	5.00	0.01	0.00	0.01
28.75	2.00	0.69	5.00	0.01	0.00	0.01
28.80	2.00	0.69	5.00	0.01	0.00	0.01
28.85	2.00	0.69	5.00	0.01	0.00	0.01
28.90	2.00	0.69	5.00	0.01	0.00	0.01
28.95	2.00	0.69	5.00	0.01	0.00	0.01
29.00	2.00	0.69	5.00	0.01	0.00	0.01
29.05	2.00	0.69	5.00	0.01	0.00	0.01
29.10	2.00	0.69	5.00	0.01	0.00	0.01
29.15	2.00	0.69	5.00	0.01	0.00	0.01
29.20	2.00	0.69	5.00	0.01	0.00	0.01
29.25	2.00	0.69	5.00	0.01	0.00	0.01
29.30	2.00	0.69	5.00	0.01	0.00	0.01
29.35	2.00	0.69	5.00	0.01	0.00	0.01
29.40	2.00	0.69	5.00	0.01	0.00	0.01
29.45	2.00	0.69	5.00	0.01	0.00	0.01
29.50	2.00	0.69	5.00	0.01	0.00	0.01
29.55	2.00	0.69	5.00	0.01	0.00	0.01
29.60	2.00	0.69	5.00	0.01	0.00	0.01
29.65	2.00	0.69	5.00	0.01	0.00	0.01
29.70	2.00	0.69	5.00	0.01	0.00	0.01
29.75	2.00	0.69	5.00	0.01	0.00	0.01
29.80	2.00	0.70	5.00	0.01	0.00	0.01
29.85	2.00	0.70	5.00	0.01	0.00	0.01
29.90	2.00	0.70	5.00	0.01	0.00	0.01
29.95	2.00	0.70	5.00	0.01	0.00	0.01
30.00	2.00	0.70	5.00	0.01	0.00	0.01
30.05	2.00	0.70	5.00	0.01	0.00	0.01
30.10	2.00	0.70	5.00	0.01	0.00	0.01
30.15	2.00	0.70	5.00	0.01	0.00	0.01

30.20	2.00	0.70	5.00	0.01	0.00	0.01
30.25	2.00	0.70	5.00	0.01	0.00	0.01
30.30	2.00	0.70	5.00	0.01	0.00	0.01
30.35	2.00	0.70	5.00	0.01	0.00	0.01
30.40	2.00	0.70	5.00	0.01	0.00	0.01
30.45	2.00	0.70	5.00	0.01	0.00	0.01
30.50	2.00	0.70	5.00	0.01	0.00	0.01
30.55	2.00	0.70	5.00	0.01	0.00	0.01
30.60	2.00	0.70	5.00	0.01	0.00	0.01
30.65	2.00	0.70	5.00	0.01	0.00	0.01
30.70	2.00	0.70	5.00	0.01	0.00	0.01
30.75	2.00	0.70	5.00	0.01	0.00	0.01
30.80	2.00	0.70	5.00	0.01	0.00	0.01
30.85	2.00	0.70	5.00	0.01	0.00	0.01
30.90	2.00	0.70	5.00	0.01	0.00	0.01
30.95	2.00	0.70	5.00	0.01	0.00	0.01
31.00	2.00	0.70	5.00	0.01	0.00	0.01
31.05	2.00	0.70	5.00	0.01	0.00	0.01
31.10	2.00	0.70	5.00	0.01	0.00	0.01
31.15	2.00	0.70	5.00	0.01	0.00	0.01
31.20	2.00	0.70	5.00	0.01	0.00	0.01
31.25	2.00	0.70	5.00	0.01	0.00	0.01
31.30	2.00	0.70	5.00	0.01	0.00	0.01
31.35	2.00	0.70	5.00	0.01	0.00	0.01
31.40	2.00	0.70	5.00	0.01	0.00	0.01
31.45	2.00	0.70	5.00	0.01	0.00	0.01
31.50	2.00	0.70	5.00	0.01	0.00	0.01
31.55	2.00	0.70	5.00	0.01	0.00	0.01
31.60	2.00	0.70	5.00	0.01	0.00	0.01
31.65	2.00	0.70	5.00	0.01	0.00	0.01
31.70	2.00	0.70	5.00	0.01	0.00	0.01
31.75	2.00	0.70	5.00	0.01	0.00	0.01
31.80	2.00	0.70	5.00	0.01	0.00	0.01
31.85	2.00	0.71	5.00	0.01	0.00	0.01
31.90	2.00	0.71	5.00	0.01	0.00	0.01
31.95	2.00	0.71	5.00	0.01	0.00	0.01
32.00	2.00	0.71	5.00	0.01	0.00	0.01
32.05	2.00	0.71	5.00	0.01	0.00	0.01
32.10	2.00	0.71	5.00	0.01	0.00	0.01
32.15	2.00	0.71	5.00	0.01	0.00	0.01
32.20	2.00	0.71	5.00	0.01	0.00	0.01
32.25	2.00	0.71	5.00	0.01	0.00	0.01
32.30	2.00	0.71	5.00	0.01	0.00	0.01
32.35	2.00	0.71	5.00	0.01	0.00	0.01
32.40	2.00	0.71	5.00	0.01	0.00	0.01
32.45	2.00	0.71	5.00	0.01	0.00	0.01
32.50	2.00	0.71	5.00	0.01	0.00	0.01
32.55	2.00	0.71	5.00	0.01	0.00	0.01
32.60	2.00	0.71	5.00	0.01	0.00	0.01
32.65	2.00	0.71	5.00	0.01	0.00	0.01
32.70	2.00	0.71	5.00	0.01	0.00	0.01
32.75	2.00	0.71	5.00	0.01	0.00	0.01
32.80	2.00	0.71	5.00	0.01	0.00	0.01
32.85	2.00	0.71	5.00	0.01	0.00	0.01
32.90	2.00	0.71	5.00	0.01	0.00	0.01
32.95	2.00	0.71	5.00	0.01	0.00	0.01
33.00	2.00	0.71	5.00	0.01	0.00	0.01
33.05	2.00	0.71	5.00	0.01	0.00	0.01
33.10	2.00	0.71	5.00	0.01	0.00	0.01
33.15	2.00	0.71	5.00	0.01	0.00	0.01
33.20	2.00	0.71	5.00	0.01	0.00	0.01
33.25	2.00	0.71	5.00	0.01	0.00	0.01
33.30	2.00	0.71	5.00	0.01	0.00	0.01
33.35	2.00	0.71	5.00	0.01	0.00	0.01
33.40	2.00	0.71	5.00	0.01	0.00	0.01
33.45	2.00	0.71	5.00	0.01	0.00	0.01
33.50	2.00	0.71	5.00	0.01	0.00	0.01

33.55	2.00	0.71	5.00	0.01	0.00	0.01
33.60	2.00	0.71	5.00	0.01	0.00	0.01
33.65	2.00	0.71	5.00	0.01	0.00	0.01
33.70	2.00	0.71	5.00	0.01	0.00	0.01
33.75	2.00	0.71	5.00	0.01	0.00	0.01
33.80	2.00	0.71	5.00	0.01	0.00	0.01
33.85	2.00	0.71	5.00	0.01	0.00	0.01
33.90	2.00	0.71	5.00	0.01	0.00	0.01
33.95	2.00	0.71	5.00	0.01	0.00	0.01
34.00	2.00	0.71	5.00	0.01	0.00	0.01
34.05	2.00	0.71	5.00	0.01	0.00	0.01
34.10	2.00	0.71	5.00	0.01	0.00	0.01
34.15	2.00	0.71	5.00	0.01	0.00	0.01
34.20	2.00	0.71	5.00	0.01	0.00	0.01
34.25	2.00	0.71	5.00	0.01	0.00	0.01
34.30	2.00	0.71	5.00	0.01	0.00	0.01
34.35	2.00	0.71	5.00	0.01	0.00	0.01
34.40	2.00	0.71	5.00	0.01	0.00	0.01
34.45	2.00	0.71	5.00	0.01	0.00	0.01
34.50	2.00	0.71	5.00	0.01	0.00	0.01
34.55	2.00	0.71	5.00	0.01	0.00	0.01
34.60	2.00	0.71	5.00	0.01	0.00	0.01
34.65	2.00	0.71	5.00	0.01	0.00	0.01
34.70	2.00	0.71	5.00	0.01	0.00	0.01
34.75	2.00	0.71	5.00	0.01	0.00	0.01
34.80	2.00	0.71	5.00	0.01	0.00	0.01
34.85	2.00	0.71	5.00	0.01	0.00	0.01
34.90	2.00	0.71	5.00	0.01	0.00	0.01
34.95	2.00	0.72	5.00	0.01	0.00	0.01
35.00	2.00	0.72	5.00	0.01	0.00	0.01
35.05	2.00	0.72	5.00	0.01	0.00	0.01
35.10	0.65	0.72	0.91*	0.01	0.00	0.01
35.15	0.58	0.72	0.81*	0.01	0.00	0.01
35.20	0.55	0.72	0.77*	0.01	0.00	0.01
35.25	0.55	0.72	0.76*	0.01	0.00	0.01
35.30	0.55	0.72	0.77*	0.00	0.00	0.00
35.35	0.56	0.72	0.79*	0.00	0.00	0.00
35.40	0.58	0.72	0.81*	0.00	0.00	0.00
35.45	0.60	0.72	0.84*	0.00	0.00	0.00
35.50	0.63	0.72	0.88*	0.00	0.00	0.00
35.55	0.66	0.72	0.93*	0.00	0.00	0.00
35.60	0.70	0.72	0.97*	0.00	0.00	0.00
35.65	0.74	0.72	1.03	0.00	0.00	0.00
35.70	0.78	0.72	1.09	0.00	0.00	0.00
35.75	0.82	0.72	1.15	0.00	0.00	0.00
35.80	0.87	0.72	1.21	0.00	0.00	0.00
35.85	0.92	0.72	1.29	0.00	0.00	0.00
35.90	0.98	0.72	1.36	0.00	0.00	0.00
35.95	1.03	0.72	1.44	0.00	0.00	0.00
36.00	1.09	0.72	1.52	0.00	0.00	0.00
36.05	1.16	0.72	1.61	0.00	0.00	0.00
36.10	1.22	0.72	1.71	0.00	0.00	0.00
36.15	1.29	0.72	1.80	0.00	0.00	0.00
36.20	1.37	0.72	1.90	0.00	0.00	0.00
36.25	1.44	0.72	2.01	0.00	0.00	0.00
36.30	1.52	0.72	2.12	0.00	0.00	0.00
36.35	1.61	0.72	2.24	0.00	0.00	0.00
36.40	1.69	0.72	2.36	0.00	0.00	0.00
36.45	1.78	0.72	2.48	0.00	0.00	0.00
36.50	1.88	0.72	2.62	0.00	0.00	0.00
36.55	1.98	0.72	2.75	0.00	0.00	0.00
36.60	2.08	0.72	2.89	0.00	0.00	0.00
36.65	2.18	0.72	3.04	0.00	0.00	0.00
36.70	2.29	0.72	3.19	0.00	0.00	0.00
36.75	2.41	0.72	3.35	0.00	0.00	0.00
36.80	2.52	0.72	3.51	0.00	0.00	0.00
36.85	2.64	0.72	3.68	0.00	0.00	0.00

36.90	2.77	0.72	3.85	0.00	0.00	0.00
36.95	2.90	0.72	4.03	0.00	0.00	0.00
37.00	2.98	0.72	4.15	0.00	0.00	0.00
37.05	2.98	0.72	4.15	0.00	0.00	0.00
37.10	2.98	0.72	4.15	0.00	0.00	0.00
37.15	2.98	0.72	4.14	0.00	0.00	0.00
37.20	2.98	0.72	4.14	0.00	0.00	0.00
37.25	2.98	0.72	4.14	0.00	0.00	0.00
37.30	2.98	0.72	4.14	0.00	0.00	0.00
37.35	2.98	0.72	4.14	0.00	0.00	0.00
37.40	2.98	0.72	4.14	0.00	0.00	0.00
37.45	2.98	0.72	4.14	0.00	0.00	0.00
37.50	2.98	0.72	4.14	0.00	0.00	0.00
37.55	2.98	0.72	4.14	0.00	0.00	0.00
37.60	2.98	0.72	4.14	0.00	0.00	0.00
37.65	2.98	0.72	4.14	0.00	0.00	0.00
37.70	2.98	0.72	4.13	0.00	0.00	0.00
37.75	2.98	0.72	4.13	0.00	0.00	0.00
37.80	2.98	0.72	4.13	0.00	0.00	0.00
37.85	2.98	0.72	4.13	0.00	0.00	0.00
37.90	2.98	0.72	4.13	0.00	0.00	0.00
37.95	2.98	0.72	4.13	0.00	0.00	0.00
38.00	2.98	0.72	4.13	0.00	0.00	0.00
38.05	2.98	0.72	4.13	0.00	0.00	0.00
38.10	2.98	0.72	4.13	0.00	0.00	0.00
38.15	2.98	0.72	4.13	0.00	0.00	0.00
38.20	2.97	0.72	4.13	0.00	0.00	0.00
38.25	2.97	0.72	4.12	0.00	0.00	0.00
38.30	2.97	0.72	4.12	0.00	0.00	0.00
38.35	2.97	0.72	4.12	0.00	0.00	0.00
38.40	2.97	0.72	4.12	0.00	0.00	0.00
38.45	2.97	0.72	4.12	0.00	0.00	0.00
38.50	2.97	0.72	4.12	0.00	0.00	0.00
38.55	2.97	0.72	4.12	0.00	0.00	0.00
38.60	2.97	0.72	4.12	0.00	0.00	0.00
38.65	2.97	0.72	4.12	0.00	0.00	0.00
38.70	2.97	0.72	4.12	0.00	0.00	0.00
38.75	2.97	0.72	4.12	0.00	0.00	0.00
38.80	2.97	0.72	4.12	0.00	0.00	0.00
38.85	2.97	0.72	4.12	0.00	0.00	0.00
38.90	2.97	0.72	4.11	0.00	0.00	0.00
38.95	2.97	0.72	4.11	0.00	0.00	0.00
39.00	2.97	0.72	4.11	0.00	0.00	0.00
39.05	2.97	0.72	4.11	0.00	0.00	0.00
39.10	2.97	0.72	4.11	0.00	0.00	0.00
39.15	2.97	0.72	4.11	0.00	0.00	0.00
39.20	2.97	0.72	4.11	0.00	0.00	0.00
39.25	2.97	0.72	4.11	0.00	0.00	0.00
39.30	2.97	0.72	4.11	0.00	0.00	0.00
39.35	2.97	0.72	4.11	0.00	0.00	0.00
39.40	2.97	0.72	4.11	0.00	0.00	0.00
39.45	2.97	0.72	4.11	0.00	0.00	0.00
39.50	2.97	0.72	4.11	0.00	0.00	0.00
39.55	2.97	0.72	4.10	0.00	0.00	0.00
39.60	2.97	0.72	4.10	0.00	0.00	0.00
39.65	2.96	0.72	4.10	0.00	0.00	0.00
39.70	2.96	0.72	4.10	0.00	0.00	0.00
39.75	2.96	0.72	4.10	0.00	0.00	0.00
39.80	2.96	0.72	4.10	0.00	0.00	0.00
39.85	2.96	0.72	4.10	0.00	0.00	0.00
39.90	2.96	0.72	4.10	0.00	0.00	0.00
39.95	2.96	0.72	4.10	0.00	0.00	0.00
40.00	2.96	0.72	4.10	0.00	0.00	0.00
40.05	2.96	0.72	4.10	0.00	0.00	0.00
40.10	2.96	0.72	4.10	0.00	0.00	0.00
40.15	2.96	0.72	4.10	0.00	0.00	0.00
40.20	2.96	0.72	4.10	0.00	0.00	0.00

40.25	2.96	0.72	4.10	0.00	0.00	0.00
40.30	2.96	0.72	4.10	0.00	0.00	0.00
40.35	2.96	0.72	4.09	0.00	0.00	0.00
40.40	2.96	0.72	4.09	0.00	0.00	0.00
40.45	2.96	0.72	4.09	0.00	0.00	0.00
40.50	2.96	0.72	4.09	0.00	0.00	0.00
40.55	2.96	0.72	4.09	0.00	0.00	0.00
40.60	2.96	0.72	4.09	0.00	0.00	0.00
40.65	2.96	0.72	4.09	0.00	0.00	0.00
40.70	2.96	0.72	4.09	0.00	0.00	0.00
40.75	2.96	0.72	4.09	0.00	0.00	0.00
40.80	2.96	0.72	4.09	0.00	0.00	0.00
40.85	2.96	0.72	4.09	0.00	0.00	0.00
40.90	2.96	0.72	4.09	0.00	0.00	0.00
40.95	2.96	0.72	4.09	0.00	0.00	0.00
41.00	2.96	0.72	4.09	0.00	0.00	0.00
41.05	2.96	0.72	4.09	0.00	0.00	0.00
41.10	2.95	0.72	4.09	0.00	0.00	0.00
41.15	2.95	0.72	4.09	0.00	0.00	0.00
41.20	2.95	0.72	4.08	0.00	0.00	0.00
41.25	2.95	0.72	4.08	0.00	0.00	0.00
41.30	2.95	0.72	4.08	0.00	0.00	0.00
41.35	2.95	0.72	4.08	0.00	0.00	0.00
41.40	2.95	0.72	4.08	0.00	0.00	0.00
41.45	2.95	0.72	4.08	0.00	0.00	0.00
41.50	2.95	0.72	4.08	0.00	0.00	0.00
41.55	2.95	0.72	4.08	0.00	0.00	0.00
41.60	2.95	0.72	4.08	0.00	0.00	0.00
41.65	2.95	0.72	4.08	0.00	0.00	0.00
41.70	2.95	0.72	4.08	0.00	0.00	0.00
41.75	2.95	0.72	4.08	0.00	0.00	0.00
41.80	2.95	0.72	4.08	0.00	0.00	0.00
41.85	2.95	0.72	4.08	0.00	0.00	0.00
41.90	2.95	0.72	4.08	0.00	0.00	0.00
41.95	2.95	0.72	4.08	0.00	0.00	0.00
42.00	2.95	0.72	4.08	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Appendix D

Earthwork Specifications

APPENDIX D: EARTHWORK SPECIFICATIONS

D.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D.2 Site Inspection

- The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

- This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

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D.3 Authority of the Geotechnical Engineer

- The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

- As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

- The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D.4 Site Clearing

- Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavements, utilities, trees and vegetation.

- Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D.5 Excavations

- Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D.6 Preparation of Fill Areas

- All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

- In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 5 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All undocumented fill should be removed and replaced with compacted fill. The excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations

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before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

- The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

- Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

- All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D.7 Placement and Compaction of Fill

- Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

- Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    - All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

    - Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

- Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

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- All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

- Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

- Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

- Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

- It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

- Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

- Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

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- Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter, and rocks shall be well mixed with finer soil.

- The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

- Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

- The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

- The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

- Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

- It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

- Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D.9 Observation and Testing

- During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

- Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than

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specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

- A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

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Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Student Center Building
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789

Converse Project No. 17-31-234-01

Prepared For:

Mt. San Antonio College
Facilities and Planning Management
Building 46
1100 North Grand Avenue
Walnut, California 91789

Prepared By:

Converse Consultants
717 South Myrtle Avenue
Monrovia, California 91016

October 5, 2017

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

October 5, 2017

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 46
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed New Student Center Building
1100 North Grand Avenue
Walnut, California
Mt. San Antonio College
Converse Project No. 17-31-234-01

Dear Mr. Gidcumb:

Enclosed is a Geotechnical Study Report prepared by Converse Consultants (Converse) for the proposed New Student Center Building at Mt. San Antonio College located in the City of Walnut, Los Angeles County, California.

The purpose of the study was to generate a geotechnical study report for design parameters and Division of State Architect (DSA) submittal purposes consistent with the current edition of California Building Code, Title 24, Chapter 16; Earthquake Design, Chapter 18A, Foundation and Retaining Wall; Appendix Chapter 33, Excavation and Grading; Part 1' Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

Based on our field exploration, laboratory testing, geologic evaluation and geotechnical analysis, the site is suitable from a geotechnical standpoint for the proposed new Student Center Building.

We appreciate the opportunity to be of service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1275.

Sincerely,

CONVERSE CONSULTANTS

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
No. 2708
Exp 6-30-18
GEOTECHNICAL
STATE OF CALIFORNIA

Dist: 3/Addressee

PROFESSIONAL CERTIFICATION

This report for the proposed new Student Center Building at Mt. San Antonio College in the City of Walnut, California, has been prepared by the staff of Converse Consultants under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed and the recommendations of this report are modified or verified in writing.

Victor Nguyen, EIT
Senior Staff Engineer



Mark B. Schluter, PG, CEG, CHG
Senior Engineering Geologist



Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President/Principal Engineer

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EXECUTIVE SUMMARY

The following is a summary of our geotechnical study, findings, conclusions, and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed new Student Center Building is to be located within the central portion of the existing Mt. San Antonio College campus. The project site is bounded by Building No. 13 to the north, Building No. 19c to the south, Building No. 26D to the east, and Building No. 10 to the west. Building Nos. 17, 18, 19A, and 19B currently occupy the proposed project site.

- Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck-mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) and by hand-auger excavation methods (BH-4 and BH-6) for limited access areas.

- The earth materials encountered during our investigation consisted of existing fill soils placed during previous site grading operations and natural alluvial sediments to a maximum explored depth of 51.5 feet bgs. Undocumented fills, approximately three (3) to five (5) feet in thickness, were encountered in the borings. Deeper artificial fills may exist at the project site. The fills encountered consisted primarily of silty sand, clayey sand, sandy clay, and silty clayey sand. The alluvial sediment deposits below the surface fills primarily consisted of fine-grained clays, clayey sands, silty sands, silts, and sandy silts.

- Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs.

- The project site is not located within a currently designated State of California Earthquake Fault Zone for surface fault rupture. No active surface faults are known to project through or towards the site.

- The project site is located within a mapped potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

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- We recommend the proposed new Student Center Building be supported on shallow spread foundations provided our earthwork recommendations are incorporated in the design and construction.

- The project will consist of clearing the site, removal of trees and surface vegetation, demolition and removal of existing buildings and utilities, removal of existing sidewalks, pavements, and slabs, and remedial grading consisting of over-excavation and re-compaction of the surface soils to provide structural support for new building pads and improvements.

- Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential.

- In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

- Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The field tests resulted in an average percolation rate of 1.74 inches/hour and a lowest percolation rate of 1.35 inches/hour.

- Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various traffic index (TI) conditions are presented in Table No. 11, Flexible Pavement Structural Sections.

- Based on our field exploration, the earth materials at the project site should be excavatable with conventional heavy-duty earth moving and trenching equipment.

Results of our study indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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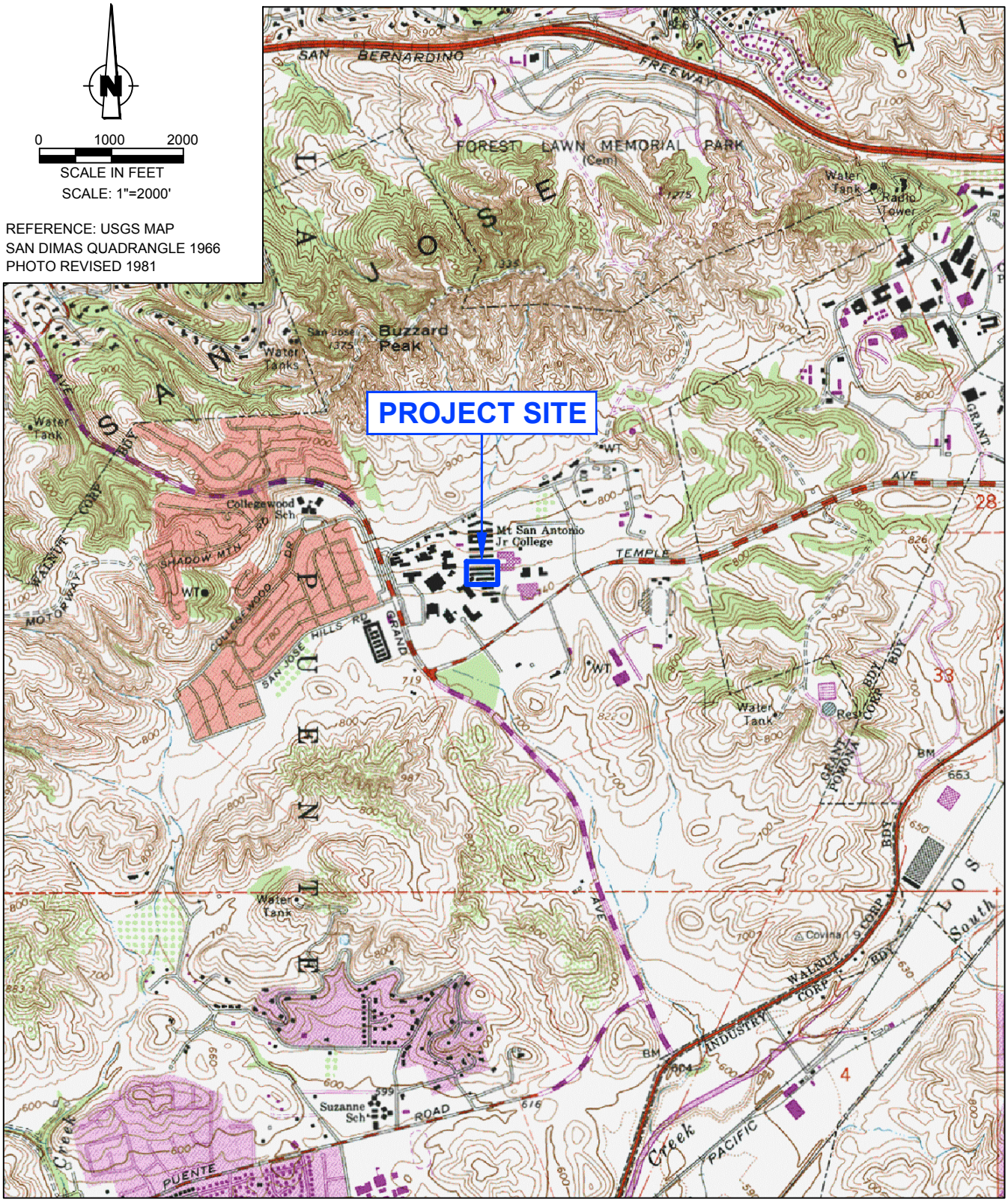
1.0 INTRODUCTION

This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed new Student Center Building located within the central portion of the Mt. San Antonio College campus in the City of Walnut, Los Angeles County, California, as shown in Drawing No. 1, *Site Location Map*.

The purpose of the study was to generate a geotechnical soils report for design and Division of State Architect (DSA) submittal purposes, consistent with the latest edition of California Building Code (CBC), Title 24, Chapter 16; Earthquake Design, Chapter 18A, Foundation and Retaining Wall; Appendix Chapter 33, Excavation and Grading; Part 1, Section 4-317 (e) and the current CGS Note 48-Checklist.

This report is written for the project described herein and is intended for use solely by Mt. San Antonio College and their design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

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SITE LOCATION MAP

STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.

17-31-234-01

Drawing No.

1

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2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed new Student Center Building is to be located within the central portion of the existing Mt. San Antonio College campus. The project site is bounded by Building No. 13 to the north, Building No. 19c to the south, Building No. 26D to the east and Building No. 10 to the west. Building Nos. 17, 18, 19A, and 19B currently occupy the proposed project site.

The site coordinates for the proposed Student Center Building are: 34.04696 degrees North Latitude, -117.84507 degrees West Longitude. The site coordinates were centered on the subject site and used to calculate the earthquake ground motions. Review of Engineering Geology and Seismology for Public Schools and Hospitals in California, dated August 9, 2005 indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

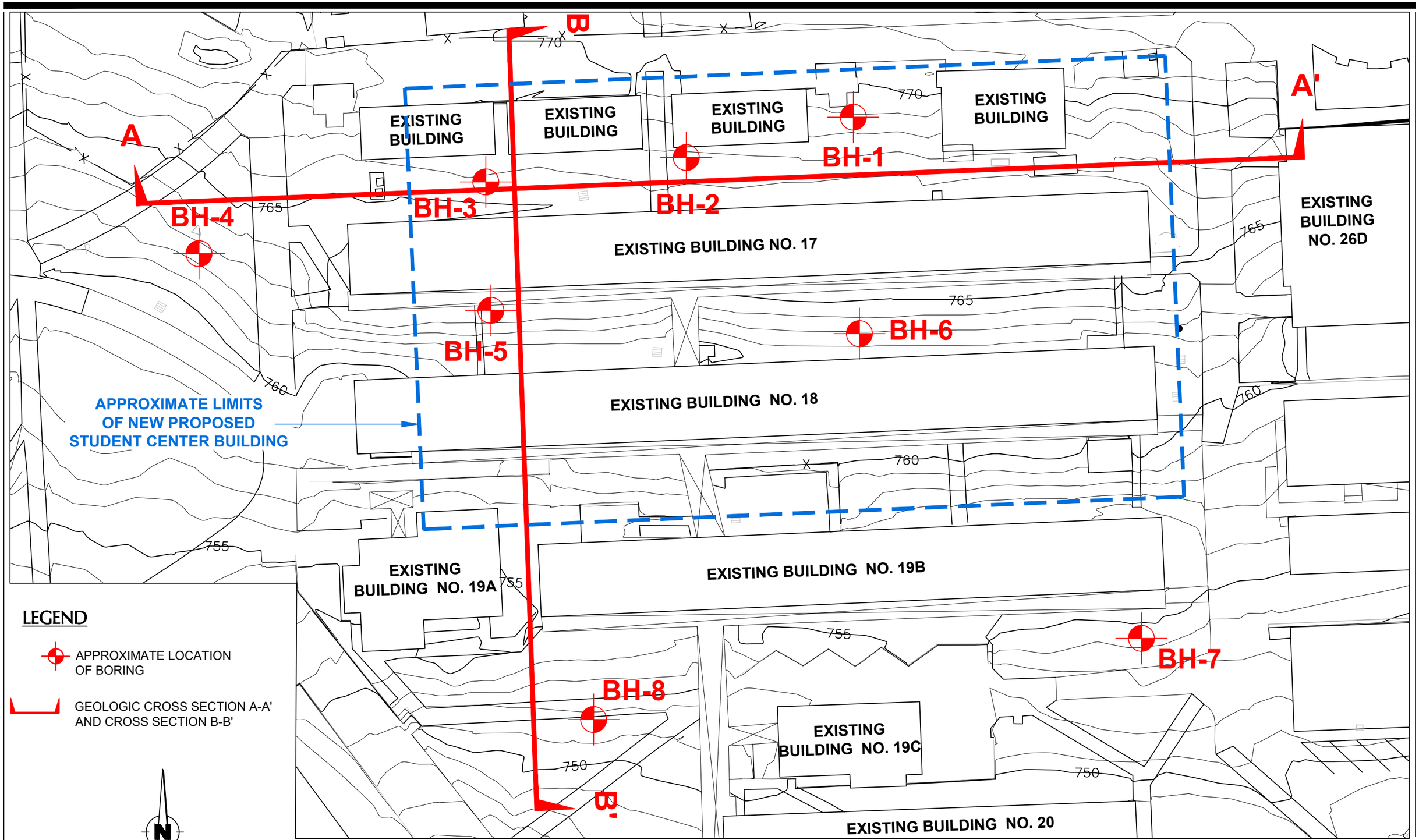
2.2 Project Description

The proposed project will consist of demolition of the existing, single-story, Building Nos. 17, 18, 19A, and 19B to allow for the grading and construction of the proposed new Student Center Building. The new Student Center Building will consist of one building with three stories and an approximate building height of 65 feet. The grade difference between the north and south sides of the building will be approximately 18 feet sloping in a north to south direction. The footprint area of the building is approximately 34,500 square feet with a total square footage of approximately 100,000 square feet.

The Student Center Building will provide space for student life offices, student organization offices, multi-cultural center, sit and study spaces, sit and relax spaces, food services including café, coffeehouse and convenience store, conference center, ball room, event center, and loading and storage areas.

Access to the building's first floor level will be from the south side at the Plaza level. Access to the building from the north side will be at the second level along the Miracle Mile Level. The building will be provided with exterior elevators for accessibility. The exterior spaces around the building will include plazas at both levels, stairs, retaining walls and landscaping. The structural loads are not known at this time, but are anticipated to be moderate. The project site and boring locations are shown in Drawing No. 2, *Site Plan and Approximate Location of Borings.*

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SITE PLAN AND APPROXIMATE LOCATION OF BORINGS

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STUDENT CENTER BUILDING
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WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 2

3.0 SCOPE OF WORK

Our scope of work consists of the tasks described in the following subsections.

3.1 Review of Existing Documents

Our field exploration included review of existing documents by a member of the Converse Staff. The purpose of the review was to have an understanding of the site geology and subsurface soils prior to subsurface exploration.

3.2 Subsurface Exploration and Percolation Testing

Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) and hand-auger excavation methods (BH-4 and BH-6) for limited access areas. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. The approximate locations of the exploratory borings and percolation test boring are shown in Drawing No. 2, *Site Plan and Approximate Location of Borings*.

California Modified Sampler (Ring samples), Standard Penetration Test samples, and bulk soil samples were obtained for laboratory testing. Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The bore holes were then backfilled and compacted with soil cuttings by reverse spinning of the augers and tamping of the soil cuttings following the completion of drilling.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In situ moisture contents and dry densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Maximum dry density and optimum-moisture content relationship (ASTM Standard D1557)
- Direct shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- Soil corrosivity tests (Caltrans 643, 422, 417, and 532)
- Expansion Index (ASTM Standard D4829)

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- Sand Equivalent (ASTM Standard 2419)
- R-Value (CTM 301)

3.4 Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated with respect to the planned construction. This report was prepared to provide the findings, conclusions and recommendations developed during our study and evaluation.

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4.0 GEOLOGIC CONDITIONS

4.1 Regional Geologic Setting

The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California near the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low *angle reverse or reverse-oblique faults bounding the southern margin of the Transverse* Ranges. Faults in high angle strike slip fault group include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Faults in the low angle reverse and reverse-oblique group include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

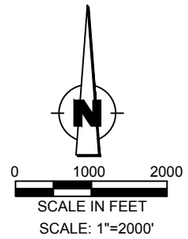
The Pomona Valley basin is bounded to the north by the San Jose fault and to the southwest by the Chino-Central Avenue fault. These two fault systems do not exhibit significant evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age faults, having exhibited displacement and movement within the past approximately 130,000 years.

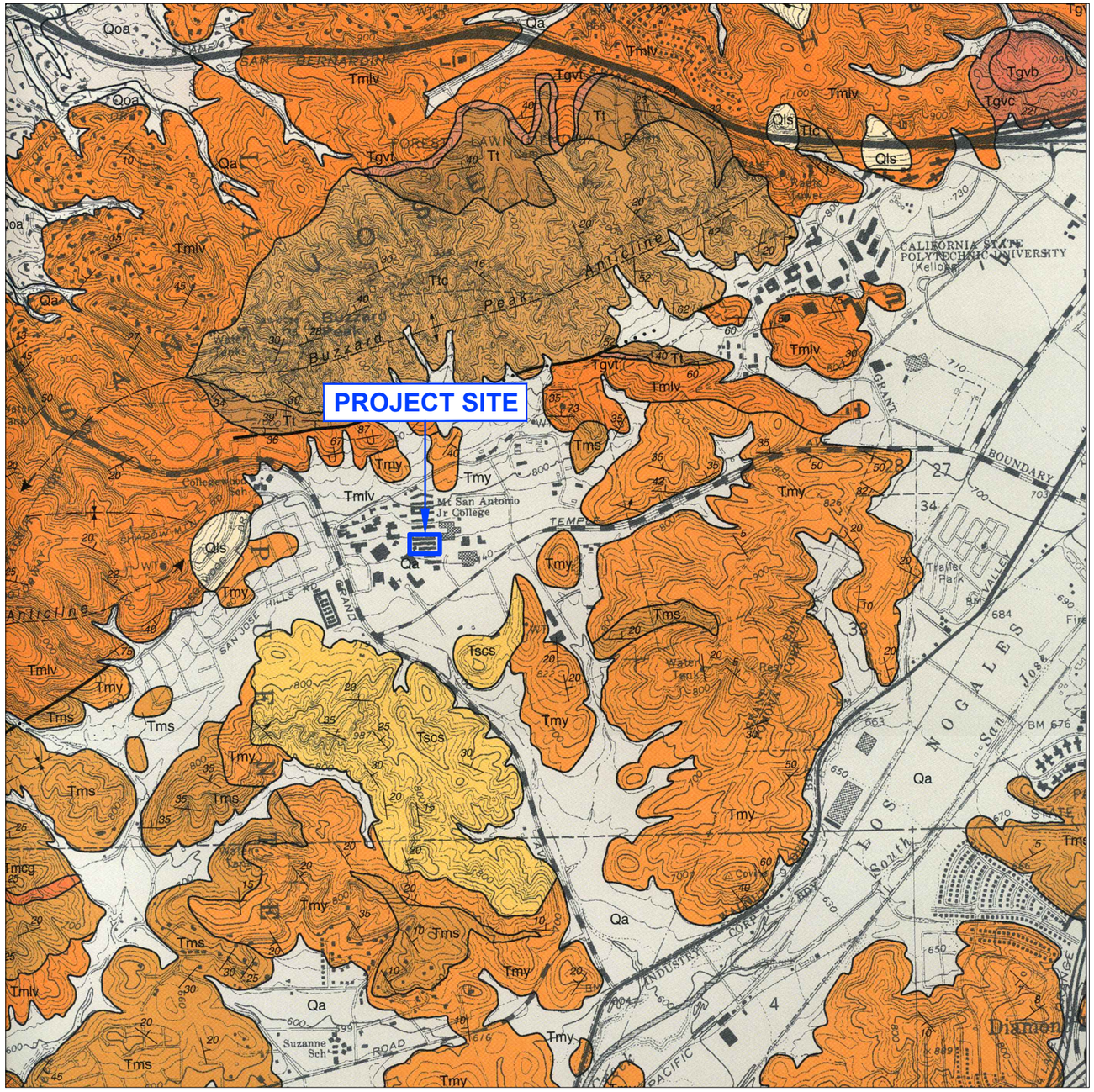
The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. A natural hillside is depicted north of the subject site and has been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and sandstone sedimentary bedrock. Drawing No. 3, *Regional Geologic Map*, has been prepared to show the project site with respect to local geology of the San Dimas Quadrangle.

4.2 Subsurface Profile of Project Site

The earth materials encountered during our investigation consist of existing fill soils placed during previous site grading operations and natural alluvial sediments to the depths explored. Undocumented fills, approximately three (3) to five (5) feet in thickness, were encountered in the borings. Deeper artificial fill may exist at the site. The fills encountered consisted primarily of silty sands, clayey sands, sandy clays, and silty clayey sands. The alluvial soil deposits below the surface fills primarily consists of fine-grained clays, clayey sands, silty sands, silts, and sandy silts. Sampling blow-counts correlate to moderately dense conditions near surface, and generally become denser with depth.

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SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

LANDSLIDE AND TALUS RUBBLE

— *UNCONFORMITY* —

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— *UNCONFORMITY* —

SEDIMENTARY AND VOLCANIC ROCKS

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic; latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg,*** *and siltstone.*

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964; Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

TOPANGA FORMATION

(of Shelton, 1955; Tan. 1998; marine clastic; middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late ? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally intertongued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

— *UNCONFORMITY* —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.*

Holocene / Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

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STUDENT CENTER BUILDING
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WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 3

Drawing No. 4, *Geologic Cross Section A-A'*, and Drawing No. 5, *Geologic Cross Section B-B'*, have been drawn across the subject site to illustrate the subsurface conditions beneath the project site. For a detailed description of the materials encountered during our exploration, see Appendix A*, Field Exploration.*

4.3 Groundwater

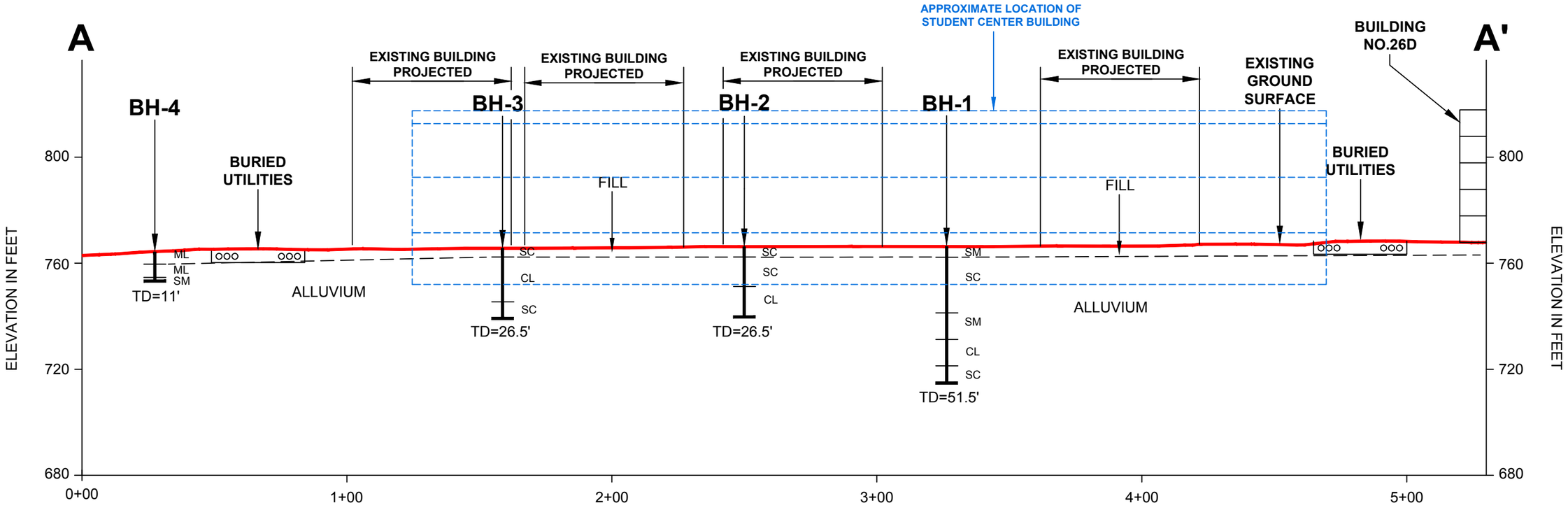
Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs. The regional groundwater table is not expected to be encountered during the planned construction. However, the possibility of perched groundwater encountered during future grading and excavation cannot be completely precluded.

In general, groundwater levels fluctuate with the seasons and from local recharge activities. Local zones of perched groundwater may be present within the near-surface deposits due to buried alluvial channel features and remnants, local recharge conditions or during rainy seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, storm water recharge and groundwater pumping, among other factors.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the project site should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth materials at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions differ significantly from those presented in this report, this office should be notified immediately so that recommendations can be modified, if necessary.

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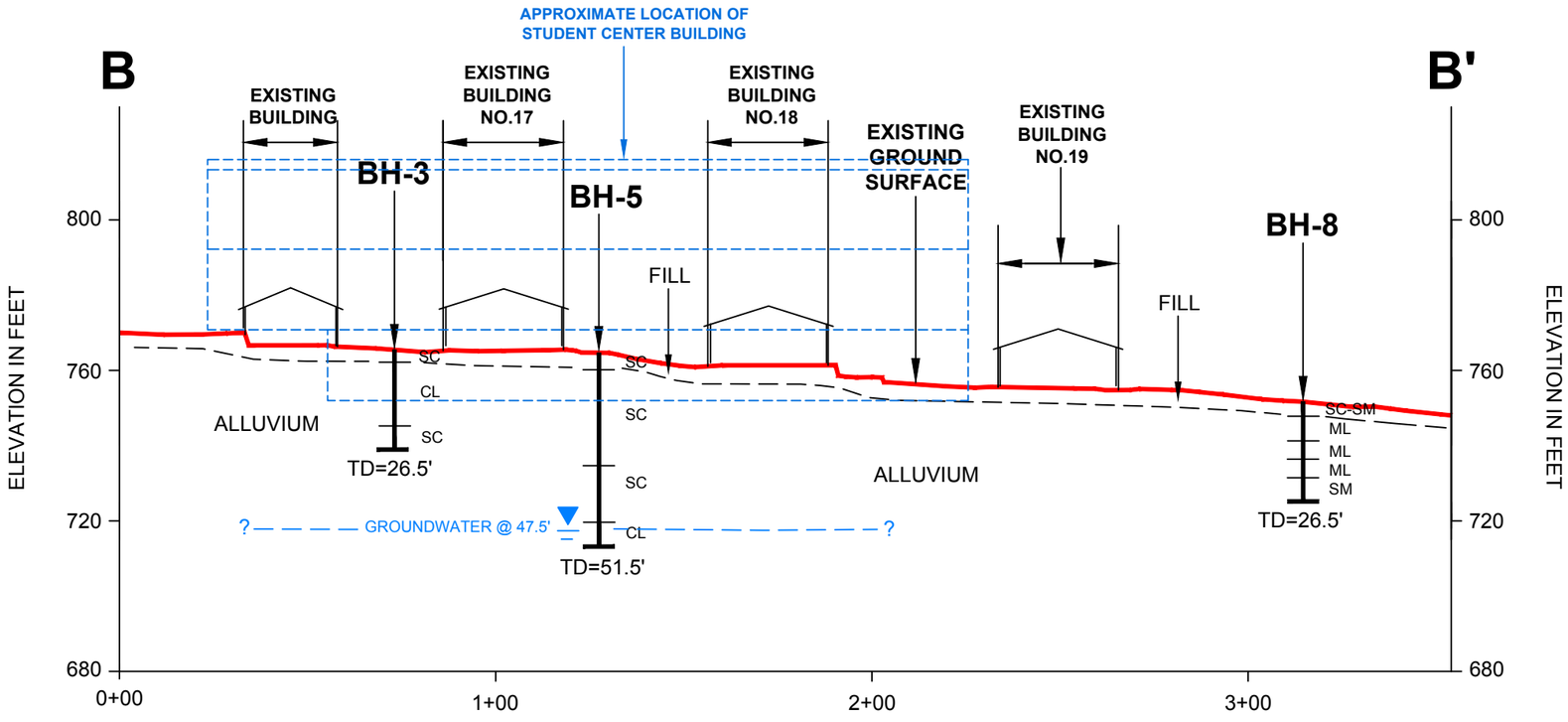
PROFILE
VERTICAL: 1"=40'
HORIZONTAL: 1"=40'

GEOLOGIC CROSS SECTION A-A'

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STUDENT CENTER BUILDING
WALNUT, CALIFORNIA

Project No.	Drawing No.
17-31-234-01	4



PROFILE
VERTICAL: 1"=40'
HORIZONTAL: 1"=40'

GEOLOGIC CROSS SECTION B-B'

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WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 5

5.0 FAULTING AND SEISMIC HAZARDS

Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (located approximately 0.5 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (located approximately 6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults was included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local and regional active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown in Drawing No. 3, *Regional Geologic Map*, and on Drawing No. 6, *Southern California Regional Fault Map*.

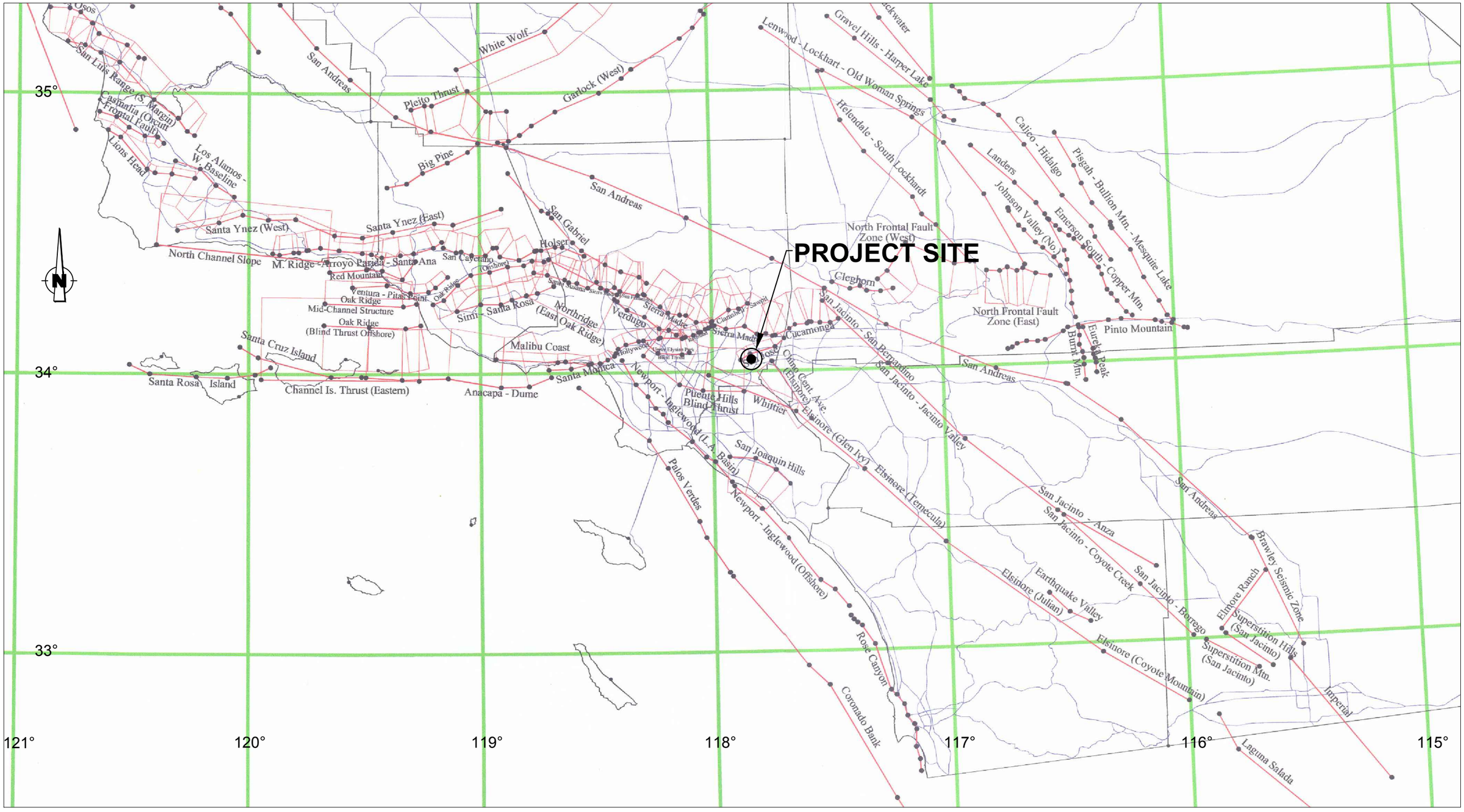
The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age, having exhibited displacement and movement within the past 738,000 years.

5.1.1 San Jose Fault

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped surface trace of the San Jose Fault is located approximately 1,700 feet (0.5 kilometers) north of the project.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose fault is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating

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REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

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WALNUT, CALIFORNIA

Project No.
17-31-234-01

Drawing No.
6

of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

5.1.2 Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The faults lie along the northeast edge of the Puente Hills in the cities of Chino Hills and Chino. The Chino and Central Avenue faults are considered part of the Elsinore fault system which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits. The Chino and Central Avenue faults converge southward into the much larger Elsinore fault system.

The July 29, 2008 Chino Hills earthquake was a magnitude 5.5 earthquake event that caused moderate ground shaking and some minor damage to Mt. San Antonio College campus buildings. The earthquake epicenter was located approximately 15 miles southeast of the campus beneath the Chino Hills and at a depth of approximately 9.1 miles (14.6 km) below the ground surface.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 1, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.5	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00

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Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
Clamshell-Sawpit	19.5	6.5	0.50
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

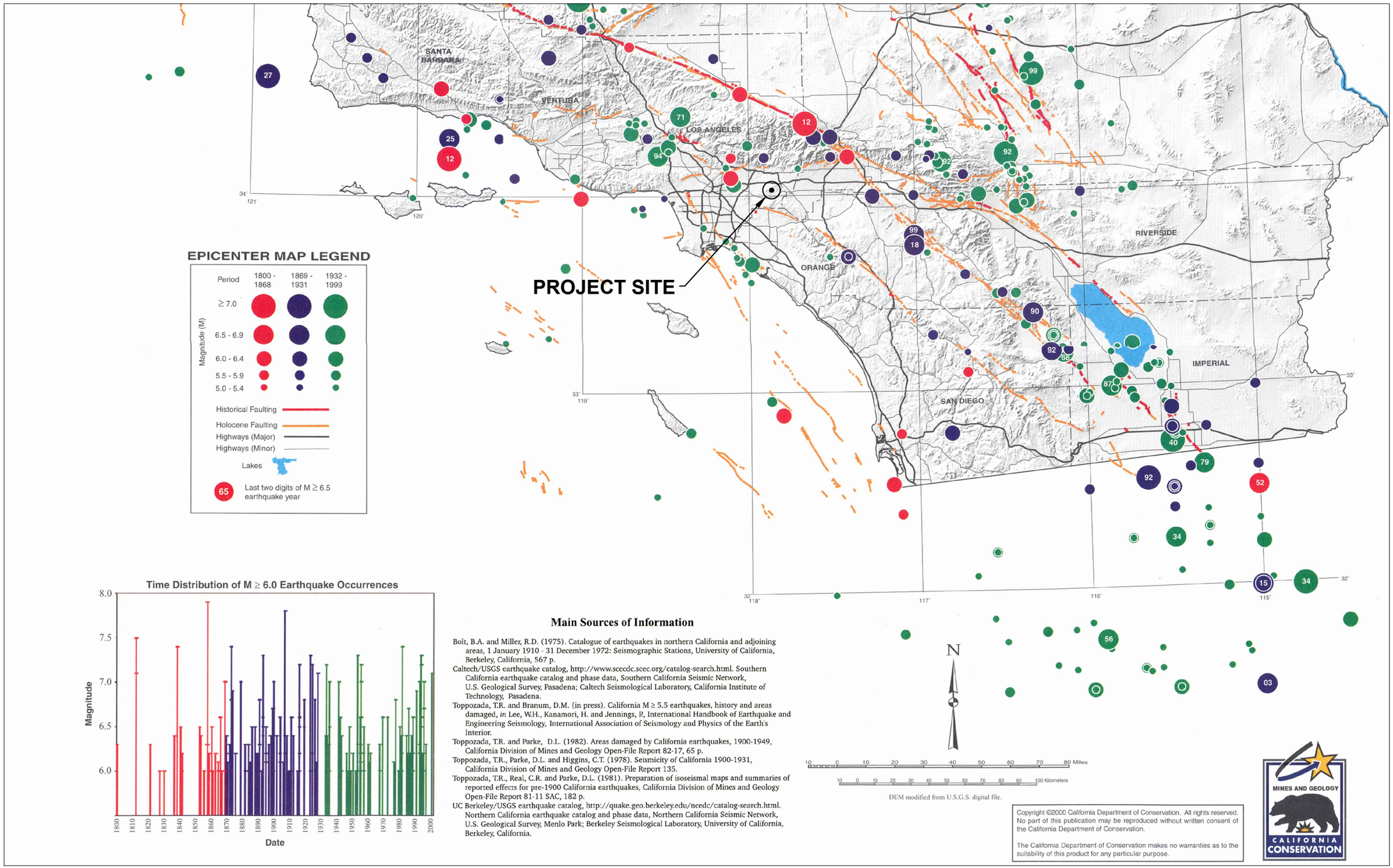
5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the heavily populated Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre, 1994 Northridge and July 2008 Chino Hills earthquakes. The epicenters for these earthquakes are shown in Drawing No. 7, *Epicenter Map of Southern California Earthquakes (1800-1999).*

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EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 — Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

N

10 0 10 20 30 40 50 60 70 80 Miles

10 0 10 20 30 40 50 60 70 80 90 100 Kilometers

DEM modified from U.S.G.S. digital file.

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 7

5.3 Surface Fault Rupture

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. An “active fault” has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault trace. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

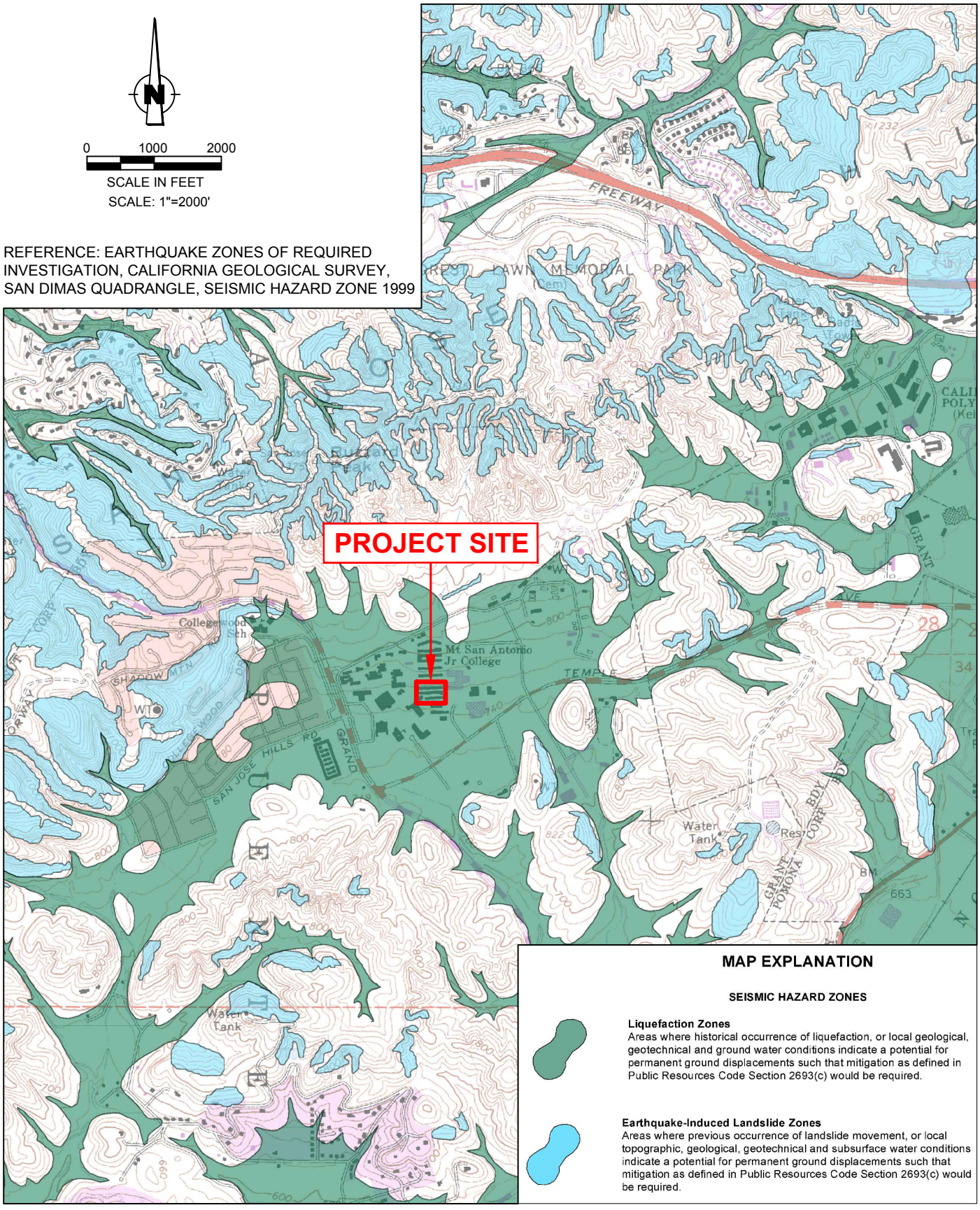
The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 8, *Seismic Hazard Zones Map*. Liquefaction analysis was performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software for the upper 50 feet below ground surface utilizing BH-1. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity of the site is gently sloping to the south, with no

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SEISMIC HAZARD ZONES MAP

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Drawing No.
8

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significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is not shown with any earthquake-induced landslide areas due to the gently, southward sloping ground condition of the site topography.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Map Number 0637C1725F, Panel 1725 of 2350, dated September 26, 2008, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote.

The potential of earthquake induced flooding of the subject site is considered to be remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 40 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard to the project site.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

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6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.04696 degrees North Latitude, -117.84507 degrees West Longitude). The seismic parameters are presented below:

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2016 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.182 g
Mapped 1-second Spectral Response Acceleration, S_1	0.779
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.182 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.169 g
Design Spectral Response Acceleration for short period, S_{DS}	1.454 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.779 g

6.2 Site-Specific Response Spectra

A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years). The controlling source was determined to be the USGS 2008 California Gridded Source, with an MCE of Mw 7.0 and a deterministic peak ground acceleration (PGA) of 1.088g.

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

The 2016 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S. Seismic Design Maps* website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2016 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	D
S_s	2.184	C_{RS}	1.012
S_1	0.780	C_{R1}	1.022
F_a	1	**0.08 F_v/F_a**	0.120
F_v	1.5	**0.4 F_v/F_a**	0.600
S_{MS}	2.184	T_0	0.107
S_{M1}	1.170	T_S	0.536
S_{DS}	1.456	T_L	8
S_{D1}	0.780		

A Site-Specific response analysis, using faults within 200 kilometers of the sites, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 360 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

The probabilistic response spectrum results and peak ground acceleration for each attenuation relationship are presented in the following table.

Table No. 4, Probabilistic Response Spectrum Data

Attenuation Relationship	Boore-Atkinson (2008)	Campbell-Bozorgnia (2008)	Chiou-Youngs (2007)	Probabilistic Mean
Peak Ground Acceleration (g)	0.934	0.910	1.059	0.975

Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.03	1.012	0.974	1.139	1.047
0.05	1.119	1.119	1.308	1.187
0.10	1.598	1.605	1.869	1.696
0.20	2.025	2.051	2.313	2.135
0.30	2.000	1.916	2.213	2.053
0.40	1.932	1.796	2.032	1.925
0.50	1.830	1.711	1.870	1.804
0.75	1.506	1.392	1.487	1.463
1.00	1.202	1.159	1.242	1.201

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Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
2.00	0.639	0.608	0.571	0.608
3.00	0.426	0.398	0.356	0.395
4.00	0.305	0.304	0.253	0.290

Applicable response spectra data are presented in the table below and on Drawing No. 9, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.

Table No. 5, Site-Specific Response Spectrum Data

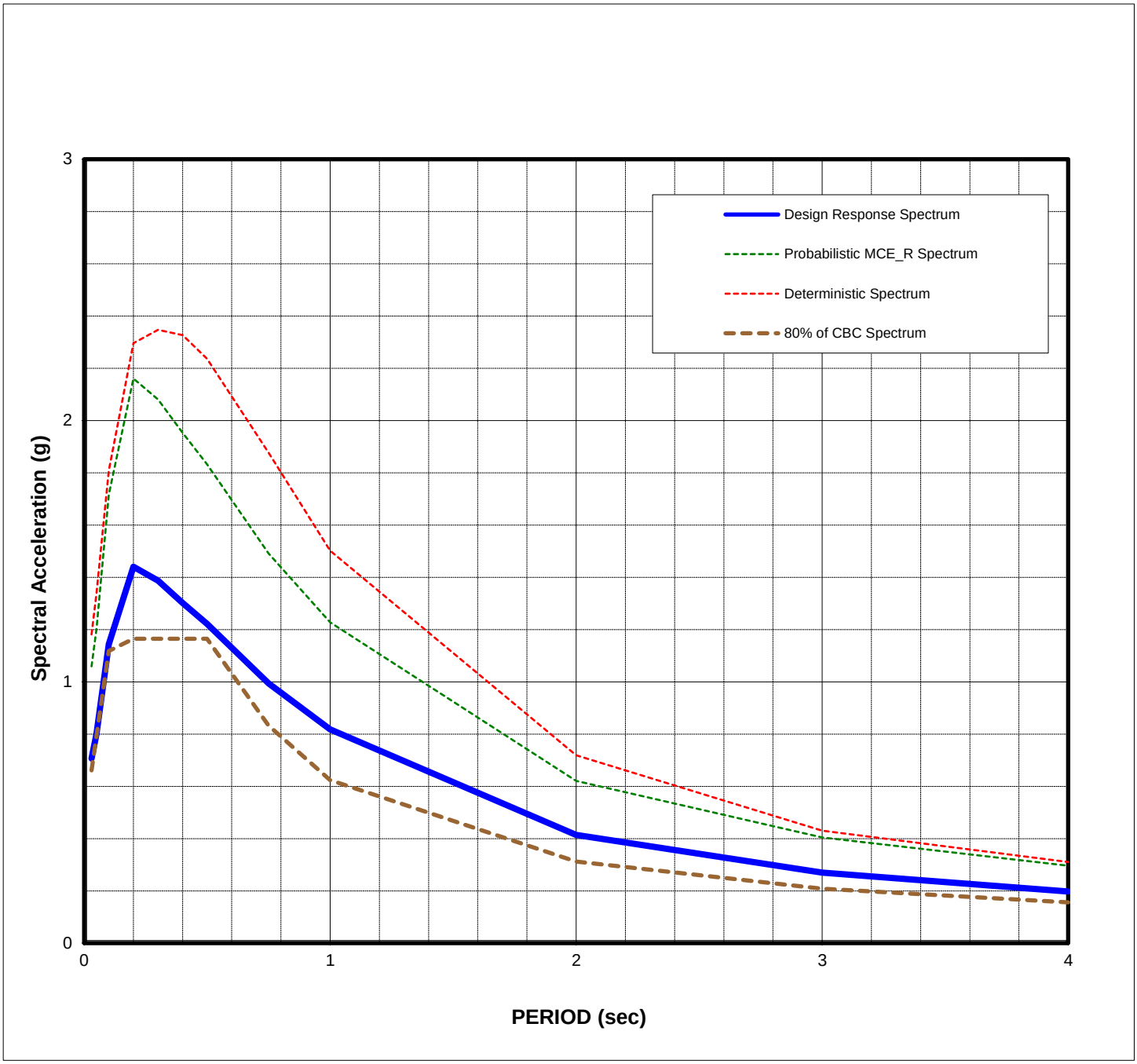
Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.047	1.012	1.060	1.181	0.225	*1.060*	*0.662*	***0.71***
0.05	1.187	1.012	1.201	1.338	0.375	*1.201*	*0.792*	***0.80***
0.10	1.696	1.012	1.716	1.808	0.750	*1.716*	*1.118*	***1.14***
0.20	2.135	1.012	2.161	2.296	1.500	*2.161*	*1.165*	***1.44***
0.30	2.053	1.013	2.080	2.347	1.500	*2.080*	*1.165*	***1.39***
0.40	1.925	1.015	1.953	2.327	1.500	*1.953*	*1.165*	***1.30***
0.50	1.804	1.016	1.832	2.236	1.500	*1.832*	*1.165*	***1.22***
0.75	1.463	1.019	1.491	1.877	1.200	*1.491*	*0.832*	***0.99***
1.00	1.201	1.022	1.227	1.502	0.900	*1.227*	*0.624*	***0.82***
2.00	0.608	1.022	0.621	0.719	0.450	*0.621*	*0.312*	***0.41***
3.00	0.395	1.022	0.404	0.431	0.300	*0.404*	*0.208*	***0.27***
4.00	0.290	1.022	0.296	0.310	0.225	*0.296*	*0.156*	***0.20***

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

Table No. 6, Site-Specific Seismic Design Parameters

Parameters	Value (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-second period Spectral Response Acceleration, S_{MS}	2.161	1.747
Site-Specific 0.1-second period Spectral Response Acceleration, S_{M1}	1.243	0.936
Site-Specific Design Spectral Response Acceleration for short period S_{DS}	1.440	1.165
Site-Specific Design Spectral Response Acceleration for 1-second period, S_{D1}	0.828	0.624

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Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE-SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Student Center

1100 N. Grand Avenue, Walnut, CA 91789

For : Mt. San Antonio College

Project Number:

17-31-234-01

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Drawing No.

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7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- Undocumented fills, approximately three to five feet in thickness, were encountered in the borings. Deeper artificial fill may exist at the site. The fill encountered consists primarily of silty sand, clayey sand, sandy clay, and silty clayey sand. The natural alluvial soil deposits below the surface fills primarily consists of fine grained clays, clayey sand, silty sand, silt, and sandy silt.

- Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs.

- The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. The site can be expected to receive moderate to strong ground shaking from earthquakes on local and regional faults.

- The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

- Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential

- In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

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- Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The test resulted in an average percolation rate of 1.74 inches/hour and a lowest percolation rate of 1.35 inches/hour

- Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various TI conditions are presented in Table No. 11, *Flexible Pavement Structural Sections.*

- Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment

- We recommend the proposed new Student Center Building be supported on shallow spread foundations provided our earthwork recommendations are incorporated in the design and construction.

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8.0 DESIGN RECOMMENDATIONS

8.1 General Evaluation

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

8.2 Shallow Foundations

The proposed new student center building can be supported on shallow continuous and isolated spread foundations founded on compacted fill provided our recommendations and earthwork recommendations are incorporated in the design and construction. These foundations can be tied using grade beams to reduce the differential settlement, if needed.

8.2.1 Vertical Capacity

The proposed new Student Center Building can be supported by conventional shallow footings. We recommend continuous and square footings be founded at least 24 inches below lowest adjacent final grade entirely into compacted fill or into native soil. A minimum footing width of 24 inches is recommended for square footings and 18 inches for continuous footings. The allowable bearing value for footings with above minimum sizes founded on compacted fill and competent native soils may be designed for a net bearing pressure of 2,000 pounds per square foot (psf) for dead-plus-live-loads. The net allowable bearing pressure can be increased by 500 psf for each additional foot of excavation depth and by 250 psf for each additional foot of excavation width up to a maximum value of 4,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

8.2.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.30 may be assumed with normal dead load forces. An allowable passive earth pressure of 240 psf per foot of depth up to a maximum of 2,400 psf may be used for footings poured against properly compacted fill. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

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8.2.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than one (1) inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively. These foundations can be tied using grade beams to reduce the differential settlement, if needed.

8.2.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

8.3 Slabs-on-Grade

Slabs-on-grade should be supported on properly compacted fill. Compacted fill used to support slabs-on-grade should be placed and compacted in accordance with report Section 9.0, *Earthwork Recommendations*.

Slabs-on-grade should have a minimum thickness of five (5) inches nominal for support of normal ground-floor live loads. Minimum reinforcement for slabs-on-grade should be No. 4 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer. A static modulus of subgrade reaction equal to 150 pounds per square inch per inch may be used in structural design of concrete slabs-on-grade.

It is critical that the exposed subgrade soils should not be allowed to desiccate prior to the slab pour. Care should be taken during concrete placement to avoid slab curling. Slabs should be designed and constructed as promulgated by the ACI and Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted.

If moisture-sensitive floor coverings, such as vinyl tile, carpet, or wood floors, are used, slabs should be underlain by a minimum 10-mil thick moisture retarder/barrier in conformance with ASTM E 1745 Class A requirements.

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8.4 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

8.5 Lateral Earth Pressure

The following provisional design values may be used for any utility vaults and/or walls below grade that are less than six (6) feet high.

The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of soil behind the wall, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following earth pressures are recommended for vertical walls with no hydrostatic pressure.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Backfill Slope (H:V)	Cantilever Wall Equivalent Fluid Pressure (pcf)	Restrained Wall Equivalent Fluid Pressure (psf)
Level	40 (triangular pressure distribution)	60 (triangular pressure distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Suitable subdrain systems should be installed around the perimeter of the subterranean walls enclosing interior spaces and moisture sensitive areas to provide adequate drainage and prevent water buildup behind the retaining walls and beneath the bottom floor level. Adequate drainage should be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by a minimum one (1) square foot per lineal feet of free draining, uniformly graded, ¾-inch washed, crushed aggregate, and wrapped in filter fabric such as Mirafi 140N or equivalent. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, rigid Schedule 40 PVC or ABS (SDR-35), with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to solid pipe outlets with glued manufactured pipe fittings, couplings and caps and sloped at a minimum 1-2% gradient to provide gravity flow to a suitable disposal point. The subdrain should be continuous around the perimeter of the wall footing and discharge into a suitable, non-erosive drain outlet with the maximum outlet spacing of 100 feet to a suitable disposal points. Subdrain systems and surface drains systems should be kept separate to prevent recharging of surface water behind the walls.

Subterranean walls and floor levels that retain earth and enclose interior spaces and floors should be waterproofed and dampproofed for moisture sensitive areas to mitigate

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potential moisture migration through the walls and floor slabs. Adequate ventilation of the subterranean floor levels should be provided. Waterproofing of the foundation walls and floor slabs should be performed in accordance with Chapter 18-Soils and Foundations, Section 1805-Damproofing and Waterproofing of the 2014 County of Los Angeles Building Code.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third (1/3) or one-half (1/2) the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Retaining walls taller than six (6) feet should be designed to resist additional earth pressure caused by seismic ground shaking based on Section 1615A.1.6 of CBC 2010. A seismic earth pressure 20H (psf), based on an inverted triangular distribution, can be used for design of wall.

Basement walls can be designed using at-rest pressures provided in Table No. 7, *Lateral Earth Pressures for Retaining Wall Design*. The seismic earth pressure does not need to be added to the at-rest pressures for the basement retaining wall design.

8.6 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test two (2) samples taken in the general area of the proposed structure. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized in the following table:

Table No. 8, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) % by Weight	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-1	0-5.0	6.78	145	0.014	2,700
BH-9	0-5.0	7.16	240	0.019	2,200

In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

In general, conventional corrosion mitigation measures may include the following:

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- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed.

- Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

The test results presented herein are considered preliminary. If advanced corrosivity study is desired by the design team, a corrosion engineer can be consulted for appropriate mitigation procedures and construction design.

8.7 Percolation Testing

Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The tests were performed using the falling head test method in accordance with Los Angeles County "Low Impact Development Best Management Practice Guideline for Design, Investigation, and Reporting".

The result of the percolation test can be seen below and in Appendix E, *Percolation Testing.*

Table No. 9, Boring Percolation Test Result

Boring No.	Depth of Test (feet)	Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-4	0.0-10.0	Silt (ML) over Sandy Silt (ML)	1.74	1.35

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.3 inch per hour. The project Civil Engineer shall review the data of percolation test presented in Appendix E to determine specific soil layers and percolation rates for design of the proposed infiltration system. Infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system. A proposed infiltration system must comply with the following setbacks in accordance with Los Angeles County guideline.

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Table No. 10, Infiltration Facility Setback Requirements per Los Angeles County

Setback from	Distance
Property lines and public right of way	5 feet
Any foundation	15 feet or within 1:1 plane drawn up from the bottom of foundation, whichever greater
Face of any slope	H/2, 5 feet minimum (H is height of slope)
Water wells used for drinking water	100 feet
Historically highest groundwater levels	10 feet above

8.8 Flexible Pavement Design

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 with a safety factor of 0.2 for asphalt concrete over aggregate base and 0.1 for a full depth asphalt concrete section. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values was evaluated. Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various TI conditions are presented in the following table:

Table No. 11, Flexible Pavement Structural Sections

Design R-value	Design TI	AC over AB Structural Section		Full Section AC
		AC (inches)	AB (inches)	
17	4	4.0	4.0	5.0
	5	4.0	8.0	7.0
	6	5.0	9.5	8.5
	7	6.0	11.5	10.0
	8	7.0	13.0	11.5
	9	8.0	14.5	13.0

Actual traffic index and traffic load should be determined by either a Civil Engineer or Traffic Engineer. The above pavement sections are recommended as a guideline for basic usage of the indicated TI values, and may not be sufficient for actual traffic loading.

Base material shall conform to requirements for a Class 2 Aggregate Base (AB) or equivalent (such as crushed miscellaneous base (CMB)) and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, Latest Edition).

Asphaltic materials should conform to Section 203-1, "*Paving Asphalt*," and should be placed in accordance with Section 302-5, "*Asphalt Concrete Pavement*," of the SSPWC.

We recommend the subgrade pavement areas be over-excavated and recompacted at least 2 feet below existing soil subgrade where space and buried utility lines permit. If

loose, soft, yielding soil conditions are encountered at the excavation bottom, then additional mitigation measures should be considered including deeper removal and re-compaction of site soils, bridging soft bottoms with imported base materials and/or placement of a geofabric layer to reinforce the soil subgrade. The soil subgrade materials should be processed, mixed, moisture conditioned as needed to near optimum moisture content, and compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557). Imported base materials should be compacted to at least 95 percent relative compaction.

8.9 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the foundation shall have a minimum 2 percent slope away from the building per 2016 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils.

8.10 Slope Maintenance and Erosion Control

Existing slopes and landscaped areas require periodic inspections and maintenance for proper upkeep and to help assure their continued stability. Most soil erosion problems are associated with water and site drainage. Maintaining adequate positive drainage and slope planting is important for erosion control. Drainage related items requiring periodic inspection and maintenance include:

- Compacted earth berms, side swales, and non-erosive drainage devices should be installed to prevent water from flowing uncontrolled over the tops of slopes and walls. It is important that these devices be maintained and free of obstruction.

- Periodic inspections of the slope areas, interceptor drains, terrace drains and down drains should be performed to check for proper operation. These drainage devices should be checked before the winter rainy season and before and after major storms.

- Interceptor drains, terrace drains, down drains, drain pipes, catch basins and drainage devices should be kept clean of debris and maintained in good working order to provide adequate drainage for slope areas. Control joints and cracks in concrete or asphalt drainage devices should be sealed and/or resealed to prevent infiltration of water into slope soils. The drainage devices should be routinely checked for proper operation and cleared of silt and debris.

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- Rodent activity should be controlled to prevent loosening of soils and water penetration. Animal burrows should be filled with compacted soils since they may cause diversion of surface runoff, promote accelerated erosion, or cause shallow slope failures.

- Slope areas disturbed by foot traffic, trails, erosion and gullies should be repaired with compacted soils and re-planted to prevent slope erosion. Site users should be encouraged to use designated trails, pathways, stairways and service roads for access.

- Slope planting should be maintained for erosion control. Nylon and jute netting can be used to protect and maintain exposed slope surfaces until a dense growth of vegetation has been established. Graded slopes may require more time to establish plant growth. The optimal goal of planting is to achieve a dense growth of vegetation (which includes plants of varying root depths) requiring little watering. Bare spots, areas of little growth and areas with deteriorated mesh or plant cover, may have to re-seeded and/or replanted with new mesh and plants for erosion control. Loose soils, plant cuttings and debris should not be permitted to accumulate on the slopes.

- Landscape watering should be controlled and be just sufficient to sustain plant growth. Seasonal adjustments to the amount of watering should be performed prudently, with periodic monitoring and regulation. Slope areas should not be over-watered. Sprinkler and irrigation systems should be maintained and adjusted to prevent overwatering of slopes and landscaping. Irrigation leaks should be stopped and repaired as soon as possible to prevent wasting of water and soil erosion. Wet spots may indicate a leaking or broken water line or control valve.

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9.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

9.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading will be required to prepare the sites for support of the proposed structures that are constructed with conventional shallow spread footings. To reduce differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation.

Site preparation for the proposed structures will require removal of existing structures, footings, slabs, improvements, pavements, sidewalks, trees, grass and roots, organic rich top soils and other existing underground manmade structures and utilities. Top soils containing organic rich materials are not acceptable for reuse as compacted fill soils beneath the building pad and structures.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing. Rocks larger than three (3) inches in the largest dimension should not be placed as fill.

On-site clayey soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

9.2 Over-Excavation

Undocumented fill soils approximately three (3) to five (5) feet in thickness were encountered in the borings. All undocumented fill soils and unsuitable or disturbed on-site soils in the building structure area and to five (5) feet beyond the building limits and appendages should be removed and be recompacted to provide at least three (3) feet of properly compacted fill beneath the bottom of the building foundations. A minimum removal of 24 inches should be anticipated for all concrete flatwork and for minor non-load bearing and lightly loaded minor structures, the paving areas for parking and driveways. The actual depth of fill removal and re-compaction should be determined in the field during grading by the project geotechnical engineer or his representative.

The on-site soils and undocumented fill soils in the upper five (5) feet and five (5) beyond the building limits should be completely over-excavated and recompacted for building slab

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and foundation support. If loose, disturbed or otherwise unsuitable soil materials are encountered at the bottom of excavations, deeper removals will be required until firm and unyielding native soils are encountered. The final bottom surfaces of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing any compacted fill. The bottoms should be proof rolled with a loaded, heavy, rubber tired piece of grading equipment to identify loose or soft bottom areas. All fill soils should be placed on competent native materials or properly compacted fill as determined by the project geotechnical engineer or his representative. The excavations to remove undocumented fill soils and unsuitable soils should be extended to five (5) feet beyond the proposed structure limits where space is available. Localized deeper removal will be needed where firm native soils are not exposed on the excavation bottom. For pavement, flatwork and hardscape areas, the upper 24 inches of subgrade soils should be over-excavated and recompacted.

Existing foundations, footings and utilities that are to remain in place should not be undermined during grading and construction and shall be properly supported.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned to above three percent (3%) of the optimum moisture content for fine-grained soils and within three percent (3%) of the optimum moisture content for granular soils, mixed and compacted to at least 90 percent (90%) relative compaction (laboratory maximum density evaluated per ASTM D1577). Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Mirafi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading by the project geotechnical engineer or his representative. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

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9.3 Structural Fill

Following observation of the excavation bottom, subgrade soil surfaces should be scarified to a depth of at least six inches. The scarified soil should be moisture-conditioned within three (3) percent of optimum moisture for granular soils and to approximate three (3) percent above the optimum moisture for fine-grained soil. Scarified soil shall be compacted to a minimum 90 percent of the laboratory maximum dry density as determined by the ASTM Standard D1557 test method.

Any import fill should be tested and approved by project geotechnical engineer or his designated representative. The import fill should have an expansion potential less than 20. The imported materials should be thoroughly mixed and moisture conditioned within three (3) percent above the optimum moisture. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory maximum dry density in accordance with the ASTM Standard D1557 test method.

Where the fill is not within the areas specified above or is not to support any structures, excavated site soils, free of deleterious materials and rock particles larger than three inches in the largest dimension, should be suitable for placement as compacted fill. The site materials should be thoroughly processed, mixed and moisture conditioned to approximate three (3) percent above the optimum moisture for fine-grained soils and within three (3) percent of the optimum moisture content for granular soils, and then compacted to at least 90 percent of relative compaction.

9.4 Subgrade Preparation

Final subgrade soils for proposed structures and pavement should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed, moisture conditioned and uniformly compacted. The subgrade soils should be properly moisture conditioned before placing concrete.

9.5 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment.

9.6 Pipeline Subgrade Preparation

The final subgrade surface should be level, firm, uniform, and free of loose materials and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles, larger than three (3) inches in dimension, if any, should be removed from the trench bottom and replaced with compacted on-site materials.

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9.7 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe, to 12 inches above the pipe.

The load on the rigid pipes and deflection of flexible pipes and, hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe. Care should be taken to densify the bedding material below the spring line of the pipe.

Bedding material for the pipes should be free from oversized particles (greater than 1-inch). One (1) Sand Equivalent (SE) test was conducted on a representative soil sample with a result of 15. Based on the SE test result, the site soils at the pipe invert depths has an SE value less than 30 and is not suitable to be used as pipe bedding. Pipe design generally requires a granular material with a Sand Equivalent (SE) greater than 30. To provide uniform and firm support for the pipe, compacted granular materials such as clean sand or crushed stone encasement may be used as pipe bedding material. For nominal pipe size, up to and including 15 inches, the crushed rock used as bedding should have a maximum size of ½ inch, whereas for pipe sizes over 15 inches, the maximum rock size should be ¾ inch.

Migration of fines from the surrounding soils must be considered in selecting the gradation of any imported bedding material. To avoid migration of fines, commercially available geofabric (used for filtration purposes) such as (i.e., Mirafi HP570, 140N, 180N or equivalent) may be used (wrapped around the bedding material encasing the pipe) to separate the bedding material from the surrounding native or fill soils.

9.8 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface.

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement. Excavated on-site soils free of oversize particles, defined as larger than one (1) inch in maximum dimension in the upper 12 inches of subgrade soils and larger than three (3) inches in the largest dimension in the trench backfill below, and deleterious matter after proper processing may be used to backfill the trench zone. Imported trench backfill, if used, should be approved by the project soils consultant prior to delivery at the site. No more than 30 percent of the backfill volume should be larger than ¾ inch in the largest dimension.

Trench backfill shall be compacted to 90 percent of the laboratory maximum dry density as per ASTM Standard D1557 test method. At least the upper twelve (12) inches of

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trench underlying pavements should be compacted to at least 95 percent of the laboratory maximum dry density.

Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content and then placed in horizontal layers if the expansion index is less than or equal to 20. Should the expansion index be greater than 20, backfill materials shall be brought to approximately 3 percent above optimum moisture content. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D6938 test methods or equivalent. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained. It should be the responsibility of the contractor to maintain safe conditions during cut and/or fill operations. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

9.8.1 Select Imported Fill Materials for Trench Zone Backfill

Imported soils, if any, used as compacted trench backfill should be predominantly granular and meet the following criteria:

- Expansion Index less than 20
- Free of all deleterious materials
- Contain no particles larger than 3 inches in the largest dimension
- Contain less than 30 percent by weight retained on ¾-inch sieve
- Contain at least 15 percent fines (passing #200 sieve)
- Have a Plasticity Index of 10 or less

Any import fill should be tested and approved by the geotechnical representative prior to delivery to the site.

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9.9 Expansive Soil Mitigation

Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential. The on-site soil materials may be mixed during the grading and the expansion potential might change. Due to this, the expansion potential of site soils should be verified during and after site grading as needed for slabs, foundations and pavement placed directly on expansive subgrade soils will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. The extent of removal should be determined by the project geotechnical engineer or his representative based on soil observations made during grading.

9.10 Shrinkage and Subsidence

Soil shrinkage and/or bulking as a result of remedial grading depends on several factors including the depth of over-excavation, and the grading method and equipment utilized, and average relative compaction. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

The approximate shrinkage factor for the native alluvial soils is estimated to range from five (5) to fifteen (15) percent. For estimation purposes, ground subsidence may be taken as 0.15 feet as a result of remedial grading.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

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10.0 CONSTRUCTION CONSIDERATIONS

10.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 10.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required.

10.2 Temporary Excavations

Based on the sandy clay and silty sand materials encountered near surface in the exploratory borings, sloped temporary excavations (if necessary) may be constructed according to the slope ratios presented in the following table, *Slope Ratios for Temporary Excavations*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 12, Slope Ratios for Temporary Excavations

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 4	vertical
4 – 8	1:1
8+	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to minimize raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical engineer or engineering geologist. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

10.3 Geotechnical Services During Construction

This report has been prepared to aid in the site preparation and site grading plans and specifications, and to assist the architect, civil and structural engineers in the design of

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the proposed structure. It is recommended that this office be provided an opportunity to review final design drawings and specifications to verify that the recommendations of this report have been properly implemented.

Recommendations presented herein are based upon the assumption that adequate earthwork monitoring will be provided by Converse. Excavation bottoms should be observed by a Converse representative prior to the placement of compacted fill. Structural fill and backfill should be placed and compacted during continuous observation and testing by this office. Footing excavations should be observed by Converse prior to placement of steel and concrete so that footings are founded on satisfactory materials and excavations are free of loose and disturbed materials.

During construction, the geotechnical engineer and/or their authorized representatives should be present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

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11.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

This report was prepared for Mt. San Antonio College for the subject project described herein. We are not responsible for technical interpretations made by others of our exploratory information. Specific questions or interpretations concerning our findings and conclusions may require a written clarification to avoid future misunderstandings.

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Appendix A

Field Exploration

APPENDIX A: FIELD EXPLORATION

Field exploration included an initial site reconnaissance, and subsurface drilling. During the site reconnaissance, surface conditions were noted and the locations of the test borings were determined. Borings were approximately located using existing features and GPS as a guide.

Prior to field exploration, Underground Service Alert (USA) was notified 48 hours in advance. The proposed boring sites were evaluated by Ground Penetrating Radar Systems, Inc. to check for buried utility lines. Any borings located within or near the utility markings was relocated to a different location within the local proximity. High concentrations of buried utility lines were located beneath planter areas and sidewalks on the east and west sides of the project site.

Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) or by hand auger methods (BH-4 and BH-6) in limited access areas. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils, in accordance with the Unified Soil Classification System. Per the college's instruction, the top five feet of soil were advanced using a hand-auger to check for buried utility lines. Field descriptions have been modified, where appropriate, to reflect laboratory test results.

Relatively undisturbed ring and bulk samples of the subsurface soils were obtained at frequent intervals in the borings. The undisturbed samples were obtained using a California Steel Sampler (2.4 inches inside diameter and 3.0 inches outside diameter) lined with thin sample rings. The sampler was driven into the bottom of the boreholes with successive drops of a 140-pound hammer falling 30 inches by means of a mechanically driven automatic trip hammer. The number of successive drops of the driving weight ("blows") required for every 6-inch of penetration of the sampler are shown on the Logs of Borings in the "blows" column.

The soil was retained in brass rings (2.4 inches in diameter and one inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the laboratory. Bulk soil samples were also collected in plastic bags and brought to the laboratory.

Standard Penetration Tests (SPTs) were also performed. In this test, a standard split-spoon sampler (1.4 inches inside diameter and 2.0 inches outside diameter) was driven into the ground with successive drops of a 140-pound hammer falling 30 inches by means of an automatic hammer. The number of successive drops of the driving weight ("blows") required for every 6-inch of penetration of the sampler are shown on the Logs of Borings

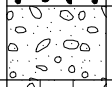
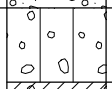
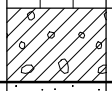
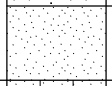
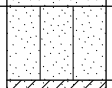
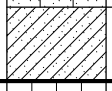
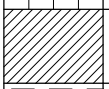
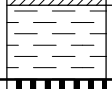
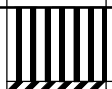
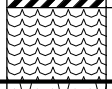
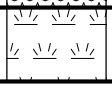
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in the "blows" column. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. A-2a through A-9, *Log of Borings.*

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE			SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GRAB SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

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Project No. **17-31-234-01**

Figure No. **A-1**

Log of Boring No. BH-1

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 769 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to coarse-grained, few gravel, brown, grass and roots top 6-inches.		■				ca,er ma (fc=21.2%)
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to coarse-grained, reddish brown.	■		2/4/6	13	118	c
		-fine to coarse-grained, trace gravel up to 1" in maximum dimension, reddish brown						
10		-fine to coarse-grained, trace organics (roots), reddish brown	■		4/5/6	11	116	
15		-fine to coarse-grained, trace gravel up to 3/4" in maximum dimension, reddish brown	■		3/4/5	11	117	wa (fc=29%)
20			■		8/13/23	13	122	
25		**SILTY SAND (SM):** trace clay, reddish brown.	⊠		10/16/20			wa (fc=37%)
30		-fine to coarse-grained, trace clay, reddish brown	■		19/16/22	14	117	

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Project No. **17-31-234-01**

Figure No. **A-2a**

Log of Boring No. BH-1

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 769 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		SANDY CLAY (CL): fine to medium-grained, trace silt, reddish brown.	X		11/21/27			wa (fc=51%)
40			■		24/50(6")	12	126	
45		**CLAYEY SAND (SC):** fine to medium-grained, trace silt, reddish brown.	X		8/5/6			wa (fc=45%)
50			■		9/11/15	20	105	
		End of boring at 51.5 feet Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-2b**

Log of Boring No. BH-2

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 767 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine to coarse-grained, brown, grass and roots top 6-inches.						
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to coarse-grained, reddish brown.	■		6/9/11	11	122	
10		-trace gravel 1/2" in maximum dimension,	■		4/5/5	12	133	
15		**SANDY CLAY (CL):** fine to coarse-grained, brown.	⊠		3/3/3			
20		-light brown	■		10/21/26	11	122	
25		-fine to coarse-grained, reddish brown	⊠		11/8/11			
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17						

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Project No. **17-31-234-01**

Figure No. **A-3**

Log of Boring No. BH-3

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 766 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, trace silt, brown, grass and roots top 6-inches.						max
		ALLUVIUM (Qal): **SANDY CLAY (CL):** fine to coarse-grained, trace silt, brown.						
5			■		10/12/10	8	122	ds
10			■		4/6/7	11	115	
15			⊠		2/3/8			
20		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, trace gravel, brown with white mottling.	■		9/20/30	13	112	
25			⊠		6/16/22			
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-4**

Log of Boring No. BH-4

Dates Drilled: 8/24/2017 Logged by: RAM Checked By: MBS

Equipment: Hand Auger Driving Weight and Drop: N/A

Ground Surface Elevation (ft): 762.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILT (ML):** dark brown, grass and roots top 6-inches.						
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** fine to coarse-grained, brown.	■			12	108	
10		**SILTY SAND (SM):** with gravel, brown.	■			10	110	
		End of hand auger boring at 11 feet. Groundwater not encountered during drilling. Performed field percolation test. Borehole backfilled with soil cuttings and tamped on 8-24-17.						

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Project No. **17-31-234-01**

Figure No. **A-5**

Log of Boring No. BH-5

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): 47.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine-grained, some silt, brown, grass and roots top 6-inches.						ei
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine-grained, trace silt, reddish brown.	■		8/15/20	12	126	
10		-fine to coarse-grained, gravel up to 1/2" in maximum dimension, reddish brown	■		4/4/5	9	127	c
15		-fine to coarse-grained, reddish brown	■		11/21/31	16	118	
20			⊠		5/6/10			
25		fine to coarse-grained, reddish brown	■		11/16/19	11	123	
30		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, reddish brown.	⊠		5/14/16	15	116	

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Project No. **17-31-234-01**

Figure No. **A-6a**

Log of Boring No. BH-5

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): 47.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		CLAYEY SAND (SC): fine to coarse-grained, reddish brown.	■		22/25/22	15	116	
40			☒		9/15/21			
45		**SANDY CLAY (CL):** fine to coarse-grained, reddish brown.	■		10/14/15	15	115	
50			☒		15/10/10			
		End of boring at 51.5 feet. Groundwater encountered at 47.5 feet. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-6b**

Log of Boring No. BH-6

Dates Drilled: 8/24/2017 Logged by: RAM Checked By: MBS

Equipment: Hand Auger Driving Weight and Drop: N/A

Ground Surface Elevation (ft): 763 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SANDY SILT (ML):** fine to coarse-grained, brown, grass to roots top 6-inches.						
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** fine to coarse-grained, light brown.				12	115	
10						14	117	
		End of hand auger boring at 11 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched on 8-24-17.						

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Figure No. **A-7**

Log of Boring No. BH-7

Dates Drilled: 8/15/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 754.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILT (ML):** light brown, grass and roots top 6-inches.						r,ca,er
5		**ALLUVIUM (Qal):** **SILT (ML):** light brown.			7/10/14	8	117	
10		**CLAYEY SAND (SC):** fine to coarse-grained, with gravel, brown.			11/18/18	12	115	ds
15		-with gravel, reddish brown			10/19/24	12	117	
20		**SAND (SP):** fine to coarse-grained, with gravel, weathered rock, white.			26/16/30			
25		**SANDY SILT (ML):** with gravel, weathered rock particles, reddish brown.			11/30(4")	10	121	
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-15-17.						

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Project No. **17-31-234-01**

Figure No. **A-8**

Log of Boring No. BH-8

Dates Drilled: 8/15/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 752 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY CLAYEY SAND (SC-SM):** few gravel, brown, grass and roots top 6-inches.						ma,se (fc=38.9%)
5		**ALLUVIUM (Qal):** **SILT (ML):** brown.	■		17/21/17	14	120	
10		**SANDY SILT (ML):** fine coarse-grained, with gravels, brown.	■		5/7/9	13	118	
15		**SILT (ML):** with gravels.	■		13/25/30	14	120	
20		**SILTY SAND (SM):** fine to coarse-grained, light brown.	⊠		10/12/22			
25			■		20/30/35	10	124	
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-15-17.						

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Project No. **17-31-234-01**

Figure No. **A-9**

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

B1.1 Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

B1.2 Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analysis was performed on two (2) selected samples. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

B1.3 Maximum Dry Density Test

A laboratory maximum dry density-moisture content relationship test was performed on one (1) representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented in Drawing No. B-2, *Moisture-Density Relationship Result*.

B1.4 Direct Shear

Direct shear tests were performed on two (2) relatively undisturbed soil sample. The test was performed at soaked moisture conditions. For this test the sample, contained in brass sampler rings, was placed directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The sample was then sheared at a constant strain rate of 0.004 inch/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-3 and B-4, *Direct Shear Test Results,* and in the following table:

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Table No. B-1, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Ultimate Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-3	5.0	Clayey Sand (SC)	30	240
BH-7	10.0	Clayey Sand (SC)	32	530

B1.5 Consolidation Test

A Consolidation test was performed on two (2) relatively undisturbed samples. Data obtained from this test was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-5 and B-6, *Consolidation Test Results*.

B1.6 Soil Corrosivity

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test two (2) bulk soil samples taken in the general area of the proposed structure. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized in the following table:

Table No. B-2, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) % by Weight	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-1	0-5.0	6.78	145	0.014	2,700
BH-9	0-5.0	7.16	240	0.019	2,200

B1.7 Expansion Index

One (1) representative bulk sample was tested to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with ASTM D4829 Standard. Test results are presented in the following table:

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Table No. B-3, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-5	0-5.0	Sandy Silt (ML), trace clay	2.3	Very Low

B1.8 Sand Equivalent

One (1) representative soil sample were tested in accordance with the ASTM D2419 test method. The test result is presented in the following table.

Table No. B-4, Sand Equivalent Test Result

Boring No.	Depth (feet)	Soil Description	Sand Equivalent
BH-5	0-5.0	Silty Clayey Sand (SC-SM)	25

B1.9 R-value

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with State of California Standard Method 301. This test is designed to provide a relative measure of soil strength for use in pavement design. The test result is shown in the following table, *R-value Test Results*:

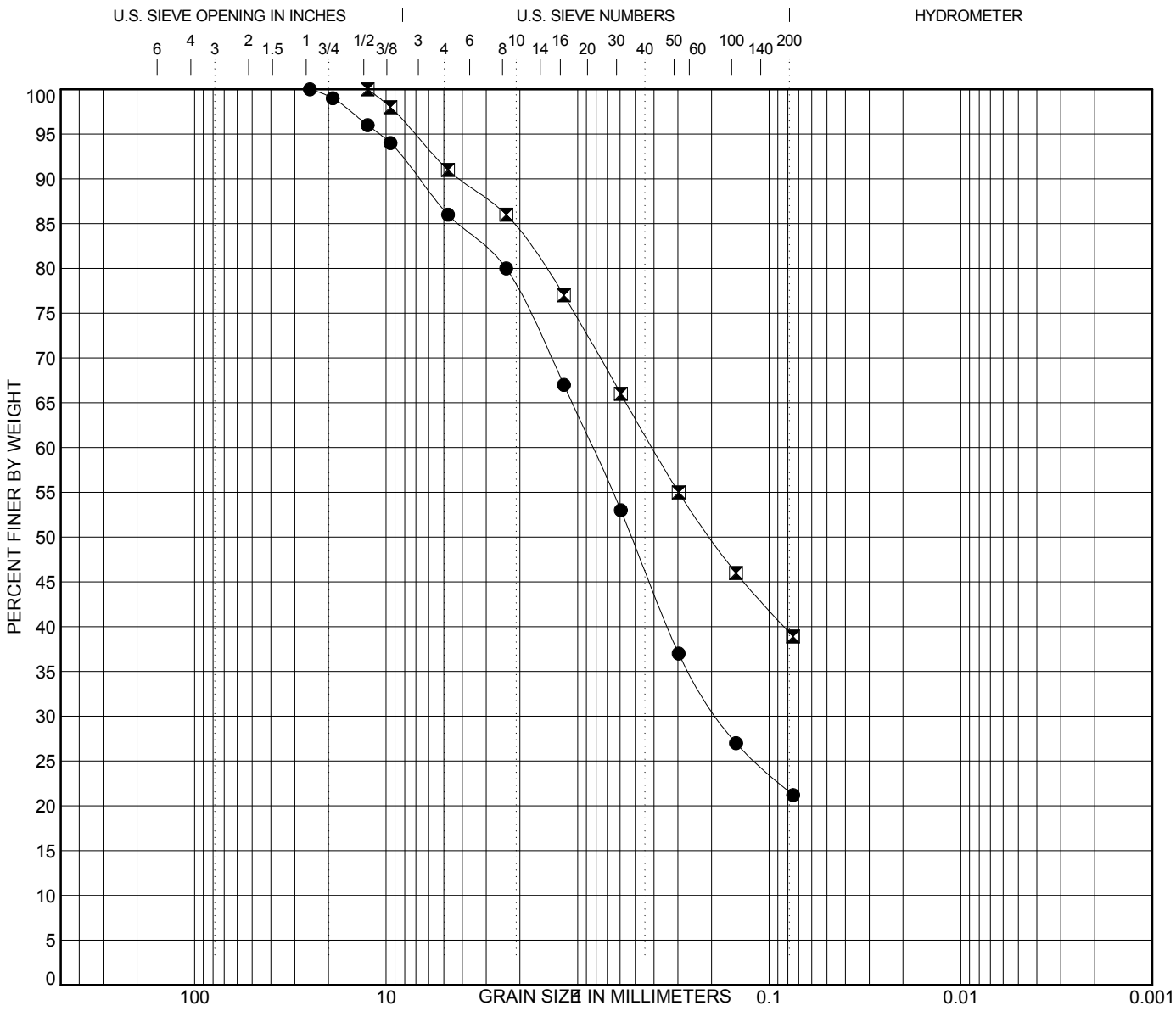
Table No. B-5, R-value Test Results

Boring No.	Depth (ft)	Soil Classification	Measured R-value
BH-7	0-5.0’	Silt (ML)	17

B1.10 Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-1**	**0-5**	**SILTY SAND (SM)**					
⊠	**BH-8**	**0-5**	**SILTY CLAYEY SAND (SC-SM)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-1**	**0-5**	**25**	**0.838**	**0.183**		**14.0**	**64.8**	**21.2**	
⊠	**BH-8**	**0-5**	**12.5**	**0.407**			**9.0**	**52.1**	**38.9**	

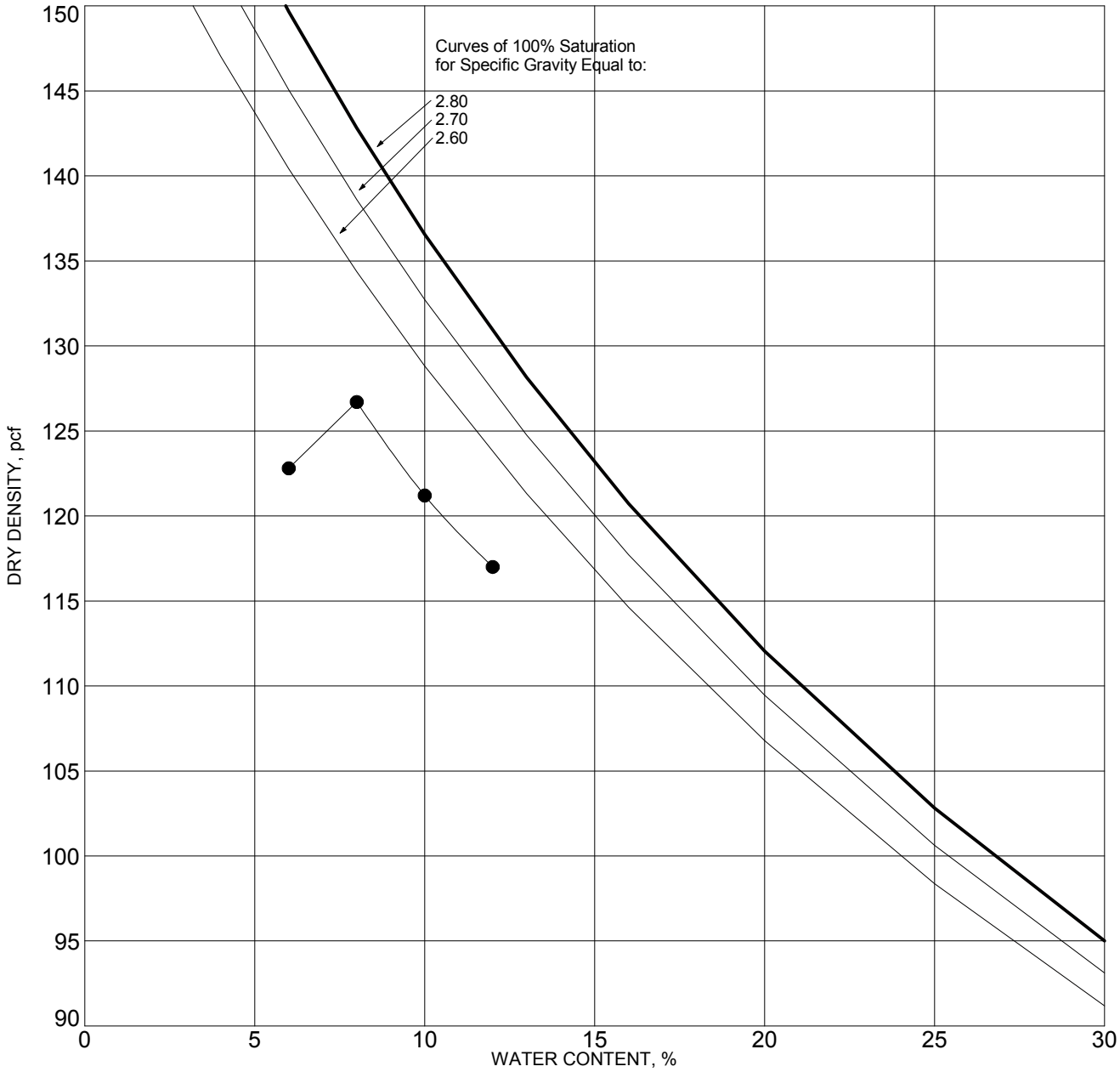
GRAIN SIZE DISTRIBUTION RESULTS

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.
17-31-234-01

Figure No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-3	0-5.0	CLAYEY SAND (SC)	D1557 Method B	9	127

NOTE:

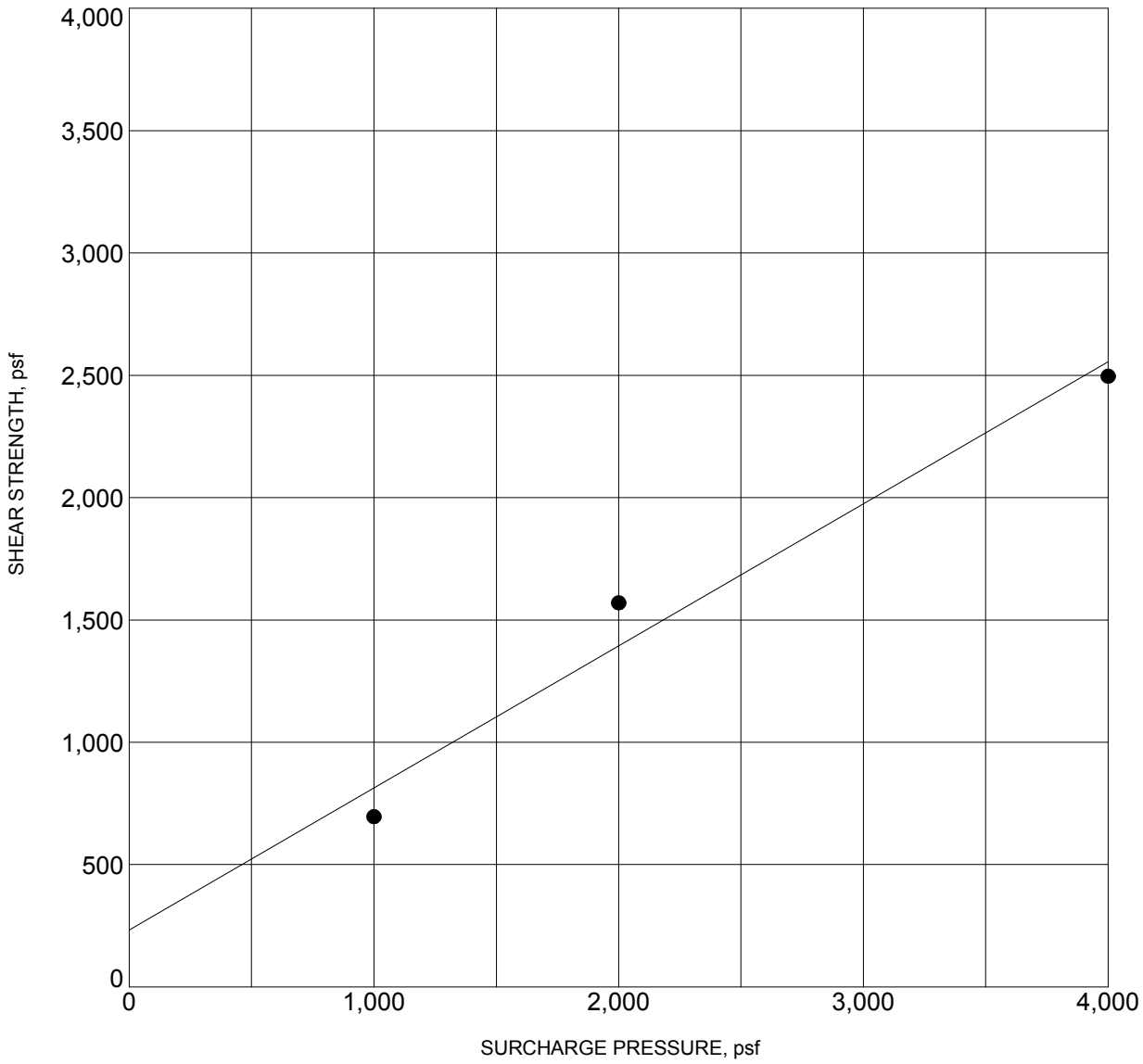
MOISTURE-DENSITY RELATIONSHIP RESULTS

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17-31-234-01

Figure No.
B-2



BORING NO.	:	**BH-3**	DEPTH (ft)	:	**0-5.0**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**230**	FRICTION ANGLE (degrees):		**30**
MOISTURE CONTENT (%)	:	**8.0**	DRY DENSITY (pcf)	:	**122.0**

NOTE: Ultimate Strength.

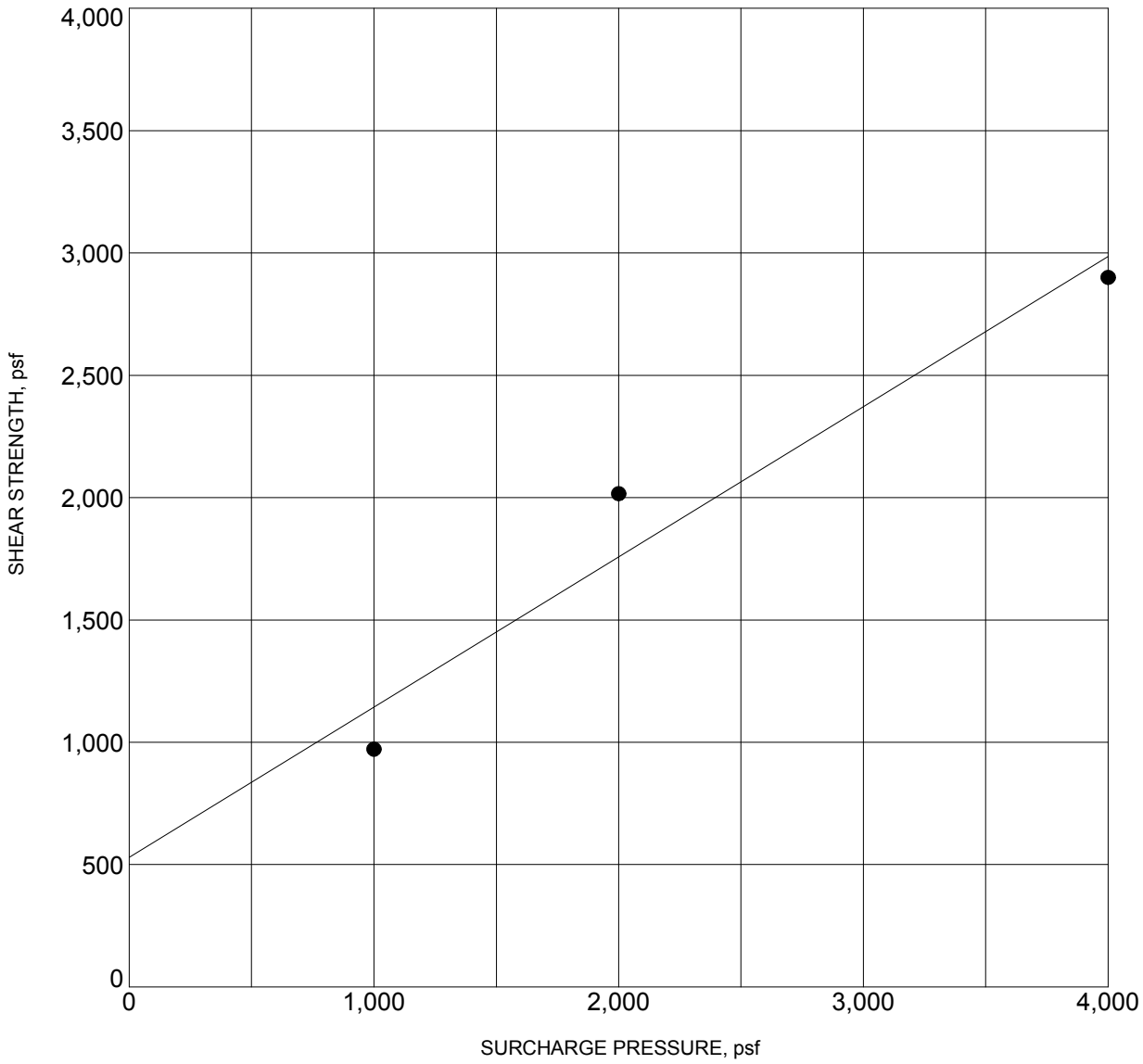
DIRECT SHEAR TEST RESULTS

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **B-3**



BORING NO.	:	**BH-7**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**530**	FRICTION ANGLE (degrees):		**32**
MOISTURE CONTENT (%)	:	**12.0**	DRY DENSITY (pcf)	:	**115.0**

NOTE: Ultimate Strength.

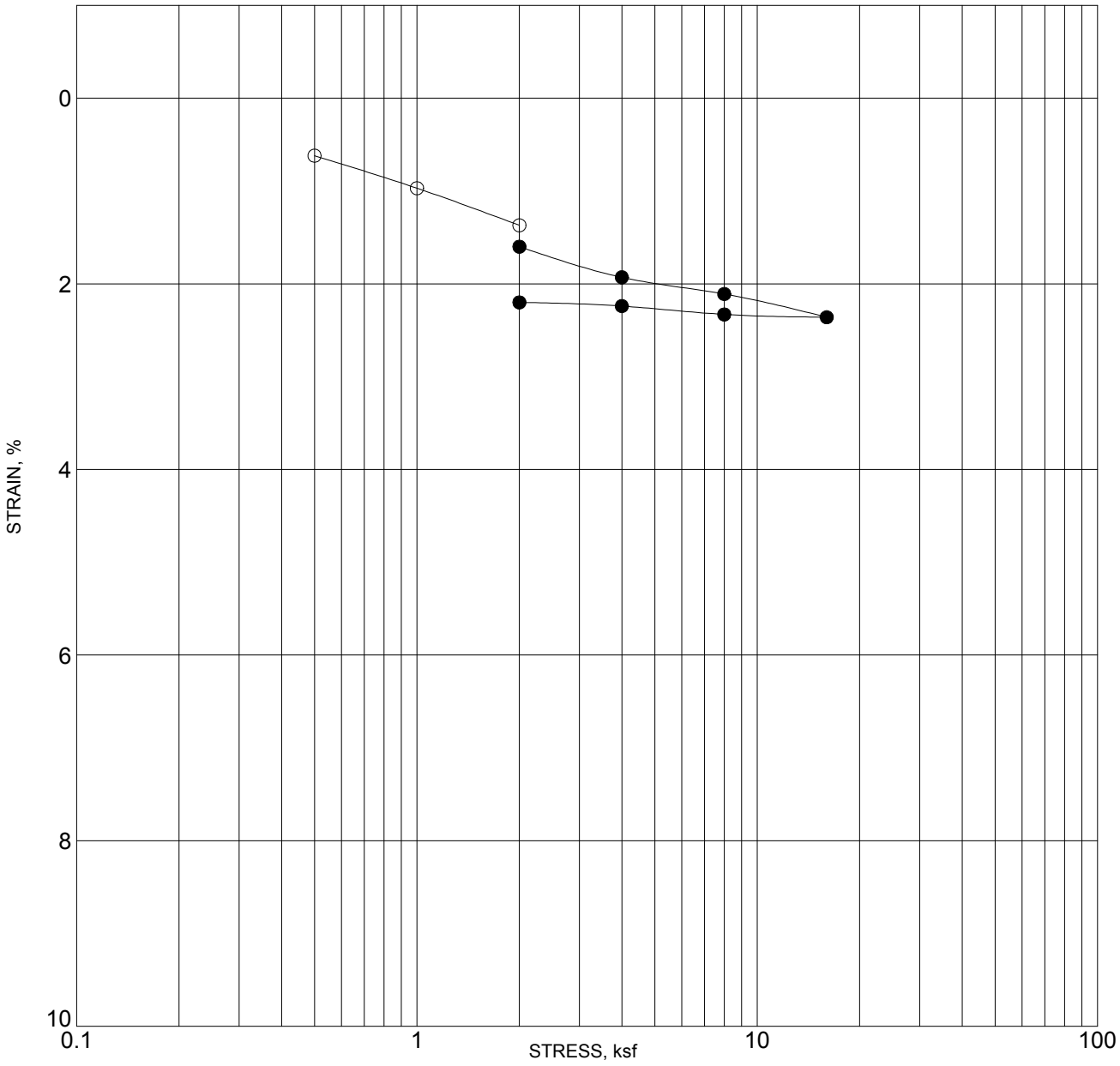
DIRECT SHEAR TEST RESULTS

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **B-4**



BORING NO. :	**BH-1**	DEPTH (ft) :	**5**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**8**	**117**	**52**	**0.401**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

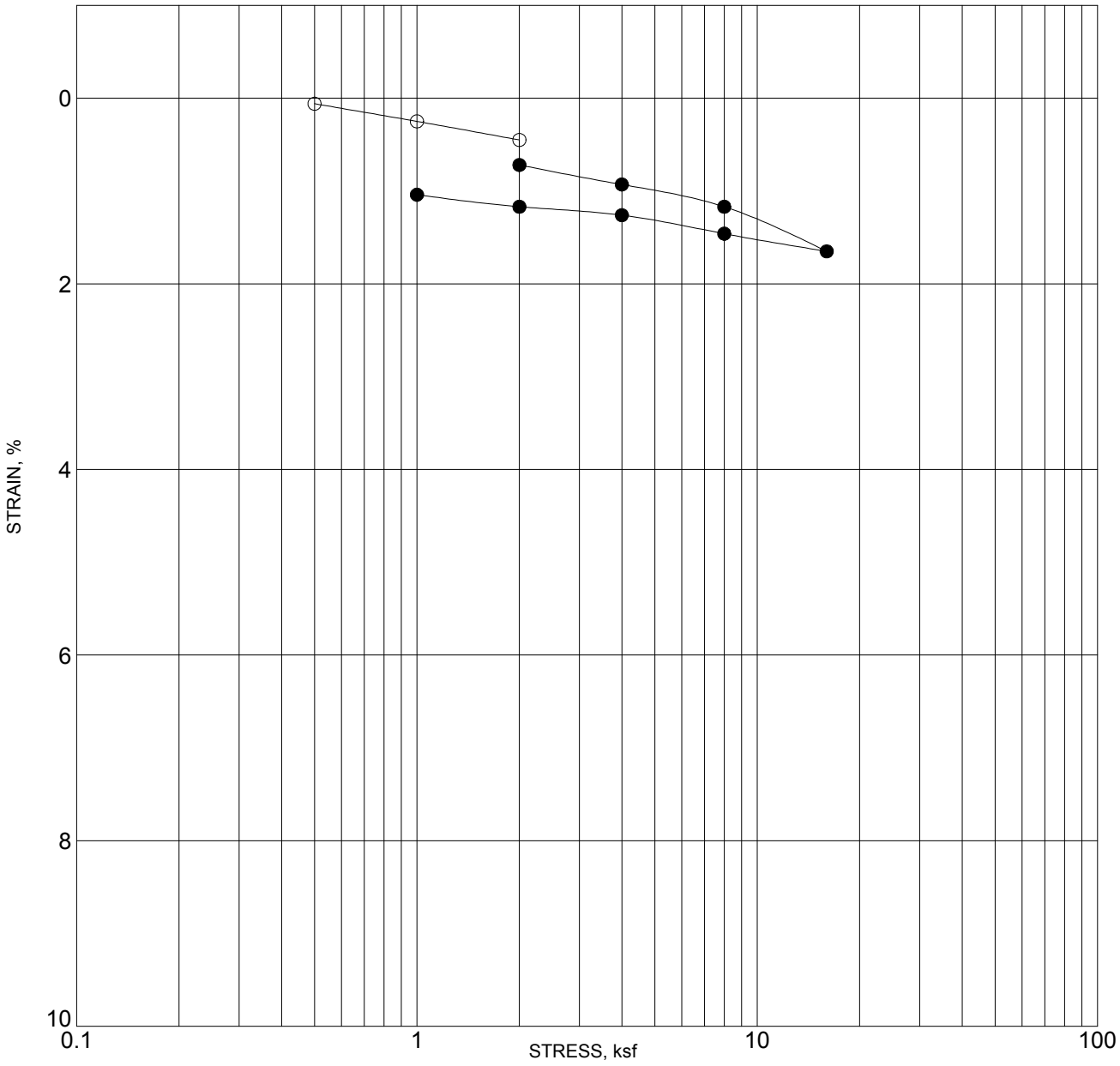
CONSOLIDATION TEST RESULTS

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **B-5**



BORING NO. :	**BH-5**	DEPTH (ft) :	**10**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**9**	**117.2**	**59**	**0.406**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **B-6**

Appendix C

Liquefaction/Seismic Settlement Analysis

APPENDIX C: LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2016 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from BH-1 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** Mw	Peak Ground Acceleration** (g)
50	6.89	0.777

* Based on Seismic Hazard Zone Report for the San Dimas 7.5-Minute Quadrangle
** Based on results from site specific analysis using EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database

We understand that the proposed new student center building will be a single three-story structure. The existing topography shows that current elevation of the building footprint is from 757 feet to 771 feet. BH-1 is at an existing elevation of 769 feet and BH-5 is at an existing elevation of 764 feet.

The final grade will be at an approximate elevation of 757 feet. This implies that approximately 12 feet of soil will be excavated below BH-1 and an additional five feet of soil will be over-excavated and recompacted.

Similarly, BH-5 will have approximately seven feet of soil excavated beneath with an additional five feet of soil that will be over-excavated and recompacted to provide a firm bottom for the foundations.

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From this, we have assumed an SPT blow count of 50 for the top 15 feet of soil for BH-1 and the top 10 feet of soil for BH-5 for our analysis as there will be no settlement from this portion of soil, as it will either be removed, or recompacted. Please see the following table for the results of our liquefaction analysis.

Table No. C-2, Potential Seismic Settlement Results

Boring	Potential Dry Seismic Settlement (inch)	Potential Differential Settlement (inch)
BH-1	1.55	0.78
BH-5	1.67	0.84

The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction.

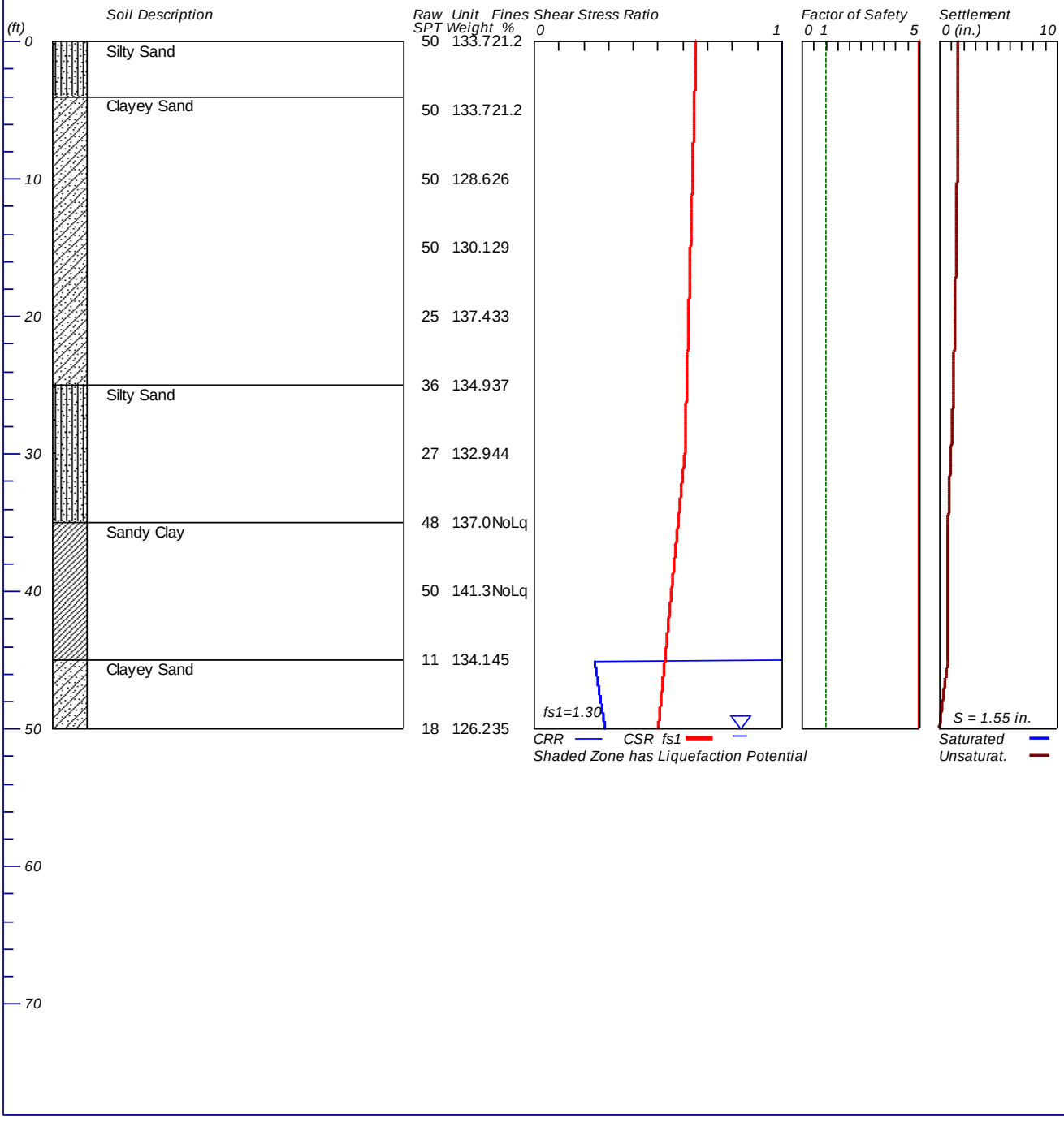
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LIQUEFACTION ANALYSIS

Mt. SAC Student Center Building

Hole No.=BH-1 Water Depth=50 ft

Magnitude=6.89
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY

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Licensed to , 10/5/2017 1:19:49 PM

Input File Name: C:\Liquefy5\17-31-234-01 BH-1 Liq.liq
Title: Mt. SAC Student Center Building
Subtitle: 17-31-234-01

Surface Elev.=
Hole No.=BH-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=BH-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	133.70	21.20
5.00	50.00	133.70	21.20
10.00	50.00	128.60	26.00
15.00	50.00	130.10	29.00
20.00	25.00	137.40	33.00
25.00	36.00	134.90	37.00
30.00	27.00	132.90	44.00
35.00	48.00	137.00	NoLiq
40.00	50.00	141.30	NoLiq
45.00	11.00	134.10	45.00
50.00	18.00	126.20	35.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.55 in.
Total Settlement of Saturated and Unsaturated Sands=1.55 in.
Differential Settlement=0.776 to 1.025 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.48	0.66	5.00	0.00	1.55	1.55
0.50	2.48	0.66	5.00	0.00	1.55	1.55
1.00	2.48	0.66	5.00	0.00	1.55	1.55
1.50	2.48	0.65	5.00	0.00	1.55	1.55
2.00	2.48	0.65	5.00	0.00	1.55	1.55
2.50	2.48	0.65	5.00	0.00	1.55	1.55
3.00	2.48	0.65	5.00	0.00	1.55	1.55
3.50	2.48	0.65	5.00	0.00	1.55	1.55
4.00	2.48	0.65	5.00	0.00	1.55	1.55
4.50	2.48	0.65	5.00	0.00	1.54	1.54
5.00	2.48	0.65	5.00	0.00	1.54	1.54
5.50	2.48	0.65	5.00	0.00	1.54	1.54
6.00	2.48	0.65	5.00	0.00	1.54	1.54
6.50	2.48	0.65	5.00	0.00	1.54	1.54
7.00	2.48	0.65	5.00	0.00	1.53	1.53
7.50	2.48	0.65	5.00	0.00	1.53	1.53
8.00	2.48	0.64	5.00	0.00	1.52	1.52
8.50	2.48	0.64	5.00	0.00	1.52	1.52
9.00	2.48	0.64	5.00	0.00	1.52	1.52
9.50	2.48	0.64	5.00	0.00	1.51	1.51
10.00	2.48	0.64	5.00	0.00	1.51	1.51
10.50	2.48	0.64	5.00	0.00	1.51	1.51

11.00	2.48	0.64	5.00	0.00	1.50	1.50
11.50	2.48	0.64	5.00	0.00	1.50	1.50
12.00	2.48	0.64	5.00	0.00	1.49	1.49
12.50	2.48	0.64	5.00	0.00	1.49	1.49
13.00	2.48	0.64	5.00	0.00	1.48	1.48
13.50	2.48	0.64	5.00	0.00	1.47	1.47
14.00	2.48	0.64	5.00	0.00	1.46	1.46
14.50	2.48	0.63	5.00	0.00	1.46	1.46
15.00	2.48	0.63	5.00	0.00	1.45	1.45
15.50	2.48	0.63	5.00	0.00	1.44	1.44
16.00	2.48	0.63	5.00	0.00	1.43	1.43
16.50	2.48	0.63	5.00	0.00	1.41	1.41
17.00	2.48	0.63	5.00	0.00	1.39	1.39
17.50	2.48	0.63	5.00	0.00	1.37	1.37
18.00	2.48	0.63	5.00	0.00	1.36	1.36
18.50	2.48	0.63	5.00	0.00	1.36	1.36
19.00	2.48	0.63	5.00	0.00	1.35	1.35
19.50	2.48	0.63	5.00	0.00	1.34	1.34
20.00	2.48	0.63	5.00	0.00	1.33	1.33
20.50	2.48	0.63	5.00	0.00	1.31	1.31
21.00	2.48	0.62	5.00	0.00	1.30	1.30
21.50	2.48	0.62	5.00	0.00	1.29	1.29
22.00	2.48	0.62	5.00	0.00	1.28	1.28
22.50	2.48	0.62	5.00	0.00	1.26	1.26
23.00	2.48	0.62	5.00	0.00	1.25	1.25
23.50	2.49	0.62	5.00	0.00	1.24	1.24
24.00	2.49	0.62	5.00	0.00	1.22	1.22
24.50	2.48	0.62	5.00	0.00	1.21	1.21
25.00	2.47	0.62	5.00	0.00	1.19	1.19
25.50	2.46	0.62	5.00	0.00	1.18	1.18
26.00	2.45	0.62	5.00	0.00	1.16	1.16
26.50	2.44	0.62	5.00	0.00	1.15	1.15
27.00	2.44	0.62	5.00	0.00	1.13	1.13
27.50	2.43	0.61	5.00	0.00	1.11	1.11
28.00	2.42	0.61	5.00	0.00	1.09	1.09
28.50	2.41	0.61	5.00	0.00	1.06	1.06
29.00	2.40	0.61	5.00	0.00	1.04	1.04
29.50	2.40	0.61	5.00	0.00	1.01	1.01
30.00	2.39	0.61	5.00	0.00	0.98	0.98
30.50	2.38	0.61	5.00	0.00	0.95	0.95
31.00	2.37	0.61	5.00	0.00	0.92	0.92
31.50	2.36	0.60	5.00	0.00	0.90	0.90
32.00	2.36	0.60	5.00	0.00	0.87	0.87
32.50	2.35	0.60	5.00	0.00	0.85	0.85
33.00	2.34	0.59	5.00	0.00	0.83	0.83
33.50	2.33	0.59	5.00	0.00	0.81	0.81
34.00	2.33	0.59	5.00	0.00	0.79	0.79
34.50	2.32	0.59	5.00	0.00	0.77	0.77

35.00	2.31	0.58	5.00	0.00	0.76	0.76
35.50	2.00	0.58	5.00	0.00	0.76	0.76
36.00	2.00	0.58	5.00	0.00	0.76	0.76
36.50	2.00	0.58	5.00	0.00	0.76	0.76
37.00	2.00	0.57	5.00	0.00	0.76	0.76
37.50	2.00	0.57	5.00	0.00	0.76	0.76
38.00	2.00	0.57	5.00	0.00	0.76	0.76
38.50	2.00	0.57	5.00	0.00	0.76	0.76
39.00	2.00	0.56	5.00	0.00	0.76	0.76
39.50	2.00	0.56	5.00	0.00	0.76	0.76
40.00	2.00	0.56	5.00	0.00	0.76	0.76
40.50	2.00	0.55	5.00	0.00	0.76	0.76
41.00	2.00	0.55	5.00	0.00	0.76	0.76
41.50	2.00	0.55	5.00	0.00	0.76	0.76
42.00	2.00	0.55	5.00	0.00	0.76	0.76
42.50	2.00	0.54	5.00	0.00	0.76	0.76
43.00	2.00	0.54	5.00	0.00	0.76	0.76
43.50	2.00	0.54	5.00	0.00	0.76	0.76
44.00	2.00	0.54	5.00	0.00	0.76	0.76
44.50	2.00	0.53	5.00	0.00	0.76	0.76
45.00	2.00	0.53	5.00	0.00	0.76	0.76
45.50	0.25	0.53	5.00	0.00	0.67	0.67
46.00	0.25	0.53	5.00	0.00	0.58	0.58
46.50	0.25	0.52	5.00	0.00	0.50	0.50
47.00	0.26	0.52	5.00	0.00	0.42	0.42
47.50	0.26	0.52	5.00	0.00	0.34	0.34
48.00	0.27	0.51	5.00	0.00	0.27	0.27
48.50	0.27	0.51	5.00	0.00	0.20	0.20
49.00	0.28	0.51	5.00	0.00	0.13	0.13
49.50	0.28	0.51	5.00	0.00	0.06	0.06
50.00	0.29	0.50	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

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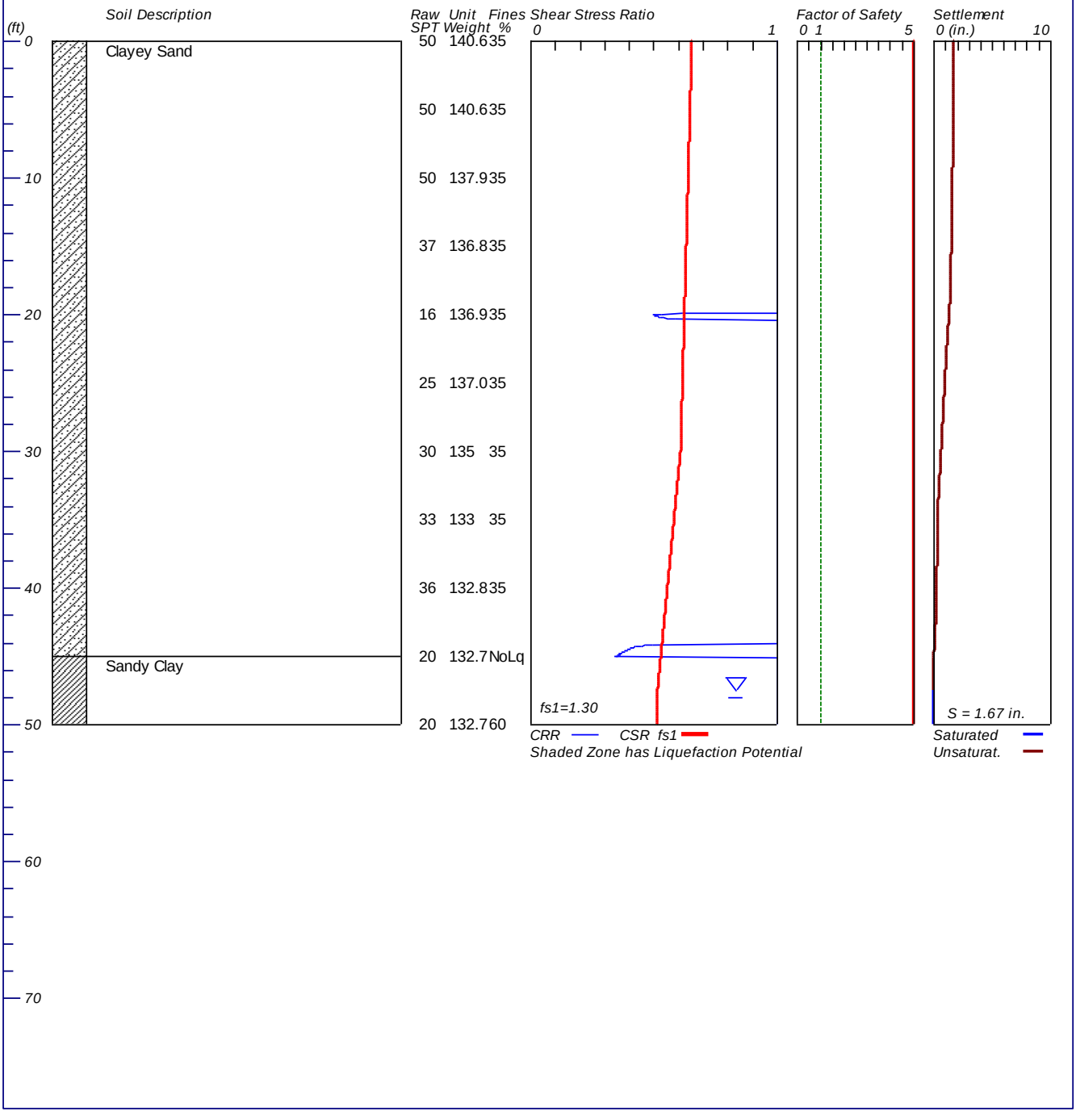
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

Mt. SAC Student Center Building

Hole No.=BH-5 Water Depth=47.5 ft

Magnitude=6.89
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
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Input File Name: C:\Liquefy5\17-31-234-01 BH-5 Liq.liq
Title: Mt. SAC Student Center Building
Subtitle: 17-31-234-01

Surface Elev.=
Hole No.=BH-5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 47.50 ft
Water Table during In-Situ Testing= 47.50 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=BH-5
Depth of Hole=50.00 ft
Water Table during Earthquake= 47.50 ft
Water Table during In-Situ Testing= 47.50 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	140.60	35.00
5.00	50.00	140.60	35.00
10.00	50.00	137.90	35.00
15.00	37.00	136.80	35.00
20.00	16.00	136.90	35.00
25.00	25.00	137.00	35.00
30.00	30.00	135.00	35.00
35.00	33.00	133.00	35.00
40.00	36.00	132.80	35.00
45.00	20.00	132.70	NoLiq
50.00	20.00	132.70	60.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.67 in.
Total Settlement of Saturated and Unsaturated Sands=1.67 in.
Differential Settlement=0.834 to 1.101 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.48	0.66	5.00	0.00	1.67	1.67
0.50	2.48	0.66	5.00	0.00	1.67	1.67
1.00	2.48	0.66	5.00	0.00	1.67	1.67
1.50	2.48	0.65	5.00	0.00	1.67	1.67
2.00	2.48	0.65	5.00	0.00	1.67	1.67
2.50	2.48	0.65	5.00	0.00	1.66	1.66
3.00	2.48	0.65	5.00	0.00	1.66	1.66
3.50	2.48	0.65	5.00	0.00	1.66	1.66
4.00	2.48	0.65	5.00	0.00	1.66	1.66
4.50	2.48	0.65	5.00	0.00	1.66	1.66
5.00	2.48	0.65	5.00	0.00	1.66	1.66
5.50	2.48	0.65	5.00	0.00	1.66	1.66
6.00	2.48	0.65	5.00	0.00	1.65	1.65
6.50	2.48	0.65	5.00	0.00	1.65	1.65
7.00	2.48	0.65	5.00	0.00	1.65	1.65
7.50	2.48	0.65	5.00	0.00	1.64	1.64
8.00	2.48	0.64	5.00	0.00	1.64	1.64
8.50	2.48	0.64	5.00	0.00	1.63	1.63
9.00	2.48	0.64	5.00	0.00	1.63	1.63
9.50	2.48	0.64	5.00	0.00	1.63	1.63
10.00	2.48	0.64	5.00	0.00	1.62	1.62
10.50	2.48	0.64	5.00	0.00	1.62	1.62

11.00	2.48	0.64	5.00	0.00	1.61	1.61
11.50	2.48	0.64	5.00	0.00	1.61	1.61
12.00	2.48	0.64	5.00	0.00	1.60	1.60
12.50	2.48	0.64	5.00	0.00	1.59	1.59
13.00	2.48	0.64	5.00	0.00	1.59	1.59
13.50	2.48	0.64	5.00	0.00	1.57	1.57
14.00	2.48	0.64	5.00	0.00	1.56	1.56
14.50	2.48	0.63	5.00	0.00	1.55	1.55
15.00	2.48	0.63	5.00	0.00	1.53	1.53
15.50	2.48	0.63	5.00	0.00	1.51	1.51
16.00	2.48	0.63	5.00	0.00	1.49	1.49
16.50	2.48	0.63	5.00	0.00	1.46	1.46
17.00	2.48	0.63	5.00	0.00	1.44	1.44
17.50	2.48	0.63	5.00	0.00	1.43	1.43
18.00	2.48	0.63	5.00	0.00	1.42	1.42
18.50	2.48	0.63	5.00	0.00	1.41	1.41
19.00	2.48	0.63	5.00	0.00	1.40	1.40
19.50	2.48	0.63	5.00	0.00	1.37	1.37
20.00	0.50	0.63	5.00	0.00	1.33	1.33
20.50	2.48	0.63	5.00	0.00	1.29	1.29
21.00	2.48	0.62	5.00	0.00	1.24	1.24
21.50	2.48	0.62	5.00	0.00	1.20	1.20
22.00	2.48	0.62	5.00	0.00	1.16	1.16
22.50	2.50	0.62	5.00	0.00	1.12	1.12
23.00	2.49	0.62	5.00	0.00	1.09	1.09
23.50	2.48	0.62	5.00	0.00	1.05	1.05
24.00	2.47	0.62	5.00	0.00	1.02	1.02
24.50	2.46	0.62	5.00	0.00	0.99	0.99
25.00	2.45	0.62	5.00	0.00	0.95	0.95
25.50	2.44	0.62	5.00	0.00	0.92	0.92
26.00	2.43	0.62	5.00	0.00	0.89	0.89
26.50	2.43	0.62	5.00	0.00	0.86	0.86
27.00	2.42	0.62	5.00	0.00	0.83	0.83
27.50	2.41	0.61	5.00	0.00	0.80	0.80
28.00	2.40	0.61	5.00	0.00	0.77	0.77
28.50	2.39	0.61	5.00	0.00	0.74	0.74
29.00	2.39	0.61	5.00	0.00	0.71	0.71
29.50	2.38	0.61	5.00	0.00	0.67	0.67
30.00	2.37	0.61	5.00	0.00	0.64	0.64
30.50	2.36	0.61	5.00	0.00	0.61	0.61
31.00	2.36	0.61	5.00	0.00	0.57	0.57
31.50	2.35	0.60	5.00	0.00	0.54	0.54
32.00	2.34	0.60	5.00	0.00	0.51	0.51
32.50	2.33	0.60	5.00	0.00	0.47	0.47
33.00	2.33	0.59	5.00	0.00	0.44	0.44
33.50	2.32	0.59	5.00	0.00	0.40	0.40
34.00	2.31	0.59	5.00	0.00	0.39	0.39
34.50	2.30	0.59	5.00	0.00	0.38	0.38

35.00	2.30	0.58	5.00	0.00	0.36	0.36
35.50	2.29	0.58	5.00	0.00	0.35	0.35
36.00	2.28	0.58	5.00	0.00	0.34	0.34
36.50	2.28	0.58	5.00	0.00	0.33	0.33
37.00	2.27	0.57	5.00	0.00	0.32	0.32
37.50	2.26	0.57	5.00	0.00	0.30	0.30
38.00	2.26	0.57	5.00	0.00	0.29	0.29
38.50	2.25	0.57	5.00	0.00	0.28	0.28
39.00	2.24	0.56	5.00	0.00	0.27	0.27
39.50	2.24	0.56	5.00	0.00	0.26	0.26
40.00	2.23	0.56	5.00	0.00	0.24	0.24
40.50	2.22	0.55	5.00	0.00	0.23	0.23
41.00	2.22	0.55	5.00	0.00	0.22	0.22
41.50	2.21	0.55	5.00	0.00	0.20	0.20
42.00	2.20	0.55	5.00	0.00	0.19	0.19
42.50	2.20	0.54	5.00	0.00	0.17	0.17
43.00	2.19	0.54	5.00	0.00	0.14	0.14
43.50	2.19	0.54	5.00	0.00	0.12	0.12
44.00	2.18	0.54	5.00	0.00	0.09	0.09
44.50	0.39	0.53	5.00	0.00	0.05	0.05
45.00	0.34	0.53	5.00	0.00	0.00	0.00
45.50	2.00	0.53	5.00	0.00	0.00	0.00
46.00	2.00	0.53	5.00	0.00	0.00	0.00
46.50	2.00	0.52	5.00	0.00	0.00	0.00
47.00	2.00	0.52	5.00	0.00	0.00	0.00
47.50	2.00	0.52	5.00	0.00	0.00	0.00
48.00	2.00	0.52	5.00	0.00	0.00	0.00
48.50	2.00	0.52	5.00	0.00	0.00	0.00
49.00	2.00	0.52	5.00	0.00	0.00	0.00
49.50	2.00	0.52	5.00	0.00	0.00	0.00
50.00	2.00	0.52	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Appendix D

Earthwork Specifications

APPENDIX D: EARTHWORK SPECIFICATIONS

D1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workman-like manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D1.2 Site Inspection

- The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

- This *Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

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D1.3 Authority of the Geotechnical Engineer

- The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

- As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

- The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D1.4 Site Clearing

- Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavements, utilities, trees, vegetation and roots.

- Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D1.5 Excavations

- Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D1.6 Preparation of Fill Areas

- All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

- In order to provide uniform support for the new structures, the minimum depth of over-excavation should be five (5) feet below the existing grade, or 36 inches below proposed bottom of foundations whichever is deeper. Deeper over-excavation will be needed if soft, yielding soils are exposed on the excavation bottom.

- The bottoms should be founded on firm and unyielding native soils or properly compacted fills. The final bottom surfaces of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing any compacted fill. All compacted fills should be placed on competent native

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materials or properly compacted fill as determined by the project geotechnical engineer or his representative. The actual depth of removal should be determined based on observations made during grading. Over-excavation and recompaction should extend a least five (5) feet beyond the limits of footings, or equal distance of over-excavation depth, whichever is greater, or as limited by the existing structures. Excavation activities should not disturb existing utilities, buildings, and remaining structures.

- Existing utilities should be removed and adequately capped at the project boundary line, or salvaged/rerouted as designed for sidewalks and flatwork area, at least the upper 24 inches of existing soils should be scarified and recompacted to at least 90 percent of compaction. Deeper over-excavation will be needed if soft, yielding soils are exposed on the excavation bottom. The excavation should be extended to at least 12 inches beyond the driveway and flatwork limit where space is permitted.

- The subgrade in all areas to receive fill shall be scarified to a minimum depth of six inches, the soil moisture adjusted to above three percent (3%) of the optimum moisture content for fine-grained soils and within three percent (3%) of the optimum moisture content for granular soils, mixed and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method.

- Compacted fill may be placed on native soils that have been properly scarified and re-compacted as discussed above.

- All areas to receive compacted fill will be observed and approved by the project Geotechnical Engineer or his designated representative before the placement of fill.

D1.7 Placement and Compaction of Fill

- Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

- Fill consisting of selected on-site earth materials or imported soils approved by the project Geotechnical Engineer or his designated representative shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    - All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

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Rocks larger than three (3) inches in size may be encountered during grading and should be anticipated in the underlying sediments.

- Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) within three (3) percent of the optimum moisture.

- Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

- All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned at approximate three (3) percent above the optimum moisture content for fine-grained soils and within three (3) percent of the optimum moisture content for coarse-grained soils.

- Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

- Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

- It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

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- Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

- Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

- Rocks larger than one inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension. Rocks shall be well mixed with finer soil.

- The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

- Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to between optimum and three percent above optimum, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

- The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

- The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D6938 test methods or equivalent.

- Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

- It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

- Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

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D1.9 Observation and Testing

- During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

- Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained

- A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

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Appendix E

Percolation Testing

APPENDIX E: PERCOLATION TESTING

Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The continuous pre-soak falling-head test method for water percolation testing was utilized to evaluate soil infiltration rates of the existing and native soils encountered between depths of 0 to 10.0 feet below the ground surface at the respective boring location in accordance with LA County Low Impact Development, Best Management Practices Guidelines. The test location was prepared by placing a perforated 2-inch diameter PVC pipe surrounded by pea gravel after drilling and sampling. Water was filled to the ground surface to pre-soak prior to testing.

The boring was cased using a two-inch diameter perforated casing. Water was added to the bore hole until the water level was as near the ground surface as could be achieved, and allowed to pre-soak for at least 4 hours if the water did not drain entirely within 30 minutes after filling the boring two (2) consecutive times. After pre-soak, water was added to the bore hole until the water level was as near the ground surface as could be achieved. The water level was measured to the nearest 1/8-inch and recorded either every 10 or 30 minutes for three (3) consecutive readings depending on the soils encountered. There were at least four (4) sets of measurements taken for each test and each set consisted of at least three (3) measurements. The results of the percolation tests are tabulated below.

Table No. E-1, Percolation Testing Result

Boring No.	Depth of Test (feet)	Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-4	0.0-10.0	Silt (ML) over Sandy Silt (ML)	1.74	1.35

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.3 inch per hour. It should be noted that per LA County Low Impact Development, Best Management Practices Guidelines, any planned infiltration systems should be at least 10 feet above historically highest groundwater levels. The project Civil Engineer shall review the percolation rates presented for design of the proposed infiltration system. Infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system.

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Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Lot R Tennis and Parking Structure
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California

Converse Project No. 17-31-247-01

Prepared For:

Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Prepared By:

Converse Consultants
717 South Myrtle Avenue
Monrovia, California 91016

December 1, 2017

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

December 1, 2017

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Lot R Tennis and Parking Structure
Mt. San Antonio College
1100 North Grand Avenue
Walnut, Los Angeles County, California
Converse Project No. 17-31-247-01

Dear Mr. Gidcumb:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geologic and geotechnical study for the Proposed Lot R Tennis and Parking Structure Project located at Student Parking Lot R at Mt. San Antonio College (Mt. SAC) in Walnut, California. In accordance with California Education Code, Sections 17212 and 81033, this report was prepared consistent with the current edition of California Building Code, Title 24, Chapter 16A and Chapter 18A; California Administrative Code, Part 1, Title 24, CCR, Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings, for design and for the Division of the State Architect (DSA) submittal purposes. Converse evaluated the nature and engineering properties of the subsurface soils and sedimentary bedrock to provide recommendations for site earthwork, foundation design, grading, and construction for the proposed development. Our services were performed in accordance with our proposal dated August 10, 2017.

We appreciate the opportunity to be of continued service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

Sincerely,

CONVERSE CONSULTANTS

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

Dist: 5/Addressee

PROFESSIONAL CERTIFICATION

This report for the Proposed Lot R Tennis and Parking Structure Project at Student Parking Lot R located within the campus of Mt. San Antonio College in the City of Walnut, Los Angeles County, California, has been prepared by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the project and property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed, and the recommendations of this report are modified or verified in writing.

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EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed project consists of a large 2-level parking structure to be constructed on existing Student Parking Lot R. The Lot R Tennis and Parking Structure will be located between the new Fieldhouse and Bonita Drive, and is part of the Athletics Complex East (ACE) project currently under construction. The parking structure footprint measures up to 650 feet long in a north/south direction and 200 feet to 480 feet wide in an east/west direction and has a Level 1 footprint of approximately 199,920 square feet. The parking structure consists of a two (2) level structure consisting of one parking level at grade with one (1) supported level providing approximately 698 total parking spaces. Level 1 will have a finish surface elevation of approximately 731 feet and Level 2 will have a finish surface elevation of approximately 743 feet. Two (2) vehicular entry/exits will serve the ground level directly off Bonita Drive. Parking on the upper level will be accessed by a separate drive with entry/exit at the upper grade level. The parking structure will be partially built into the existing ground on the north side of the structure with the remaining sides open. The ground floor level of the parking structure will be founded on shallow spread and column foundations.

  The top deck of the parking structure will support a variety of functions. One portion of the top deck will be isolated from the rest of the deck and used for nine (9) tennis courts with lighting. The deck separation is intended to isolate the tennis courts from any vibrations that may occur in the parking structure. Fire truck access loop and heavy media truck traffic is anticipated for the top deck level.

- Eleven (11) exploratory borings (BH-1 through BH-11) were drilled within the project site from August 18 to August 24, 2017. The borings were advanced using a truck-mounted drill rig with an 8-inch diameter hollow-stem auger to depths ranging from 30 to 80 feet below the existing ground surface (bgs).

- Seventeen (17) exploratory Cone Penetration Test (CPT-1 through CPT-17) soundings were advanced to depths of 25 to 75 feet below the existing ground surface within the project site on September 6 and 7, 2017. CPT Nos. CPT-1, CPT-2, CPT-5, CPT-7, and CPT-17 encountered very dense/stiff soils and dense/stiff sedimentary bedrock conditions, and were stopped short of their planned depths.

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- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The western and southern portions of the site are underlain by alluvial soil deposits that are located within a mapped Seismic Hazard Zone for liquefaction. The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction-induced settlement ranges from 0.43 to 2.58 inches with potential differential settlement ranging from 0.22 to 1.29 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

- Local zones of groundwater and groundwater seepage were encountered during subsurface exploration in the alluvium and sedimentary bedrock in Borings BH-3, BH-4, BH-5, BH-6, BH-7, BH-8, BH-9 and BH-11. The groundwater was encountered during drilling at depths ranging from approximately 20 feet bgs in boring BH-6 to approximately 60 feet bgs in boring BH-3. The groundwater levels encountered ranged between approximate elevations 696 feet and 713 feet. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Variable thicknesses of undocumented fill soils were encountered in the borings. The undocumented fill soils are not considered suitable for slab or foundation support.

- Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and top portion of the sedimentary bedrock subgrade is recommended for site grading to provide support for the proposed parking structure. Areas underlain by sedimentary bedrock (Tpss) should be over-excavated and recompacted to provide a uniform 5-foot-thick layer of compacted fill beneath the building foundations and floor slab and provide a minimum 2-foot thick layer of lime-treated soil or non-expansive, granular compacted fill soils beneath the floor slab to mitigate the low to medium expansive sedimentary bedrock materials (interbedded siltstone and claystone).

  Over-excavation and re-compaction for areas underlain by alluvial soils (Qal) and the edge of the sedimentary bedrock (Tpss) along the west and south sides of the parking structure is recommended to extend approximately 10 feet below plan grade surface, a minimum of 10-feet beyond the edge of the parking structure foundations, and a minimum of 15-feet of overlap over the edge of the sedimentary bedrock (Tpss). A geofabric reinforcement layer is recommended on the compacted bottom of the 10-foot depth of over-excavation to reduce differential

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settlements between the underlying alluvium and shallow sedimentary bedrock materials.

- Shallow spread and continuous footings founded on compacted fill are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans and specifications, and are followed during site construction.

- Based on the proposed plan, over-excavation and re-compaction of the undocumented fills, upper alluvial soils and sedimentary bedrock is required for the building pad to achieve the planned finished grades.

- Different earth materials should be anticipated at excavation bottoms for the planned floor levels. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction below the bottom of foundations and slab-on-grades is recommended. We recommend the shallow foundations should be supported on a minimum 5-foot-thick layer of compacted fill over sedimentary bedrock materials (Tpss) and a minimum 10-foot thick layer of compacted fill over undisturbed native alluvial soils (Qal).

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general, the soluble sulfate concentration, pH and chloride content are not in the corrosive range. However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials may contain gravels up to 3 inches in maximum dimension. Larger gravels, cobbles and boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers (pebble conglomerates, sandstone layers, siliceous layers, cemented layers, etc.) may be encountered during excavation and grading and should be anticipated. Bedrock hardness may increase with depth within the interbedded siltstone, claystone and sandstone layers (Tpss) and pebble conglomerate (Tpcg)

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where encountered. Earthwork and grading should be performed with suitable grading equipment for hard, cemented and gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project

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1.0 INTRODUCTION

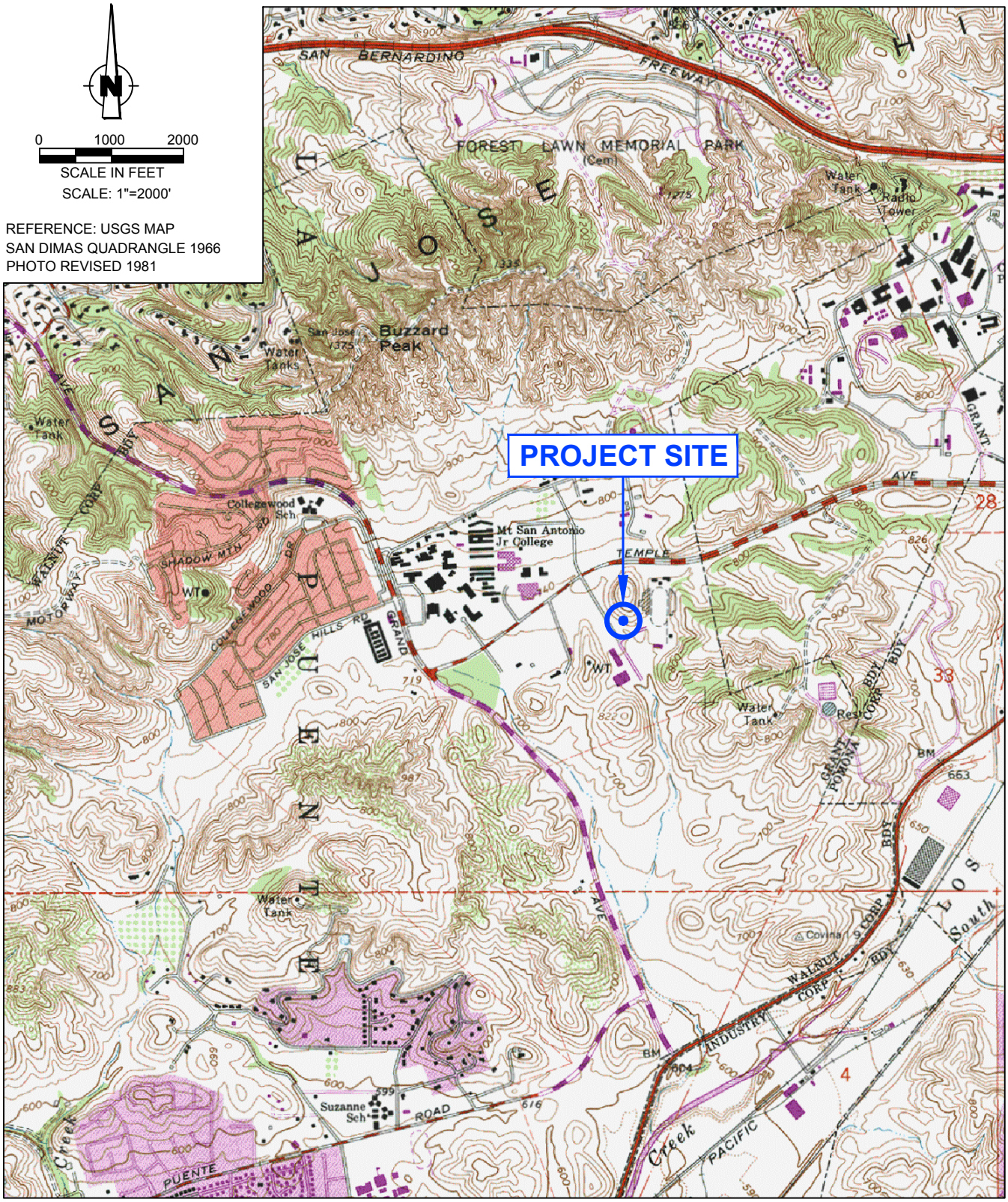
This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed Lot R Tennis and Parking Structure at Student Parking Lot R located within the campus of Mt. San Antonio College, in the City of Walnut, Los Angeles County, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of the investigation was to generate a report for design and the Department of State Architect (DSA) submittal purposes, consistent with current edition of California Education Code, Sections 17212 and 81033, California Building Code, Title 24 CCR, Sections 4-317, 1803 and 1804 and CGS Note 48-Checklist for the review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

We have used a site plan provided to us by your office as a reference for this project. The site plan is included in this report as Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

This report is written for the project described herein and is intended for use solely by Mt. San Antonio College and its design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

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SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
LOT R STRUCTURE
WALNUT, CALIFORNIA

Project No.

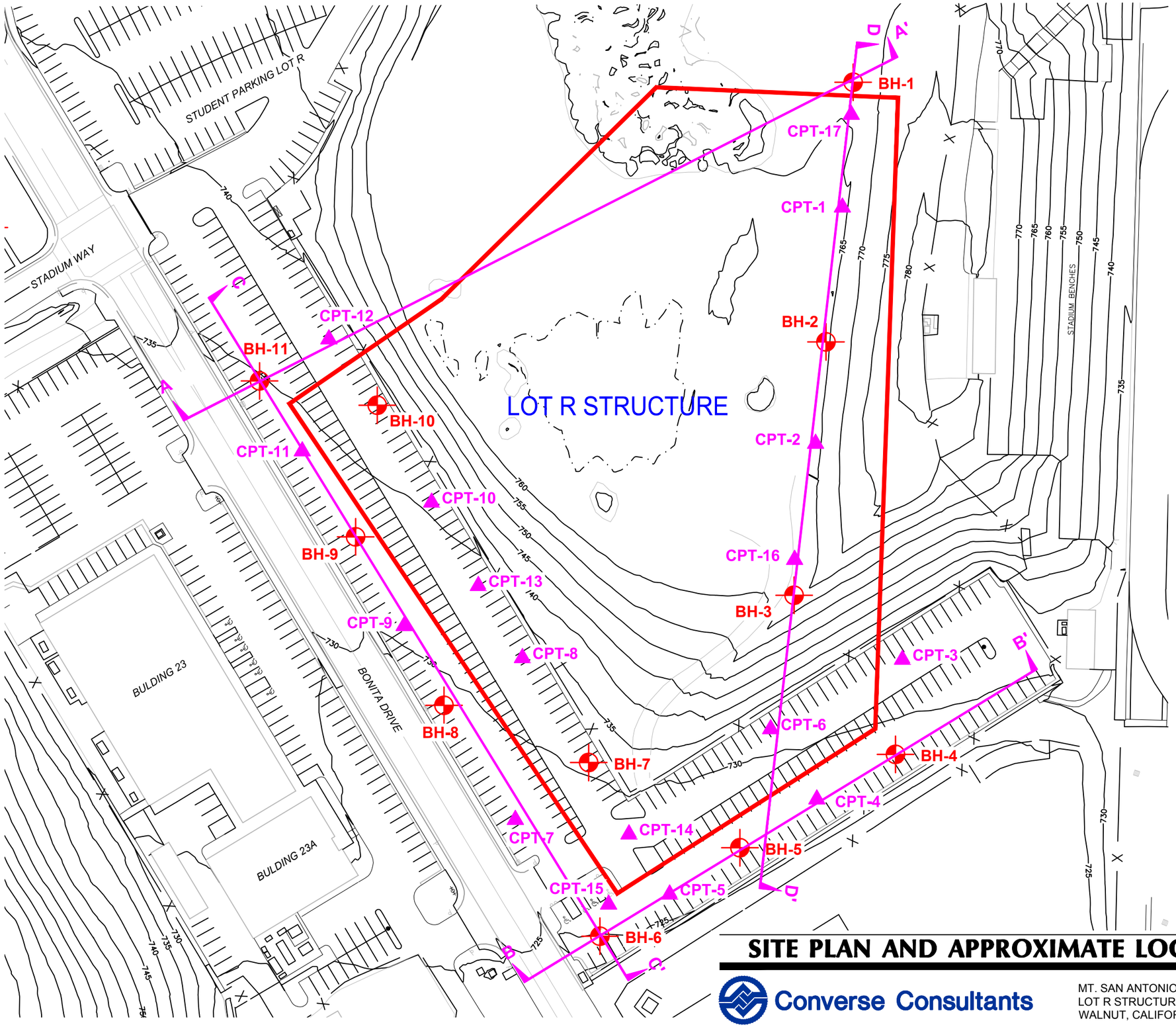
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Drawing No.

1

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LEGEND

- APPROXIMATE LOCATION OF BORING (AUGUST 2017)
- APPROXIMATE LOCATION OF CPT SOUNDINGS (SEPTEMBER 2017)
- GEOLOGIC CROSS SECTION A-A', B-B', C-C', AND D-D'

N

0 80 160

APPROXIMATE SCALE IN FEET

SITE PLAN AND APPROXIMATE LOCATION OF CPT AND BORING

Converse Consultants

MT. SAN ANTONIO COLLEGE
LOT R STRUCTURE
WALNUT, CALIFORNIA

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17-31-247-01	2

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed Lot R Tennis and Parking Structure project is located at the current Student Parking Lot R located near the southeast corner of the intersection of West Temple Avenue and Bonita Drive in Mt. San Antonio College (Mt. SAC). The Lot R Tennis and Parking Structure will be located between the new Fieldhouse and Bonita Drive, and is part of the Athletics Complex East (ACE) project currently under construction. The proposed parking lot dimensions are up to approximately 650 feet long in a north-south direction by 200 feet to 480 feet wide in an east-west direction. The site is bordered by West Temple Avenue to the north, Bonita Drive service road to the west and the Hilmer Lodge Stadium to the east.

The subject site for the proposed parking structure has current surface elevations ranging from approximately 725 to 780 feet relative to mean-sea-level (MSL) respectively, with surface gradients flowing down gradient toward the southwest. Grading had been performed in 2014 to excavate and remove a large portion of the hilltop area beneath the project site. Approximately 78 feet of the hilltop was excavated and removed from approximate elevation 846 feet down to approximate elevation 765 feet. The excavated earth materials were transported to the south end of the campus and used as engineered fill for a student parking area. Additional excavation and removals up to approximately 49 feet from elevation 780 feet down to elevation 731 feet are still planned for the former hilltop area. The site coordinates are: North latitude: 34.04546 degrees, West longitude: 117.83831 degrees.

The site coordinates were centered on the subject sites and used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

2.2 Project Description

The proposed Lot R Tennis and Parking Structure consists of a new two-level parking structure building. The parking structure footprint measures up to 650 feet long in a north-south direction and approximately 200 feet and 480 feet wide in an east-west direction and has a Level 1 footprint of approximately 199,920 square feet. The structural loads are not known at this time, but are anticipated to be moderate. The structure is planned to be founded on shallow spread foundations, columns and concrete mat foundations. The project site is shown on Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

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3.0 SCOPE OF WORK

The scope of our work included a site reconnaissance, subsurface exploration with soil sampling, laboratory testing, engineering analysis, and preparation of this report.

3.1 Site Reconnaissance

During the site reconnaissance from August 14 to August 18, 2017, the surface conditions were noted, and the locations of the borings were determined so that the hollow stem auger drill rig and Cone Penetration Test (CPT) test rig could access the proposed soil boring and CPT locations. The borings and CPT soundings were located using existing boundary features and existing topography as a guide and should be considered accurate only to the degree implied by the method used. Underground Service Alert (USA) of Southern California was then notified of our proposed boring and CPT test locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration

Eleven (11) exploratory borings (BH-1 through BH-11) were drilled within the project site from August 18 to August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger to depths ranging from 30 to 80 feet below the existing ground surface (bgs). Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils and bedrock. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. California Modified Sampler (Ring samples), Standard Penetration Test (SPT) samples, and bulk soil samples were obtained for laboratory testing.

Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The SPT sampler was driven into the ground with successive drops of a 140-pound hammer falling 30 inches by means of a mechanically driven drop hammer. The number of successive drops of the driving weight (“blows”) required for every 6-inches of penetration of the sampler are shown on the Logs of Borings in the “blows column. The bore holes were then backfilled and compacted with soil cuttings by reverse spinning of the auger following the completion of drilling and patched with asphalt patch where necessary to match existing conditions.

Seventeen (17) Cone Penetration Test soundings (CPT-1 through CPT-17) were advanced to depths of 25 feet to 75 feet below ground surface within project site on September 6 and 7, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The cone penetration testing consisted of pushing an instrumented cone-tipped probe into the ground while simultaneously recording the resistance to penetration at the cone tip and along the friction sleeve. The test holes were stopped at plan depths or when the

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cone tip encountered refusal to penetration. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then backfilled and tamped with site soil materials to match the existing ground surface conditions.

The approximate locations of the exploratory borings and CPT test soundings are shown in Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In Situ Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Fines Content/Passing No. 200 Sieve (ASTM D1140)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- R-value (ASTM Standard D2844)
- Soil Corrosivity Tests (Caltrans 643, 422, 417, and 532)
- Atterberg Limits (ASTM Standard D4318)

For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*. For *in-situ* moisture and density data, see the Logs of Borings in Appendix A, *Field Exploration*.

3.4 Engineering Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

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4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California and along the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low angle reverse or reverse-oblique faults bounding the south margin of the Transverse Ranges. Faults in group one include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Group two faults include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

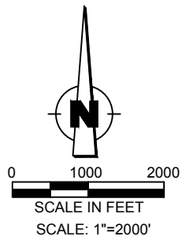
The Pomona Valley basin is bounded to the north by the San Jose fault and to the southwest by the Chino-Central Avenue fault. These two fault systems do not exhibit significant evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age faults, having exhibited displacement and movement within the past approximately 130,000 years.

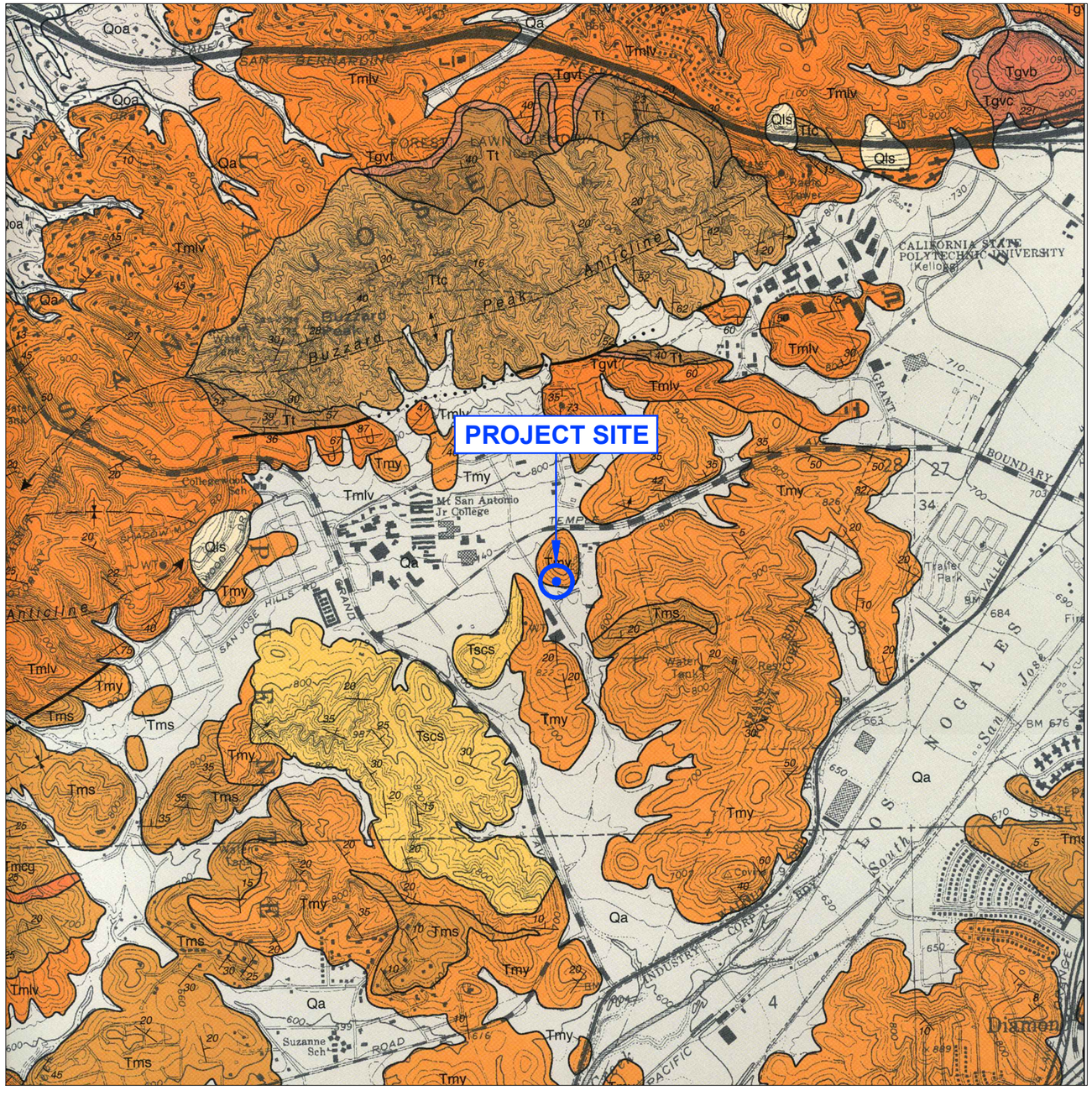
The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. Low lying sedimentary bedrock hillsides with intervening alluvial filled valleys are depicted on and around the project site. The hillsides beneath the project site and east of the subject site and have been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and minor sandstone and (Tscs) Sycamore Canyon Formation consisting of light gray sandstone that includes conglomerate and siltstone. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map.*

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our investigation consisted of existing fill soils (Af) placed during previous site grading operations, natural alluvial soils (Qal) and sedimentary bedrock of the Puente Formation (Tpss). The project site was previously graded in 2014 to excavate and remove a large portion of the hilltop within the project site. Approximately 81 feet of the hilltop was excavated and removed from approximate elevation 846 feet down to approximate elevation 765 feet. Additional excavation and

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SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

af / Qa / Qg

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

Qls

LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

Qoa / Qog

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

Tscg | Tscs

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic; latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg,*** *and siltstone.*

Tm | Tmy | Tmcg | Tms | Tmlv

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964; Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

Tt | Ttc

TOPANGA FORMATION

(of Shelton, 1955; Tan. 1998; marine clastic; middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late ? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

Tgv | Tgvc | Tgvb | Tgvp | Tgvt | Tgva | Tgvr | Tgve

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally intertongued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

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CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

Tmda

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

qd | qdb

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.*

Holocene / Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

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MT. SAN ANTONIO COLLEGE
LOT R STRUCTURE
WALNUT, CALIFORNIA

Project No. 17-31-247-01

Drawing No. 3

removals up to approximately 49 feet from elevation 780 feet down to elevation 731 feet are still planned for the former hilltop area. Existing soil materials from other projects on campus have been stockpiled for later use on top of the current hilltop (elevation 760 feet). The previous graded parking lot areas along the west and south sides of the project are covered by a layer of fill soils underlain by the alluvial soils and interbedded layers of sandstone, pebble conglomerate, siltstone, and claystone sedimentary bedrock of the Puente Formation. These earth materials consist primarily of silty sands, clayey sands, sands, silts and clays. Each of these earth materials is described in more detail below.

Fill Soils (Af)

An undocumented fill layer of variable thickness was encountered in soil borings BH-4, BH-5, BH-6, BH-7, BH-8, BH-9 and BH-11 drilled between August 18 to August 24, 2017, within the subject site. The depth of the fill ranges from approximately five (5) to ten (10) feet in thickness. Deeper fill soils may be encountered at the project site. The observed fill soils consist primarily of silty clay, clayey sand and clayey silt. Most of the fill soils appear to have been locally derived from the general site area and were placed beneath the former parking lot areas. Documentation concerning the placement and degree of compaction of the fill soils was not available.

Alluvium (Qal)

Alluvial deposits were encountered underlying the fill material at the project site. The native soil encountered in the borings consists of clayey sands, sandy clays, sandy silts, silty clays, silts and clays with occasional gravels and cobbles. The deepest alluvium was located on the west side of the project site along Bonita Drive. Sampling blow-counts correlate from loose and medium stiff to dense and very stiff. Dark brown, fine-grained silts and clays were encountered above the alluvium / bedrock contact. These natural soil materials are potentially expansive and not recommended for use as fill directly below footings and slabs. The soils also include occasional fragments of weathered bedrock. We expect that some cobbles and rocks are larger in size than the largest observed, (approximately four (4) inches in the maximum dimension) and were broken down in the hollow stem auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may be buried in the alluvial sediments below the site.

Interbedded Siltstone, Claystone and Sandstone Bedrock (Tpss)

The sedimentary bedrock on Lot R Tennis and Parking Structure site is underlain by sedimentary bedrock of Puente Formation (Tpss and Tpcg) consisting of interbedded siltstone, claystone, sandstone, and pebble conglomerate layers. The bedrock beneath the hillside area consists of well stratified sedimentary bedrock assigned to the Puente Formation. The bedrock materials are Miocene-age and estimated to be at least 25 million years old. The bedrock consists of interbedded layers of siltstone, claystone, sandstone

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and pebble conglomerate that were originally deposited as horizontal strata in a marine environment. The bedrock layers have undergone tectonic deformation, uplift and tilting over the past 25 million years. The gross bedrock structure beneath the subject hillside forms a uniformly northwest dipping monoclinal structure with local small amplitude folding. The bedrock bedding structure generally strikes northeast and dips between 44 to 65 degrees to the northwest (Converse, 2007, 2013). The bedrock consists of laminated to thinly bedded, stratified layers of interbedded siltstone, claystone, sandstone and shales. The sedimentary bedrock becomes less weathered with depth and is of low to moderate hardness. The hollow stem auger borings were drilled to the planned depths in the bedrock materials. The samplers (Ring and SPT) met increased sampling resistance with depth. The CPT soundings met very dense/ stiff conditions in the bedrock materials and were stopped short of their plan depths to prevent CPT damage.

The sedimentary bedrock materials produce low to moderate expansive soil materials when excavated, processed and mixed for use as fill. The bedrock material also contains diatomaceous layers that can influence moisture contents and densities when mixed and used as fill materials.

Sandstone and Pebble Conglomerate Bedrock (Tpcg)

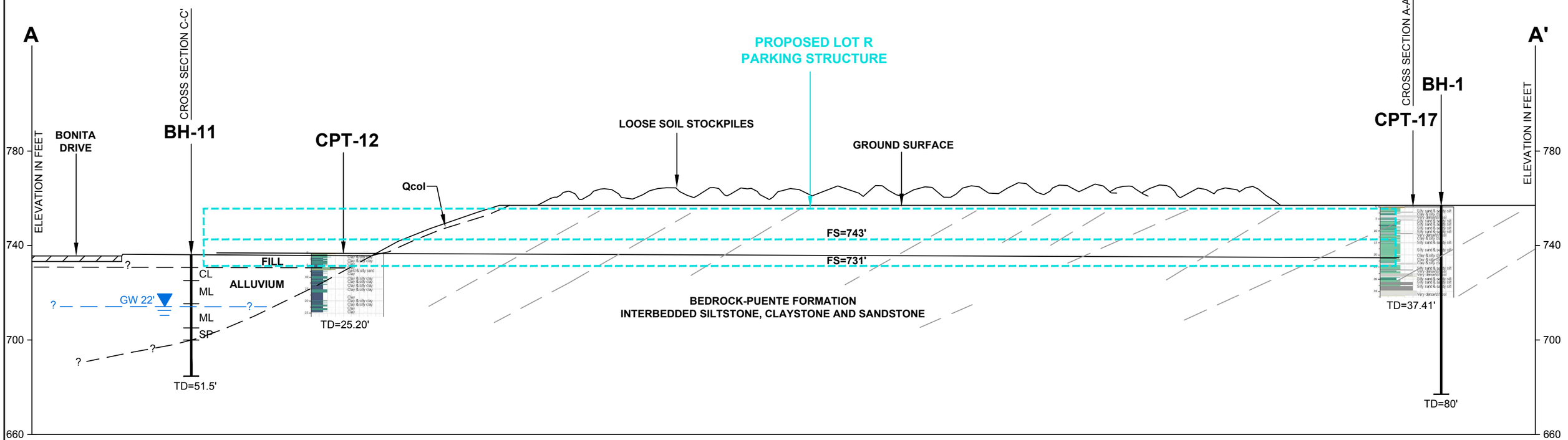
Hard sandstone and conglomerate bedrock layers consisting of gravel and cobble-sized rocks in a cemented sandstone matrix (Tpcg) were encountered at shallow depths along the north side of hillside beyond the current Lot R structure location. The sandstone and conglomerate layers can be thick and massive and may contain boulder sized hard rock materials. The sandstone and conglomerate bedrock materials were observed to be hard and will be more difficult to excavate during grading and construction.

Drawing No.4, *Geologic Cross Section A-A'*, Drawing No.5, *Geologic Cross Section B-B'*, Drawing No.6, *Geologic Cross Section C-C'* and Drawing No.7, *Geologic Cross Section D-D'*, have been drawn across the subject site to illustrate the subsurface conditions beneath the project site. For additional information on the subsurface conditions, see the Logs of Boring Data in Appendix A, *Field Exploration*.

4.3 Groundwater

Local zones of groundwater seepage and groundwater were encountered during subsurface exploration in the alluvium and bedrock in Borings BH-3, BH-4, BH-5, BH-6, BH-7, BH-8, BH-9 and BH-11 at depths ranging from approximately 20 feet below ground surface in Boring BH-6 to approximately 60 feet in Boring BH-3. The groundwater levels encountered during drilling ranged between approximate elevations 696 feet and 713 feet. The regional groundwater table is not expected to be encountered during the planned grading and construction. However, the possibility of groundwater being encountered during future grading and deeper excavations cannot be completely precluded.

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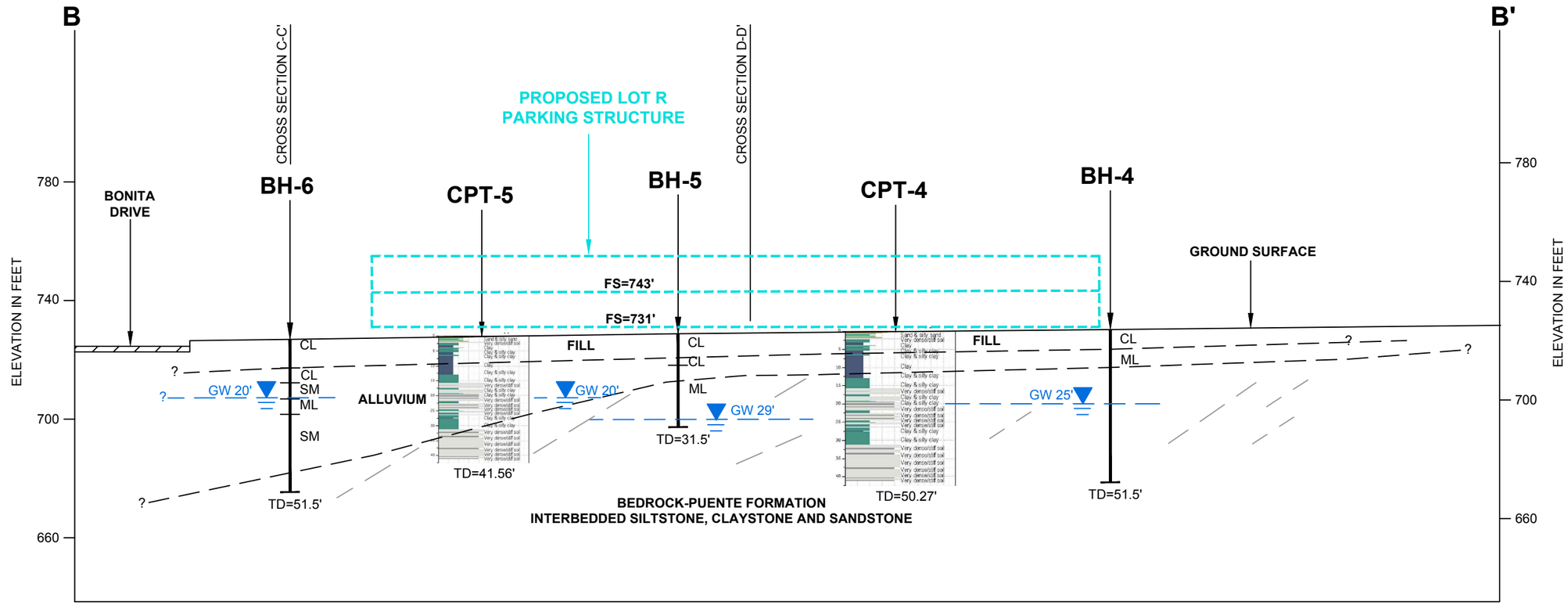
PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION A-A'

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Project No.	Drawing No.
17-31-247-01	4



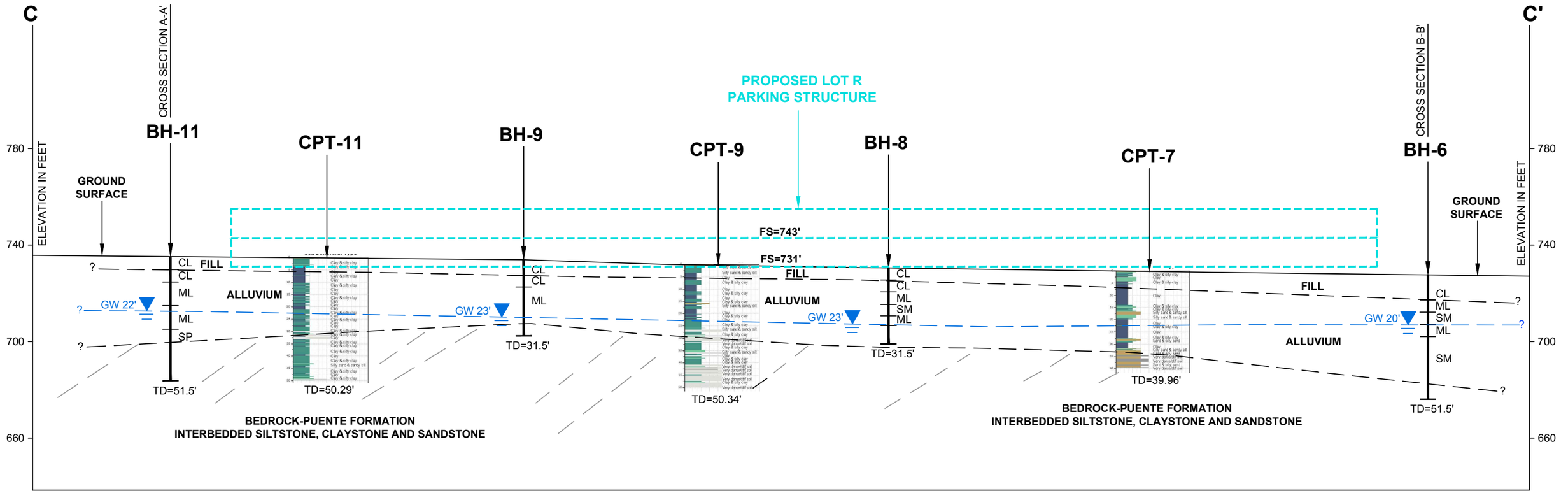
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VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION B-B'

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WALNUT, CALIFORNIA

Project No.	Drawing No.
17-31-247-01	5



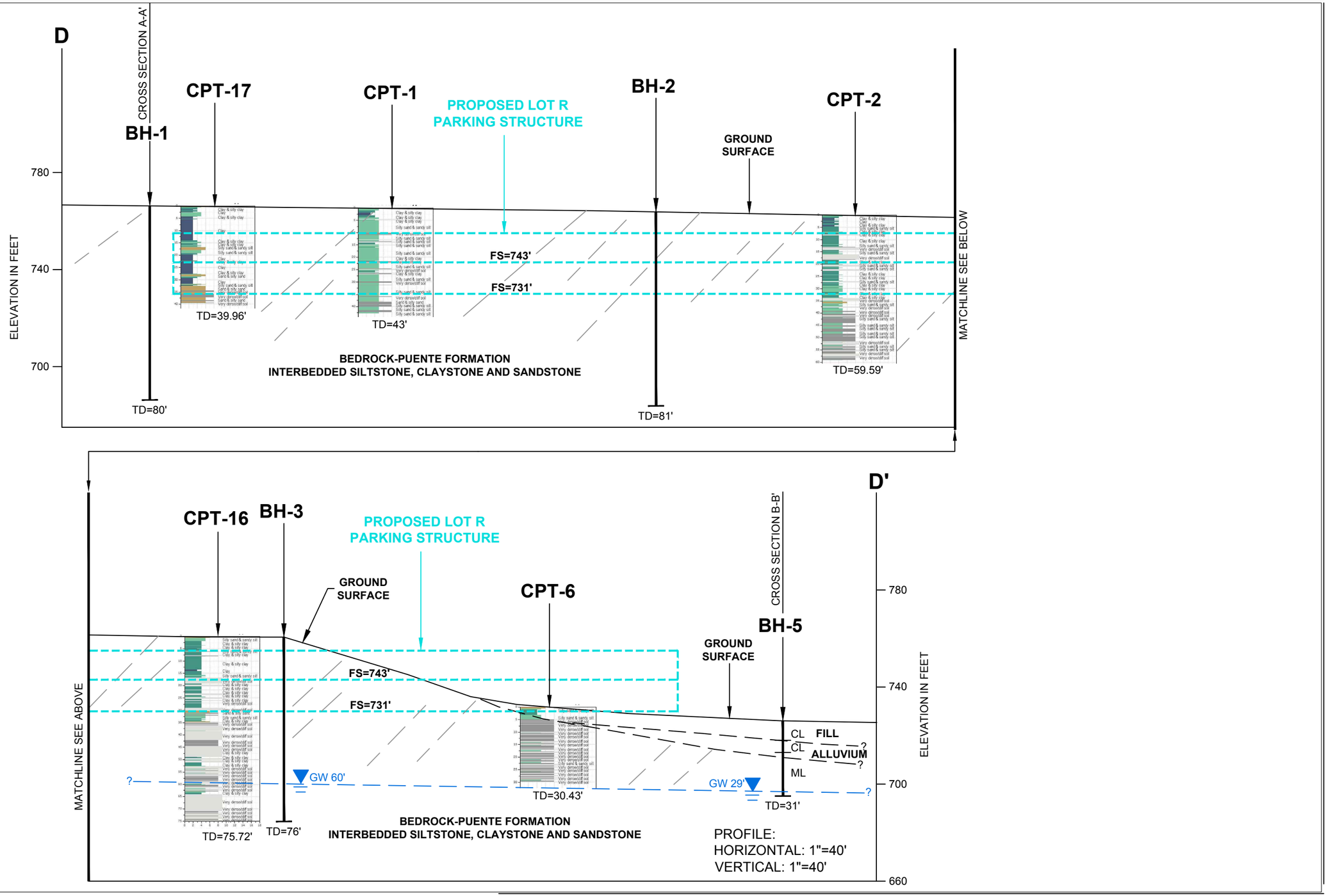
PROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION C-C'

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Project No.	Drawing No.
17-31-247-01	6



GEOLOGIC CROSS SECTION D-D'

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Project No. 17-31-247-01

Drawing No. 7

Wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers in the alluvium from upslope infiltration of rainfall, surface flow, runoff and storm water recharge and should be anticipated during grading and construction. Local zones of perched groundwater may be present within the near-surface deposits due to buried alluvial channel features, channel remnants, alluvium/bedrock contacts, local recharge conditions or during the rainy season. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, storm water recharge and groundwater pumping, among other factors.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

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5.0 FAULTING AND SEISMIC HAZARDS

Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (0.53 mile / 0.85 kilometer to the north) and Chino-Central Avenue (Elsinore) Fault (6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults were included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown on Drawing No. 3, *Regional Geological Map* and Drawing No. 8, *Southern California Regional Fault Map*.

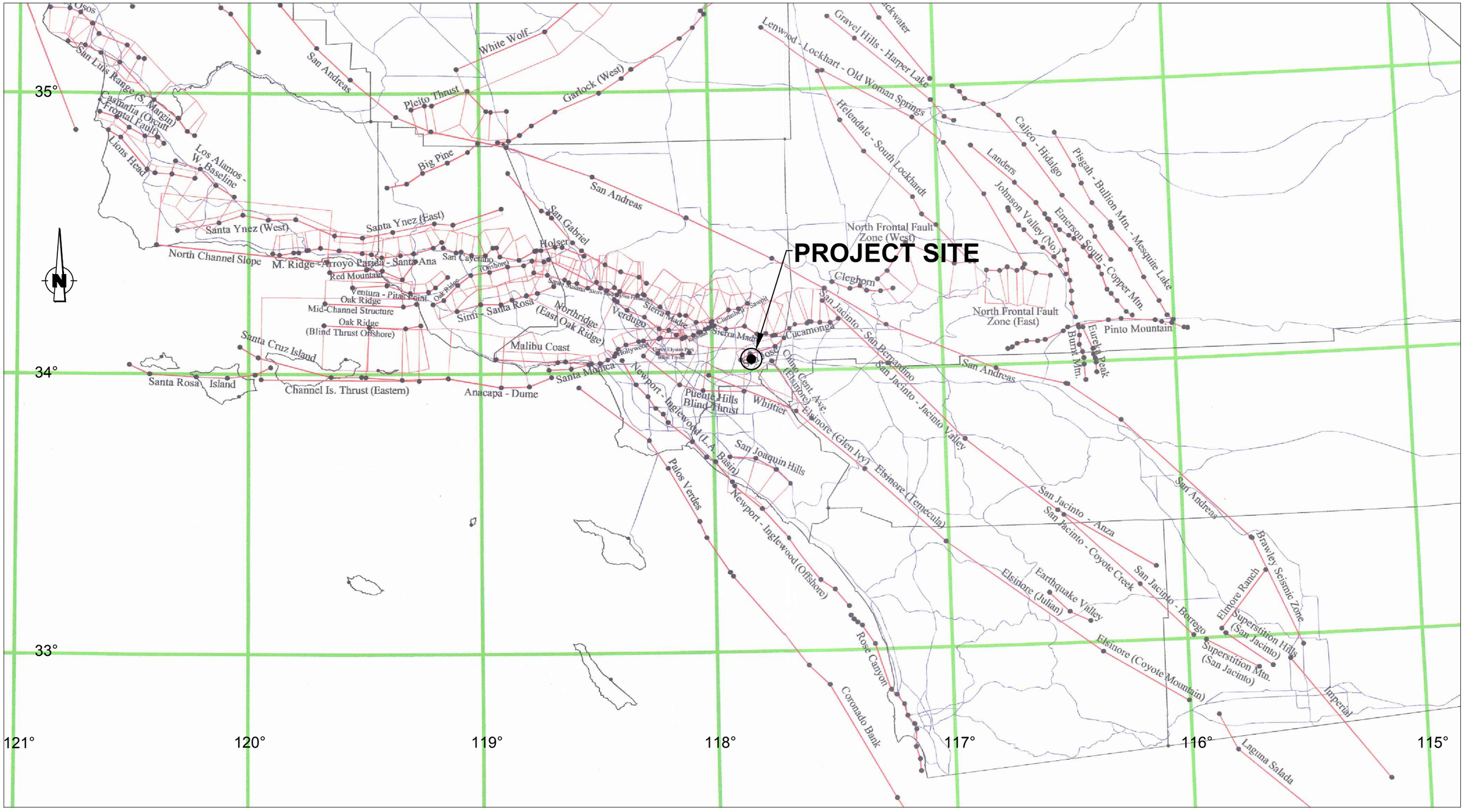
The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 738,000 years.

<u>San Jose Fault</u>

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 0.53 mile / 0.85 kilometer north of the project site.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating

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REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

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Drawing No. 8

of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault lies along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits. The Chino and Central Avenue faults converge southward into the much larger Elsinore fault system.

The July 29, 2008 Chino Hills earthquake was a magnitude 5.5 earthquake event that caused moderate ground shaking and some minor damage to the Mt. San Antonio College campus buildings. The earthquake epicenter was located approximately 15 miles southeast of the campus beneath the Chino Hills and at a depth of approximately 9.1 miles (14.6 km) below ground surface.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 1, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.8	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00
Clamshell-Sawpit	19.5	6.5	0.50

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Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

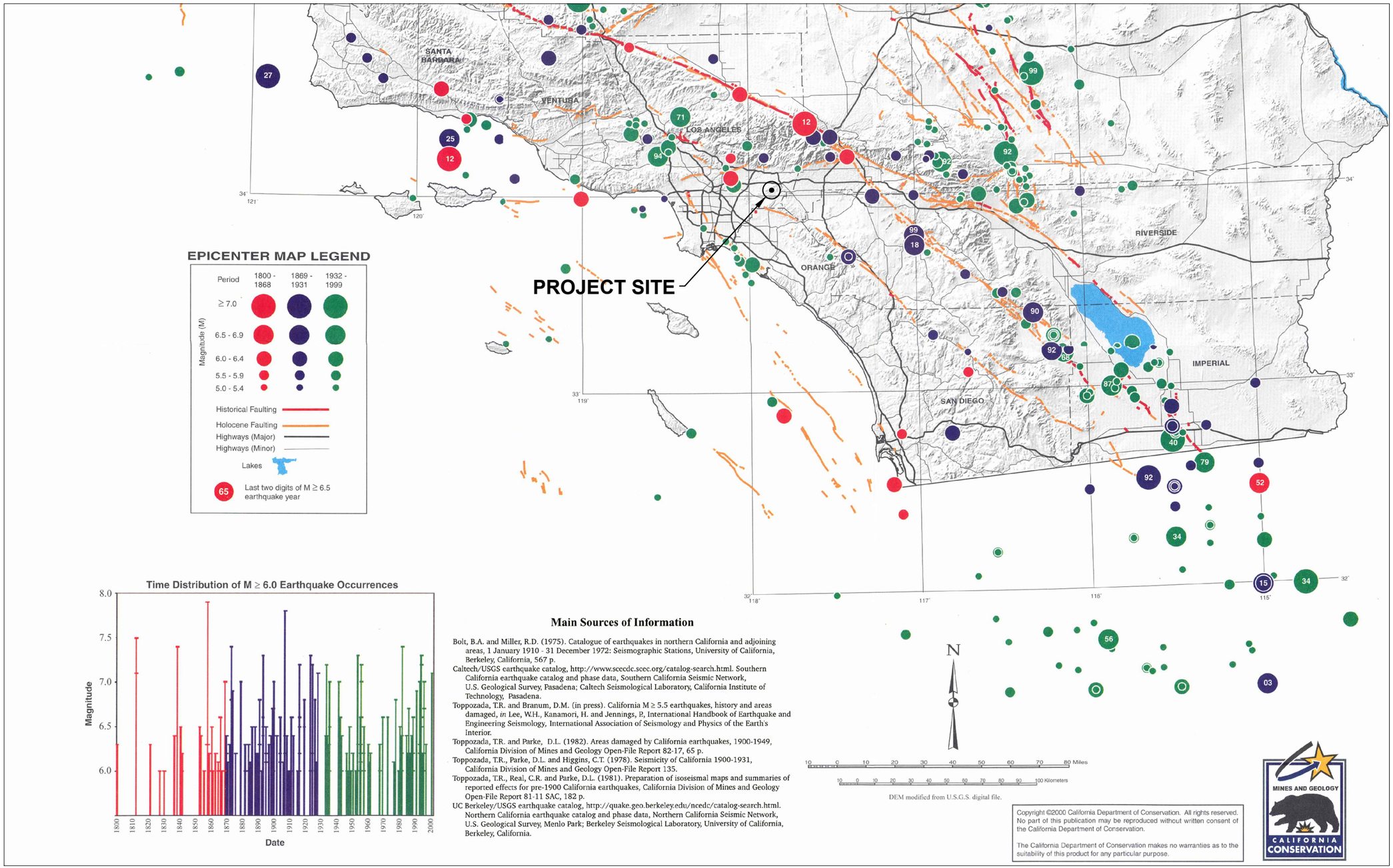
5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre, 1994 Northridge and 2008 Chino Hills earthquakes. The epicenters for these earthquakes are shown on Drawing No. 9, *Epicenter Map of Southern California Earthquakes (1800-1999).*

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EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting

Holocene Faulting

Highways (Major)

Highways (Minor)

Lakes

65 — Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

N

10 0 10 20 30 40 50 60 70 80 Miles

10 0 10 20 30 40 50 60 70 80 90 100 Kilometers

DEM modified from U.S.G.S. digital file.

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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Drawing No. 9

5.3 Surface Fault Rupture

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. An “active fault” has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

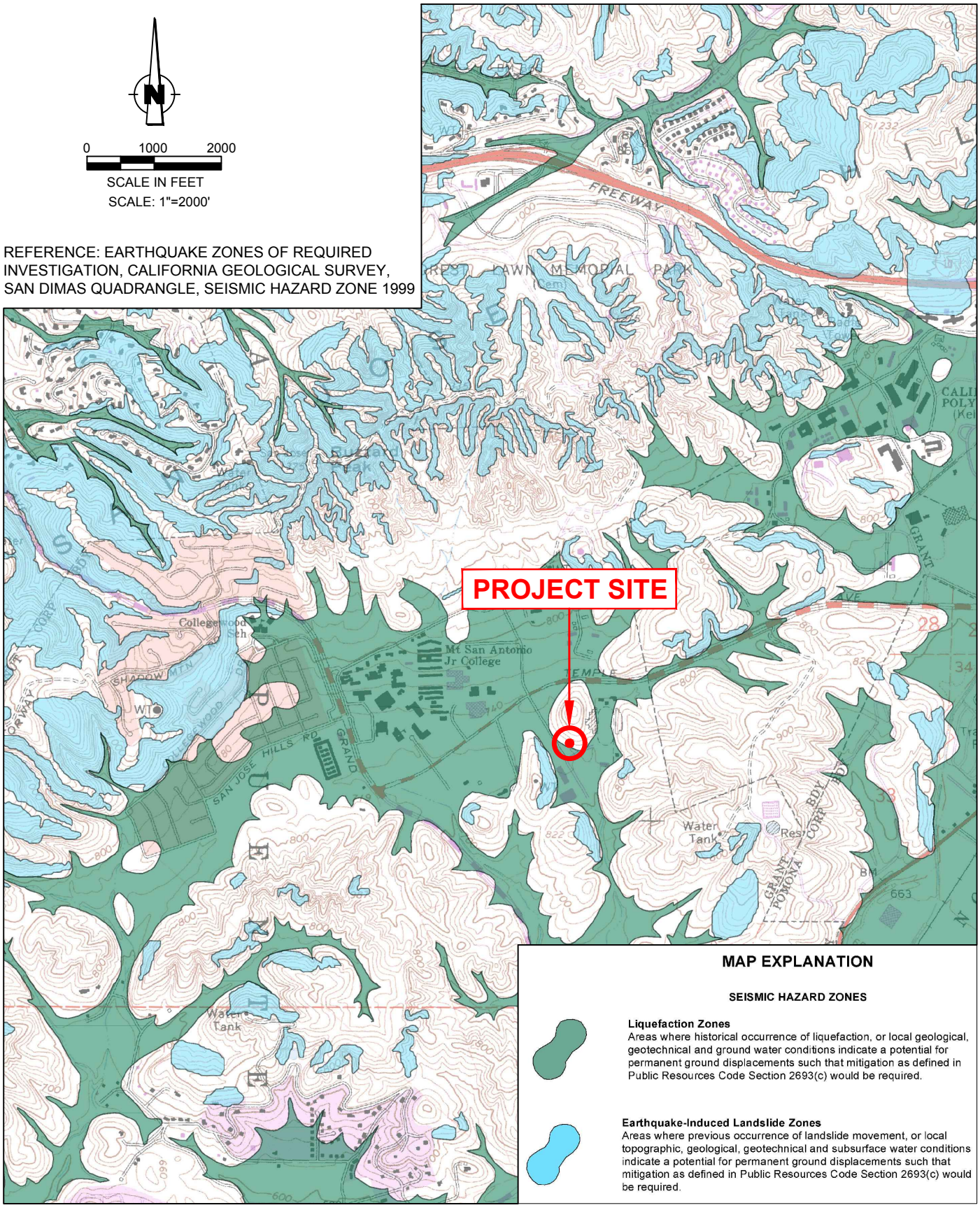
The western and southern sections of the proposed Lot R structure site along Bonita Drive are underlain by alluvial sediments that are located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 10, *Seismic Hazard Zones Map*. Liquefaction analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software for the upper 50 feet below ground surface utilizing Boring BH-4, BH-6, CPT-9 and BH-11. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement ranges from 0.43 to 2.58 inches with potential differential settlement ranging from 0.22 to 1.29 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with

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SEISMIC HAZARD ZONES MAP

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Project No. 17-31-247-01

Drawing No. 10

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predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity of the site is gently sloping to the southwest, with no significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is also not shown with any earthquake-induced landslide areas due to the gently, southwest sloping ground condition of the site topography. The hillside slope will be excavated and removed to create a level building pad. In the absence of significant ground slopes, the potential for seismically induced landslides to affect the proposed site is considered to be very low.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Map Number 0637C1725F, Panel 1725 of 2350, dated September 26, 2008, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote. The potential of earthquake induced flooding of the subject site is considered to be remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

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6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.0455 degrees North Latitude, 117.8383 degrees West Longitude). The seismic parameters are presented below.

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2016 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.185 g
Mapped 1-second Spectral Response Acceleration, S_1	0.780 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.3
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.185 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.014 g
Design Spectral Response Acceleration for short period, S_{DS}	1.457 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.676 g
Seismic Design Category	E

6.2 Site-Specific Response Spectra

A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years). The controlling source was determined to be the USGS 2008 California Gridded Source, with an MCE of Mw 7.0 and a deterministic peak ground acceleration (PGA) of 1.01g.

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

The 2016 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S.*

Seismic Design Maps website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2016 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	E
S_S	2.185	C_{RS}	1.012
S_1	0.780	C_{R1}	1.023
F_a	1	**0.08 F_V/F_a**	0.104
F_v	1.3	**0.4 F_V/F_a**	0.520
S_{MS}	2.185	T_0	0.093
S_{M1}	1.014	T_S	0.464
S_{DS}	1.457	T_L	8
S_{D1}	0.676		

A Site-Specific response analysis, using faults within 200 kilometers of the sites, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 390 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

The probabilistic response spectrum results and peak ground acceleration for each attenuation relationship are presented in the following table.

Table No. 4, Probabilistic Response Spectrum Data

Attenuation Relationship	Probabilistic Mean	Boore-Atkinson (2008)	Campbell-Bozorgnia (2008)	Chiou-Youngs (2007)
Peak Ground Acceleration (g)	0.966	0.909	0.910	1.056

Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.03	1.040	0.987	0.979	1.138
0.05	1.187	1.095	1.130	1.318
0.10	1.712	1.570	1.637	1.908
0.20	2.144	1.998	2.077	2.337
0.30	2.036	1.936	1.918	2.210

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Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.40	1.894	1.854	1.785	2.027
0.50	1.764	1.737	1.702	1.851
0.75	1.406	1.418	1.357	1.442
1.00	1.149	1.136	1.119	1.193
2.00	0.570	0.601	0.569	0.535
3.00	0.369	0.398	0.371	0.330
4.00	0.270	0.286	0.283	0.234

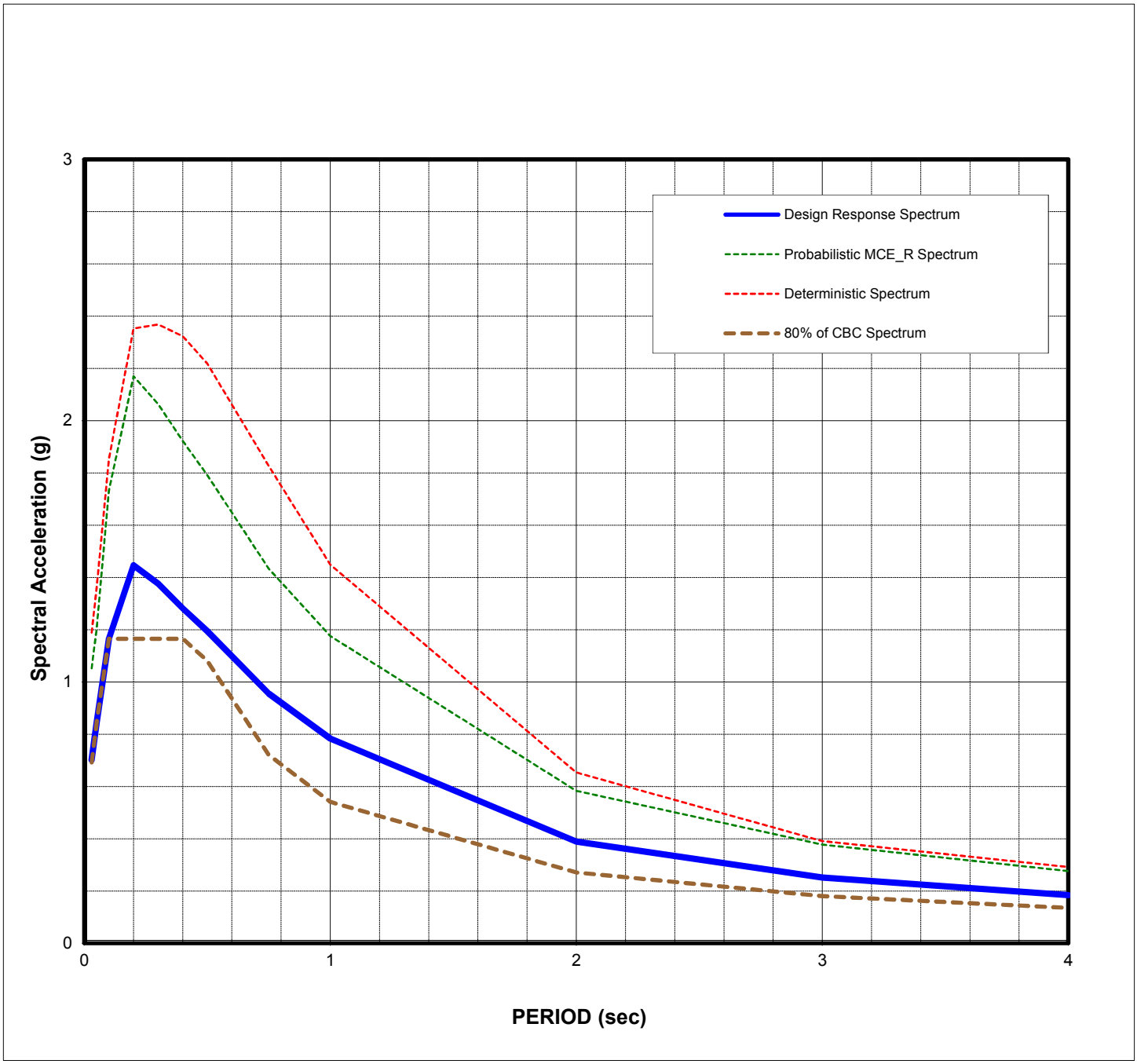
Applicable response spectra data are presented in the table below and on Drawing No. 11, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.

Table No. 5, Site Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.040	1.012	1.052	1.189	0.260	1.052	0.692	**0.70**
0.05	1.187	1.012	1.201	1.358	0.433	1.201	0.843	**0.84**
0.10	1.712	1.012	1.733	1.854	0.865	1.733	1.165	**1.17**
0.20	2.144	1.012	2.170	2.353	1.500	2.170	1.165	**1.45**
0.30	2.036	1.013	2.063	2.368	1.500	2.063	1.165	**1.38**
0.40	1.894	1.015	1.922	2.323	1.500	1.922	1.165	**1.28**
0.50	1.764	1.016	1.792	2.219	1.500	1.792	1.082	**1.19**
0.75	1.406	1.020	1.434	1.827	1.040	1.434	0.721	**0.96**
1.00	1.149	1.023	1.175	1.449	0.780	1.175	0.541	**0.78**
2.00	0.570	1.023	0.583	0.653	0.390	0.583	0.270	**0.39**
3.00	0.369	1.023	0.377	0.391	0.260	0.377	0.180	**0.25**
4.00	0.270	1.023	0.276	0.292	0.195	0.276	0.135	**0.18**

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

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Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Transit Center Parking Lot R

1100 N. Grand Avenue, Walnut, CA 91789

For : Mt. San Antonio College

Project Number:

17-31-247-01

Converse Consultants

Drawing No.

11

Table No. 6, Site-Specific Seismic Design Parameters

Parameter	Value (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-Second Period Spectral Response Acceleration, S_{MS}	2.170	1.748
Site-Specific 1-Second Period Spectral Response Acceleration, S_{M1}	1.175	0.811
Site-Specific Design Spectral Response Acceleration for Short Period, S_{DS}	1.446	1.165
Site-Specific Design Spectral Response Acceleration for 1-Second Period, S_{D1}	0.784	0.541

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7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site re-development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The western and southern portions of the project site along Bonita Drive are underlain by alluvial sediments and are located within a mapped Seismic Hazard Zone for liquefaction. Liquefaction analyses were performed for the upper 50 feet below ground surface utilizing BH-4, BH-6, CPT-9 and BH-11. Based on the results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement is on the order of 0.43 to 2.58 inches with potential differential settlement of 0.22 to 1.29 inches.

- Local zones of groundwater seepage and groundwater were encountered during subsurface exploration at depths ranging from approximately 20 feet bgs in Boring BH-6 to approximately 60 feet bgs in Boring BH-3. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Shallow spread and continuous footings are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans, specifications, and are followed during site construction.

- Variable thickness undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for any slab or foundation support.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and top portion of the sedimentary bedrock subgrade is recommended for site grading to provide a compacted fill blanket beneath the building foundations and floor slabs. The over-excavation and re-compaction for the areas underlain by sedimentary bedrock (Tpss) should be over-excavated and recompacted to provide a uniform 5-foot thick

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layer of compacted fill beneath the building foundations and floor slab. To mitigate the low to medium expansive potential of the sedimentary bedrock materials (siltstone and claystone) provide a minimum 2-foot thick layer of lime-treated soil or non-expansive, granular compacted fill soils beneath the floor slabs.

- Over-excavation and re-compaction for areas underlain by alluvial soils (Qal) and the edge of the sedimentary bedrock (Tpss) along the west and south sides of the parking structure is recommended to extend 10 feet below plan grade surface, a minimum of 10 feet beyond the edge of the parking structure foundations, and a minimum of 15 feet of overlap over the edge of the sedimentary bedrock (Tpss). A geofabric reinforcement layer (HP570) is recommended on the compacted bottom of the 10-foot depth of over-excavation to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock materials.

- Different earth materials should be anticipated at the bottom of excavations. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of existing alluvium and bedrock below the bottom of foundations and slab-on-grades are recommended. We recommend the spread foundations and slab-on-grades be supported on a minimum 5-foot thick layer of compacted fill that is be benched into native earth materials.

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general, the pH value, chloride content, and saturated resistivity of the site soils are in the non-corrosive range. However, the saturated resistivity of samples taken at project site indicate a “Corrosive” potential to ferrous metals.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials may contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers may be encountered in the excavation and should be anticipated. The sedimentary bedrock materials will require excavation, processing and mixing for use as compacted fills. Earthwork should be performed with suitable equipment for gravelly materials and for hard, cemented, bedrock materials.

- The planned structure might have different structure heights and foundation elevations. Differential vertical and lateral deflections between structures should be

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anticipated. We recommend cold joints on slabs and walls at the transition between structures or where needed determined by the structural engineer should be constructed.

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8.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

8.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading is required to prepare the site for support of the proposed parking structure. The subject site has slight slope to the southwest. It is anticipated that the site preparation will include excavation and removal of the remaining hillside slope to plan Level 1 surface grades and over-excavation and re-compaction of the upper earth materials. To reduce potential differential settlements, variations in the soil and bedrock types, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform where possible. A geofabric reinforcement layer (HP570) is recommended at the bottom of the deeper 10-foot depths of over-excavation in the alluvium and along the edge of the sedimentary bedrock to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock areas. To mitigate the low to medium expansion potential of the sedimentary bedrock materials and clay soils, we recommend the top 2 feet of prepared subgrade be treated with lime to stabilize the earth materials or replaced with granular, non-expansive soil materials.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation.

Site preparation will require removal of remaining hilltop slope and existing pavements, structures, footings, slabs, sidewalks, curbs, trees and other improvements with their foundations and existing underground structures, vaults and utility lines. Top soils containing organic rich materials are not acceptable for reuse as compacted fill soils beneath the parking structure footings and floor slab.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing, mixing and moisture conditioning. The upper undocumented stockpiled fill soils and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slabs to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays. Rocks larger than three (3) inches in the largest dimension should not be placed as fill. Rocks larger than one (1) inch should not be placed within the upper 12 inches of subgrade soils.

On-site clay and silt soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

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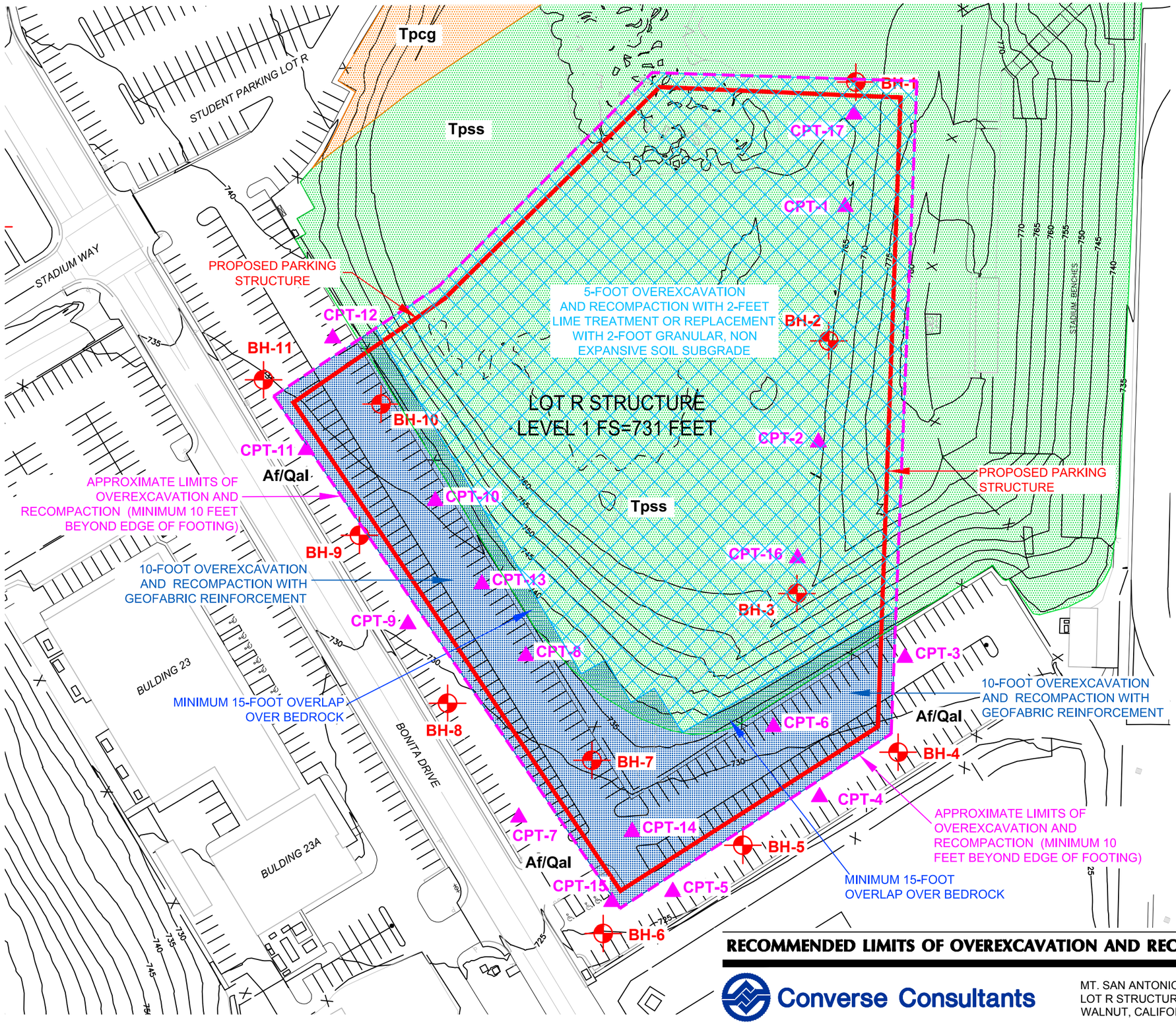
To mitigate potentially expansive earth materials in the upper subgrade materials with lime treatment, we recommend the top 2 feet of the soil and bedrock subgrade be over-excavated, processed, and thoroughly mixed with 4 to 5 percent lime by weight of dry earth material. Thorough mixing will be required to distribute the lime throughout the earth materials and to initially pulverize the earth materials and prepare it for the addition of water to initiate the chemical reaction for stabilization. Rotary mixers should be used to ensure the thorough mixing of the lime, soil and water. It is essential that adequate water be added before final mixing to ensure complete hydration and to bring the soil moisture content 3 percent above optimum before compaction. The rotary mixers will have to mix the materials in multiple lifts depending on equipment capability. Earth materials excavated from the building pads and 10-feet beyond the edge of foundations can be lime-treated in lifts as it is removed and stored in a stockpile for up to several weeks. These treated soils should have a water content 1 to 3 percent above optimum moisture content to ensure that the lime reaction has enough water for completion. This practice saves construction time as the mellowing is occurring in the fill material stockpile. The treated and mellowed fill material can then be compacted in lifts without delay as it is returned to building pad and compacted.

8.2 Over-Excavation/Removal

Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and sedimentary bedrock is recommended for site grading to provide a minimum 5-foot thick layer of compacted fill beneath the bottom of the building foundations and floor slabs. Different earth materials will be encountered at the bottom of the excavations. In order to provide a relative uniform bearing material below parking structure foundations and floor slabs, and reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock earth materials, over-excavation and re-compaction below the foundations and slab-on-grades is recommended. The over-excavation and re-compaction for the areas underlain by sedimentary bedrock (Tpss) should extend approximately 5-feet below plan subgrade to provide a uniform 5-foot thick layer of compacted fill. A minimum 2-foot thick layer of lime-treated soil or non-expansive, granular compacted fill beneath the floor slabs should be used to mitigate the potentially expansive earth materials.

Over-excavation and re-compaction for areas underlain by alluvial soils (Qal) and the edge of the sedimentary bedrock (Tpss) along the west and south sides of the parking structure is recommended to extend 10-feet below plan grade surface, and a minimum 10-feet beyond the edge of the parking structure foundations, and a minimum of 15-feet of overlap over the edge of the sedimentary bedrock (Tpss). A geofabric reinforcement layer (Mirafi HP 570 or equivalent) is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce potential differential settlements between the underlying alluvium and shallow bedrock areas. Drawing No.12, *Recommended Limits of Over-Excavation and Re-Compaction with Geofabric Reinforcement*, shows the

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LEGEND

- APPROXIMATE LOCATION OF BORING (AUGUST 2017)
- APPROXIMATE LOCATION OF CPT SOUNDINGS (SEPTEMBER 2017)
- **Tpcg** SEDIMENTARY BEDROCK-PUENTE FORMATION PEBBLE CONGLOMERATE AND SANDSTONE, HARD, CEMENTED
- **Tpss** SEDIMENTARY BEDROCK-PUENTE FORMATION, INTERBEDDED SILTSTONE, CLAYSTONE ADN SANDSTONE, LOW TO MEDIUM EXPANSION POTENTIAL.
- **Af** FILL SOILS FROM PREVIOUS SITE GRADING
- **Qal** ALLUVIAL SOILS

N

0 80 160

APPROXIMATE SCALE IN FEET

RECOMMENDED LIMITS OF OVEREXCAVATION AND RECOMPACTION WITH GEOFABRIC REINFORCEMENT

Converse Consultants

MT. SAN ANTONIO COLLEGE
LOT R STRUCTURE
WALNUT, CALIFORNIA

Project No.	Drawing No.
17-31-247-01	12

approximate limits and depths of over-excavation and re-compaction for the proposed parking structure.

The bottom and edges of the excavations shall be cleaned, squared-off and leveled. If loose, soft, disturbed or otherwise unsuitable soil materials are encountered at the bottom of excavations, deeper removals will be required until firm and unyielding native soils are encountered. The final bottom surfaces and limits of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing compacted fill. The bottoms should be proof rolled with a loaded, heavy, rubber tired piece of grading equipment to identify any remaining loose or soft bottom areas. The bottom of excavation shall be observed, evaluated and approved during grading to determine that suitable firm and unyielding soils have been encountered. The exposed bottom shall then be scarified 6-8 inches in depth, mixed, moisture conditioned or dried back as necessary, and compacted to 90% relative maximum dry density compaction prior to smoothing and leveling for placement of the bottom geosynthetic reinforcement layer.

A geofabric reinforcement layer consisting of Mirafi HP 570 or equivalent, shall be placed across the prepared bottom of the deeper 10-foot depths of over-excavation and minimum 15-foot bedrock bench cut overlap as shown on Drawing No.12, *Recommended Limits of Over-Excavation and Re-Compaction with Geofabric Reinforcement*. The bottom layer of Mirafi HP 570 geotextile reinforcement, or equivalent, shall be laid across the prepared soil subgrade in accordance with the manufacture's recommendations and project specifications. A minimum 1-foot side-to- side overlap should be provided for each fabric layer in accordance with project and manufacturer's specifications. An approximately 2-inch thick layer of moisture conditioned fill should be placed between the overlapping geotextile fabric layers to increase friction resistance between the overlapping sections of geotextile fabric. The installation should be observed and documented by the geotechnical engineer or his designated representative prior to backfill grading. Once placement of the geotextile reinforcement layers have been observed and documented by the geotechnical engineer or his designated representative, moisture conditioned backfill soils can be carefully placed, spread smoothed and level over the geotextile reinforcement layer without disturbing the geotextile layers or their positions. The remaining fill soils should then be placed, mixed, moisture conditioned and compacted to 90% relative compaction in 6-inch to 8-inch lifts and compacted in accordance with project specifications to bring the fill soils up to plan grades.

We recommend a minimum 5 feet of onsite soils and bedrock below the bottom of foundations and floor slabs should be removed, moisture-conditioned if necessary and replaced as compacted fill for parking structure. All undocumented fill should be removed and replaced with compacted fill.

The excavations to remove undocumented fills, alluvium and bedrock to proposed subgrade levels should be extended to ten (10) feet laterally beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill.

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Thickness of compacted fill underneath the buildings should not vary significantly. After the required removals have been made, the exposed native earth materials shall be excavated to provide a minimum 5-foot thick zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork.

For retaining walls, we recommend over-excavation be at least 5 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Mirafi HP570, or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading by the project geotechnical engineer or his designated representative. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

8.3 Structural Fill

The approved bottom of the excavations should be scarified to a depth of at least six (6) inches. The scarified soils should be moisture conditioned and mixed to within three (3) percent of optimum moisture content for granular soils and to approximately three (3) percent above the optimum content to near-optimum moisture content for the fine-grained soils. Scarified soil shall be compacted to a minimum 90 percent of the laboratory maximum dry density as determined by the ASTM Standard D1557 test method to produce a firm and unyielding surface.

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All structural fill should be placed on competent, scarified and compacted native materials as determined by a geotechnical engineer or his designated representative and in accordance with the specifications presented in this section.

Excavated site soils, free of deleterious materials and rock fragments larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any import fill should be tested and approved by Converse. The import fill should have an expansion potential less than 20.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within three (3) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory dry density in accordance with the ASTM Standard D1557 test method. The amount of processing required for proper moisture conditioning and mixing at the site will depend on the seasonal variations in the in-situ moisture conditions, the depth of cut, the equipment, weather and the processing method.

Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be keyed and benched into competent materials. The height and width of the benches shall be at least two (2) feet.

8.4 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The onsite materials contain about 5 to 10 percent gravels up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. The deeper sedimentary bedrock materials are less weathered, cemented and moderately hard to hard. The excavation and rippability of these hard bedrock materials will be more difficult and should be anticipated during grading. Many of the soil borings drilled for the project site encountered difficult drilling and/or refusal in the sedimentary bedrock materials beneath the former hillside. Standard Penetration Tests (SPT) blow counts in the sedimentary bedrock materials were high and often times met refusal to sampler penetrations. Localized areas of very hard bedrock requiring single shank ripping or hydraulic breakers should be anticipated. Directional ripping and downsizing breakers may be required in harder and cemented bedrock materials. Earthwork should be performed with suitable equipment for hard and cemented bedrock materials.

8.5 Expansive Soil

Based on our laboratory testing results, the on-site fine-grained silt and clay earth materials are considered to have a low to moderate expansion potential. Medium to high expansion potential in fine-grained silt and clay materials may be anticipated. The on-

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site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading as slabs, foundations and pavement placed directly on expansive subgrade soil will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Removing the top two (2) feet of subgrade soils beneath the plan grade surfaces throughout the site, and replacing with imported non-expansive sandy soil materials.

- Reinforce footings and place thicker concrete slabs with moisture barriers.

- Lime treat the upper two (2) feet of the subgrade soils.

8.6 Shrinkage and Subsidence

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.

- Subsidence would depend on the construction methods including type of equipment utilized. For estimation purposes, ground subsidence may be taken as 0.20 feet.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

8.7 Subgrade Preparation

Final subgrade soils for structures and streets should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade

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soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 0.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

The various design recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. The proposed buildings may be supported by shallow continuous and isolated square footings.

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9.0 DESIGN RECOMMENDATIONS

9.1 Shallow Foundations

9.1.1 Vertical Capacity

Continuous and square footings should be founded at least 24 inches below lowest adjacent final grade on the recommended earth materials. A minimum footing width of 24 inches is recommended for continuous and square footings. The net allowable dead plus live load bearing value for isolated square and continuous footings is 2,000 psf. The net allowable bearing pressure can be increased by 200 psf for each additional foot of excavation depth and width up to a maximum value of 4,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

9.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 200 psf per foot of depth up to a maximum of 2,500 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

9.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

9.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

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9.2 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

9.3 Lateral Earth Pressure

The proposed retaining walls are anticipated to be up to 15 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Wall Type	Equivalent Fluid Pressure (pcf)
	Level Backfill
Cantilever Wall (Active pressure)	35 (Triangular Distribution)
Restrained Wall (At-rest pressure)	55 (Triangular Distribution)

The recommended lateral pressures assume that the walls are fully back-drained with granular, free-draining, non-expansive soil materials to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by free draining, uniformly graded, ¾ -inch washed, permeable aggregate material, and wrapped in filter fabric such as Mirafi 140N or equivalent, and should extend to about 2 feet below the finished grade. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, Schedule 40 PVC or rigid ABS (SDR-35), or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to surface drain or sump pump. Subterranean walls should be waterproofed to prevent moisture migration and moisture problems.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Cantilever retaining walls greater than 12 feet, as measured from the surface, should be designed to resist additional earth pressure caused by seismic ground shaking. A

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dynamic earth pressure of 21H (psf), based on an inverted triangular distribution, can be used for design of wall.

9.4 Slabs-on-Grade

Slabs-on-grade should have a minimum thickness of five inches for support of nominal ground-floor live loads without hydrostatic uplift pressures. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer.

Slabs should be designed and constructed as promulgated by the American Concrete Institute (ACI) and the Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted. Care should be taken during concrete placement to avoid slab curling.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a 10-mil-thick moisture barrier between the slab and compacted subgrade that meets the performance criteria of ASTM E 1745 Class A material. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

9.5 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test one (1) selected soil sample taken in the general area of the proposed structures. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized on the following table:

Table No. 8, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 643) Ohm-cm
BH-1	35	7.62	170	0.071	480
BH-10	10	7.78	190	0.095	570

Based on our review of soil corrosivity test results (see Appendix B), the soluble sulfate concentration, pH, and chloride content are not in the corrosive range to concrete in accordance with the Caltrans Corrosive Guidelines (2012). However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated. Type I or II Portland Cement may be used for the construction of the foundations and slabs.

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The test results presented herein are considered preliminary. Additional testing and evaluation of the as-graded soils is recommended. A corrosion engineer may be consulted for appropriate mitigation procedures and construction design, if needed. Conventional corrosion mitigation measures may include the following:

- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed. Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

9.6 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 9, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
13	4	3.0	4.5	5.0
	5	4.0	6.0	6.5
	6	5.5	7.5	8.0
	7	6.5	9.5	9.5
	8	7.5	11.0	11.0
	10	9.0	14.0	14.5

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

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Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.7 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 10, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
13	5.0	7.25
	6.0	7.50
	7.0	7.75
	8.0	8.25
	9.0	8.50

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard. Recommended maximum and minimum values of slump for pavement concrete are three (3) inches and one (1) inch, respectively.

Transverse contraction joints should not be spaced more than 15 feet and should be cut to a depth of ¼ the thickness of the slab. Longitudinal joints should not be spaced more than 12 feet apart. A longitudinal joint is not necessary in the pavement adjacent to the curb and gutter section.

All outside edges should conform to Section 201 of the Standard Specifications for Public Works Construction (SSPWC, latest edition), and should be constructed in accordance with Section 302-6 of the SSPWC. Pavement subgrade should be prepared in accordance with Section 9.7 of this report.

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The PCCP materials should conform to Section 201 of the Specifications for Public Works Construction and should be constructed in accordance with Section 302-6 of the SSPWC.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.8 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building per 2016 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils. Gutters and downspouts should be installed on the roof, and runoff should be directed to the storm drain through non-erosive devices. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

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10.0 CONSTRUCTION RECOMMENDATIONS

10.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 10.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required. For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

10.2 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in Table No. 11, *Slope Ratios for Temporary Excavation*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 11, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 5	vertical
5 – 10	1:1
10 +	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

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If the excavation occurs near existing structures, special construction considerations would be required during excavation to protect these existing structures during construction. The proposed excavation should not cause loss of bearing and/or lateral supports of the existing structures.

10.3 Shoring Design

Temporary shoring may be required for the recommended excavation due to space limitations and property line boundaries and because of nearby existing structures or facilities and traffic loading. Temporary shoring may consist of the use of a trench box (where feasible), or conventional soldier piles and lagging. Shoring should ultimately be designed by a qualified structural engineer considering the recommendations below in their final design and others which are applicable.

Drilled excavations for soldier piles may require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation. Casing may be needed if granular earth material is located behind the existing retaining wall.

10.3.1 Cantilevered Shoring

Cantilevered shoring systems may include soldier piles with lagging to maintain temporary support of vertical wall excavations. Shoring design must consider the support of adjacent underground utilities and/or structures, and should consider the effects of shoring deflection on supported improvements. Due to sandy nature of on-site soils, some caving during the drilling of soldier-pile borings should be anticipated. A soldier pile system will require continuous lagging to control caving and sloughing in the excavation between soldier piles.

Temporary cantilevered shoring should be designed to resist a lateral earth pressure equivalent to a fluid density of 35 pounds per cubic foot (pcf) for non-surcharged condition. This pressure is valid only for shoring retaining level ground. This equivalent fluid pressure is valid only for shoring supporting level ground.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. Surcharge pressures from the existing structures should be added to the above earth pressures for surcharges within a horizontal distance less than or equal to the wall height. Surcharge coefficients of 50% of any uniform vertical surcharge should be added as a horizontal earth pressure for shoring design. All shoring should be designed and installed in accordance with state and federal safety regulations.

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The minimum embedment depth for piles is ten (10) feet from the lowest adjacent grade into firm alluvium, below the bottom of the excavation. Vertical skin friction against soldier piles for may be taken as 300 psf. Fixity may be assumed at two (2) feet below the excavation into firm native alluvium or bedrock. For the design of soldier piles spaced at least 3.0 diameters on-center, the passive resistance of the soils adjacent to the piles may be assumed to be 200 psf per foot of embedment depth. Soldier pile members placed in drilled holes should be properly backfilled with a sand/cement slurry or lean concrete in order to develop the required passive resistance.

Caving soils should be anticipated between the piles. To limit local sloughing, caving soils can be supported by continuous lagging or guniting. The lagging between the soldier piles may consist of pressure-treated wood members or solid steel sheets. In our opinion, steel sheeting is expected to be more expedient than wood lagging to install. Although soldier piles and any bracing used should be designed for the full-anticipated earth pressures and surcharge pressures, the pressures on the lagging are less because of the effect of arching between the soldier piles. Accordingly, the lagging between the piles may be designed for a nominal pressure of up to a maximum of 350 psf. All lumber to be left in the ground should be treated in accordance with Section 204-2 of the "Standard Specifications for Public Works Construction" (Latest Edition).

10.3.2 Tie-Back Shoring

A tie-back soldier-pile shoring system may be used to maintain temporary support of deep vertical walled excavations. Braced or tied-back shoring, retaining a level ground surface, should be designed for a uniform pressure of 25H psf, where H is the height of the retained cut in feet.

Surcharge pressures should be added to this earth pressure for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 50 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for braced shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation.

Tie-Backs

For design of tie-back shoring, it should be assumed that the potential wedge of failure is determined by a plane at 30 degrees from the vertical, through the bottom of the excavation. Tie-back anchors may be installed at angles of 15 to 40 degrees below a horizontal plane. Soil friction values, for estimating the allowable capacity of drilled friction anchors, may be computed using the following equation:

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$q = 40H$; $q \leq 500$ *pounds-per-square-foot (psf)*

where:

H = average depth of anchor below ground surface, shown on
q = anchor surface area resistance, in psf (excluding tip),

Only the frictional resistance developed beyond the assumed failure plane should be included in the tie-back design for resisting lateral loads. After shoring/tie-back is no longer needed to support the excavation, stress should be carefully released and shoring system including tieback may be able to be left in place.

All shoring and tie-back should be designed by experienced California licensed Civil Engineer and installed by experienced contractors. Shoring/tie-back design should also be reviewed by a geotechnical consultant to verify the soil parameters used in the design are in conformance with geotechnical report.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by a competent person employed by the contractor. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

It is recommended that Converse review plans and specifications for proposed shoring and that a Converse representative observes the installation of shoring. A licensed surveyor should be retained to establish monuments on shoring and the surrounding ground prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) Engineer and Converse for review and evaluation. Adjacent building elements should be photo-documented prior to construction.

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11.0 PLAN REVIEW AND CONSTRUCTION INSPECTION SERVICES

This report has been prepared to aid in evaluation of the site, to prepare site-grading recommendations, and to assist the civil/structural engineer in the design of the proposed developments. It is recommended that this office be provided the opportunity to provide final site grading and design recommendations once the final grading plan is available.

All site grading and earthwork should be completed under the observation and testing of a qualified geotechnical consultant to verify compliance with the recommendations set forth in this report. All ground surfaces should be examined and approved by the project geotechnical consultant prior to placing any fill and/or structure. All footing excavations should be observed prior to placement of steel and concrete to see that footings are founded on satisfactory compacted soils and that excavations are free of loose, disturbed or deleterious materials.

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12.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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Appendix A

Field Exploration

APPENDIX A: FIELD EXPLORATION

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings and performing Cone Penetration Test (CPT) soundings. During the site reconnaissance on August 14 to August 18, 2017, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Eleven (11) borings (BH-1 through BH-11) were drilled from August 18 to August 24, 2017, extending between depths of approximately 30 to 80 feet below the existing ground surface (bgs). The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger for soil sampling. Soils and bedrock were logged by a Converse engineer and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. A-2a through A-12b, *Log of Borings*.

The cone penetration testing (CPT) conducted for this project consisted of pushing an instrumented Vertek cone-tipped probe into the ground while simultaneously recording

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the resistance to penetration at the cone tip and along the friction sleeve. The cone penetration testing described in this report was conducted in general accordance with the current ASTM specifications (ASTM D5778-95 and D3441-94) using an electronic cone penetrometer.

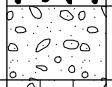
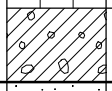
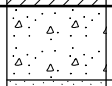
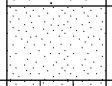
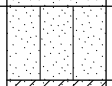
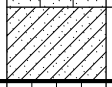
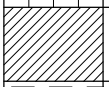
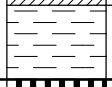
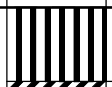
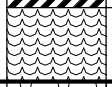
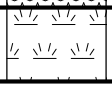
Seventeen (17) Cone Penetration Test soundings (CPT-1 through CPT-17) were advanced to depths of 25 to 75 feet below ground surface within the project site on September 6 and 7th, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The test holes were stopped at plan depths or when the cone tip encountered refusal to penetration. CPT Nos. CPT-1, CPT-2, CPT-5, CPT-7, and CPT-17 encountered very dense/stiff soil and sedimentary bedrock conditions, and were stopped short of their planned depths. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then patched with asphalt patch and tamped to match existing pavement surfaces.

The Cone Penetration Test (CPT) test logs are presented at the end of Appendix A.

Additional soil borings were drilled and sampled for the project site area during previous geotechnical studies by Converse in 2007, 2013, 2015, and 2016 for the proposed Athletic Complex East and can be provided upon request.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GRAB SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-1**

Log of Boring No. BH- 1

Dates Drilled: 8/18/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 765.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK-PUENTE FORMATION (Tpss):						
		CLAYSTONE AND SILTSTONE: interbedded, moderately weathered, thinly bedded, low hardness, claystone and diatomaceous layers, brown to olive gray,						
5								
10			■		7/22/27	17	92	
15								
20		**SILTSTONE:** interbedded layers, some claystone and sandstone layers, diatomaceouse layers, moderately weathered, olive	⊠		5/9/13			
25								
30			■		13/50(5")			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-2a**

Log of Boring No. BH- 1

Dates Drilled: 8/18/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 765.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION (Tpss): **CLAYSTONE AND SILTSTONE:** interbedded, moderately weathered, thinly bedded, low hardness, diatomaceous layers, black to olive gray	X		13/27/40			
40			■		18/50(4")	29	79	
45		-interbedded layers, becoming less weathered with depth, dark gray to black -interbedded layers, dark gray to black, becoming less weathered with depth	X		12/19/24			
50			■		20/50(4")	30	93	
55			X		10/19/22			
60		-interbedded layers of siltstone and claystone, thinly bedded	■		11/50(6")	29	93	
65		-less weathered, black to dark gray	X		20/45/45			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-2b**

Log of Boring No. BH- 1

Dates Drilled: 8/18/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 765.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION (Tpss):	■		12/50(6")	28	96	
		SILTSTONE AND CLAYSTONE: interbedded, thinly bedded, less weathered, low hardness, dark gray						
75			☒		10/25/50			
80			■		22/50(3")	28	91	
		End of boring at 81 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-18-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-2c**

Log of Boring No. BH- 2

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss):						pi
5		**SILTSTONE AND SANDSTONE:** interbedded, moderately weathered, thinly bedded, low hardness, diatomaceous and claystone layers, brown to grayish brown						
10			■		10/27/49			
15								
20		**SILTSTONE:** thinly bedded, some sandstone and claystone layers, low hardness, moderately weathered, grayish brown to gray	■		9/14/33			
25								
30			■		9/31/50			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-3a**

Log of Boring No. BH- 2

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SANDSTONE:** interbedded, thinly bedded, low hardness, diatomaceous layers	■		7/22/43			pi
40		-siltstone with interbedded sandstone layers	■		11/28/50(5")	12	114	ds
45			■		8/21/35			
50			■		35/50(4")			
55		-dark gray to black, becoming less weathered with depth	☒		7/14/22			
60			■		21/50(5")			
65			☒		13/50(6")			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-3b**

Log of Boring No. BH- 2

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SANDSTONE:** interbedded, thinly bedded, some claystone and diatomeceous layers, dark gray to black	■		30/50(5")			
75			☒		25/35/50(5")			
80			■		33/50(5")			
		End of boring at 80.9 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-22-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-3c**

Log of Boring No. BH- 3

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 760 Depth to Water (ft): 60

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** interbedded, thinly bedded, moderately weathered, thinly bedded, moderately weathered, low hardness, diatomaceous layers, brown to grayish brown						
5								
10			■		10/26/45	24	85	
15			■			27	85	
20		-siltstone with interbedded sandstone layers, brown to grayish brown	■		10/50(6")			
25			■		50(2")			
30			■		36/50(3")			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4a**

Log of Boring No. BH- 3

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 760 Depth to Water (ft): 60

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss):	■		31/50(5")			
		SILTSTONE AND SANDSTONE: interbedded, thinly bedded, moderately weathered, low hardness, claystone and diatomaceous layers, brown to grayish brown						
40			■		30/44/50(4")	12	109	c
45			■		13/50(4")	23	90	
50			☒		9/50/32			
55			■		17/50(4")			
60		-groundwater seepage at 60 feet -clayey siltstone, brown	☒		10/19/31			
65			■		33/50(5")			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4b**

Log of Boring No. BH- 3

Dates Drilled: 8/22/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 760 Depth to Water (ft): 60

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE** interbedded, thinly bedded, less weathered, low hardness, diatomaceous layers, brown to grayish brown	X		11/20/27			
75			■		35/50(4")			
		End of boring at 76 feet. Groundwater encountered at 60 feet during drilling. Borehole backfilled with soil cuttings and tamped and on 8-22-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4c**

Log of Boring No. BH- 4

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 728 Depth to Water (ft): 25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY CLAY (CL):** dark brown.						
5			■		1/7/7	26	85	
		ALLUVIUM (Qal): **SANDY SILT (ML):** with fine sand, tan to light brown.						
10			■		7/14/28	22	92	
		BEDROCK-PUENTE FORMATION (Tpss): **SILTSTONE AND SANDSTONE:** interbedded, thinly bedded, moderately weathered, low hardness, claystone and diatomaceous layers, tan to light brown						
15			■		12/26/42	32	87	
20			■		8/20/35	34	86	
		-groundwater seepge at 25 feet.						
25			■		12/30/50(4")	29	90	
30			⊠		12/20/29			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-5a**

Log of Boring No. BH- 4

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 728 Depth to Water (ft): 25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK-PUENTE FORMATION (Tpss):	■		21/50(4")			
		SILTSTONE AND SANDSTONE: interbedded, thinly bedded, moderately weathered, low hardness, claystone and diatomaceous layers						
40			☒		10/12/37			
45			■		16/35/50(4")	18	96	
50			☒		12/50(6")			
		End of boring at 51 feet. Groundwater encountered at 25 feet during drilling. Borehole backfilled with soil cuttings and tampedd on 8-23-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-5b**

Log of Boring No. BH- 5

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 725.5 Depth to Water (ft): 29

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): (CL):. **SILTY SAND (CL):** grayish brown to dark brown.						
5			■		10/13/25			
		ALLUVIUM (Qal): **SILTY CLAY (CL):** grayish brown to dark brown.						
10		**SANDY SILT (ML):** tan to light brown.	■		7/14/24	6	106	c
15		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SANDSTONE:** interbedded, thinly bedded, moderately weathered, low hardness, claystone and diatomaceous layers, brown and grayish brown	■		12/20/39	24	93	
20			■		10/12/45	19	95	
25			■		16/41/50(4")	30	91	
		-groundwater seepage at 29 feet.						
30			■		20/30/50(4")	32	87	
		End of boring at 31.3 feet. Groundwater encountered at 29 feet. Borehole backfilled with soil cuttings and tamped on 8-23-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-6**

Log of Boring No. BH- 6

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 724.5 Depth to Water (ft): 20

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY CLAY (CL):** some fine sand, dark brown.		■		14	122	ma,max
5			■		10/16/7	10	110	
10		**ALLUVIUM (Qal):** **SILTY CLAY (CL):** some fine sand, dark brown.	■		5/12/18	23	100	
15		**SILTY SAND (SM):** medium to coarse-grained, some gravel, reddish brown.	■		7/8/14	19	96	
		-groundwater at 20 feet						
20		**SILT (ML):** dark brown.	■		9/8/6	10	115	
25		**SILTY SAND (SM):** fine-grained, grayish brown.	⊠		4/4/6			
30			■		13/50(6")	7	125	

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-7a**

Log of Boring No. BH- 6

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 724.5 Depth to Water (ft): 20

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		SILTY SAND (SM): fine to coarse-grained, reddish brown.	X		13/24/40			
40			■		20/36/50(5")	13	117	
45		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SANDSTONE:** interbedded, moderately weathered, thinly bedded, low hardness, claystone and diatomaceous layers, grayish brown and brown	X		8/12/25			
50			■		16/31/50	32	90	
		End of boring at 51.5 feet. Groundwater encountered at 20 feet during drilling. Borehole backfilled with soil cuttings and tamped on 8-22-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-7b**

Log of Boring No. BH- 7

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 730 Depth to Water (ft): 31.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAY (CL):** slightly silty, dark gray to black.						
5		**ALLUVIUM (Qal):** **CLAY (CL):** some silt, dark gray to black.	■		6/9/16	28	92	se
10		**SILTY CLAY (CL):** dark brown.	■		5/15/20	19	96	ds
15		**SILT (ML):** grayish brown.	■		8/18/23	30	88	
20		-whitish gray and brown	■		7/13/21	35	80	
25			■		10/19/22	11	116	
30		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE:** thinly bedded, weathered, brown to gray	■		13/24/27	40	90	
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-23-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-8**

Log of Boring No. BH- 8

Dates Drilled: 8/24/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 729 Depth to Water (ft): 23

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY CLAY (CL):** dark gray to black.						r
5		**ALLUVIUM (Qal):** **CLAY (CL):** dark gray to black.	■		5/8/14	22	86	pi
10		-dark brown	■		7/14/21	24	97	
15		**SILTY SAND (SM):** dark brown.	■		5/7/15	14	109	wa(36%)
20		**SAND (ML):** dark brown.	■		5/6/10	24	95	
		-groundwater at 23 feet						
25		-slightly clayey	■		5/5/7	28	86	
30		-sand layer at bottom of sample	■		4/8/21	22	86	
		End of boring at 31.5 feet. Groundwater encountered at 23 feet. Borehole backfilled with soil cuttings and tamped on 8-22-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-9**

Log of Boring No. BH- 9

Dates Drilled: 8/24/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): 23

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **SILTY CLAY (CL):** dark brown.						
5		**ALLUVIUM (Qal):** **SILTY CLAY (CL):** dark brown to brown.	■		5/10/14	28	92	
10		**SILT (ML):** grayish brown.	■		6/15/20	20	103	
15		-dark brown	■		4/8/16	29	92	
20		-dark brown	■		4/6/8	35	80	
		-groundwater at 23 feet						
25		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE:** thinly bedded, interbedded sandstone and claystone layers, moderately weathered, low hardness, grayish brown to gray	■		4/6/10	32	89	
30			■		6/12/20	27	81	
		End of boring at 31.5 feet. Groundwater encountered at 23 feet during drilling. Borehole backfilled with soil cuttings and tamped on 8-24-17.						

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LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-10**

Log of Boring No. BH-10

Dates Drilled: 8/23/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss):						
		SILTSTONE, SANDSTONE AND CLAYSTONE: thinly bedded, moderately weathered, low hardness, diatomaceous layers, olive gray to gay						
5			■		7/12/15	35	86	
10			■		6/8/11			
15		-grayish brown, thinly bedded, low hardness	■		8/11/21	32	89	
20			■		11/20/23	37	93	
25		-with thin lenses of sandstone	■		11/18/22	37	92	
30			■		15/29/40	30	88	
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-23-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-11**

Log of Boring No. BH-11

Dates Drilled: 8/24/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 Depth to Water (ft): 22

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **SILTY CLAY (CL):** dark brown.						ma
5		**ALLUVIUM:** **SILTY CLAY (CL):** brown to dark brown.	■		8/13/20	25	88	
10		**SILTY SAND (SM):** with fine sand, brown.	■		7/10/15	13	109	
15			■		4/7/7	15	117	wa (fc=36%)
20		-groundwater at 22 feet	⊠		2/2/3			
25		-some clay, dark brown	■		2/4/14	25	104	wa (fc=29%)
30		**SILT (ML):** some sand, brown.	⊠		19/18/9			

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-12a**

Log of Boring No. BH-11

Dates Drilled: 8/24/2017 | Logged by: DA | Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER | Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 | Depth to Water (ft): 22

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** interbedded, thinly bedded, moderately weathered, low hardness, diatomaceous layers, grayish brown to brown	■		6/11/15			wa (fc=71%))
40			☒		5/6/9			
45		-dark gray to black	■		7/16/50(5")			
50			☒		8/15/24			
		End of boring at 51.5 feet. Groundwater encountered at 22 feet during drilling. Borehole backfilled with soil cuttings and tamped on 8-24-17.						

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Project Name
MT. SAN ANTONIO COLLEGE
LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-12b**

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Mount San Antonio College (Lot R)
1100 N. Grand Avenue
Walnut, CA
September 6-7, 2017

Prepared for:

Mr. Ram Ariram
Converse Consultants
717 S. Myrtle Avenue
Monrovia, CA 91016
Office (626) 930-1200 / Fax (626) 930-1212

Prepared by:

KEHOE TESTING & ENGINEERING
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3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

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- CPT Plots
- CPT Classification/Soil Behavior Chart
- Interpretation Output (CPeT-IT)
- CPeT-IT Calculation Formulas

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Mount San Antonio College (Lot R) project located at 1100 N. Grand Avenue in Walnut, California. The work was performed by Kehoe Testing & Engineering (KTE) on September 6-7, 2017. The scope of work was performed as directed by Converse Consultants personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at 17 locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	43	Refusal, hole open to 10.0 ft (dry)
CPT-2	59	Refusal, hole open to 59.0 ft (dry)
CPT-3	30	Hole open to 12.0 ft (dry)
CPT-4	50	Hole open to 19.0 ft (dry)
CPT-5	41	Refusal, hole caved @ surface
CPT-6	30	Hole open to 19.6 ft (dry)
CPT-7	39	Refusal, hole open to 12.0 ft (dry)

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-8	30	Hole open to 26.0 ft (dry)
CPT-9	50	Groundwater @ 24.0 ft
CPT-10	26	Hole open to 26.0 ft (dry)
CPT-11	50	Hole open to 29.0 ft (dry)
CPT-12	25	Hole open to 20.6 ft (dry)
CPT-13	30	Hole caved @ surface
CPT-14	50	Hole open to 21.0 ft (dry)
CPT-15	50	Hole caved @ surface
CPT-16	75	Hole open to 55.5 ft (dry)
CPT-17	37	Refusal, hole open to 10.0 ft (dry)

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the attached CPT Classification Chart (Robertson) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Tables of basic CPT output from the interpretation program CPeT-IT are provided for CPT data averaged over one foot intervals in the Appendix. We recommend a geotechnical engineer review the assumed input parameters and the calculated output from the CPeT-IT program. A summary of the equations used for the tabulated parameters is provided in the Appendix.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Richard W. Koester, Jr.
General Manager

09/14/17-kk-8632-1

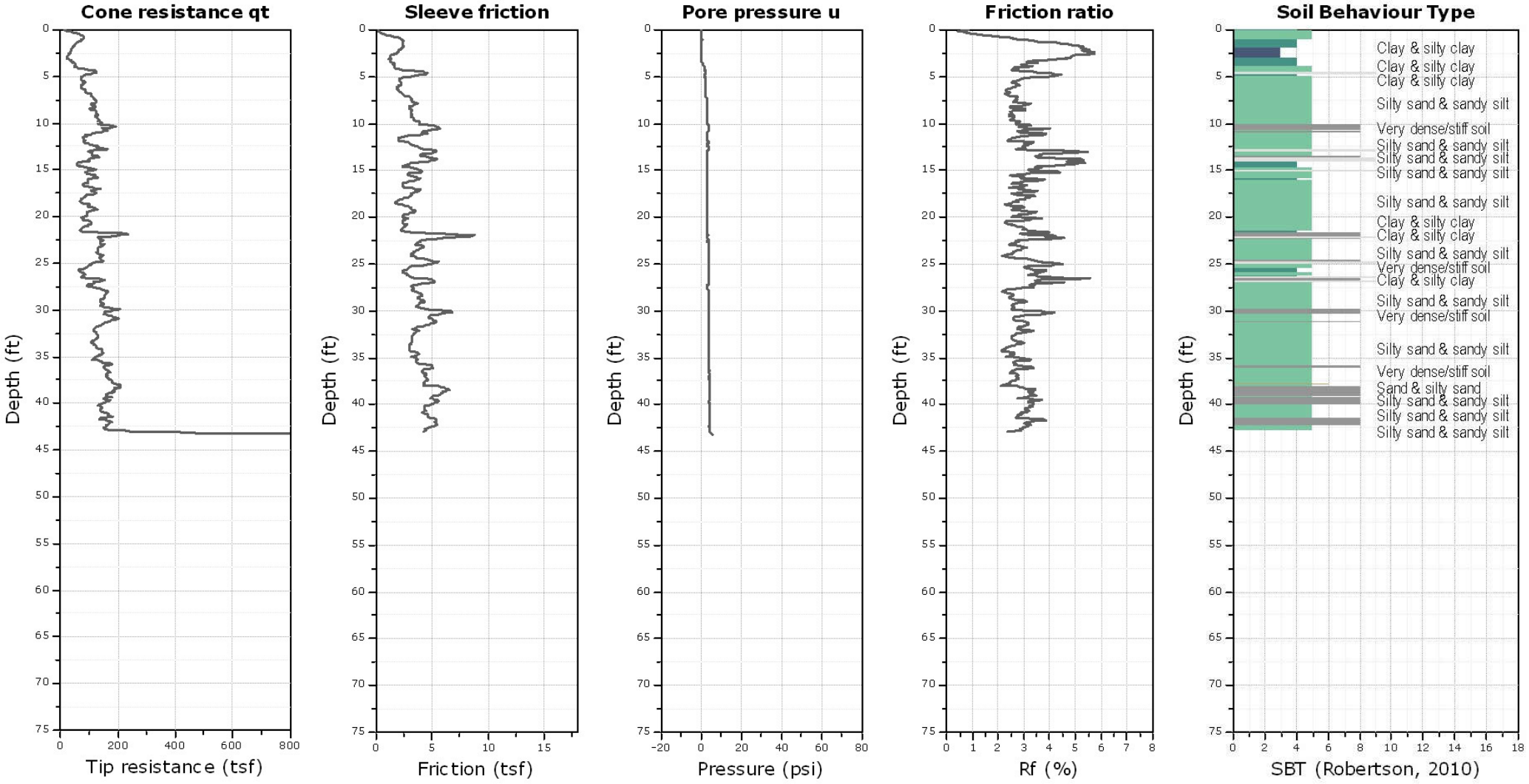
APPENDIX

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CPT-1

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Total depth: 43.24 ft, Date: 9/6/2017

Location: **1100 N. Grand Ave Walnut, CA**
Cone Type: Vertek

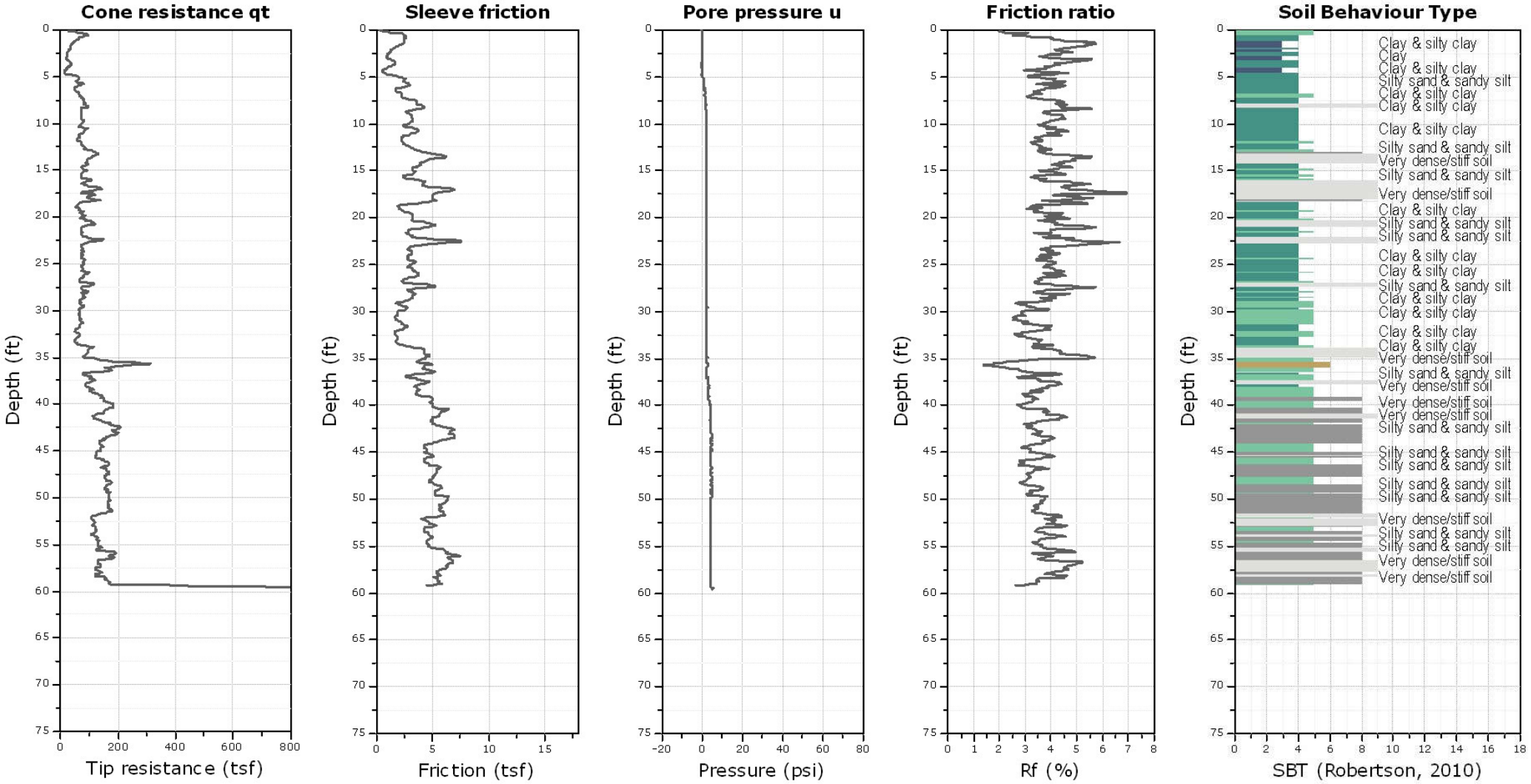


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CPT-2

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Total depth: 59.59 ft, Date: 9/6/2017

Location: **1100 N. Grand Ave Walnut, CA**
Cone Type: Vertek

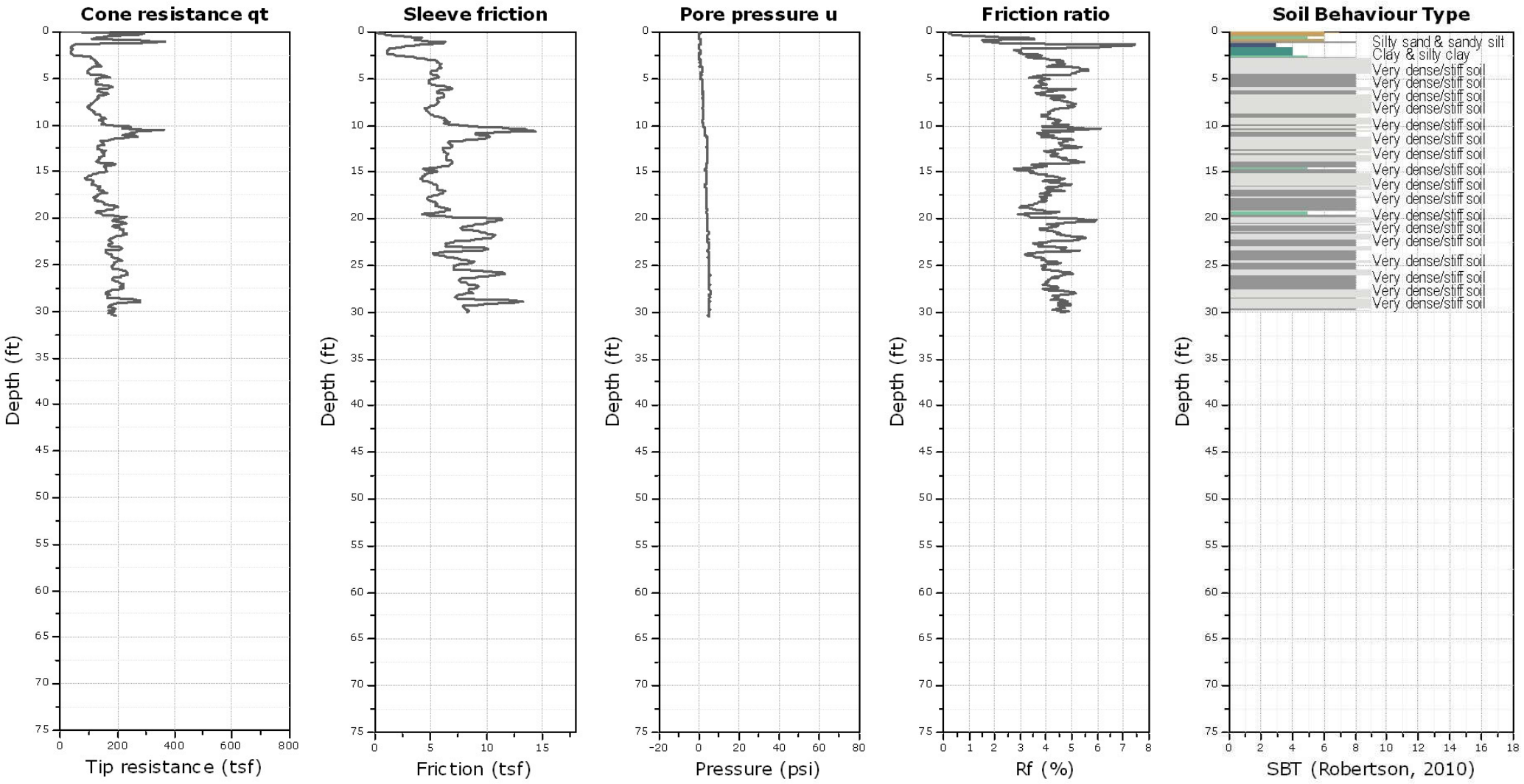


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CPT-3

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Total depth: 30.40 ft, Date: 9/6/2017

Location: **1100 N. Grand Ave Walnut, CA**
Cone Type: Vertek

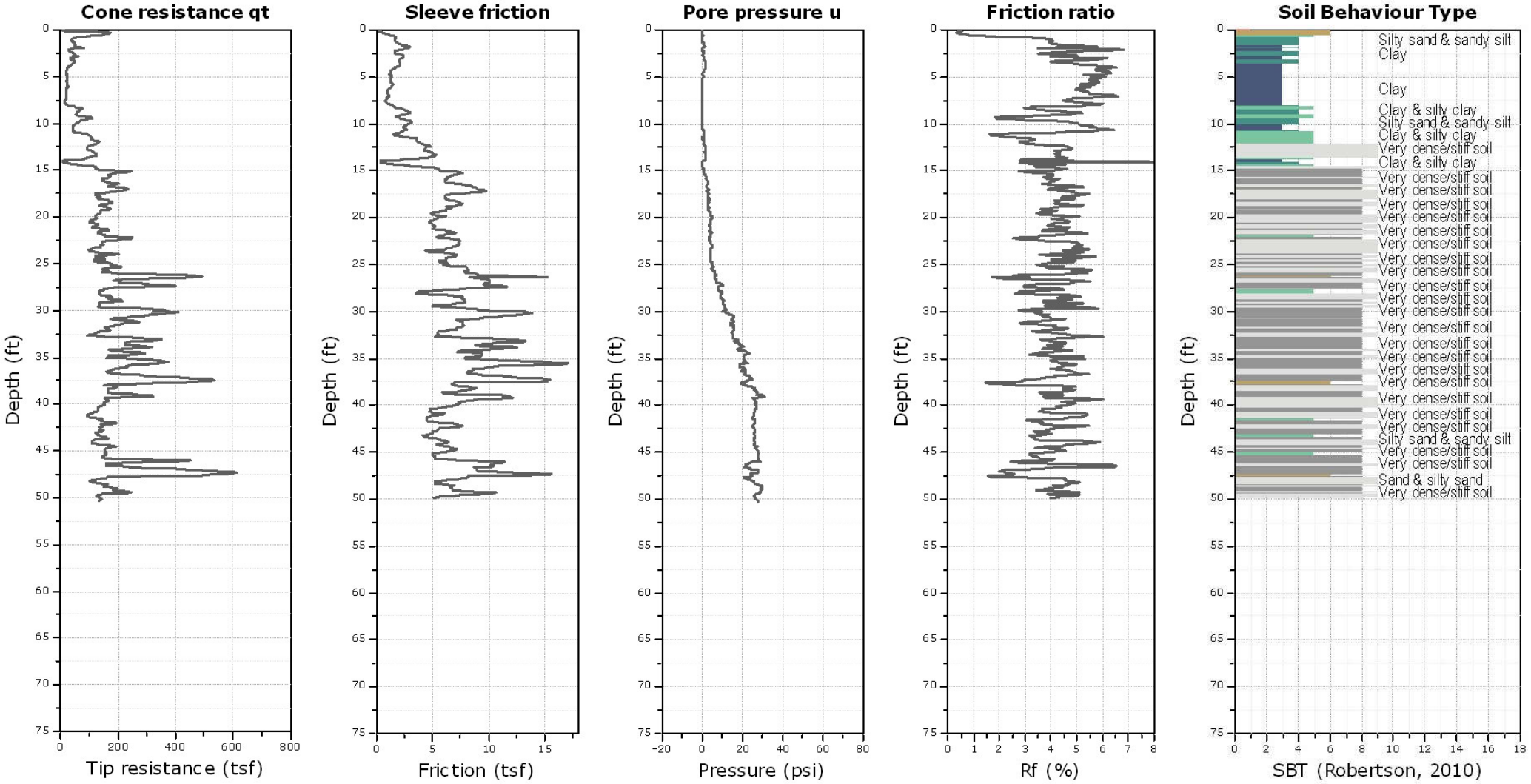


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CPT-4

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Total depth: 50.27 ft, Date: 9/6/2017

Location: **1100 N. Grand Ave Walnut, CA**
Cone Type: Vertek

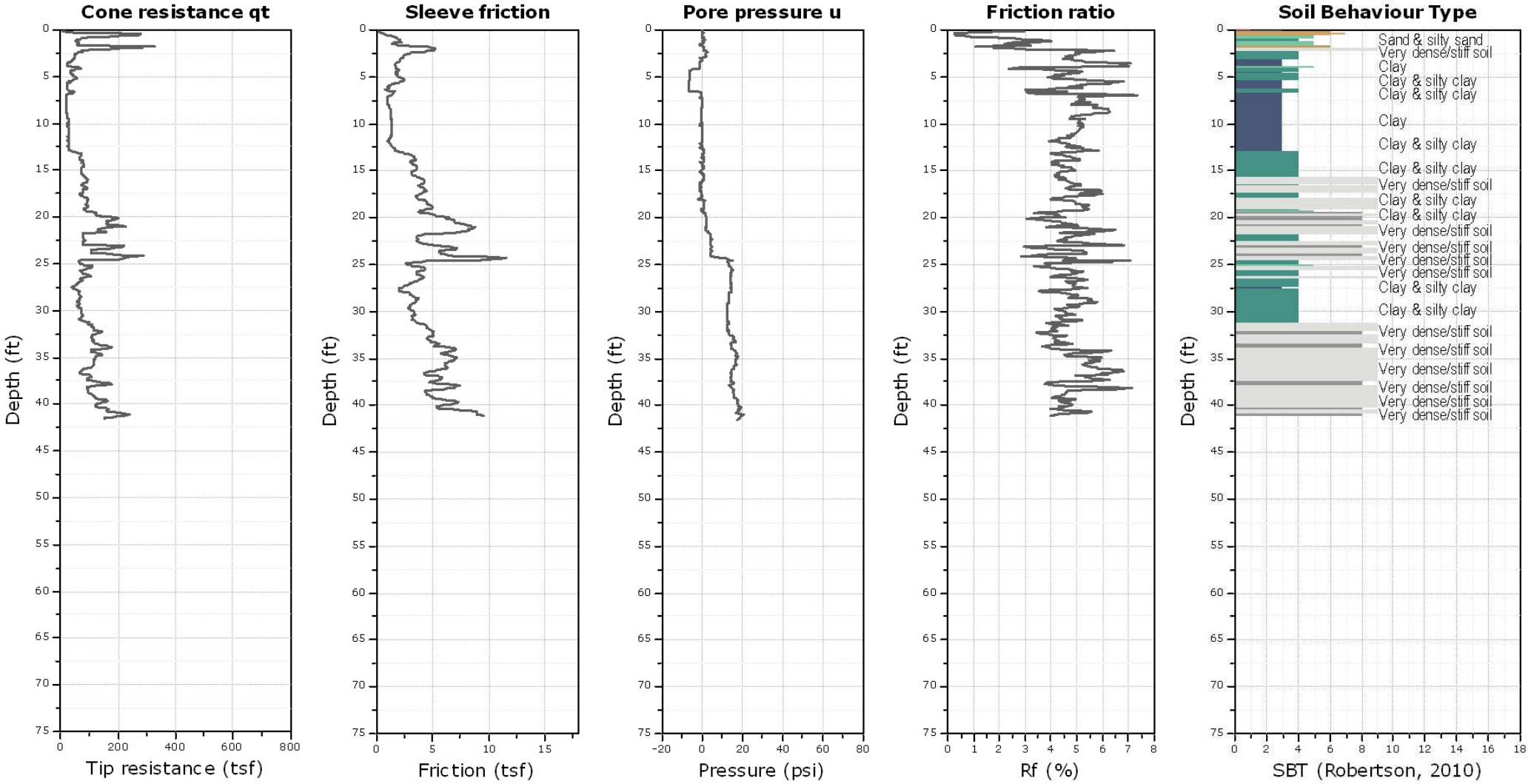

Cone resistance qt
Depth (ft)
Tip resistance (tsf)
Sleeve friction
Friction (tsf)
Pore pressure u
Pressure (psi)
Friction ratio
Rf (%)
Soil Behaviour Type
SBT (Robertson, 2010)
Silty sand & sandy silt
Clay
Clay
Clay & silty clay
Silty sand & sandy silt
Clay & silty clay
Very dense/stiff soil
Clay & silty clay
Very dense/stiff soil
Very dense/stiff soil
Very dense/stiff soil

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CPT-5

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 41.56 ft, Date: 9/6/2017
Cone Type: Vertek

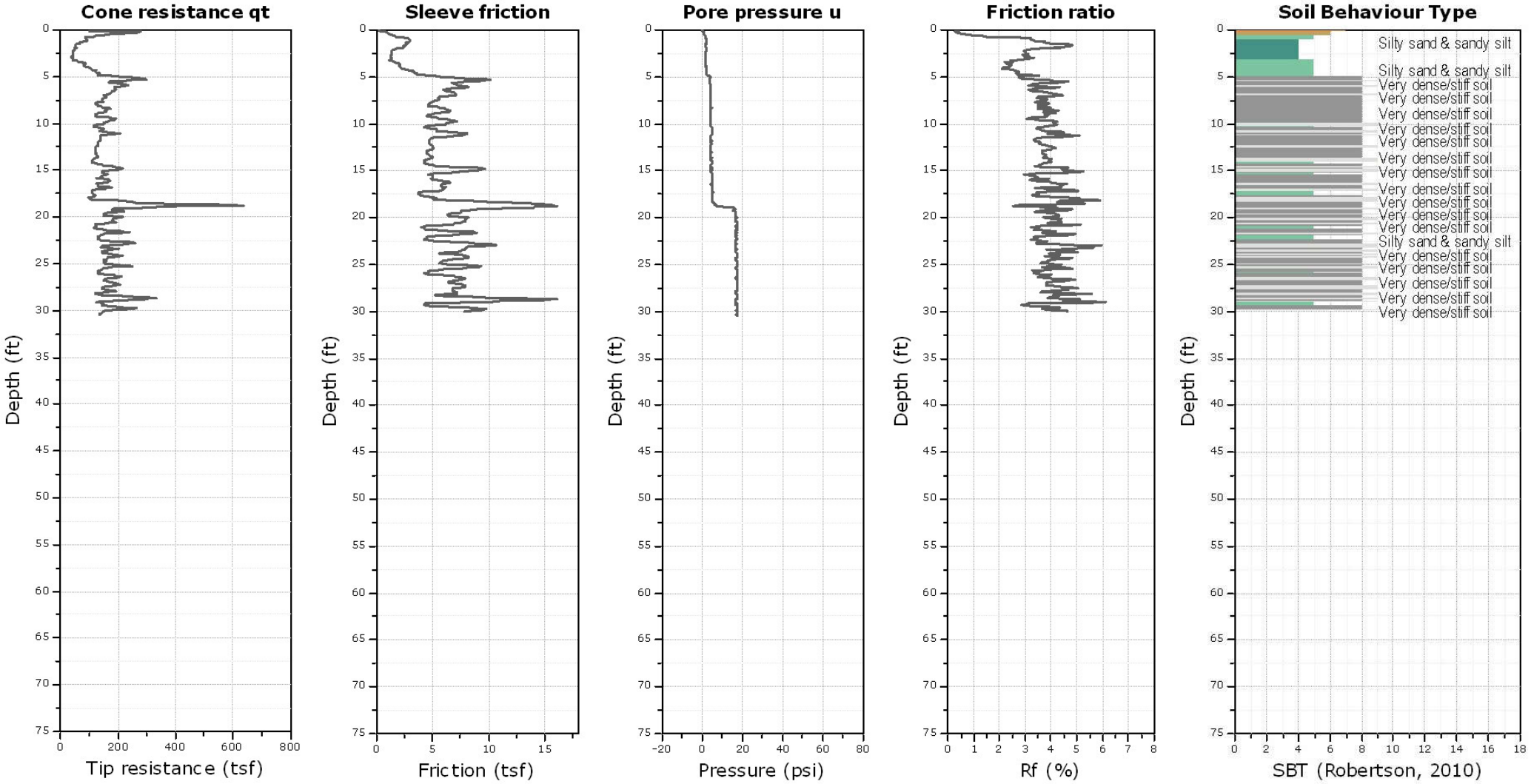


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CPT-6

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 30.41 ft, Date: 9/6/2017
Cone Type: Vertek

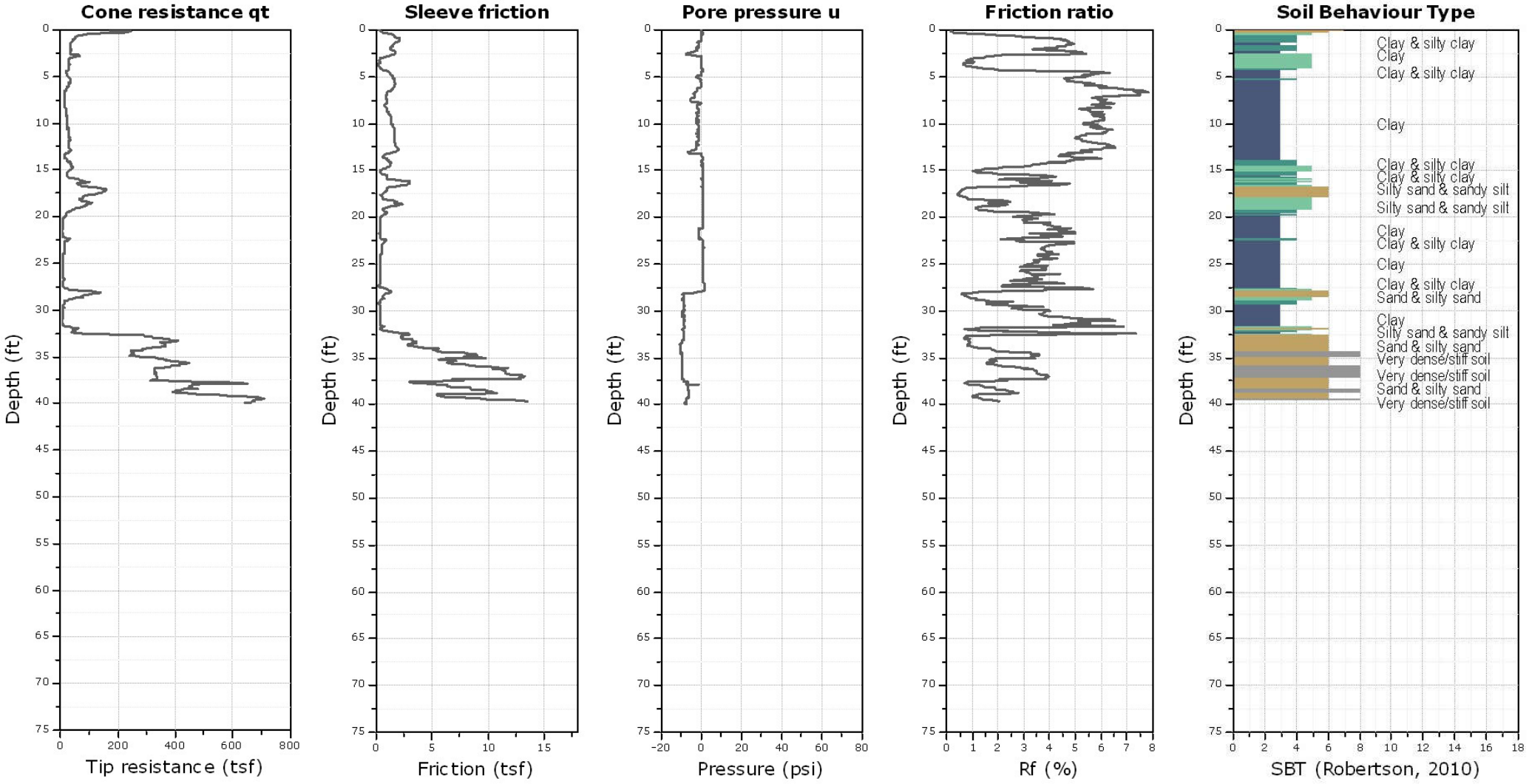


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CPT-7

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 39.96 ft, Date: 9/6/2017
Cone Type: Vertek

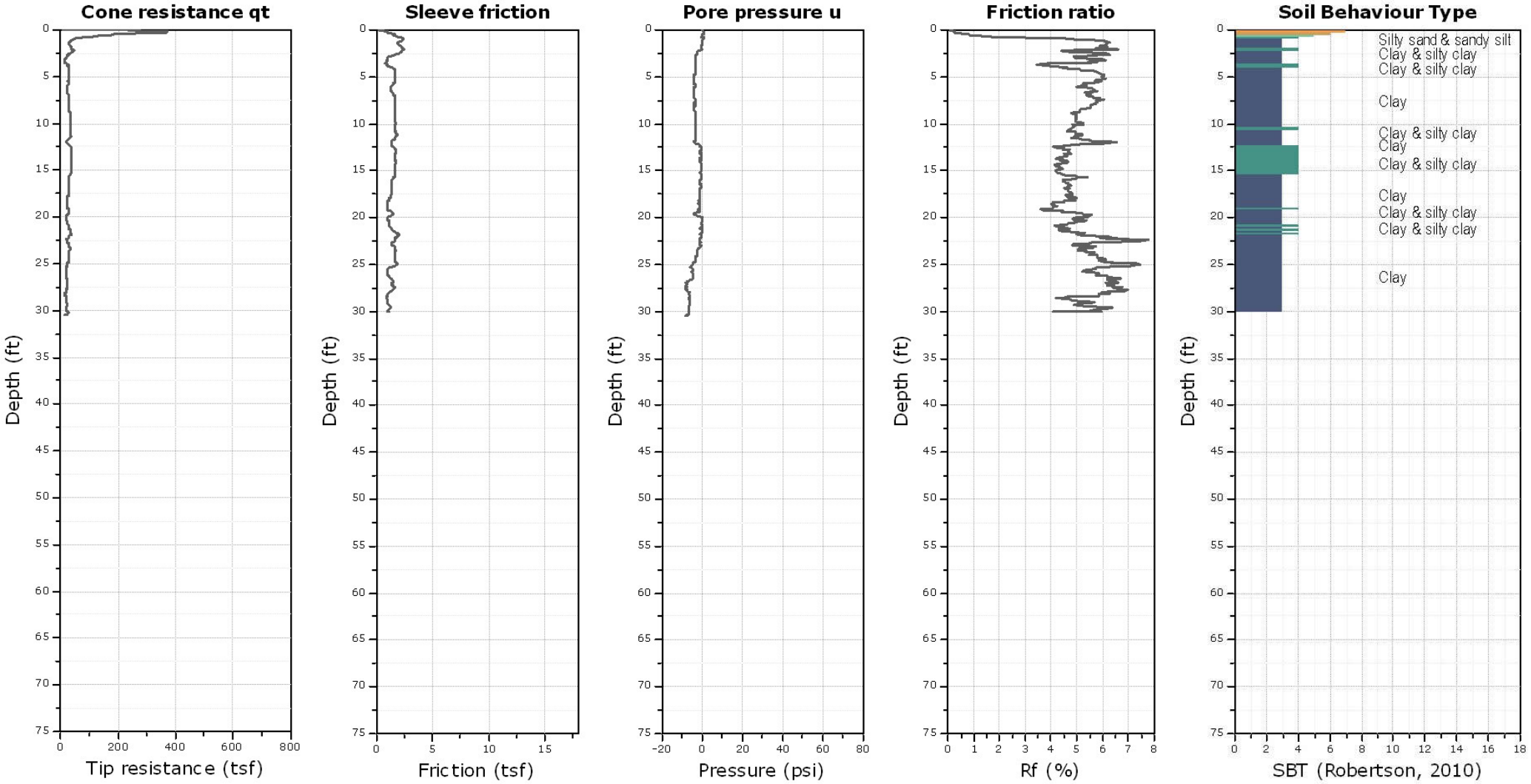


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CPT-8

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 30.45 ft, Date: 9/6/2017
Cone Type: Vertek

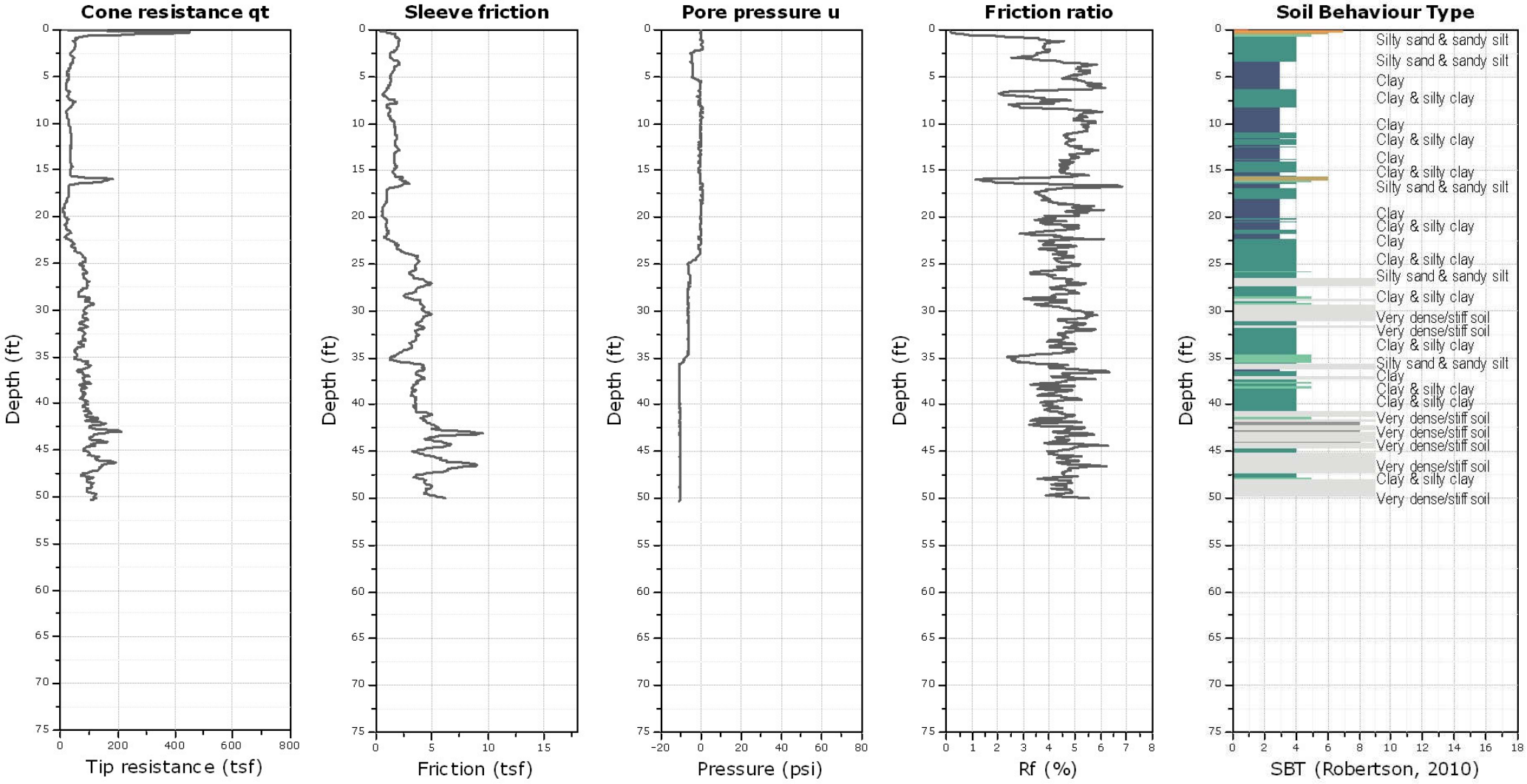


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CPT-9

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Total depth: 50.34 ft, Date: 9/6/2017

Location: **1100 N. Grand Ave Walnut, CA**
Cone Type: Vertek

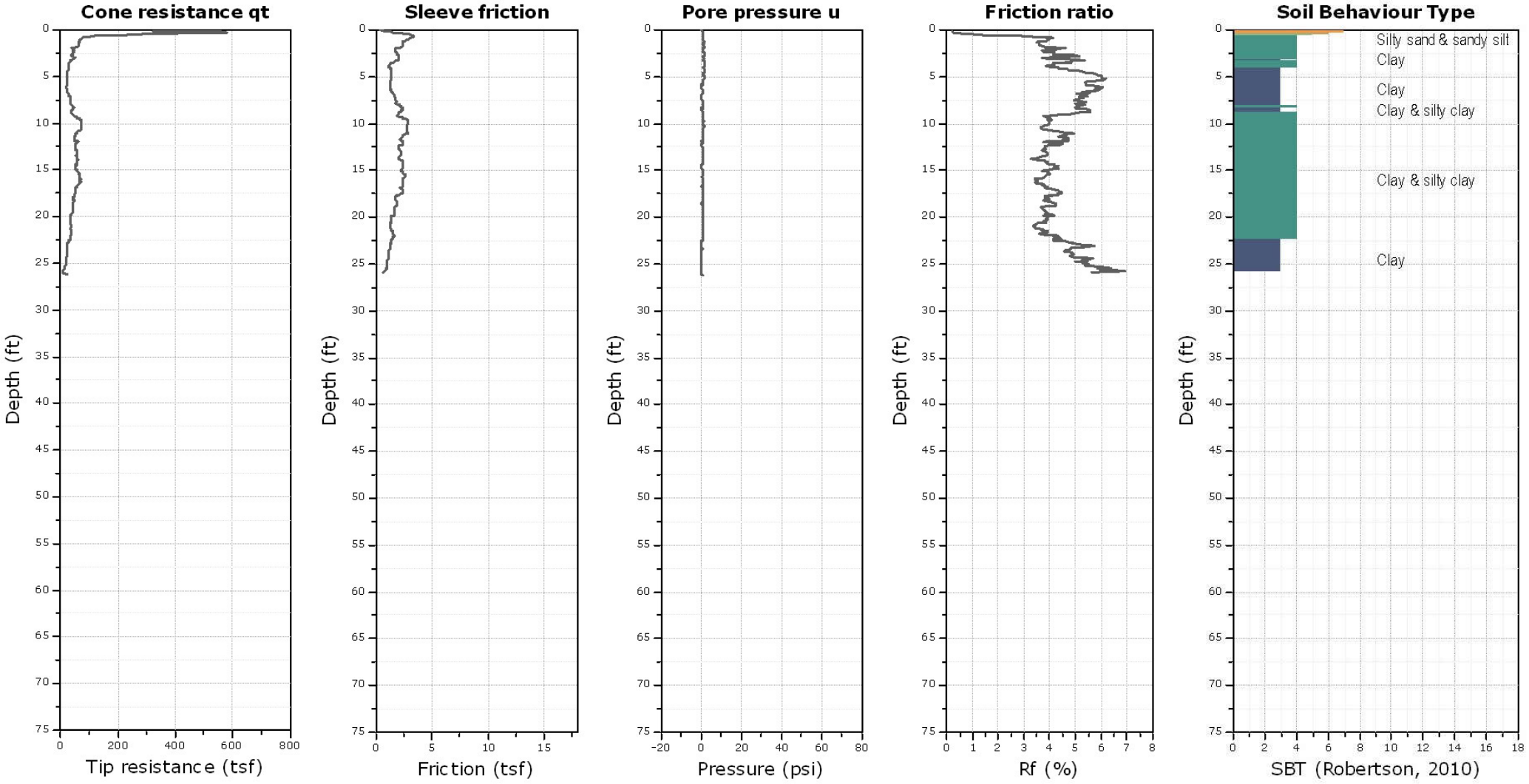


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CPT-10

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 26.25 ft, Date: 9/7/2017
Cone Type: Vertek

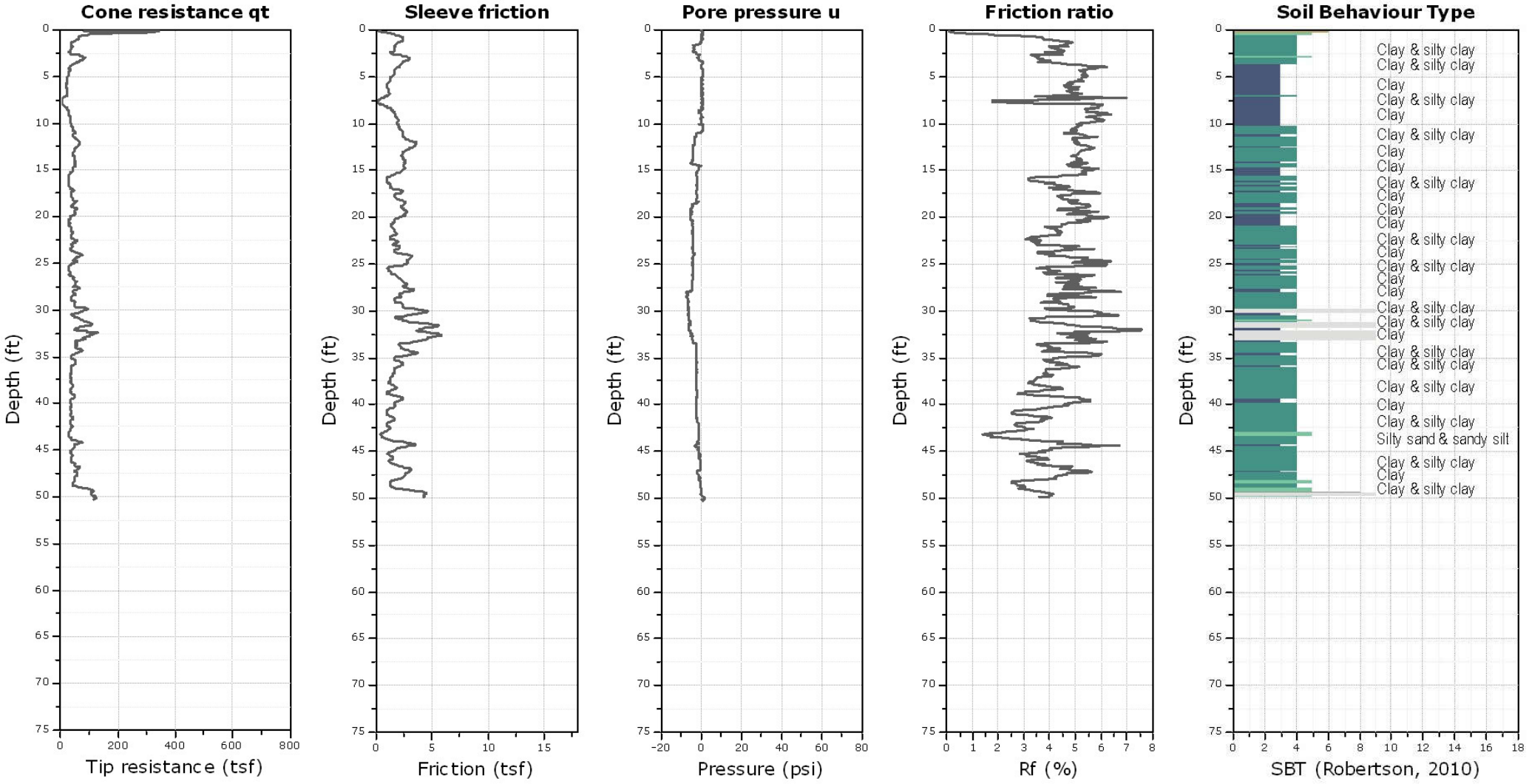


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CPT-11

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 50.29 ft, Date: 9/7/2017
Cone Type: Vertek

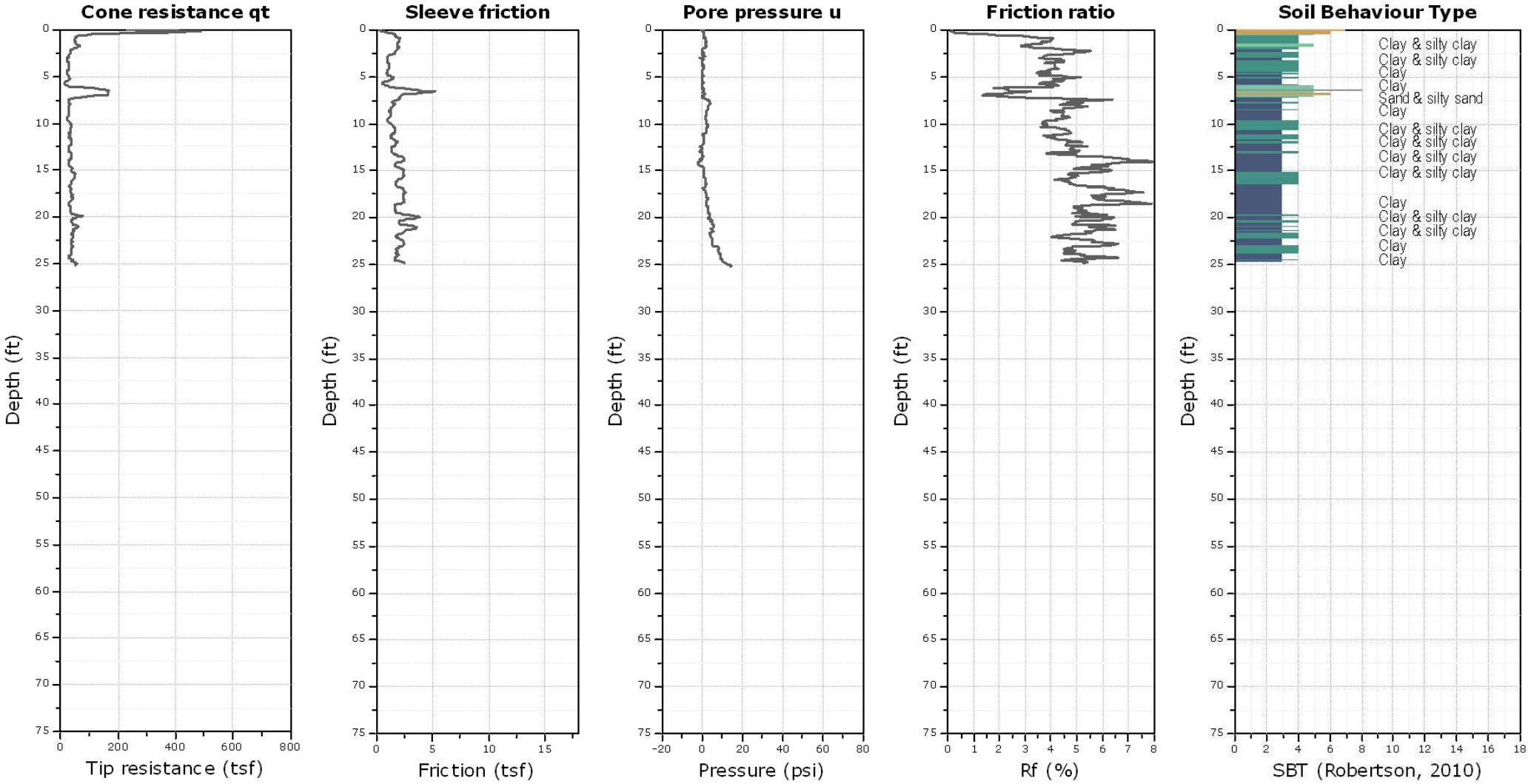


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CPT-12

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 25.20 ft, Date: 9/7/2017
Cone Type: Vertek

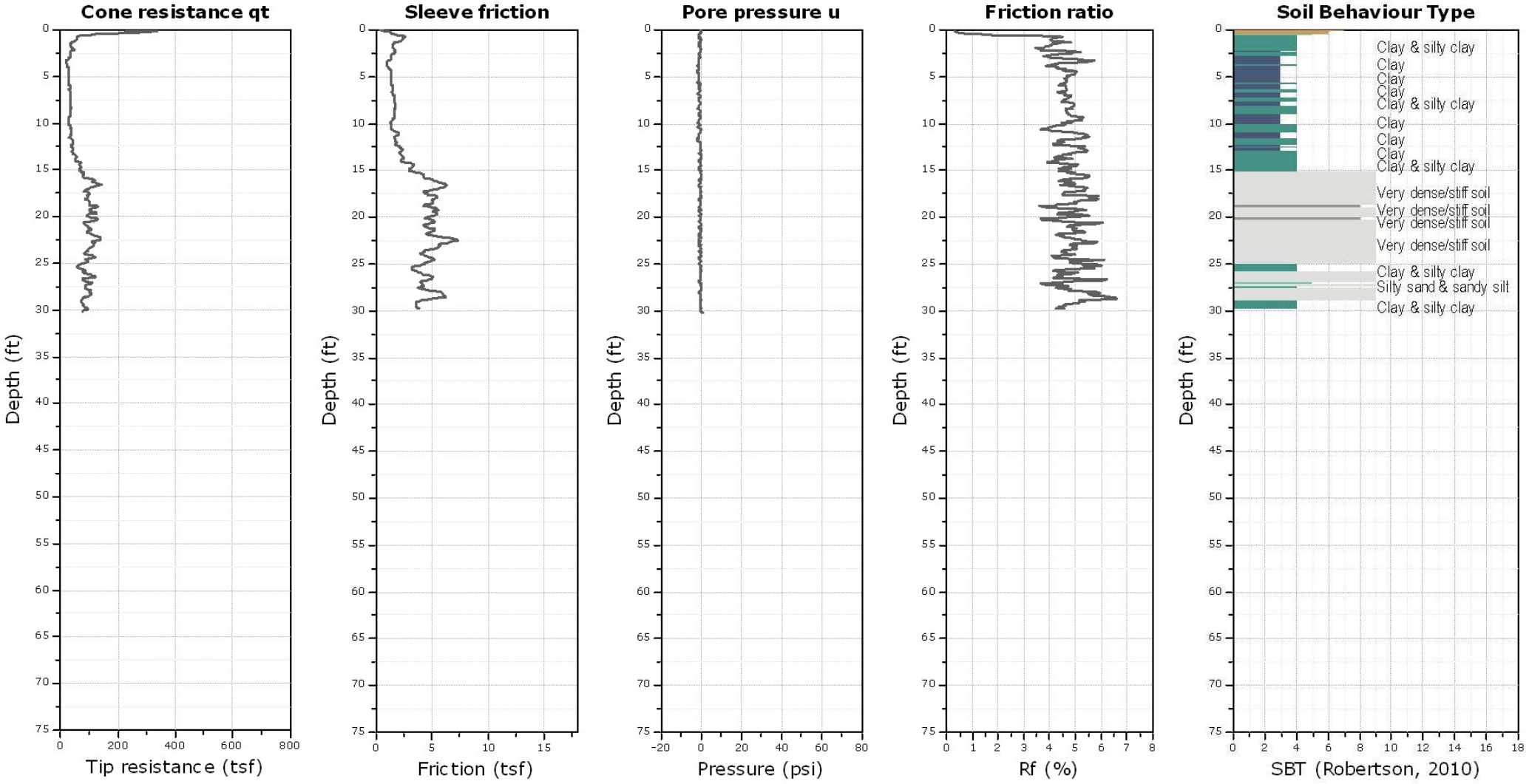


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CPT-13

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 30.19 ft, Date: 9/7/2017
Cone Type: Vertek

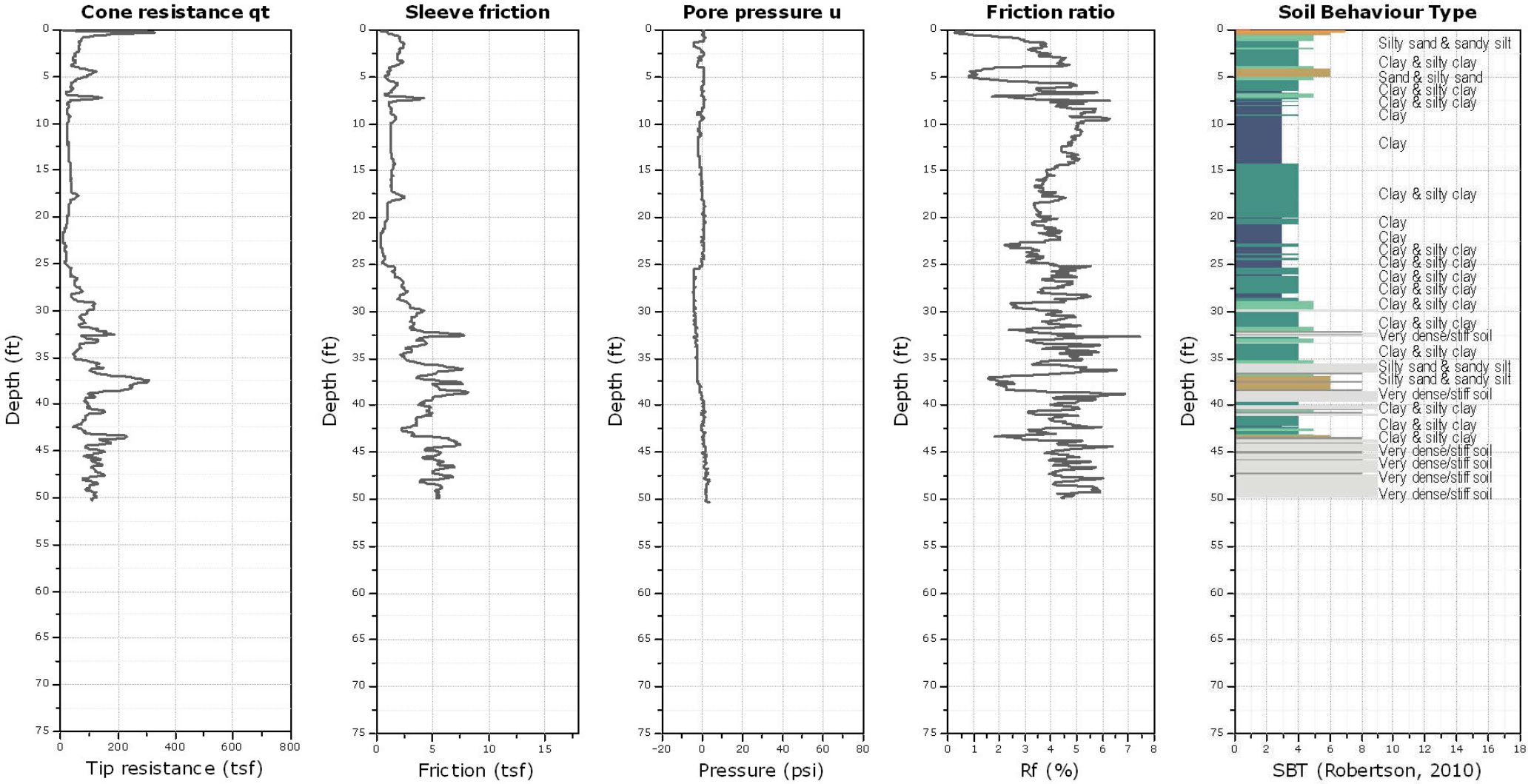


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CPT-14

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 50.27 ft, Date: 9/7/2017
Cone Type: Vertek

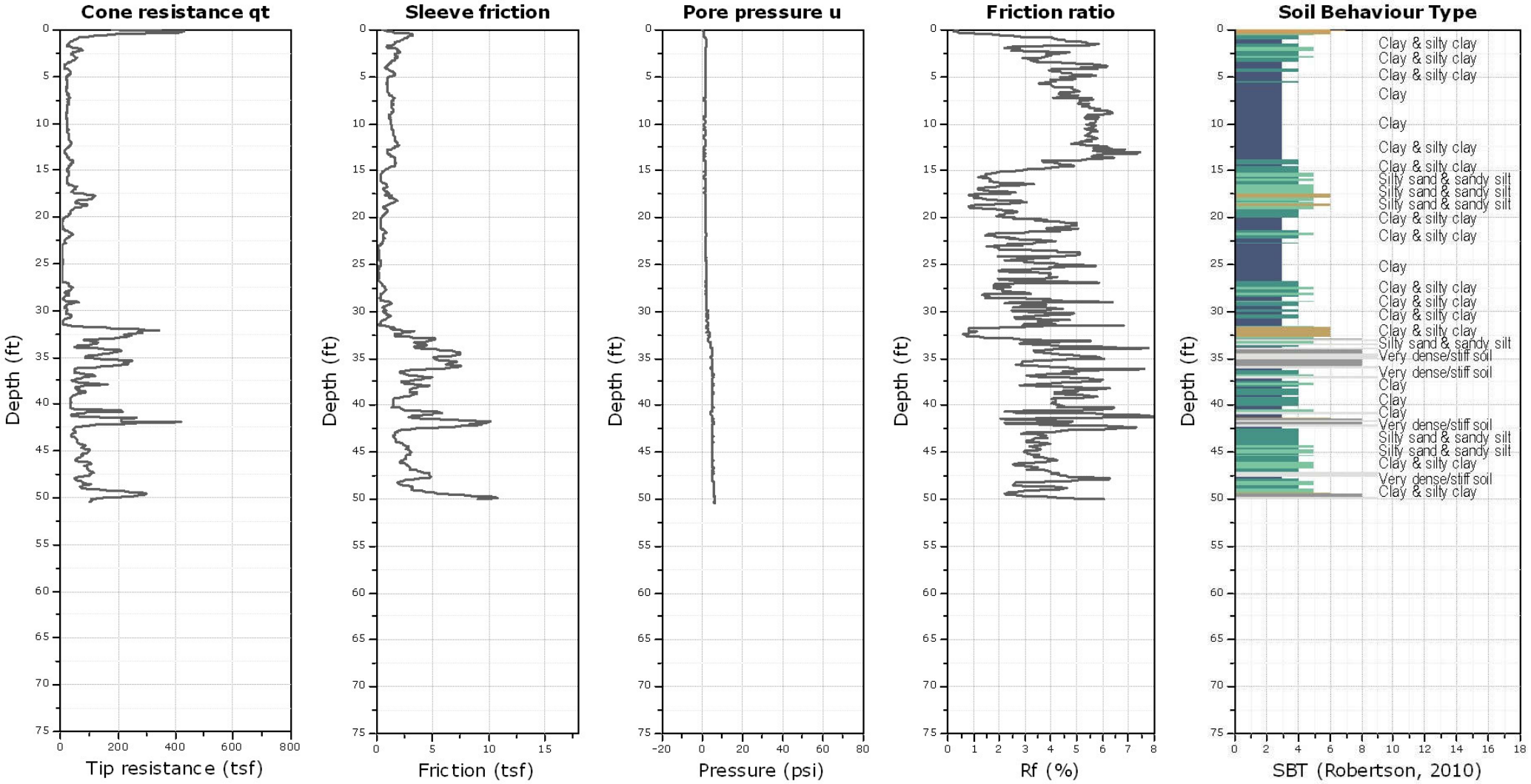


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CPT-15

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 50.42 ft, Date: 9/7/2017
Cone Type: Vertek

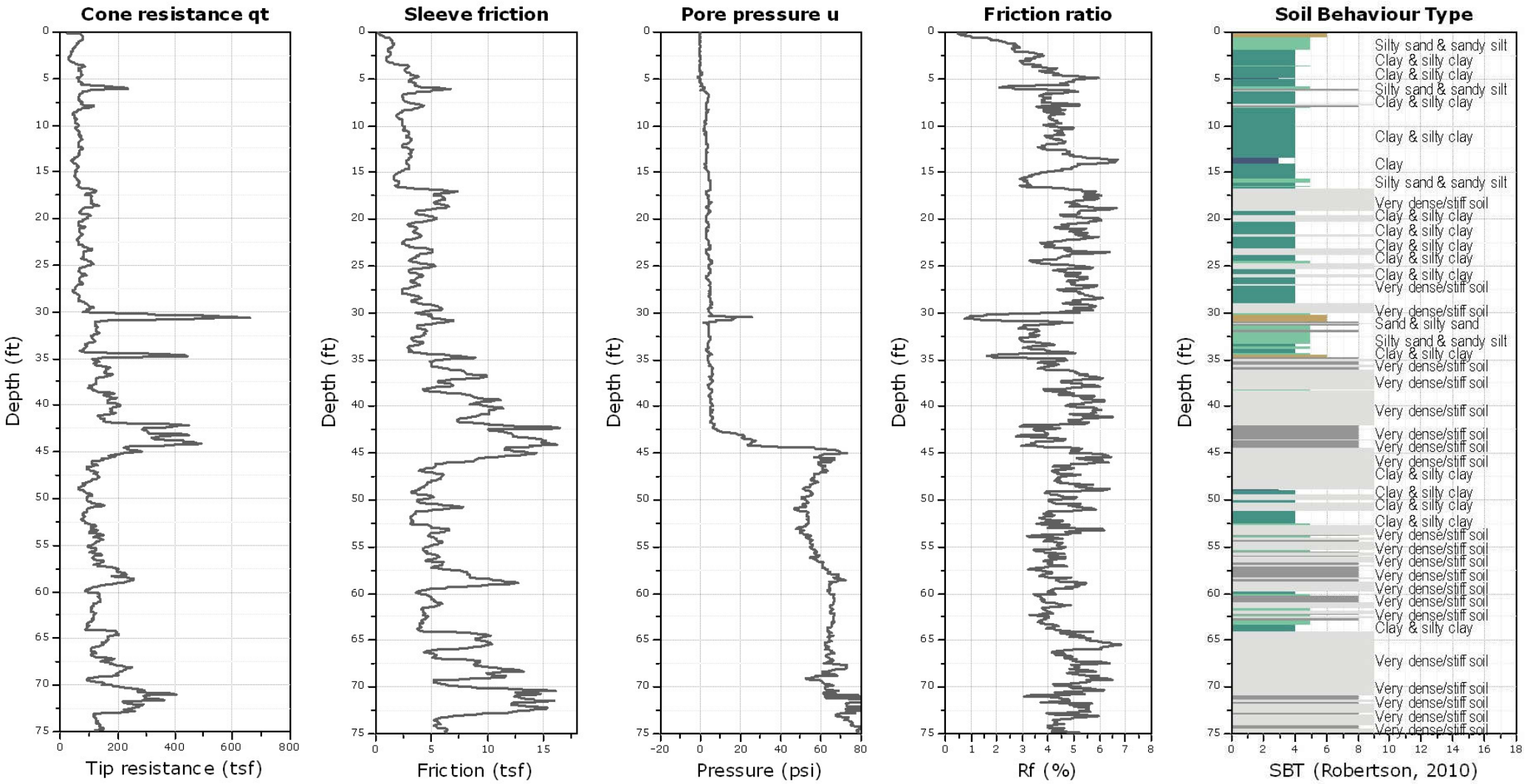


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CPT-16

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 75.22 ft, Date: 9/7/2017
Cone Type: Vertek

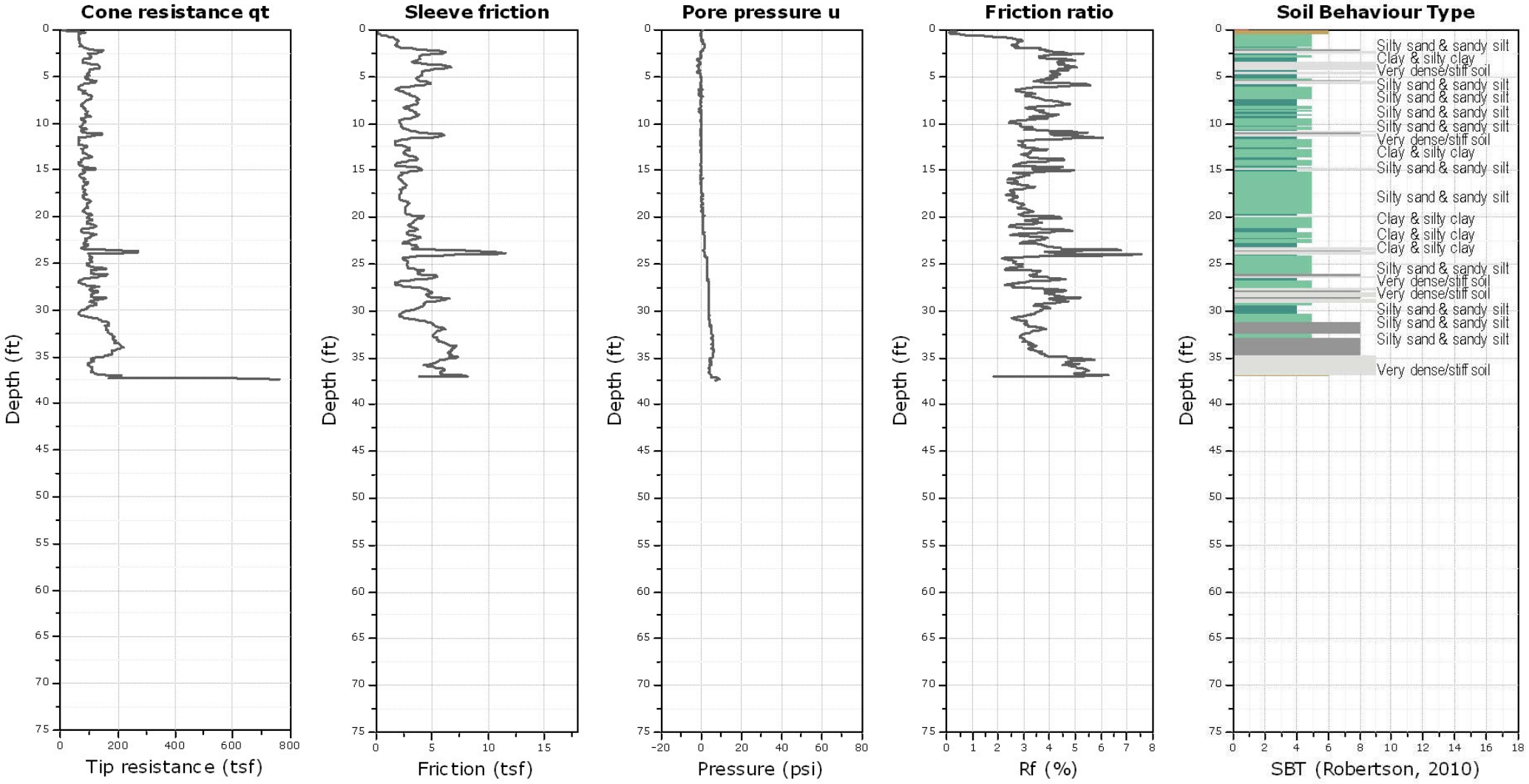


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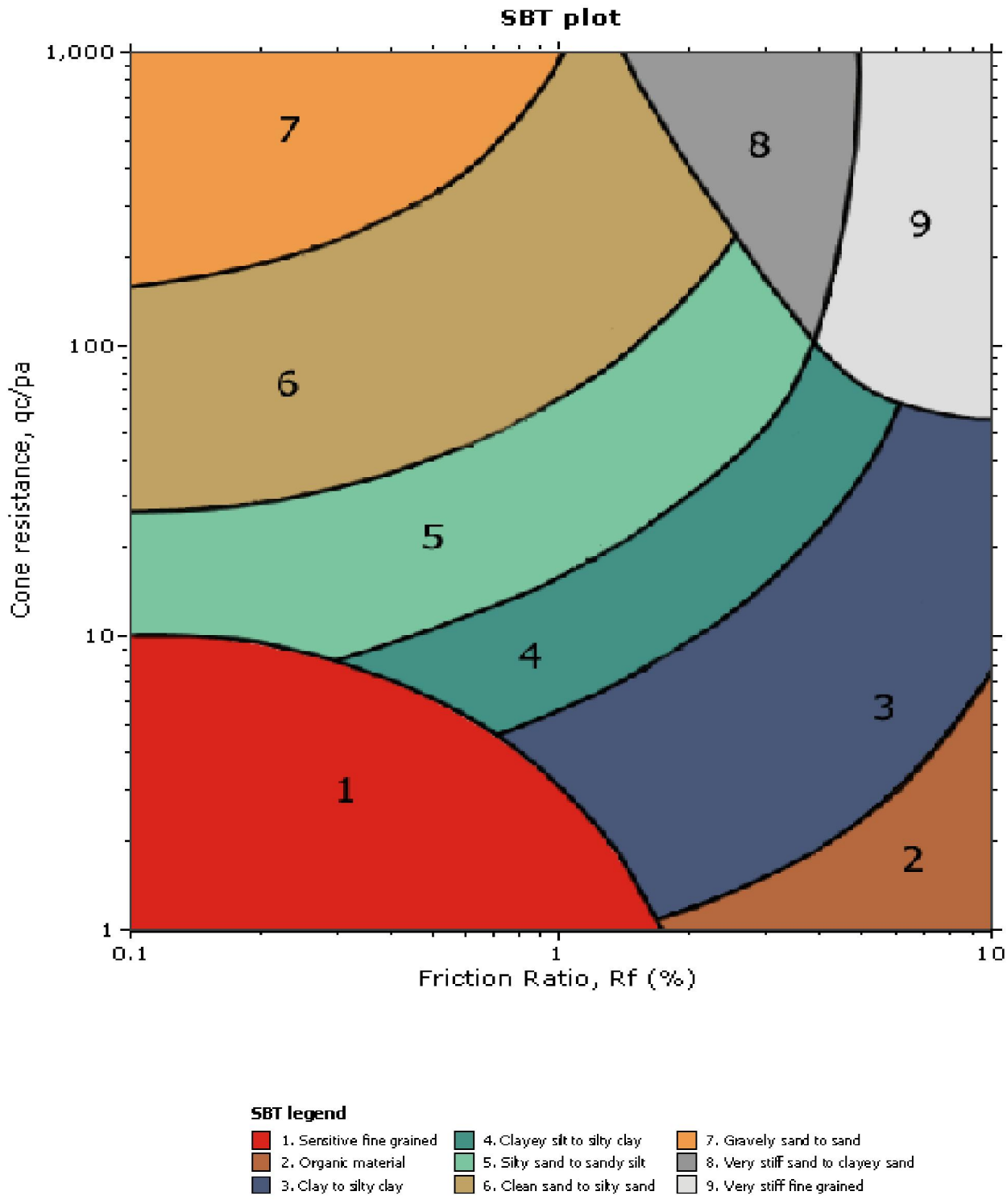
CPT-17

Project: **Converse Consultants/Mount San Antonio College (Lot R)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 37.41 ft, Date: 9/7/2017
Cone Type: Vertek



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	CPT-1	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	77.38	1.67	0.45	-1.4	77.39	2.16	5	2.23	124.63	0.06	0	0.06	1240	2.16	0	8	0.55	4.69	1.81	342.57	0.52	43.51	7
2	41.46	2.09	0.19	-1.55	41.46	5.04	4	2.69	124.74	0.12	0	0.12	331.29	5.05	0	9	0.72	4.68	2.27	182.74	0.11	19.4	3
3	26	1.57	0.19	-1.4	26	6.02	3	2.89	121.5	0.19	0	0.19	139.29	6.07	0	9	0.81	4.06	2.49	99.19	0.07	16.25	3
4	54.93	2.61	1.31	-1.31	54.94	4.75	4	2.58	127.06	0.25	0	0.25	219.72	4.77	0	9	0.74	2.9	2.3	150.06	0.38	20.36	3
5	77.17	3.65	1.77	-1.88	77.19	4.73	4	2.48	130.36	0.31	0	0.31	244.72	4.75	0	9	0.73	2.41	2.26	175.26	0.41	20.51	3
6	73.73	2.19	2.03	-2.05	73.75	2.97	5	2.35	126.51	0.38	0	0.38	194.39	2.99	0	5	0.69	2.03	2.15	140.71	0.39	30.72	5
7	105.89	2.61	2.41	-2.17	105.92	2.46	5	2.18	128.67	0.44	0	0.44	238.73	2.48	0	5	0.64	1.75	2.03	174.8	0.39	36.76	7
8	108.6	3.24	2.67	-2.29	108.64	2.98	5	2.24	130.3	0.51	0	0.51	213.36	2.99	0	8	0.68	1.64	2.1	168.01	0.38	31.07	5
9	127.4	3.24	2.8	-2.43	127.44	2.54	5	2.14	130.69	0.57	0	0.57	221.71	2.55	0	5	0.65	1.49	2.03	178.91	0.35	35.88	7
10	142.96	4.07	3	-2.55	143	2.85	5	2.14	132.65	0.64	0	0.64	222.94	2.86	0	8	0.66	1.4	2.06	188.2	0.34	32.58	7
11	123.85	4.18	2.99	-2.68	123.89	3.37	5	2.24	132.49	0.7	0	0.7	174.76	3.39	0	8	0.71	1.33	2.17	155.29	0.31	27.71	5
12	82.6	2.72	3.19	-2.48	82.64	3.29	5	2.35	128.35	0.77	0	0.77	106.46	3.32	0	5	0.76	1.27	2.28	98.49	0.3	27.35	5
13	103.91	4.39	2.99	-2.57	103.94	4.22	9	2.36	132.42	0.84	0	0.84	123.47	4.25	0	9	0.77	1.2	2.32	117.02	0.26	22.37	5
14	97.53	3.97	2.8	-2.5	97.57	4.07	4	2.37	131.53	0.9	0	0.9	107.3	4.11	0	9	0.78	1.13	2.34	103.64	0.22	22.94	5
15	119.05	2.82	2.9	-2.22	119.08	2.37	5	2.13	129.51	0.97	0	0.97	122.31	2.39	0	5	0.7	1.07	2.12	119.04	0.22	36.44	7
16	97.95	3.03	2.83	-2.2	97.99	3.09	5	2.28	129.56	1.03	0	1.03	94.08	3.12	0	5	0.77	1.02	2.28	93.51	0.2	28.59	5
17	131.89	2.72	2.99	-2.63	131.93	2.06	5	2.06	129.49	1.1	0	1.1	119.45	2.08	0	5	0.69	0.98	2.07	120.73	0.2	40.78	7
18	78.11	2.92	2.9	-2.92	78.15	3.74	4	2.4	128.75	1.16	0	1.16	66.4	3.8	0	4	0.83	0.93	2.44	67.42	0.18	23.74	5
19	112.05	2.51	2.99	-3.32	112.09	2.24	5	2.13	128.5	1.22	0	1.22	90.59	2.26	0	5	0.74	0.9	2.17	94.14	0.18	36.82	7
20	80.2	2.61	2.8	-3.86	80.23	3.25	5	2.35	127.99	1.29	0	1.29	61.3	3.31	0	4	0.83	0.85	2.41	63.39	0.16	26.25	5
21	90.85	3.13	2.99	-3.88	90.89	3.45	5	2.33	129.63	1.35	0	1.35	66.19	3.5	0	4	0.83	0.82	2.4	69.02	0.16	25.37	5
22	198.2	4.28	3.09	-4.04	198.24	2.16	6	1.96	133.81	1.42	0	1.42	138.64	2.18	0	5	0.69	0.82	2.02	151.98	0.16	40.43	7
23	152.05	3.76	3.38	-4.3	152.09	2.47	5	2.08	132.22	1.49	0	1.49	101.37	2.5	0	5	0.74	0.78	2.16	110.65	0.16	34.85	7
24	136.38	3.97	3.67	-4.24	136.43	2.91	5	2.16	132.35	1.55	0	1.55	86.91	2.94	0	5	0.78	0.74	2.26	94.45	0.17	30.02	5
25	110.59	4.18	3.38	-4.02	110.63	3.78	5	2.31	132.21	1.62	0	1.62	67.38	3.83	0	4	0.85	0.7	2.42	71.85	0.15	23.7	5
26	77.07	3.45	3.28	-3.89	77.11	4.47	4	2.47	129.92	1.68	0	1.68	44.82	4.57	0	4	0.92	0.65	2.6	46.47	0.14	20	3
27	115.71	4.39	3.28	-4.28	115.75	3.79	8	2.3	132.68	1.75	0	1.75	65.17	3.85	0	4	0.86	0.65	2.43	69.97	0.14	23.58	5
28	163.64	3.45	3.57	-4.16	163.68	2.11	5	2.01	131.76	1.82	0	1.82	89.18	2.13	0	5	0.75	0.67	2.13	102.24	0.14	39.02	7
29	139.93	3.86	3.57	-3.01	139.98	2.76	5	2.14	132.21	1.88	0	1.88	73.41	2.8	0	5	0.81	0.63	2.28	81.99	0.14	30.72	5
30	195.38	4.18	3.57	-2.19	195.43	2.14	6	1.96	133.6	1.95	0	1.95	99.32	2.16	0	5	0.74	0.64	2.09	116.39	0.13	39.34	7
31	189.64	4.49	3.58	-1.31	189.68	2.37	5	2.01	134.05	2.02	0	2.02	93.13	2.39	0	5	0.76	0.61	2.15	108.44	0.13	35.95	7
32	116.44	3.76	3.57	-0.47	116.48	3.23	5	2.24	131.56	2.08	0	2.08	54.97	3.29	0	4	0.87	0.55	2.43	59.91	0.12	26.2	5
33	127.82	3.13	3.57	0.36	127.86	2.45	5	2.12	130.46	2.15	0	2.15	58.58	2.49	0	5	0.83	0.56	2.31	65.98	0.12	32.41	7
34	126.46	3.34	3.58	0.95	126.51	2.64	5	2.15	130.9	2.21	0	2.21	56.2	2.69	0	5	0.85	0.53	2.35	62.8	0.12	30.48	5
35	128.34	3.86	3.38	1.86	128.38	3.01	5	2.19	132	2.28	0	2.28	55.37	3.06	0	5	0.87	0.51	2.4	61.12	0.11	27.64	5
36	152.25	4.18	3.48	2.74	152.3	2.74	5	2.11	132.99	2.34	0	2.34	63.97	2.79	0	5	0.84	0.51	2.32	72.47	0.11	30.33	5
37	162.18	4.39	3.73	4	162.22	2.7	5	2.09	133.5	2.41	0	2.41	66.29	2.74	0	5	0.84	0.5	2.3	75.64	0.11	30.85	5
38	203.84	4.91	4.15	4.21	203.89	2.41	5	1.99	134.88	2.48	0	2.48	81.28	2.44	0	5	0.8	0.51	2.19	96.25	0.12	34.89	7
39	157.58	5.85	3.87	5.11	157.63	3.71	8	2.21	135.54	2.55	0	2.55	60.91	3.77	0	4	0.9	0.45	2.44	66.52	0.11	23.85	5
40	145.88	5.12	3.96	5.86	145.93	3.51	8	2.21	134.37	2.61	0	2.61	54.85	3.57	0	4	0.91	0.44	2.45	59.56	0.11	24.61	5
41	155.6	4.8	3.99	6.23	155.65	3.09	5	2.15	134.07	2.68	0	2.68	57.07	3.14	0	5	0.89	0.44	2.39	63.27	0.11	27.27	5
42	175.02	5.01	4.05	6.71	175.07	2.86	5	2.09	134.66	2.75	0	2.75	62.72	2.91	0	5	0.87	0.44	2.34	71.01	0.11	29.29	5
43	256.26	0	4.54	7.01	256.32	0	0	0	87.36	2.79	0	2.79	90.83	0	0	0	1	0.38	4.06	90.83	0.12	144.05	0

	CPT-2	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	60.46	2.3	-0.16	1.18	60.46	3.8	4	2.48	126.36	0.06	0	0.06	955.32	3.8	0	8	0.63	5.87	2.03	335.27	-0.19	25.67	5
2	31.85	1.57	-0.01	1.32	31.85	4.92	3	2.76	122	0.12	0	0.12	255.32	4.94	0	9	0.74	4.87	2.32	145.97	-0.01	19.73	3
3	20.47	1.25	0	1.48	20.47	6.12	3	2.97	119.29	0.18	0	0.18	110.39	6.18	0	9	0.83	4.25	2.54	81.53	0	15.95	3
4	25.48	1.36	-0.2	1.49	25.48	5.33	3	2.85	120.41	0.24	0	0.24	103.42	5.38	0	9	0.82	3.31	2.51	78.9	-0.06	17.98	3
5	61.72	1.57	-0.02	1.83	61.72	2.54	5	2.35	123.61	0.31	0	0.31	200.8	2.55	0	5	0.67	2.29	2.11	133	0	34.94	7
6	60.99	2.51	0.97	1.86	61	4.11	4	2.51	127.02	0.37	0	0.37	164.13	4.13	0	9	0.74	2.18	2.29	124.95	0.19	23.01	5
7	69.65	2.51	1.02	1.87	69.67	3.6	4	2.43	127.34	0.43	0	0.43	159.85	3.62	0	8	0.73	1.91	2.25	125.17	0.17	25.84	5
8	85.11	3.34	1.74	1.31	85.13	3.93	4	2.4	129.94	0.5	0	0.5	169.98	3.95	0	8	0.73	1.73	2.25	138.74	0.25	24.08	5
9	74.35	2.92	1.74	1.14	74.37	3.93	4	2.43	128.63	0.56	0	0.56	131.28	3.96	0	8	0.76	1.61	2.31	112.45	0.22	23.76	5
10	73.52	3.34	1.83	0.92	73.54	4.54	4	2.48	129.58	0.63	0	0.63	116.27	4.58	0	9	0.79	1.51	2.38	103.92	0.21	20.85	3
11	79.47	3.13	1.93	0.73	79.49	3.94	4	2.42	129.3	0.69	0	0.69	113.91	3.98	0	9	0.77	1.39	2.33	103.32	0.2	23.57	5
12	70.28	2.61	1.9	0.83	70.3	3.71	4	2.43	127.67	0.76	0	0.76	92.04	3.75	0	4	0.79	1.3	2.36	85.65	0.18	24.43	5
13	113.93	4.07	1.84	0.71	113.95	3.57	5	2.28	132.1	0.82	0	0.82	137.71	3.6	0	8	0.74	1.21	2.24	128.98	0.16	26.01	5
14	93.04	4.8	2.12	0.38	93.07	5.16	9	2.46	132.81	0.89	0	0.89	103.81	5.21	0	9	0.82	1.15	2.43	100.55	0.17	18.61	3
15	91.37	3.03	2.22	0.51	91.4	3.31	5	2.32	129.39	0.95	0	0.95	94.94	3.35	0	5	0.77	1.08	2.3	92.7	0.17	27	5
16	103.17	3.03	2.12	0.56	103.2	2.93	5	2.25	129.69	1.02	0	1.02	100.41	2.96	0	5	0.75	1.03	2.24	99.45	0.15	30.01	5
17	144.01	4.49	2.12	0.61	144.03	3.12	5	2.17	133.38	1.08	0	1.08	131.83	3.14	0	5	0.73	0.98	2.18	132.69	0.14	29.31	5
18	98.06	3.97	2.12	0.67	98.08	4.05	4	2.37	131.54	1.15	0	1.15	84.29	4.09	0	4	0.82	0.93	2.39	85.6	0.13	22.74	5
19	62.24	2.51	2.03	0.59	62.26	4.03	4	2.49	127.07	1.21	0	1.21	50.31	4.11	0	4	0.88	0.89	2.54	51.17	0.12	21.84	3
20	73.93	3.86	2.12	0.34	73.96	5.22	9	2.53	130.66	1.28	0	1.28	56.83	5.32	0	4	0.9	0.84	2.59	57.96	0.12	17.97	3
21	77.9	4.07	2.12	-0.04	77.93	5.23	9	2.52	131.17	1.34	0	1.34	56.96	5.32	0	4	0.9	0.81	2.59	58.36	0.11	17.97	3
22	77.07	4.18	2.13	-0.34	77.09	5.42	9	2.53	131.33	1.41	0	1.41	53.67	5.52	0	4	0.91	0.77	2.62	55.02	0.11	17.4	3
23	74.25	5.64	2.16	-0.49	74.27	7.59	9	2.65	133.43	1.48	0	1.48	49.3	7.75	0	3	0.97	0.72	2.76	49.8	0.11	13.12	3
24	78.32	3.13	2.22	-0.51	78.35	4	4	2.43	129.26	1.54	0	1.54	49.83	4.08	0	4	0.89	0.72	2.54	51.95	0.1	21.98	3
25	78.84	3.34	2.18	-0.84	78.87	4.24	4	2.44	129.75	1.61	0	1.61	48.1	4.33	0	4	0.9	0.69	2.56	50.08	0.1	20.96	3
26	96.28	3.03	2.22	-1.02	96.31	3.14	5	2.29	129.52	1.67	0	1.67	56.63	3.2	0	5	0.85	0.68	2.41	60.69	0.1	26.76	5
27	85.42	2.61	2.22	-1.15	85.45	3.06	5	2.31	128.14	1.74	0	1.74	48.24	3.12	0	4	0.87	0.65	2.46	51.5	0.09	26.67	5
28	93.78	3.03	2.32	-1.28	93.8	3.23	5	2.3	129.45	1.8	0	1.8	51.12	3.29	0	4	0.87	0.63	2.45	54.77	0.09	25.88	5
29	67.15	2.92	2.22	-1.27	67.17	4.35	4	2.5	128.38	1.86	0	1.86	35.04	4.48	0	4	0.96	0.58	2.68	35.87	0.09	19.89	3
30	65.48	2.3	2.32	-1.23	65.5	3.51	4	2.44	126.56	1.93	0	1.93	32.99	3.61	0	4	0.94	0.57	2.63	34.13	0.09	22.83	5
31	69.65	2.09	2.32	-1.13	69.68	3	5	2.37	126.01	1.99	0	1.99	34.01	3.09	0	4	0.92	0.56	2.57	35.7	0.08	25.37	5
32	54.82	2.4	2.32	-1.03	54.85	4.38	4	2.56	126.45	2.05	0	2.05	25.71	4.55	0	3	1	0.52	2.79	25.71	0.08	19.1	3
33	53.05	2.09	2.17	-1.11	53.08	3.94	4	2.53	125.35	2.12	0	2.12	24.08	4.1	0	3	1	0.5	2.78	24.08	0.07	20.2	3
34	109.02	3.34	2.22	-1.18	109.05	3.06	5	2.24	130.54	2.18	0	2.18	48.99	3.13	0	4	0.89	0.53	2.45	53.21	0.07	26.74	5
35	82.39	4.7	2.32	-1.48	82.42	5.7	9	2.53	132.35	2.25	0	2.25	35.67	5.86	0	3	1	0.47	2.76	35.67	0.07	16.36	3
36	180.35	4.39	2.32	-0.63	180.37	2.43	5	2.03	133.76	2.31	0	2.31	76.93	2.46	0	5	0.8	0.53	2.21	89.77	0.07	34.27	7
37	99.83	4.07	2.49	-0.36	99.86	4.08	9	2.36	131.78	2.38	0	2.38	40.95	4.18	0	4	0.96	0.46	2.6	42.47	0.08	21.21	3
38	86.99	4.07	2.99	-0.41	87.02	4.68	9	2.45	131.44	2.45	0	2.45	34.58	4.82	0	4	1	0.43	2.71	34.62	0.09	18.85	3
39	136.49	3.97	3.18	-0.67	136.53	2.91	5	2.16	132.35	2.51	0	2.51	53.34	2.96	0	5	0.88	0.47	2.4	59.06	0.09	28.2	5
40	181.18	5.22	3.96	-0.74	181.23	2.88	5	2.09	135.05	2.58	0	2.58	69.25	2.92	0	5	0.85	0.47	2.3	79.14	0.11	29.59	5
41	135.44	5.53	4.15	-1.05	135.49	4.08	8	2.28	134.76	2.65	0	2.65	50.18	4.17	0	4	0.94	0.42	2.54	52.92	0.11	21.66	3
42	171.16	5.43	3.96	-0.75	171.2	3.17	8	2.13	135.19	2.71	0	2.71	62.06	3.22	0	5	0.88	0.43	2.38	69.27	0.1	27.03	5
43	194.03	6.37	4.54	-0.34	194.08	3.28	8	2.11	136.67	2.78	0	2.78	68.73	3.33	0	5	0.88	0.43	2.35	77.32	0.12	26.67	5
44	136.07	5.43	4.18	-0.5	136.12	3.99	8	2.27	134.64	2.85	0	2.85	46.75	4.07	0	4	0.96	0.39	2.55	48.72	0.11	21.87	3
45	132.94	4.49	4.44	-0.52	132.99	3.38	5	2.22	133.19	2.92	0	2.92	44.59	3.45	0	4	0.95	0.38	2.51	47.08	0.11	24.55	5
46	147.66	4.91	4.25	-0.38	147.71	3.32	8	2.19	134.1	2.98	0	2.98	48.5	3.39	0	4	0.94	0.38	2.48	51.8	0.1	25.16	5
47	161.13	5.33	4.34	-0.6	161.18	3.3	8	2.16	134.91	3.05	0	3.05	51.82	3.37	0	4	0.93	0.37	2.45	55.79	0.1	25.51	5
48	155.18	5.22	4.32	-0.68	155.23	3.36	8	2.18	134.67	3.12	0	3.12	48.77	3.43	0	4	0.94	0.36	2.48	51.81	0.1	24.94	5
49	154.45	5.85	4.34	-0.58	154.5	3.79	8	2.22	135.49	3.19	0	3.19	47.48	3.86	0	4	0.97	0.34	2.53	49.25	0.1	22.76	5
50	168.65	5.85	4.44	-0.53	168.7	3.47	8	2.17	135.7	3.25	0	3.25	50.84	3.53	0	4	0.95	0.34	2.48	53.8	0.1	24.52	5
51	164.79	5.85	4.44	-0.46	164.84	3.55	8	2.18	135.64	3.32	0	3.32	48.61	3.62	0	4	0.96	0.33	2.51	50.76	0.1	23.94	5
52	109.23	5.64	4.25	-0.55	109.28	5.16	9	2.42	134.38	3.39	0	3.39	31.24	5.33	0	3	1	0.31	2.77	31.24	0.09	17.45	3
53	114.03	4.7	3.96	-0.5	114.08	4.12	9	2.33	133.15	3.46	0	3.46	32.01	4.25	0	4	1	0.31	2.7	32.01	0.08	20.4	3
54	111.84	4.59	4.25	-0.23	111.89	4.11	9	2.33	132.94	3.52	0	3.52	30.76	4.24	0	4	1	0.3	2.71	30.76	0.09	20.34	3
55	128.55	5.22	3.97	0.04	128.6	4.06	9	2.29	134.21	3.59	0	3.59	34.82	4.18	0	4	1	0.29	2.67	34.82	0.08	20.8	3
56	181.29	6.58	4.25	0.06	181.34	3.63	8	2.17	136.74	3.66	0	3.66	48.57	3.7	0	4	0.98	0.3	2.52	49.6	0.08	23.5	5
57	130.43	6.27	3.97	0.21	130.48	4.8	9	2.35	135.58	3.73	0	3.73	34.02	4.94	0	3	1	0.28	2.72	34.02	0.08	18.48	3
58	142.33	5.43	4.19	0.51	142.39	3.81	8	2.25	134.75	3.79	0	3.79	36.54	3.92	0	4	1	0.28	2.63	36.54	0.08	21.83	3
59	170.43	2.51	4.26	0.49	170.48	1.47	6	1.88	129.53	3.86	0	3.86	43.19	1.5	0	5	0.89	0.31	2.26	49.58	0.08	41.21	7

	CPT-3	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	331.66	3.55	0.73	1.41	331.67	1.07	6	1.58	133.7	0.07	0	0.07	4957.2	1.07	0	6	0.37	2.77	1.36	868.65	0.78	87.86	7
2	40.52	2.4	0.39	3.66	40.52	5.93	3	2.74	125.71	0.13	0	0.13	311.21	5.95	0	9	0.74	4.76	2.33	181.64	0.21	16.66	3
3	118.73	3.97	0.28	3.71	118.74	3.34	5	2.25	132.01	0.2	0	0.2	605.98	3.35	0	8	0.62	2.84	1.99	318.18	0.1	28.91	5
4	102.76	5.74	1.26	3.69	102.77	5.59	9	2.46	134.36	0.26	0	0.26	390	5.6	0	9	0.71	2.7	2.23	261.33	0.34	17.69	3
5	126.15	5.53	0.7	3.71	126.16	4.39	9	2.33	134.59	0.33	0	0.33	381.08	4.4	0	8	0.68	2.21	2.14	262.62	0.15	22.25	5
6	169.9	5.64	1.45	3.6	169.92	3.32	8	2.15	135.45	0.4	0	0.4	425.98	3.33	0	8	0.63	1.86	2.01	297.59	0.26	29.02	5
7	130.74	5.95	1.84	3.59	130.77	4.55	9	2.33	135.21	0.47	0	0.47	279.85	4.57	0	9	0.71	1.79	2.19	220.03	0.28	21.4	3
8	97.01	5.33	1.84	4.09	97.04	5.49	9	2.47	133.67	0.53	0	0.53	181.31	5.52	0	9	0.77	1.69	2.34	154.57	0.25	17.83	3
9	139.41	5.43	1.86	4.54	139.43	3.89	8	2.26	134.69	0.6	0	0.6	231.52	3.91	0	8	0.7	1.49	2.16	195.48	0.22	24.62	5
10	192.15	9.4	1.74	4.62	192.17	4.89	9	2.26	137.28	0.67	0	0.67	286.53	4.91	0	9	0.72	1.39	2.19	251.47	0.19	20.05	3
11	229.01	11.9	2.8	5.74	229.04	5.2	9	2.24	137.28	0.74	0	0.74	309.77	5.21	0	9	0.72	1.3	2.19	279.91	0.27	18.95	3
12	148.91	7	4.02	6.1	148.96	4.7	9	2.31	136.71	0.81	0	0.81	183.95	4.72	0	9	0.75	1.23	2.26	171.81	0.36	20.63	3
13	151.63	6.16	4.16	6.25	151.68	4.06	8	2.25	135.82	0.87	0	0.87	172.71	4.09	0	8	0.74	1.15	2.22	164.21	0.34	23.51	5
14	138.05	5.74	3.87	6.37	138.1	4.16	9	2.28	135.08	0.94	0	0.94	145.8	4.19	0	8	0.76	1.09	2.27	141.7	0.3	22.87	5
15	157.06	4.28	3.38	6.49	157.1	2.73	5	2.1	133.25	1.01	0	1.01	154.94	2.74	0	5	0.7	1.03	2.1	152.66	0.24	33.28	7
16	115.18	4.7	3.29	6.39	115.22	4.08	9	2.32	133.17	1.07	0	1.07	106.28	4.12	0	9	0.79	0.99	2.33	106.61	0.22	22.91	5
17	134.5	5.33	3.38	6.25	134.54	3.96	8	2.27	134.47	1.14	0	1.14	116.88	3.99	0	8	0.78	0.94	2.29	118.87	0.21	23.66	5
18	123.54	5.12	3.58	5.94	123.58	4.14	9	2.31	133.97	1.21	0	1.21	101.29	4.18	0	9	0.8	0.9	2.35	104	0.21	22.58	5
19	186.72	5.43	3.96	5.91	186.76	2.91	8	2.08	135.41	1.28	0	1.28	145.38	2.93	0	5	0.72	0.87	2.12	153.26	0.22	31.48	5
20	219.3	6.58	4.1	5.8	219.35	3	8	2.05	137.2	1.34	0	1.34	162.14	3.02	0	8	0.71	0.84	2.1	173.68	0.22	30.92	5
21	202.48	9.4	4.35	5.64	202.54	4.64	9	2.23	137.28	1.41	0	1.41	142.32	4.67	0	9	0.79	0.8	2.29	151.29	0.22	20.76	3
22	188.6	8.88	4.45	5.44	188.65	4.71	9	2.25	137.28	1.48	0	1.48	126.3	4.74	0	9	0.8	0.76	2.32	134.89	0.22	20.42	3
23	175.33	6.16	4.64	5.21	175.39	3.51	8	2.16	136.18	1.55	0	1.55	112.17	3.54	0	8	0.78	0.74	2.25	122.02	0.22	26.27	5
24	179.09	6.68	4.64	4.98	179.15	3.73	8	2.18	136.82	1.62	0	1.62	109.71	3.76	0	8	0.79	0.71	2.27	119.82	0.21	24.91	5
25	185.04	9.5	4.87	4.95	185.1	5.13	9	2.29	137.28	1.69	0	1.69	108.73	5.18	0	9	0.84	0.68	2.39	117.15	0.21	18.78	3
26	234.33	9.61	5.18	5.09	234.4	4.1	8	2.15	137.28	1.76	0	1.76	132.51	4.13	0	8	0.79	0.67	2.25	147.31	0.21	23.19	5
27	217.73	7.83	4.84	5.14	217.79	3.6	8	2.12	137.28	1.82	0	1.82	118.38	3.63	0	8	0.79	0.65	2.23	132.99	0.19	25.89	5
28	161.13	8.67	5.27	4.9	161.2	5.38	9	2.34	137.28	1.89	0	1.89	84.16	5.44	0	9	0.88	0.6	2.47	90.12	0.2	17.87	3
29	256.89	8.67	4.62	4.55	256.95	3.37	8	2.06	137.28	1.96	0	1.96	130	3.4	0	8	0.77	0.62	2.18	149.58	0.17	27.59	5
30	183.79	0	5.11	4.49	183.85	0	0	0	87.36	2.01	0	2.01	90.69	0	0	0	1	0.53	4.06	90.69	0.18	143.84	0

	CPT-4	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	39.06	1.88	-0.1	1.87	39.05	4.81	4	2.69	123.83	0.06	0	0.06	629.37	4.82	0	9	0.68	6.96	2.18	256.67	-0.11	20.4	3
2	46.89	2.4	0.03	1.77	46.89	5.12	4	2.65	126.07	0.13	0	0.13	374.02	5.14	0	9	0.71	4.6	2.25	203.37	0.02	19.14	3
3	36.55	2.3	0.68	1.81	36.56	6.28	3	2.79	125.14	0.19	0	0.19	194.04	6.32	0	9	0.78	3.88	2.43	133.23	0.26	15.71	3
4	26.63	1.78	1.16	1.87	26.64	6.66	3	2.91	122.48	0.25	0	0.25	106.12	6.73	0	9	0.84	3.37	2.57	84.02	0.34	14.8	3
5	22.45	1.25	0.39	1.9	22.46	5.58	3	2.91	119.51	0.31	0	0.31	71.79	5.66	0	4	0.85	2.87	2.6	59.99	0.09	17.09	3
6	26.63	1.25	0	1.97	26.63	4.71	3	2.8	119.93	0.37	0	0.37	71.26	4.77	0	4	0.84	2.42	2.54	59.95	0	19.64	3
7	17.65	0.94	-0.15	1.99	17.65	5.33	3	2.97	116.82	0.43	0	0.43	40.33	5.46	0	3	0.91	2.28	2.73	37.14	-0.03	17.29	3
8	23.5	1.46	0	2.02	23.5	6.22	3	2.93	120.75	0.49	0	0.49	47.23	6.35	0	3	0.91	2.03	2.72	44.11	0	15.45	3
9	52.94	2.82	0	2.23	52.94	5.33	4	2.63	127.54	0.55	0	0.55	95.09	5.38	0	9	0.82	1.71	2.49	84.74	0	18.01	3
10	56.7	2.72	0.29	2.37	56.71	4.79	4	2.58	127.43	0.61	0	0.61	91.25	4.84	0	9	0.82	1.56	2.46	82.55	0.03	19.71	3
11	68.4	3.03	0.39	2.44	68.4	4.43	4	2.5	128.68	0.68	0	0.68	99.72	4.47	0	9	0.8	1.42	2.4	91.2	0.04	21.18	3
12	135.55	3.86	0.58	2.72	135.55	2.85	5	2.16	132.14	0.75	0	0.75	180.89	2.87	0	5	0.68	1.27	2.1	161.96	0.06	32.19	7
13	111.63	4.28	1.26	2.56	111.65	3.83	8	2.31	132.41	0.81	0	0.81	136.62	3.86	0	8	0.75	1.22	2.26	127.87	0.11	24.45	5
14	5.12	4.39	-0.03	2.32	5.12	85.72	2	4.21	125.07	0.87	0	0.87	4.86	103.38	0	2	1	1.21	4.06	4.86	0	2.6	1
15	181.81	5.33	0.74	2.84	181.82	2.93	5	2.09	135.2	0.94	0	0.94	192.12	2.94	0	8	0.68	1.08	2.07	185.17	0.06	31.72	5
16	146.09	7.21	2.1	2.84	146.12	4.93	9	2.33	136.88	1.01	0	1.01	143.68	4.97	0	9	0.78	1.04	2.32	142.24	0.15	19.61	3
17	236.84	7.73	2.79	2.21	236.88	3.26	8	2.06	137.28	1.08	0	1.08	218.6	3.28	0	8	0.69	0.99	2.07	219.91	0.19	29.08	5
18	127.82	6.58	3.1	1.81	127.86	5.15	9	2.38	135.89	1.15	0	1.15	110.53	5.19	0	9	0.82	0.94	2.4	112.14	0.19	18.73	3
19	166.35	6.47	3	1.93	166.39	3.89	8	2.21	136.41	1.21	0	1.21	135.98	3.92	0	8	0.76	0.9	2.24	140.51	0.18	24.25	5
20	121.97	4.91	4.83	1.8	122.03	4.02	9	2.3	133.63	1.28	0	1.28	94.22	4.06	0	9	0.81	0.86	2.35	97.77	0.27	23.06	5
21	112.05	5.64	3.87	1.23	112.1	5.03	9	2.4	134.44	1.35	0	1.35	82.11	5.09	0	9	0.85	0.81	2.47	85.08	0.21	18.89	3
22	160.3	7.21	3.92	0.99	160.34	4.49	9	2.27	137.1	1.42	0	1.42	112.13	4.53	0	9	0.81	0.79	2.34	118.59	0.2	21.16	3
23	138.37	6.37	4.66	1.16	138.42	4.6	9	2.32	135.84	1.49	0	1.49	92.21	4.65	0	9	0.83	0.75	2.4	97.53	0.23	20.53	3
24	184.11	5.01	3.96	1.16	184.15	2.72	5	2.06	134.79	1.55	0	1.55	117.61	2.75	0	5	0.74	0.75	2.14	129.96	0.18	32.8	7
25	174.81	6.58	4.93	1.38	174.87	3.76	8	2.19	136.65	1.62	0	1.62	106.88	3.8	0	8	0.8	0.71	2.28	116.58	0.22	24.69	5
26	210.42	8.88	6.04	1.6	210.49	4.22	8	2.19	137.28	1.69	0	1.69	123.58	4.25	0	9	0.8	0.69	2.28	135.74	0.26	22.52	5
27	204.36	9.09	8.72	1.57	204.47	4.44	9	2.21	137.28	1.76	0	1.76	115.29	4.48	0	9	0.82	0.66	2.32	126.54	0.36	21.43	3
28	134.29	7.52	9.63	1.51	134.41	5.59	9	2.4	136.99	1.83	0	1.83	72.58	5.67	0.01	9	0.9	0.61	2.53	76.61	0.38	17.17	3
29	209.69	7.83	10.05	0.97	209.81	3.73	8	2.14	137.28	1.9	0	1.9	109.7	3.77	0	8	0.8	0.63	2.26	123.09	0.38	24.94	5
30	326.23	8.77	9.94	1.06	326.35	2.69	8	1.92	137.28	1.96	0	1.96	165.17	2.7	0	5	0.72	0.64	2.03	196.96	0.36	34.34	7
31	194.76	8.98	15.37	0.89	194.94	4.61	9	2.24	137.28	2.03	0	2.03	94.91	4.66	0.01	9	0.85	0.57	2.38	104.4	0.54	20.57	3
32	163.01	6.79	15.54	0.59	163.2	4.16	8	2.24	136.71	2.1	0	2.1	76.67	4.21	0.01	4	0.87	0.55	2.41	84.01	0.53	22.17	5
33	344.82	6.47	17.98	0.41	345.04	1.88	6	1.77	137.28	2.17	0	2.17	158.04	1.89	0	6	0.68	0.62	1.9	199.39	0.6	46.89	7
34	298.77	8.98	17.49	-0.06	298.98	3	8	1.98	137.28	2.24	0	2.24	132.58	3.03	0	5	0.76	0.56	2.12	158.12	0.56	30.65	5
35	161.97	11.8	20.78	-0.38	162.22	7.27	9	2.45	137.28	2.31	0	2.31	69.32	7.38	0.01	9	0.97	0.47	2.64	71.21	0.65	13.64	3
36	231.93	13.47	21.19	-0.93	232.19	5.8	9	2.28	137.28	2.38	0	2.38	96.74	5.86	0.01	9	0.9	0.48	2.46	104.87	0.64	16.78	3
37	308.48	7.94	23.53	-1.38	308.77	2.57	8	1.91	137.28	2.44	0	2.44	125.32	2.59	0.01	5	0.76	0.53	2.08	153.58	0.69	34.96	7
38	157.69	6.58	24.11	-1.9	157.98	4.16	8	2.25	136.4	2.51	0	2.51	61.88	4.23	0.01	4	0.91	0.45	2.47	66.79	0.69	21.78	3
39	290.2	6.37	30.73	-2.3	290.58	2.19	6	1.87	137.28	2.58	0	2.58	111.58	2.21	0.01	5	0.75	0.51	2.05	138.97	0.86	39.47	7
40	152.25	6.37	26.96	-2.71	152.58	4.17	8	2.26	136.08	2.65	0	2.65	56.6	4.25	0.01	4	0.93	0.43	2.5	60.36	0.73	21.55	3
41	107.66	4.7	25.36	-2.85	107.97	4.35	9	2.36	133.01	2.72	0	2.72	38.76	4.46	0.02	4	0.99	0.39	2.65	39.21	0.67	20.08	3
42	190.16	4.8	25.49	-2.91	190.47	2.52	5	2.03	134.56	2.78	0	2.78	67.44	2.56	0.01	5	0.85	0.44	2.27	78.35	0.66	32.66	7
43	122.18	5.53	25.8	-2.84	122.5	4.52	9	2.34	134.52	2.85	0	2.85	41.98	4.63	0.02	4	0.99	0.37	2.64	42.39	0.65	19.69	3
44	109.65	6.16	25.9	-2.82	109.97	5.6	9	2.45	135.04	2.92	0	2.92	36.69	5.76	0.02	3	1	0.36	2.75	36.69	0.64	16.61	3
45	151.94	6.47	27.35	-2.92	152.28	4.25	9	2.27	136.2	2.99	0	2.99	50	4.34	0.01	4	0.97	0.37	2.56	51.84	0.66	20.98	3
46	417.71	6.47	27.89	-3.3	418.05	1.55	6	1.66	137.28	3.05	0	3.05	135.87	1.56	0	6	0.7	0.48	1.85	186.57	0.66	54.44	7
47	448.93	8.56	27.6	-3.54	449.27	1.91	6	1.72	137.28	3.12	0	3.12	142.85	1.92	0	6	0.73	0.45	1.92	191.82	0.64	46.06	7
48	136.8	7.62	23.69	-3.63	137.09	5.56	9	2.39	137.14	3.19	0	3.19	41.95	5.69	0.01	3	1	0.33	2.7	41.95	0.53	16.82	3
49	196.32	6.79	29.02	-3.65	196.68	3.45	8	2.13	137.17	3.26	0	3.26	59.33	3.51	0.01	4	0.93	0.35	2.42	64.28	0.64	25.13	5
50	135.13	0	26.47	-3.65	135.45	0	0	0	87.36	3.3	0	3.3	40	0	0.01	0	1	0.32	4.06	40	0.58	71.43	0

	CPT-5	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	67.04	1.88	1.34	-1.21	67.06	2.8	5	2.36	125.15	0.06	0	0.06	1070	2.81	0	8	0.59	5.23	1.92	331.39	1.54	34.15	7
2	202.8	2.61	0.58	-2.43	202.8	1.29	6	1.78	130.25	0.13	0	0.13	1586.1	1.29	0	6	0.44	2.56	1.54	489.62	0.32	71.31	7
3	47.51	2.3	-1.16	-3.35	47.5	4.84	4	2.63	125.77	0.19	0	0.19	248.34	4.86	0	9	0.73	3.51	2.29	156.74	-0.44	20.06	3
4	60.05	1.78	-1.29	-3.39	60.03	2.96	5	2.41	124.46	0.25	0	0.25	236.48	2.97	0	5	0.67	2.62	2.13	148.25	-0.37	31.01	5
5	51.38	1.78	-5.99	-3.45	51.3	3.46	4	2.51	124.08	0.31	0	0.31	161.95	3.48	-0.01	5	0.72	2.4	2.25	115.78	-1.37	26.59	5
6	22.56	1.67	-6.64	-3.37	22.48	7.43	3	2.99	121.62	0.38	0	0.38	58.82	7.56	-0.02	3	0.91	2.56	2.73	53.41	-1.27	13.38	3
7	18.9	1.25	-0.87	-3.02	18.89	6.63	3	3.01	119.09	0.44	0	0.44	42.4	6.79	0	3	0.93	2.28	2.78	39.81	-0.14	14.64	3
8	19.74	1.04	-0.15	-2.91	19.73	5.29	3	2.94	117.86	0.49	0	0.49	38.94	5.43	0	3	0.91	2.01	2.73	36.49	-0.02	17.34	3
9	22.56	1.25	-0.97	-2.77	22.54	5.56	3	2.91	119.52	0.55	0	0.55	39.7	5.7	0	3	0.92	1.81	2.74	37.69	-0.13	16.75	3
10	26.21	1.36	-0.46	-2.53	26.21	5.18	3	2.84	120.47	0.61	0	0.61	41.67	5.3	0	3	0.91	1.64	2.7	39.63	-0.05	17.71	3
11	27.36	1.25	0.14	-2.47	27.36	4.58	3	2.79	119.99	0.67	0	0.67	39.59	4.7	0	4	0.9	1.5	2.68	37.87	0.01	19.32	3
12	26.73	1.25	0.15	-2.37	26.74	4.69	3	2.8	119.94	0.73	0	0.73	35.41	4.82	0	4	0.92	1.4	2.71	34.38	0.01	18.83	3
13	41.25	2.19	0.65	-2.19	41.26	5.32	3	2.7	125.09	0.8	0	0.8	50.79	5.42	0	4	0.89	1.29	2.64	49.29	0.06	17.59	3
14	75.08	3.45	0.68	-2.19	75.09	4.59	4	2.48	129.86	0.86	0	0.86	86.16	4.64	0	9	0.82	1.18	2.44	83.05	0.06	20.43	3
15	70.49	3.55	-0.55	-2.16	70.48	5.04	4	2.53	129.92	0.93	0	0.93	75.07	5.1	0	9	0.85	1.12	2.51	73.58	-0.04	18.76	3
16	95.34	3.65	0.53	-2.31	95.35	3.83	4	2.36	130.87	0.99	0	0.99	95.12	3.87	0	4	0.79	1.05	2.35	93.84	0.04	23.95	5
17	83.02	3.76	-1.25	-2.35	83	4.53	4	2.45	130.74	1.06	0	1.06	77.5	4.59	0	4	0.84	1	2.46	77.49	-0.09	20.56	3
18	95.24	3.97	-1.57	-2.47	95.22	4.17	4	2.38	131.47	1.12	0	1.12	83.79	4.22	0	4	0.82	0.95	2.4	84.7	-0.1	22.17	5
19	90.75	4.8	0.68	-2.63	90.76	5.29	9	2.48	132.75	1.19	0	1.19	75.3	5.36	0	9	0.86	0.9	2.51	76.51	0.04	18.01	3
20	161.34	5.95	2.18	-2.98	161.37	3.69	8	2.2	135.72	1.26	0	1.26	127.34	3.72	0	8	0.76	0.88	2.24	132.65	0.13	25.33	5
21	219.4	7	1.6	-3.37	219.42	3.19	8	2.07	137.28	1.33	0	1.33	164.48	3.21	0	8	0.72	0.85	2.12	175.22	0.09	29.3	5
22	76.44	5.22	4.44	-3.43	76.5	6.83	9	2.61	132.94	1.39	0	1.39	53.93	6.95	0	3	0.94	0.77	2.69	54.8	0.23	14.37	3
23	136.49	4.49	4.15	-3.41	136.54	3.29	5	2.21	133.25	1.46	0	1.46	92.58	3.32	0	5	0.79	0.78	2.28	99.09	0.2	27.31	5
24	196.85	5.22	4.15	-3.88	196.9	2.65	5	2.04	135.25	1.53	0	1.53	127.97	2.67	0	5	0.73	0.77	2.11	141.49	0.2	33.8	7
25	73.31	4.18	12.94	-3.19	73.47	5.69	9	2.56	131.21	1.59	0	1.59	45.14	5.81	0.01	3	0.95	0.68	2.68	46.12	0.59	16.6	3
26	76.55	3.86	13.62	-3.85	76.71	5.04	9	2.51	130.75	1.66	0	1.66	45.28	5.15	0.01	4	0.93	0.66	2.64	46.62	0.59	18.26	3
27	63.39	3.13	14.04	-4.29	63.56	4.93	4	2.55	128.75	1.72	0	1.72	35.91	5.07	0.02	3	0.96	0.63	2.71	36.55	0.59	18.24	3
28	66.42	2.61	13.43	-4.5	66.58	3.92	4	2.47	127.53	1.79	0	1.79	36.28	4.03	0.01	4	0.94	0.61	2.63	37.49	0.54	21.48	3
29	59.52	3.45	12.94	-4.73	59.68	5.77	4	2.62	129.3	1.85	0	1.85	31.25	5.96	0.02	3	1	0.57	2.81	31.25	0.5	16.1	3
30	72.89	3.03	12.17	-5.19	73.04	4.15	4	2.46	128.84	1.91	0	1.91	37.14	4.26	0.01	4	0.95	0.57	2.64	38.32	0.46	20.72	3
31	64.95	3.65	12.52	-5.67	65.11	5.61	4	2.59	129.94	1.98	0	1.98	31.88	5.79	0.01	3	1	0.53	2.79	31.88	0.46	16.45	3
32	115.6	4.59	12.81	-6.23	115.76	3.97	9	2.31	133.02	2.05	0	2.05	55.57	4.04	0.01	4	0.9	0.55	2.49	59.48	0.45	22.39	5
33	109.34	5.01	15.28	-6.67	109.52	4.58	9	2.38	133.52	2.11	0	2.11	50.83	4.67	0.01	4	0.93	0.53	2.57	53.37	0.52	19.86	3
34	171.47	5.53	14.62	-7.69	171.65	3.22	8	2.14	135.34	2.18	0	2.18	77.71	3.27	0.01	5	0.83	0.55	2.31	87.66	0.48	27.41	5
35	121.55	6.16	16.94	-7.89	121.76	5.06	9	2.38	135.29	2.25	0	2.25	53.15	5.16	0.01	4	0.94	0.49	2.59	55.46	0.54	18.39	3
36	108.81	5.43	15.75	-7.93	109.01	4.98	9	2.41	134.09	2.32	0	2.32	46.08	5.09	0.01	4	0.96	0.47	2.63	47.44	0.49	18.44	3
37	107.46	4.49	13.98	-7.73	107.63	4.17	9	2.35	132.67	2.38	0	2.38	44.19	4.27	0.01	4	0.95	0.46	2.59	46.08	0.42	21.04	3
38	147.35	4.8	13.95	-7.71	147.52	3.26	5	2.18	133.93	2.45	0	2.45	59.24	3.31	0.01	5	0.88	0.48	2.4	65.5	0.41	26.32	5
39	110.07	5.33	15.84	-7.95	110.26	4.83	9	2.39	133.98	2.52	0	2.52	42.83	4.94	0.01	4	0.98	0.43	2.65	43.65	0.45	18.77	3
40	123.02	7.73	18.19	-8.38	123.24	6.27	9	2.46	136.97	2.58	0	2.58	46.69	6.4	0.01	3	1	0.41	2.71	46.69	0.51	15.36	3
41	216.48	7.31	20.37	-9.13	216.73	3.37	8	2.1	137.28	2.65	0	2.65	80.69	3.41	0.01	5	0.86	0.46	2.31	92.11	0.55	26.55	5
42	189.64	0	27.68	-3.22	189.98	0	0	0	87.36	2.7	0	2.7	69.45	0	0.01	0	1	0.39	4.06	69.45	0.74	113.5	0

	CPT-6	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	92.73	1.98	1.91	-0.03	92.75	2.14	5	2.18	126.33	0.06	0	0.06	1466.5	2.14	0	8	0.53	4.49	1.78	392.92	2.18	44.23	7
2	49.71	2.09	1.73	-0.2	49.73	4.2	4	2.57	125.19	0.13	0	0.13	394.16	4.21	0	8	0.69	4.32	2.18	202.51	0.99	23.03	5
3	40.52	1.57	1.57	-0.22	40.54	3.86	4	2.61	122.58	0.19	0	0.19	215.8	3.88	0	8	0.72	3.47	2.26	132.15	0.6	24.38	5
4	93.36	2.61	1.92	-1.3	93.38	2.8	5	2.26	128.36	0.25	0	0.25	370.75	2.8	0	8	0.63	2.47	2.02	217.46	0.55	33.47	7
5	203.74	4.7	3.77	-2.68	203.78	2.31	5	1.98	134.56	0.32	0	0.32	638.78	2.31	0	8	0.56	1.95	1.82	375.62	0.85	41.13	7
6	214.81	6.68	4.04	-3.16	214.86	3.11	8	2.07	137.27	0.39	0	0.39	553.9	3.12	0	8	0.61	1.84	1.94	372.51	0.75	31.08	5
7	153.82	6.06	4.13	-3.29	153.87	3.94	8	2.24	135.73	0.46	0	0.46	337.1	3.95	0	8	0.67	1.76	2.1	255.83	0.65	24.61	5
8	129.49	5.53	4.38	-2.87	129.54	4.27	9	2.31	134.65	0.52	0	0.52	247.04	4.29	0	8	0.71	1.65	2.19	201.11	0.6	22.63	5
9	125.52	6.58	4.33	-2.37	125.57	5.24	9	2.39	135.84	0.59	0	0.59	211.76	5.26	0	9	0.75	1.55	2.29	182.89	0.53	18.68	3
10	147.35	6.27	4.26	-2.28	147.4	4.25	9	2.27	135.88	0.66	0	0.66	222.94	4.27	0	8	0.72	1.41	2.19	194.94	0.47	22.71	5
11	186.72	5.12	5	-2.27	186.78	2.74	5	2.06	134.97	0.73	0	0.73	256.36	2.75	0	8	0.65	1.28	2	224.4	0.5	34.11	7
12	131.16	4.8	4.23	-2.11	131.21	3.66	8	2.25	133.65	0.79	0	0.79	164.54	3.68	0	8	0.73	1.23	2.2	152.05	0.38	25.72	5
13	122.49	5.01	4.51	-1.66	122.55	4.09	9	2.31	133.79	0.86	0	0.86	141.61	4.12	0	8	0.76	1.17	2.27	134.61	0.38	23.16	5
14	109.44	5.85	4.6	-1.1	109.5	5.34	9	2.43	134.65	0.93	0	0.93	117.16	5.39	0	9	0.81	1.11	2.41	114.26	0.36	18.13	3
15	178.36	6.68	4.33	-1.06	178.41	3.75	8	2.18	136.81	1	0	1	178.28	3.77	0	8	0.73	1.05	2.17	175.31	0.31	25.37	5
16	159.98	5.22	5	-1.09	160.04	3.26	8	2.16	134.74	1.06	0	1.06	149.62	3.28	0	8	0.73	1	2.17	149.79	0.34	28.43	5
17	128.86	5.12	4.71	-1.21	128.92	3.97	8	2.29	134.07	1.13	0	1.13	113.13	4	0	9	0.78	0.95	2.3	114.75	0.3	23.56	5
18	99.62	8.04	5.09	-1.1	99.69	8.07	9	2.6	136.75	1.2	0	1.2	82.22	8.16	0	9	0.91	0.89	2.64	83.13	0.31	12.44	3
19	297.93	12.22	15.67	-1.74	298.12	4.1	8	2.1	137.28	1.27	0	1.27	234.39	4.12	0	8	0.72	0.88	2.13	246.46	0.89	23.65	5
20	211.05	6.47	16.84	-2.4	211.25	3.06	8	2.07	136.99	1.34	0	1.34	157.23	3.08	0.01	8	0.72	0.85	2.11	167.85	0.91	30.26	5
21	123.33	7.52	16.46	-2.87	123.53	6.09	9	2.45	136.78	1.4	0	1.4	87.02	6.16	0.01	9	0.88	0.78	2.52	90.14	0.84	16.02	3
22	135.65	8.46	16.84	-3.08	135.86	6.23	9	2.43	137.28	1.47	0	1.47	91.28	6.29	0.01	9	0.88	0.75	2.51	95.09	0.82	15.72	3
23	171.05	7.62	16.43	-3.62	171.25	4.45	9	2.25	137.28	1.54	0	1.54	110.16	4.49	0.01	9	0.81	0.74	2.34	118.16	0.77	21.33	3
24	187.03	6.58	17.1	-4.21	187.24	3.51	8	2.15	136.82	1.61	0	1.61	115.36	3.54	0.01	8	0.78	0.72	2.24	126.59	0.77	26.34	5
25	169.9	5.53	17.2	-4.8	170.11	3.25	8	2.14	135.32	1.68	0	1.68	100.45	3.29	0.01	5	0.79	0.7	2.25	110.87	0.74	27.83	5
26	129.8	5.64	17.13	-5	130.01	4.34	9	2.31	134.8	1.74	0	1.74	73.54	4.4	0.01	4	0.86	0.65	2.44	78.79	0.71	21.32	3
27	180.76	7.1	17.36	-5.12	180.98	3.92	8	2.2	137.28	1.81	0	1.81	98.82	3.96	0.01	9	0.82	0.64	2.31	109	0.69	23.7	5
28	156.01	9.92	16.82	-5.29	156.22	6.35	9	2.4	137.28	1.88	0	1.88	82.03	6.43	0.01	9	0.91	0.59	2.54	86.51	0.64	15.42	3
29	145.15	13.47	16.59	-5.2	145.36	9.27	9	2.56	137.28	1.95	0	1.95	73.54	9.39	0.01	9	0.98	0.55	2.71	74.64	0.61	10.98	3
30	168.34	0	17.38	-5.21	168.55	0	0	0	87.36	1.99	0	1.99	83.54	0	0.01	0	1	0.53	4.06	83.54	0.63	133.62	0

	CPT-7	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	45.53	1.46	-0.17	-0.09	45.53	3.21	4	2.52	122.36	0.06	0	0.06	742.66	3.22	0	8	0.63	5.97	2.03	256.34	-0.2	29.78	5
2	32.89	1.46	-1.99	-0.17	32.87	4.45	4	2.72	121.57	0.12	0	0.12	268.33	4.46	0	9	0.72	4.78	2.28	147.83	-1.17	21.62	3
3	36.24	1.04	0.2	-0.26	36.24	2.88	4	2.56	119.34	0.18	0	0.18	198.59	2.9	0	5	0.69	3.4	2.19	115.85	0.08	31.03	5
4	27.26	0.63	0.13	-0.2	27.26	2.3	4	2.6	114.91	0.24	0	0.24	113.02	2.32	0	5	0.72	2.91	2.25	74.25	0.04	34.79	7
5	27.15	1.36	-2.02	-0.18	27.13	5	3	2.82	120.56	0.3	0	0.3	89.61	5.06	-0.01	4	0.82	2.82	2.51	71.48	-0.48	18.87	3
6	27.67	1.46	0.1	-0.27	27.67	5.28	3	2.83	121.15	0.36	0	0.36	75.88	5.35	0	4	0.84	2.48	2.56	64.05	0.02	17.94	3
7	12.53	1.04	-3.58	-0.22	12.49	8.36	3	3.22	116.75	0.42	0	0.42	28.85	8.65	-0.02	3	0.99	2.51	2.95	28.66	-0.62	12.16	3
8	12.84	0.94	-1.44	-0.17	12.83	7.33	3	3.17	116.04	0.48	0	0.48	25.93	7.61	-0.01	3	0.99	2.21	2.94	25.78	-0.22	13.44	3
9	20.47	1.15	-1.74	-0.18	20.45	5.62	3	2.94	118.65	0.54	0	0.54	37.17	5.77	-0.01	3	0.93	1.88	2.76	35.38	-0.23	16.56	3
10	25.48	1.46	-2.39	-0.18	25.45	5.74	3	2.88	120.94	0.6	0	0.6	41.69	5.88	-0.01	3	0.92	1.69	2.73	39.8	-0.29	16.38	3
11	27.46	1.67	-1.39	-0.1	27.45	6.09	3	2.87	122.11	0.66	0	0.66	40.76	6.24	0	3	0.93	1.56	2.75	39.42	-0.15	15.65	3
12	30.18	1.78	-2.16	-0.1	30.15	5.89	3	2.83	122.78	0.72	0	0.72	40.96	6.03	-0.01	3	0.93	1.43	2.74	39.82	-0.22	16.06	3
13	31.12	1.57	-6.24	-0.08	31.04	5.05	3	2.78	121.93	0.78	0	0.78	38.83	5.18	-0.01	3	0.92	1.32	2.71	37.86	-0.58	18	3
14	26	0.84	0.03	0.06	26	3.21	4	2.7	116.9	0.84	0	0.84	30.03	3.32	0	4	0.9	1.23	2.65	29.34	0	23.5	5
15	33.73	0.94	0.48	0.05	33.74	2.79	4	2.58	118.4	0.9	0	0.9	36.6	2.86	0	4	0.86	1.15	2.55	35.78	0.04	26.55	5
16	57.02	1.36	0.53	0.09	57.02	2.38	5	2.36	122.37	0.96	0	0.96	58.5	2.42	0	5	0.79	1.08	2.35	57.29	0.04	32.24	7
17	154.55	1.46	0.4	1.01	154.56	0.95	6	1.77	125.34	1.02	0	1.02	150.36	0.95	0	6	0.57	1.02	1.77	148.09	0.03	74.92	7
18	73.2	1.04	0.75	1.2	73.21	1.43	5	2.13	121.06	1.08	0	1.08	66.69	1.45	0	5	0.72	0.98	2.15	67.11	0.05	46.13	7
19	71.01	1.67	0.68	1.37	71.02	2.35	5	2.29	124.42	1.14	0	1.14	61.09	2.39	0	5	0.79	0.94	2.32	62.11	0.04	33	7
20	15.04	0.63	0.85	1.49	15.05	4.16	3	2.96	113.46	1.2	0	1.2	11.53	4.52	0	3	1	0.88	3.05	11.53	0.05	17.62	2
21	9.61	0.31	0.72	1.44	9.62	3.26	3	3.05	107.3	1.25	0	1.25	6.67	3.75	0.01	3	1	0.84	3.2	6.67	0.04	17.55	2
22	9.19	0.42	-1.56	1.5	9.17	4.55	3	3.15	109.29	1.31	0	1.31	6.01	5.31	-0.01	3	1	0.81	3.32	6.01	-0.09	15.71	2
23	13.05	0.63	0.87	1.5	13.06	4.8	3	3.04	113.12	1.37	0	1.37	8.57	5.36	0.01	3	1	0.78	3.2	8.57	0.05	16.02	2
24	11.9	0.42	0.68	1.46	11.91	3.51	3	2.99	109.93	1.42	0	1.42	7.39	3.98	0	3	1	0.74	3.17	7.39	0.03	17.49	2
25	9.82	0.31	0.48	1.42	9.82	3.19	3	3.04	107.35	1.47	0	1.47	5.66	3.75	0	3	1	0.72	3.26	5.66	0.02	17.16	2
26	9.61	0.42	0.68	1.44	9.62	4.34	3	3.12	109.4	1.53	0	1.53	5.29	5.17	0.01	3	1	0.69	3.36	5.29	0.03	15.71	2
27	10.34	0.63	0.94	1.42	10.35	6.05	3	3.19	112.55	1.59	0	1.59	5.53	7.15	0.01	3	1	0.67	3.43	5.53	0.04	14.18	2
28	113.3	0.84	-2.9	1.43	113.27	0.74	6	1.81	120.49	1.65	0	1.65	67.85	0.75	0	6	0.66	0.75	1.92	78.91	-0.13	68.89	7
29	19.53	0.52	-9.14	1.4	19.42	2.69	4	2.75	112.75	1.7	0	1.7	10.41	2.95	-0.04	3	1	0.62	2.98	10.41	-0.39	20.27	2
30	10.65	0.42	-9.03	1.42	10.54	3.96	3	3.07	109.63	1.76	0	1.76	5	4.76	-0.07	3	1	0.6	3.36	5	-0.37	16	2
31	6.58	0.52	-8.42	1.54	6.48	8.06	3	3.42	110.07	1.81	0	1.81	2.57	11.19	-0.13	2	1	0.58	3.81	2.57	-0.33	12.72	1
32	55.24	1.25	-9.24	1.63	55.13	2.27	5	2.36	121.7	1.87	0	1.87	28.44	2.35	-0.01	4	0.91	0.59	2.55	29.93	-0.36	28.43	5
33	338.87	2.4	-9.07	1.79	338.76	0.71	6	1.44	130.89	1.94	0	1.94	173.83	0.71	0	6	0.53	0.73	1.54	231.15	-0.34	102.69	7
34	323.62	5.01	-10.34	1.93	323.49	1.55	6	1.72	136.16	2.01	0	2.01	160.28	1.56	0	6	0.64	0.66	1.83	201.41	-0.37	55.05	7
35	267.02	8.35	-9.73	2.03	266.9	3.13	8	2.02	137.28	2.07	0	2.07	127.66	3.15	0	5	0.77	0.6	2.15	149.21	-0.34	29.45	5
36	383.46	8.77	-9.71	2.26	383.34	2.29	8	1.82	137.28	2.14	0	2.14	177.87	2.3	0	6	0.69	0.61	1.94	221.21	-0.33	39.93	7
37	334.9	8.56	-9.45	2.33	334.78	2.56	8	1.89	137.28	2.21	0	2.21	150.36	2.57	0	5	0.73	0.58	2.03	183.85	-0.31	35.68	7
38	465.01	5.64	-7.12	2.17	464.93	1.21	6	1.54	137.28	2.28	0	2.28	202.89	1.22	0	6	0.59	0.64	1.66	277.79	-0.22	70.43	7
39	511.07	9.19	-5.99	2.01	510.99	1.8	6	1.67	137.28	2.35	0	2.35	216.54	1.81	0	6	0.64	0.6	1.79	287.86	-0.18	50.48	7
40	123.12	0	16.36	-7.52	123.32	0	0	0	87.36	2.39	0	2.39	50.54	0	0.01	0	1	0.44	4.06	50.54	0.49	86.49	0

	CPT-8	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	44.69	1.88	-0.12	1.54	44.69	4.21	4	2.61	124.16	0.06	0	0.06	718.48	4.21	0	8	0.66	6.48	2.11	273.52	-0.13	23.2	5
2	38.01	1.88	-0.31	1.44	38.01	4.95	4	2.71	123.76	0.12	0	0.12	305.41	4.96	0	9	0.73	4.74	2.28	169.67	-0.18	19.7	3
3	18.8	1.36	-3.39	1.44	18.76	7.24	3	3.04	119.66	0.18	0	0.18	101.09	7.31	-0.01	9	0.85	4.46	2.61	78.21	-1.33	13.75	3
4	30.08	1.15	-3.48	1.37	30.03	3.82	4	2.71	119.58	0.24	0	0.24	122.31	3.86	-0.01	4	0.76	3.07	2.37	86.38	-1.03	23.91	5
5	28.09	1.67	-3.96	1.28	28.04	5.96	3	2.86	122.16	0.3	0	0.3	91.04	6.02	-0.01	9	0.84	2.84	2.56	74.53	-0.94	16.29	3
6	25.17	1.46	-3.76	1.28	25.12	5.82	3	2.89	120.91	0.37	0	0.37	67.79	5.91	-0.01	4	0.86	2.51	2.62	58.72	-0.74	16.49	3
7	28.51	1.46	-4.06	1.44	28.46	5.14	3	2.81	121.22	0.43	0	0.43	65.84	5.22	-0.01	4	0.85	2.18	2.58	57.66	-0.69	18.25	3
8	30.18	1.57	-3.79	1.48	30.13	5.2	3	2.79	121.86	0.49	0	0.49	60.93	5.28	-0.01	4	0.86	1.96	2.6	54.83	-0.56	18.02	3
9	33.63	1.57	-3.57	1.52	33.58	4.66	4	2.73	122.13	0.55	0	0.55	60.32	4.74	-0.01	4	0.85	1.75	2.57	54.79	-0.47	19.65	3
10	33.94	1.67	-3.67	1.5	33.89	4.93	3	2.74	122.62	0.61	0	0.61	54.65	5.02	-0.01	4	0.87	1.62	2.61	50.94	-0.43	18.71	3
11	35.92	1.67	-3.58	1.51	35.88	4.66	4	2.71	122.76	0.67	0	0.67	52.51	4.75	-0.01	4	0.87	1.49	2.6	49.53	-0.38	19.52	3
12	21.09	1.57	-4.36	1.52	21.04	7.44	3	3.02	120.99	0.73	0	0.73	27.78	7.71	-0.02	3	1	1.45	2.92	27.77	-0.43	13.29	3
13	37.91	1.67	-0.96	1.6	37.9	4.41	4	2.67	122.89	0.79	0	0.79	46.83	4.5	0	4	0.88	1.29	2.61	45.25	-0.09	20.18	3
14	38.43	1.67	-1.06	1.67	38.42	4.35	4	2.66	122.93	0.85	0	0.85	44	4.45	0	4	0.89	1.21	2.62	42.96	-0.09	20.28	3
15	37.49	1.67	-0.63	1.66	37.48	4.46	4	2.68	122.87	0.92	0	0.92	39.95	4.57	0	4	0.9	1.14	2.65	39.4	-0.05	19.76	3
16	30.28	1.46	-1.26	1.62	30.27	4.83	3	2.77	121.37	0.98	0	0.98	30.01	4.99	0	3	0.95	1.08	2.77	29.89	-0.09	18.2	3
17	28.93	1.36	-1.35	1.64	28.91	4.7	3	2.78	120.71	1.04	0	1.04	26.9	4.87	0	3	0.96	1.02	2.79	26.87	-0.09	18.36	3
18	24.44	1.15	-1.55	1.6	24.42	4.7	3	2.83	119.08	1.1	0	1.1	21.28	4.93	0	3	1	0.97	2.87	21.29	-0.1	17.89	3
19	23.29	1.15	-1.64	1.42	23.27	4.94	3	2.86	118.96	1.16	0	1.16	19.14	5.19	-0.01	3	1	0.92	2.92	19.14	-0.1	17.2	3
20	19.01	1.36	0.16	1.38	19.01	7.14	3	3.03	119.69	1.22	0	1.22	14.64	7.63	0	3	1	0.87	3.12	14.64	0.01	13.56	3
21	28.93	1.36	-0.61	1.38	28.92	4.69	3	2.78	120.71	1.28	0	1.28	21.67	4.91	0	3	1	0.83	2.86	21.67	-0.03	17.95	3
22	30.6	1.67	-0.58	1.34	30.59	5.46	3	2.8	122.37	1.34	0	1.34	21.88	5.71	0	3	1	0.79	2.91	21.88	-0.03	16.35	3
23	27.99	1.46	-0.87	1.4	27.98	5.23	3	2.82	121.18	1.4	0	1.4	19.02	5.5	0	3	1	0.76	2.94	19.02	-0.04	16.62	3
24	28.82	1.67	-2.51	1.44	28.79	5.8	3	2.84	122.22	1.46	0	1.46	18.74	6.11	-0.01	3	1	0.73	2.98	18.74	-0.12	15.57	3
25	24.33	1.46	-5.01	1.4	24.27	6.02	3	2.91	120.83	1.52	0	1.52	14.98	6.43	-0.02	3	1	0.7	3.06	14.98	-0.24	15.02	3
26	17.96	1.04	-4.64	1.28	17.9	5.83	3	2.99	117.62	1.58	0	1.58	10.35	6.4	-0.02	3	1	0.67	3.18	10.35	-0.21	14.94	2
27	22.24	1.46	-7.9	1.26	22.15	6.6	3	2.96	120.61	1.64	0	1.64	12.52	7.13	-0.03	3	1	0.65	3.15	12.52	-0.35	14.14	3
28	18.69	1.25	-6.42	1.33	18.61	6.73	3	3.02	119.05	1.7	0	1.7	9.97	7.41	-0.03	3	1	0.62	3.24	9.97	-0.27	13.88	2
29	18.59	1.04	-6.22	1.38	18.51	5.64	3	2.97	117.71	1.76	0	1.76	9.54	6.23	-0.03	3	1	0.6	3.2	9.54	-0.26	15.09	2
30	19.84	0	-6.67	1.26	19.76	0	0	0	87.36	1.8	0	1.8	9.98	0	-0.03	0	1	0.59	4.06	9.98	-0.27	28.54	0

	CPT-9	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	57.54	1.88	0.19	-0.69	57.54	3.27	4	2.45	124.77	0.06	0	0.06	920.74	3.27	0	8	0.61	5.67	1.99	308.21	0.22	29.52	5
2	48.98	1.78	0.39	-0.73	48.98	3.62	4	2.53	123.96	0.12	0	0.12	392.58	3.63	0	8	0.67	4.2	2.14	193.99	0.23	26.33	5
3	48.77	1.57	-5.01	-0.66	48.71	3.22	4	2.5	123.03	0.19	0	0.19	261.14	3.23	-0.01	8	0.68	3.27	2.16	150.13	-1.94	28.87	5
4	32.79	1.88	-4.19	-0.8	32.74	5.74	3	2.8	123.4	0.25	0	0.25	131.25	5.79	-0.01	9	0.8	3.21	2.47	98.55	-1.22	16.96	3
5	26.94	1.36	-4.46	-0.89	26.89	5.05	3	2.82	120.54	0.31	0	0.31	86.34	5.11	-0.01	4	0.83	2.77	2.52	69.6	-1.04	18.71	3
6	20.15	1.15	-0.65	-0.89	20.15	5.7	3	2.95	118.61	0.37	0	0.37	53.87	5.81	0	3	0.89	2.55	2.67	47.72	-0.13	16.63	3
7	27.78	1.15	-0.87	-0.95	27.77	4.14	4	2.75	119.39	0.43	0	0.43	64.04	4.2	0	4	0.83	2.13	2.53	55.03	-0.15	21.59	3
8	42.5	1.57	-1.07	-0.97	42.49	3.69	4	2.58	122.7	0.49	0	0.49	86.05	3.73	0	4	0.79	1.84	2.41	73.12	-0.16	24.25	5
9	21.83	1.36	-0.48	-0.82	21.82	6.22	3	2.95	120.03	0.55	0	0.55	38.8	6.38	0	3	0.93	1.85	2.78	37.16	-0.06	15.35	3
10	28.72	1.57	-0.33	-0.82	28.71	5.46	3	2.82	121.74	0.61	0	0.61	46.14	5.57	0	3	0.9	1.65	2.69	43.72	-0.04	17.13	3
11	36.03	1.78	-0.36	-0.88	36.02	4.93	3	2.72	123.21	0.67	0	0.67	52.71	5.02	0	4	0.88	1.49	2.61	49.85	-0.04	18.68	3
12	38.12	1.88	-0.55	-0.93	38.11	4.93	4	2.71	123.77	0.73	0	0.73	51.02	5.03	0	4	0.88	1.38	2.62	48.87	-0.05	18.64	3
13	34.36	1.88	-0.39	-0.97	34.35	5.47	3	2.77	123.52	0.79	0	0.79	42.25	5.6	0	3	0.92	1.3	2.7	41.27	-0.04	17.02	3
14	34.67	1.78	-1.3	-0.95	34.65	5.12	3	2.75	123.12	0.86	0	0.86	39.49	5.25	0	3	0.92	1.22	2.7	38.83	-0.11	17.82	3
15	33.83	1.88	-0.89	-0.93	33.82	5.56	3	2.78	123.48	0.92	0	0.92	35.86	5.71	0	3	0.94	1.14	2.75	35.57	-0.07	16.68	3
16	179.41	2.09	-0.48	-0.89	179.4	1.16	6	1.79	128.32	0.98	0	0.98	181.72	1.17	0	6	0.57	1.04	1.78	176.01	-0.04	67.39	7
17	27.15	1.88	-0.46	-0.73	27.15	6.92	3	2.91	122.94	1.04	0	1.04	25.02	7.2	0	3	1	1.01	2.93	25.02	-0.03	14	3
18	26.21	0.94	0.48	-0.63	26.22	3.58	4	2.73	117.78	1.1	0	1.1	22.79	3.74	0	4	0.96	0.96	2.77	22.83	0.03	21.12	3
19	12.64	0.73	0.1	-0.62	12.64	5.78	3	3.11	114.17	1.16	0	1.16	9.9	6.37	0	3	1	0.91	3.2	9.9	0.01	14.96	2
20	16.19	0.73	-0.29	-0.62	16.18	4.52	3	2.96	114.77	1.22	0	1.22	12.3	4.88	0	3	1	0.87	3.05	12.3	-0.02	17.14	3
21	17.23	0.94	-0.4	-0.75	17.23	5.46	3	2.99	116.76	1.28	0	1.28	12.51	5.89	0	3	1	0.83	3.1	12.51	-0.02	15.66	3
22	19.11	1.36	-0.89	-0.62	19.1	7.11	3	3.03	119.7	1.33	0	1.33	13.31	7.64	0	3	1	0.79	3.15	13.31	-0.05	13.57	3
23	42.08	1.88	-1.28	-0.53	42.07	4.47	4	2.65	124.01	1.4	0	1.4	29.12	4.62	0	3	0.96	0.77	2.75	29.42	-0.07	19.14	3
24	74.35	2.82	-1.15	-0.54	74.34	3.79	4	2.42	128.36	1.46	0	1.46	49.88	3.87	0	4	0.88	0.75	2.52	51.87	-0.06	22.86	5
25	71.95	3.65	-6.57	-0.51	71.87	5.09	4	2.53	130.18	1.53	0	1.53	46.09	5.2	-0.01	4	0.93	0.71	2.64	47.32	-0.31	18.15	3
26	91.37	3.65	-6.18	-0.37	91.3	4	4	2.38	130.76	1.59	0	1.59	56.36	4.07	0	4	0.88	0.7	2.5	59.28	-0.28	22.24	5
27	95.55	3.97	-5.88	-0.28	95.48	4.16	4	2.38	131.48	1.66	0	1.66	56.61	4.23	0	4	0.88	0.67	2.51	59.65	-0.26	21.61	3
28	66.73	3.34	-6.57	-0.29	66.65	5.01	4	2.55	129.34	1.72	0	1.72	37.71	5.15	-0.01	3	0.96	0.63	2.7	38.45	-0.27	18.09	3
29	85.84	3.34	-6.57	-0.25	85.76	3.9	4	2.39	129.96	1.79	0	1.79	46.99	3.98	-0.01	4	0.9	0.62	2.54	49.43	-0.26	22.28	5
30	83.33	4.18	-6.46	-0.05	83.25	5.02	9	2.48	131.52	1.85	0	1.85	43.94	5.13	-0.01	4	0.95	0.59	2.65	45.26	-0.25	18.28	3
31	93.57	4.18	-6.38	-0.2	93.49	4.47	9	2.41	131.8	1.92	0	1.92	47.73	4.56	-0.01	4	0.93	0.58	2.58	49.91	-0.24	20.13	3
32	66	3.97	-6.13	-0.16	65.92	6.02	4	2.61	130.57	1.98	0	1.98	32.23	6.21	-0.01	3	1	0.53	2.81	32.23	-0.22	15.64	3
33	77.59	3.55	-6.49	0.04	77.51	4.58	4	2.47	130.15	2.05	0	2.05	36.83	4.71	-0.01	4	0.97	0.53	2.68	37.64	-0.23	19.28	3
34	60.99	2.72	-6.43	0.04	60.91	4.46	4	2.53	127.6	2.11	0	2.11	27.83	4.62	-0.01	3	1	0.5	2.77	27.83	-0.22	19.06	3
35	50.44	2.51	-8.02	-0.11	50.34	4.98	4	2.62	126.55	2.18	0	2.18	22.13	5.2	-0.01	3	1	0.49	2.87	22.13	-0.27	17.35	3
36	103.7	3.55	-11.01	-0.9	103.56	3.43	5	2.3	130.86	2.24	0	2.24	45.2	3.5	-0.01	4	0.91	0.5	2.51	48.24	-0.35	24.36	5
37	91.48	3.65	-11.11	-1.13	91.34	4	4	2.38	130.77	2.31	0	2.31	38.6	4.11	-0.01	4	0.96	0.47	2.62	39.92	-0.35	21.34	3
38	68.5	3.55	-10.82	-1.01	68.37	5.19	4	2.55	129.85	2.37	0	2.37	27.83	5.38	-0.01	3	1	0.45	2.81	27.83	-0.33	17.22	3
39	85.32	3.34	-10.72	-0.81	85.19	3.92	4	2.39	129.94	2.44	0	2.44	33.96	4.04	-0.01	4	0.98	0.44	2.66	34.59	-0.32	21.27	3
40	89.18	3.55	-10.65	-0.65	89.05	3.99	4	2.39	130.49	2.5	0	2.5	34.59	4.1	-0.01	4	0.98	0.43	2.66	35.17	-0.31	21.08	3
41	105.89	3.86	-10.53	-0.57	105.76	3.65	5	2.31	131.53	2.57	0	2.57	40.19	3.74	-0.01	4	0.95	0.43	2.57	41.9	-0.3	22.88	5
42	132.83	4.49	-10.72	-0.43	132.7	3.38	5	2.22	133.18	2.63	0	2.63	49.37	3.45	-0.01	4	0.92	0.43	2.48	53.16	-0.29	24.91	5
43	205.41	4.8	-10.53	-0.19	205.28	2.34	5	1.98	134.74	2.7	0	2.7	74.98	2.37	0	5	0.82	0.46	2.2	88.97	-0.28	35.22	7
44	145.68	4.59	-10.47	-0.11	145.55	3.16	5	2.17	133.58	2.77	0	2.77	51.57	3.22	-0.01	4	0.91	0.42	2.44	56.2	-0.27	26.39	5
45	82.39	5.01	-10.44	0.12	82.27	6.09	9	2.55	132.82	2.83	0	2.83	28.02	6.31	-0.01	3	1	0.37	2.86	28.02	-0.27	15.4	3
46	123.54	6.27	-10.53	0.32	123.41	5.08	9	2.38	135.44	2.9	0	2.9	41.52	5.2	-0.01	4	1	0.36	2.68	41.52	-0.26	18.02	3
47	134.82	6.47	-10.52	0.67	134.69	4.81	9	2.34	135.9	2.97	0	2.97	44.34	4.92	-0.01	4	1	0.36	2.64	44.48	-0.26	18.87	3
48	110.07	4.07	-10.54	0.71	109.94	3.7	5	2.3	132.01	3.04	0	3.04	35.21	3.81	-0.01	4	1	0.35	2.63	35.3	-0.25	22.15	5
49	107.56	4.8	-10.39	0.87	107.43	4.47	9	2.37	133.16	3.1	0	3.1	33.62	4.6	-0.01	4	1	0.34	2.71	33.62	-0.24	19.4	3
50	114.77	0	-10.53	0.97	114.64	0	0	0	87.36	3.15	0	3.15	35.43	0	-0.01	0	1	0.34	4.06	35.43	-0.24	64.9	0

	CPT-10	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	71.01	3.03	0.87	0.32	71.02	4.26	4	2.47	128.78	0.06	0	0.06	1101.3	4.27	0	8	0.63	5.88	2.05	394.52	0.97	23.07	5
2	40	2.19	0.77	0.12	40.01	5.48	3	2.72	125.01	0.13	0	0.13	314.05	5.5	0	9	0.74	4.75	2.31	179.2	0.44	17.93	3
3	52.53	1.67	1.05	0.34	52.54	3.18	4	2.47	123.69	0.19	0	0.19	277.49	3.19	0	8	0.68	3.2	2.14	158.46	0.4	29.26	5
4	28.82	1.25	1	0.53	28.83	4.35	3	2.76	120.12	0.25	0	0.25	114.91	4.38	0	4	0.78	3.11	2.42	83.92	0.29	21.45	3
5	22.66	1.36	1.06	0.67	22.67	5.99	3	2.93	120.12	0.31	0	0.31	72.41	6.07	0	4	0.86	2.89	2.62	61.05	0.25	16.13	3
6	21.2	1.36	0.29	0.79	21.2	6.4	3	2.97	119.96	0.37	0	0.37	56.48	6.52	0	3	0.89	2.56	2.69	50.49	0.06	15.16	3
7	30.08	1.57	0.1	0.9	30.08	5.21	3	2.8	121.86	0.43	0	0.43	68.97	5.28	0	4	0.85	2.15	2.57	60.32	0.02	18.09	3
8	38.32	1.98	0.48	0.97	38.33	5.18	3	2.72	124.18	0.49	0	0.49	76.94	5.24	0	4	0.84	1.9	2.54	68.07	0.07	18.29	3
9	41.67	2.4	0.39	0.97	41.67	5.76	3	2.73	125.78	0.55	0	0.55	74.12	5.84	0	9	0.86	1.74	2.58	67.61	0.05	16.69	3
10	70.8	2.82	0.79	1.18	70.81	3.98	4	2.45	128.25	0.62	0	0.62	113.42	4.02	0	9	0.77	1.51	2.34	100.33	0.09	23.33	5
11	57.43	2.51	0.87	1.4	57.45	4.36	4	2.54	126.87	0.68	0	0.68	83.19	4.42	0	4	0.82	1.43	2.45	76.71	0.09	21.22	3
12	61.09	2.09	0.36	1.36	61.09	3.42	4	2.45	125.69	0.75	0	0.75	80.98	3.46	0	5	0.79	1.32	2.37	75.23	0.04	25.8	5
13	56.7	1.98	0.39	1.54	56.71	3.5	4	2.48	125.13	0.81	0	0.81	69.22	3.55	0	4	0.81	1.24	2.42	65.77	0.04	24.97	5
14	59.94	2.09	0.69	1.93	59.95	3.48	4	2.46	125.64	0.87	0	0.87	67.87	3.54	0	4	0.81	1.17	2.42	65.45	0.06	25.03	5
15	57.75	2.4	0.47	2.37	57.75	4.16	4	2.53	126.58	0.93	0	0.93	60.85	4.23	0	4	0.85	1.11	2.51	59.71	0.04	21.62	3
16	67.77	2.51	0.58	2.91	67.78	3.7	4	2.44	127.28	1	0	1	66.95	3.75	0	4	0.83	1.05	2.44	66.26	0.04	23.93	5
17	54.82	2.19	0.39	3.21	54.83	4	4	2.53	125.78	1.06	0	1.06	50.7	4.08	0	4	0.87	1	2.54	50.72	0.03	21.93	3
18	44.9	1.88	0.77	3.51	44.91	4.19	4	2.6	124.17	1.12	0	1.12	39.02	4.29	0	4	0.91	0.95	2.64	39.23	0.05	20.65	3
19	45.01	1.78	0.77	3.97	45.02	3.94	4	2.59	123.76	1.18	0	1.18	37.01	4.05	0	4	0.91	0.9	2.63	37.39	0.05	21.4	3
20	34.77	1.46	0.48	4.28	34.78	4.2	4	2.69	121.71	1.25	0	1.25	26.93	4.36	0	3	0.96	0.86	2.76	27.11	0.03	19.72	3
21	36.65	1.36	0.68	4.54	36.66	3.7	4	2.63	121.29	1.31	0	1.31	27.08	3.84	0	4	0.95	0.82	2.72	27.38	0.04	21.34	3
22	36.13	1.46	0.58	5.14	36.14	4.05	4	2.66	121.8	1.37	0	1.37	25.44	4.2	0	3	0.97	0.78	2.77	25.65	0.03	20.05	3
23	22.66	1.25	0.19	5.04	22.66	5.53	3	2.9	119.53	1.43	0	1.43	14.89	5.9	0	3	1	0.74	3.04	14.89	0.01	15.77	3
24	23.5	1.15	0.29	5.26	23.5	4.89	3	2.86	118.99	1.49	0	1.49	14.81	5.22	0	3	1	0.71	3.01	14.81	0.01	16.85	3
25	17.23	0.94	-0.14	5.37	17.23	5.46	3	2.99	116.76	1.54	0	1.54	10.16	5.99	0	3	1	0.69	3.17	10.16	-0.01	15.4	2
26	11.9	0	-0.01	5.37	11.9	0	0	0	87.36	1.59	0	1.59	6.5	0	0	0	1	0.67	4.06	6.5	0	23.57	0

	CPT-11	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	60.88	1.98	0.48	2.59	60.89	3.26	4	2.43	125.31	0.06	0	0.06	970.17	3.26	0	8	0.61	5.6	1.98	321.74	0.55	29.63	5
2	38.53	1.78	-3.78	2.48	38.49	4.61	4	2.68	123.37	0.12	0	0.12	308.33	4.63	-0.01	9	0.72	4.64	2.26	168.22	-2.19	21.01	3
3	84.27	1.98	-1.73	2.49	84.25	2.35	5	2.24	126.1	0.19	0	0.19	448.81	2.36	0	6	0.6	2.83	1.95	224.79	-0.67	39.1	7
4	32.79	1.98	0.29	2.51	32.79	6.05	3	2.81	123.8	0.25	0	0.25	130.57	6.1	0	9	0.81	3.22	2.49	99.11	0.08	16.18	3
5	25.06	1.46	0.43	2.57	25.07	5.83	3	2.89	120.91	0.31	0	0.31	79.93	5.91	0	9	0.85	2.84	2.58	66.4	0.1	16.53	3
6	20.26	1.15	0.19	2.47	20.26	5.67	3	2.95	118.62	0.37	0	0.37	53.9	5.77	0	3	0.88	2.54	2.67	47.74	0.04	16.7	3
7	24.02	0.84	0.06	2.41	24.02	3.48	4	2.75	116.71	0.43	0	0.43	55.19	3.54	0	4	0.83	2.12	2.52	47.32	0.01	24.13	5
8	8.77	0.63	0.6	2.44	8.78	7.14	3	3.29	112.15	0.48	0	0.48	17.16	7.55	0.01	3	1	2.19	3.07	17.16	0.09	13.61	3
9	27.88	1.67	0.02	2.33	27.88	5.99	3	2.86	122.14	0.54	0	0.54	50.21	6.11	0	3	0.9	1.82	2.69	47.06	0	15.96	3
10	36.86	1.98	0.02	2.35	36.86	5.38	3	2.74	124.08	0.61	0	0.61	59.77	5.47	0	4	0.87	1.63	2.61	55.7	0	17.53	3
11	52.42	2.3	-1.84	2.39	52.4	4.38	4	2.57	126.01	0.67	0	0.67	77.25	4.44	0	4	0.82	1.46	2.47	71.25	-0.2	21.03	3
12	68.61	2.82	-3.48	2.45	68.57	4.11	4	2.47	128.17	0.73	0	0.73	92.44	4.16	0	4	0.8	1.34	2.4	85.85	-0.34	22.46	5
13	48.87	2.82	-4.15	2.53	48.82	5.78	3	2.68	127.34	0.8	0	0.8	60.23	5.87	-0.01	4	0.89	1.28	2.62	58.32	-0.37	16.57	3
14	51.48	2.4	-4.88	2.62	51.42	4.67	4	2.6	126.29	0.86	0	0.86	58.76	4.75	-0.01	4	0.86	1.2	2.56	57.14	-0.41	19.66	3
15	42.5	2.09	-1.7	2.78	42.48	4.92	4	2.67	124.8	0.92	0	0.92	45.03	5.03	0	4	0.9	1.13	2.65	44.43	-0.13	18.56	3
16	29.45	1.25	-2.03	2.94	29.42	4.26	4	2.74	120.17	0.98	0	0.98	28.93	4.41	-0.01	4	0.94	1.07	2.74	28.81	-0.15	19.71	3
17	38.95	1.46	-1.93	3.03	38.93	3.76	4	2.62	121.98	1.04	0	1.04	36.28	3.86	0	4	0.9	1.01	2.63	36.24	-0.13	22.03	5
18	41.56	1.98	-2.77	3.2	41.53	4.78	4	2.67	124.37	1.11	0	1.11	36.55	4.91	0	4	0.93	0.96	2.7	36.66	-0.18	18.67	3
19	44.28	2.51	-4.99	3.46	44.22	5.67	3	2.7	126.24	1.17	0	1.17	36.82	5.82	-0.01	3	0.95	0.91	2.75	36.99	-0.31	16.47	3
20	35.71	2.19	-5.6	3.71	35.65	6.15	3	2.79	124.73	1.23	0	1.23	27.94	6.37	-0.01	3	1	0.86	2.86	27.95	-0.33	15.3	3
21	33.1	1.67	-4.35	3.75	33.05	5.06	3	2.76	122.56	1.29	0	1.29	24.56	5.26	-0.01	3	0.99	0.82	2.84	24.59	-0.24	17.35	3
22	37.7	1.88	-4.43	3.89	37.64	4.99	3	2.71	123.74	1.35	0	1.35	26.78	5.18	-0.01	3	0.99	0.78	2.81	26.88	-0.24	17.63	3
23	38.74	1.78	-4.02	3.84	38.69	4.59	4	2.68	123.39	1.42	0	1.42	26.32	4.76	-0.01	3	0.98	0.75	2.79	26.47	-0.2	18.6	3
24	71.01	1.98	-3.89	4.08	70.96	2.8	5	2.34	125.68	1.48	0	1.48	46.97	2.86	0	5	0.85	0.75	2.44	49.38	-0.19	28.14	5
25	43.55	2.09	-4.55	4.37	43.49	4.8	4	2.66	124.86	1.54	0	1.54	27.21	4.98	-0.01	3	0.99	0.69	2.79	27.34	-0.21	18.12	3
26	35.4	1.46	-4.17	4.76	35.35	4.14	4	2.68	121.75	1.6	0	1.6	21.06	4.33	-0.01	3	1	0.66	2.84	21.06	-0.19	19.26	3
27	58.06	2.51	-5.05	4.64	58	4.32	4	2.54	126.9	1.67	0	1.67	33.81	4.45	-0.01	4	0.95	0.65	2.69	34.54	-0.22	19.91	3
28	43.76	2.61	-7.43	5.15	43.66	5.98	3	2.72	126.5	1.73	0	1.73	24.25	6.23	-0.01	3	1	0.61	2.9	24.25	-0.31	15.5	3
29	44.17	2.09	-6.65	5.17	44.09	4.74	4	2.65	124.89	1.79	0	1.79	23.61	4.94	-0.01	3	1	0.59	2.84	23.61	-0.27	18.01	3
30	87.51	2.3	-6.49	4.74	87.43	2.63	5	2.26	127.26	1.86	0	1.86	46.12	2.68	-0.01	5	0.86	0.62	2.42	49.88	-0.25	29.37	5
31	69.97	3.13	-5.91	5.2	69.89	4.48	4	2.5	128.99	1.92	0	1.92	35.4	4.61	-0.01	4	0.96	0.56	2.68	36.19	-0.22	19.51	3
32	51.38	5.64	-6.05	5.2	51.3	10.99	3	2.88	132.53	1.99	0	1.99	24.83	11.43	-0.01	3	1	0.53	3.08	24.83	-0.22	9.84	2
33	82.08	4.49	-4.76	5.26	82.02	5.47	9	2.52	132.01	2.05	0	2.05	38.97	5.62	0	3	0.98	0.52	2.72	39.41	-0.17	16.96	3
34	53.88	2.51	-2.8	5.46	53.85	4.65	4	2.58	126.72	2.12	0	2.12	24.46	4.84	0	3	1	0.5	2.82	24.46	-0.1	18.28	3
35	38.01	3.03	-2.61	5.64	37.98	7.97	3	2.86	127.25	2.18	0	2.18	16.43	8.46	-0.01	3	1	0.49	3.11	16.43	-0.09	12.65	3
36	38.32	2.09	-2.61	5.8	38.29	5.45	3	2.74	124.55	2.24	0	2.24	16.08	5.79	-0.01	3	1	0.47	3.01	16.08	-0.08	15.98	3
37	35.71	1.46	-2.51	5.85	35.68	4.1	4	2.67	121.77	2.3	0	2.3	14.5	4.38	-0.01	3	1	0.46	2.97	14.5	-0.08	18.35	3
38	42.71	1.15	-2.51	5.96	42.68	2.69	4	2.49	120.44	2.36	0	2.36	17.07	2.85	0	4	1	0.45	2.8	17.07	-0.08	22.82	5
39	43.02	1.36	-2.12	6.12	43	3.16	4	2.53	121.68	2.42	0	2.42	16.74	3.35	0	3	1	0.44	2.84	16.74	-0.06	21.22	3
40	35.3	1.57	-2.8	6.24	35.26	4.44	4	2.7	122.24	2.48	0	2.48	13.19	4.78	-0.01	3	1	0.43	3.02	13.19	-0.08	17.43	3
41	37.18	1.15	-2.51	6.24	37.15	3.09	4	2.57	120.1	2.54	0	2.54	13.6	3.32	-0.01	3	1	0.42	2.91	13.6	-0.07	20.49	2
42	35.09	1.46	-1.45	6.27	35.07	4.17	4	2.68	121.73	2.61	0	2.61	12.46	4.5	0	3	1	0.41	3.02	12.46	-0.04	17.81	3
43	30.91	1.15	-1.64	6.33	30.89	3.72	4	2.69	119.65	2.67	0	2.67	10.59	4.07	0	3	1	0.4	3.05	10.59	-0.04	18.21	2
44	53.78	1.36	-1.75	6.33	53.76	2.53	5	2.4	122.23	2.73	0	2.73	18.72	2.66	0	4	1	0.39	2.75	18.72	-0.05	23.97	5
45	35.92	1.78	-1.25	6.4	35.91	4.94	3	2.72	123.2	2.79	0	2.79	11.88	5.36	0	3	1	0.38	3.09	11.88	-0.03	16.37	3
46	36.97	1.78	-0.77	6.48	36.96	4.8	4	2.71	123.28	2.85	0	2.85	11.97	5.2	0	3	1	0.37	3.08	11.97	-0.02	16.61	3
47	64.12	2.4	-0.88	6.61	64.11	3.75	4	2.46	126.83	2.91	0	2.91	21.01	3.92	0	3	1	0.36	2.81	21.01	-0.02	20.34	3
48	47.72	2.09	-1.06	6.73	47.71	4.38	4	2.6	125.09	2.98	0	2.98	15.03	4.67	0	3	1	0.36	2.97	15.03	-0.03	17.86	3
49	66.73	2.4	-0.1	6.79	66.73	3.6	4	2.44	126.93	3.04	0	3.04	20.96	3.77	0	3	1	0.35	2.8	20.96	0	20.77	3
50	117.59	0	1.06	6.95	117.6	0	0	0	87.36	3.08	0	3.08	37.15	0	0	0	1	0.34	4.06	37.15	0.02	67.35	0

	CPT-12	In situ data					Basic output data															
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	49.5	1.78	1.08	0.05	49.51	3.59	4	2.53	123.99	0.06	0	0.06	797.13	3.59	0	8	0.63	6.04	2.05	282.23	1.25	26.98	5
2	46.78	1.67	0.34	0.32	46.79	3.57	4	2.54	123.41	0.12	0	0.12	376.99	3.58	0	8	0.67	4.23	2.14	186.59	0.2	26.63	5
3	25.48	1.25	-0.57	0.37	25.47	4.92	3	2.83	119.82	0.18	0	0.18	137.8	4.96	0	9	0.78	3.94	2.43	94.23	-0.23	19.41	3
4	27.88	1.04	0.4	0.49	27.89	3.74	4	2.72	118.71	0.24	0	0.24	113.8	3.78	0	4	0.77	3.09	2.38	80.85	0.12	24.2	5
5	28.61	0.84	-0.11	0.63	28.61	2.92	4	2.64	117.14	0.3	0	0.3	93.89	2.95	0	5	0.76	2.59	2.35	69.28	-0.03	28.89	5
6	26.73	1.98	0.02	0.74	26.73	7.42	3	2.94	123.3	0.36	0	0.36	72.6	7.52	0	9	0.89	2.58	2.68	64.29	0	13.42	3
7	147.56	3.55	0.29	1.04	147.56	2.41	5	2.08	131.72	0.43	0	0.43	342.86	2.41	0	6	0.61	1.73	1.94	240.73	0.05	38.52	7
8	32.16	1.36	3.29	1.28	32.2	4.22	4	2.71	120.98	0.49	0	0.49	64.8	4.28	0.01	4	0.83	1.9	2.52	57.02	0.48	21.34	3
9	28.09	1.04	1.83	1.44	28.11	3.71	4	2.72	118.73	0.55	0	0.55	50.22	3.79	0	4	0.85	1.75	2.55	45.47	0.24	22.9	5
10	34.98	1.15	1.97	1.52	35.01	3.28	4	2.61	119.96	0.61	0	0.61	56.5	3.34	0	4	0.82	1.58	2.48	51.22	0.23	25.4	5
11	31.01	1.57	1.3	1.55	31.03	5.05	3	2.78	121.93	0.67	0	0.67	45.32	5.16	0	4	0.9	1.51	2.66	43.24	0.14	18.17	3
12	37.07	1.46	0.4	1.74	37.08	3.94	4	2.65	121.86	0.73	0	0.73	49.73	4.02	0	4	0.86	1.37	2.56	47.22	0.04	22.01	3
13	28.2	1.78	-1.04	1.78	28.18	6.3	3	2.87	122.61	0.79	0	0.79	34.58	6.48	0	3	0.96	1.32	2.81	34.15	-0.09	15.15	3
14	28.09	2.3	-1.05	2.02	28.08	8.18	3	2.96	124.49	0.85	0	0.85	31.87	8.44	0	3	1	1.24	2.91	31.86	-0.09	12.35	3
15	38.74	2.19	0.44	1.81	38.75	5.66	3	2.74	124.94	0.92	0	0.92	41.26	5.8	0	3	0.93	1.14	2.72	40.85	0.03	16.57	3
16	41.98	2.19	1.35	1.78	42	5.22	3	2.69	125.13	0.98	0	0.98	41.88	5.35	0	3	0.92	1.07	2.69	41.62	0.1	17.65	3
17	36.55	2.09	0.91	1.89	36.56	5.71	3	2.76	124.44	1.04	0	1.04	34.1	5.88	0	3	0.96	1.02	2.78	34.08	0.06	16.3	3
18	42.61	2.09	2.76	2.11	42.64	4.9	4	2.67	124.81	1.1	0	1.1	37.63	5.03	0	4	0.93	0.96	2.7	37.74	0.18	18.38	3
19	32.06	1.88	2.67	2.21	32.09	5.86	3	2.81	123.35	1.17	0	1.17	26.53	6.08	0.01	3	1	0.91	2.86	26.54	0.17	15.8	3
20	60.15	2.3	3.13	2.33	60.19	3.82	4	2.49	126.35	1.23	0	1.23	47.98	3.9	0	4	0.88	0.88	2.54	48.88	0.18	22.61	5
21	62.97	2.19	5.52	2.47	63.04	3.48	4	2.44	126.12	1.29	0	1.29	47.79	3.55	0.01	4	0.87	0.84	2.51	49.07	0.31	24.18	5
22	43.55	2.19	4.2	2.65	43.6	5.03	4	2.67	125.22	1.35	0	1.35	31.18	5.19	0.01	3	0.97	0.79	2.76	31.44	0.22	17.77	3
23	37.7	2.09	5.19	2.82	37.76	5.53	3	2.74	124.52	1.42	0	1.42	25.65	5.75	0.01	3	1	0.75	2.86	25.65	0.26	16.4	3
24	36.24	1.88	8.98	2.94	36.35	5.17	3	2.73	123.65	1.48	0	1.48	23.58	5.39	0.02	3	1	0.72	2.86	23.58	0.44	17.04	3
25	55.66	0	13.13	2.88	55.82	0	0	0	87.36	1.52	0	1.52	35.67	0	0.02	0	1	0.7	4.06	35.67	0.62	65.24	0

	CPT-13	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	59	2.09	-0.98	-1.37	58.99	3.54	4	2.47	125.6	0.06	0	0.06	937.67	3.54	0	8	0.62	5.78	2.01	321.9	-1.12	27.41	5
2	43.44	1.46	-0.69	-1.83	43.43	3.37	4	2.55	122.25	0.12	0	0.12	349.25	3.38	0	8	0.67	4.22	2.14	172.71	-0.4	27.98	5
3	30.18	1.25	-1.06	-1.78	30.17	4.15	4	2.73	120.23	0.18	0	0.18	162.98	4.18	0	9	0.75	3.71	2.34	105.16	-0.42	22.6	5
4	26.94	1.04	-1.26	-1.76	26.93	3.88	4	2.74	118.62	0.24	0	0.24	109.67	3.91	0	4	0.77	3.12	2.4	78.78	-0.37	23.47	5
5	29.03	1.36	-1.35	-1.85	29.01	4.68	3	2.78	120.72	0.3	0	0.3	94.53	4.73	0	4	0.81	2.74	2.48	74.41	-0.32	20.01	3
6	31.54	1.36	-1.35	-1.8	31.52	4.31	4	2.72	120.92	0.36	0	0.36	85.54	4.36	0	4	0.81	2.37	2.47	69.71	-0.27	21.33	3
7	32.27	1.46	-0.89	-1.83	32.26	4.53	4	2.73	121.52	0.43	0	0.43	74.9	4.59	0	4	0.83	2.13	2.51	63.97	-0.15	20.33	3
8	36.03	1.67	-0.97	-1.82	36.02	4.64	4	2.7	122.77	0.49	0	0.49	73.07	4.7	0	4	0.83	1.91	2.52	64.15	-0.14	19.95	3
9	35.09	1.57	-1.07	-1.68	35.07	4.47	4	2.7	122.23	0.55	0	0.55	63.07	4.54	0	4	0.84	1.74	2.54	56.93	-0.14	20.39	3
10	30.28	1.46	-0.87	-1.56	30.27	4.83	3	2.77	121.37	0.61	0	0.61	48.78	4.93	0	4	0.88	1.63	2.63	45.71	-0.1	18.87	3
11	39.16	1.57	-0.81	-1.44	39.15	4	4	2.63	122.5	0.67	0	0.67	57.48	4.07	0	4	0.84	1.47	2.53	53.53	-0.09	22.07	5
12	41.04	1.88	-0.82	-1.14	41.03	4.58	4	2.66	123.95	0.73	0	0.73	55.1	4.66	0	4	0.87	1.38	2.58	52.43	-0.08	19.85	3
13	40.41	2.3	-0.64	-0.69	40.41	5.69	3	2.73	125.38	0.79	0	0.79	49.89	5.8	0	3	0.9	1.3	2.67	48.53	-0.06	16.65	3
14	55.24	2.72	-0.89	-0.61	55.23	4.92	4	2.59	127.36	0.86	0	0.86	63.4	4.99	0	4	0.86	1.2	2.55	61.59	-0.07	18.96	3
15	66.83	3.55	-0.64	-0.57	66.83	5.31	4	2.56	129.79	0.92	0	0.92	71.43	5.39	0	9	0.86	1.13	2.54	70.08	-0.05	17.89	3
16	108.92	5.01	-0.9	-0.59	108.91	4.6	9	2.38	133.51	0.99	0	0.99	109.07	4.64	0	9	0.8	1.06	2.37	107.62	-0.07	20.64	3
17	99.52	5.85	-0.39	-0.93	99.51	5.88	9	2.49	134.41	1.06	0	1.06	93.18	5.94	0	9	0.85	1	2.5	93.16	-0.03	16.55	3
18	90.33	4.8	-1.16	-0.91	90.32	5.32	9	2.48	132.74	1.12	0	1.12	79.43	5.39	0	9	0.86	0.95	2.5	80.11	-0.07	17.97	3
19	126.25	4.8	-1.02	-0.95	126.24	3.81	8	2.28	133.55	1.19	0	1.19	105.11	3.84	0	8	0.79	0.91	2.31	107.79	-0.06	24.33	5
20	99.73	5.22	-0.63	-0.83	99.72	5.24	9	2.45	133.59	1.26	0	1.26	78.36	5.3	0	9	0.86	0.86	2.5	80.26	-0.04	18.21	3
21	94.4	4.8	-0.7	-0.95	94.39	5.09	9	2.45	132.85	1.32	0	1.32	70.35	5.16	0	9	0.87	0.82	2.52	72.41	-0.04	18.57	3
22	117.9	5.33	-1.06	-1.22	117.89	4.52	9	2.35	134.14	1.39	0	1.39	83.8	4.57	0	9	0.84	0.8	2.42	87.57	-0.06	20.74	3
23	113.83	5.74	-0.21	-1.54	113.82	5.05	9	2.4	134.61	1.46	0	1.46	77.11	5.11	0	9	0.87	0.76	2.48	80.51	-0.01	18.8	3
24	83.23	4.59	-0.75	-1.85	83.22	5.52	9	2.52	132.21	1.52	0	1.52	53.63	5.62	0	4	0.92	0.71	2.62	55.2	-0.04	17.14	3
25	76.65	4.49	-1.21	-1.99	76.63	5.86	9	2.56	131.84	1.59	0	1.59	47.22	5.98	0	3	0.95	0.68	2.68	48.27	-0.05	16.24	3
26	82.92	3.86	-0.87	-1.97	82.9	4.66	9	2.46	130.94	1.65	0	1.65	49.1	4.76	0	4	0.92	0.66	2.59	51	-0.04	19.52	3
27	104.84	4.59	-0.39	-2.01	104.84	4.38	9	2.37	132.78	1.72	0	1.72	59.91	4.46	0	4	0.89	0.65	2.51	63.32	-0.02	20.82	3
28	100.77	4.59	-0.63	-2.11	100.76	4.56	9	2.4	132.68	1.79	0	1.79	55.37	4.64	0	4	0.9	0.62	2.54	58.24	-0.03	20.05	3
29	70.49	4.7	-0.68	-2.04	70.48	6.67	9	2.62	131.97	1.85	0	1.85	37.03	6.85	0	3	1	0.57	2.8	37.03	-0.03	14.53	3
30	91.06	0	-0.84	-2.15	91.05	0	0	0	87.36	1.9	0	1.9	46.99	0	0	0	1	0.56	4.06	46.99	-0.03	81.42	0

	CPT-14	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	73.1	2.09	0.87	-1.22	73.11	2.86	5	2.34	126.13	0.06	0	0.06	1157.5	2.86	0	8	0.58	5.16	1.91	356.37	0.99	33.64	7
2	62.66	2.19	-0.49	-1.01	62.65	3.5	4	2.45	126.11	0.13	0	0.13	495.43	3.51	0	8	0.65	3.97	2.08	234.72	-0.28	27.4	5
3	41.35	1.88	-1.74	-0.87	41.33	4.55	4	2.66	123.97	0.19	0	0.19	218.83	4.57	0	9	0.73	3.56	2.3	138.36	-0.67	21.13	3
4	58.79	1.67	-0.24	-0.79	58.79	2.84	5	2.4	123.96	0.25	0	0.25	234.12	2.85	0	5	0.67	2.63	2.13	145.51	-0.07	32.04	7
5	90.54	1.36	0.97	-0.85	90.55	1.5	5	2.08	123.5	0.31	0	0.31	289.38	1.5	0	6	0.57	2.02	1.86	171.97	0.22	55.36	7
6	35.71	1.67	-0.33	-0.91	35.71	4.68	4	2.71	122.75	0.37	0	0.37	94.67	4.73	0	9	0.81	2.32	2.47	77.47	-0.06	20.05	3
7	58.9	1.36	0.07	-1	58.9	2.3	5	2.34	122.45	0.43	0	0.43	134.55	2.32	0	5	0.69	1.85	2.16	102.25	0.01	36.51	7
8	26.63	1.46	0.65	-1.79	26.64	5.49	3	2.85	121.06	0.49	0	0.49	52.82	5.59	0	4	0.89	1.96	2.66	48.42	0.09	17.14	3
9	25.9	1.46	-2.55	-1.9	25.87	5.65	3	2.87	120.98	0.56	0	0.56	45.57	5.78	-0.01	3	0.91	1.79	2.7	42.9	-0.33	16.65	3
10	24.96	1.46	-1.62	-1.99	24.94	5.86	3	2.89	120.9	0.62	0	0.62	39.49	6.01	0	3	0.93	1.65	2.75	37.97	-0.19	16.08	3
11	24.33	1.25	-0.93	-2.05	24.32	5.15	3	2.86	119.71	0.68	0	0.68	34.99	5.3	0	3	0.93	1.52	2.75	33.89	-0.1	17.58	3
12	26.73	1.25	-2.1	-2.13	26.71	4.69	3	2.8	119.93	0.74	0	0.74	35.3	4.82	-0.01	4	0.92	1.4	2.71	34.27	-0.21	18.81	3
13	28.2	1.25	-2.03	-2.14	28.17	4.45	3	2.77	120.06	0.8	0	0.8	34.4	4.58	-0.01	4	0.92	1.3	2.7	33.61	-0.18	19.48	3
14	30.18	1.36	-1.35	-2.13	30.16	4.5	3	2.75	120.82	0.86	0	0.86	34.23	4.63	0	4	0.92	1.22	2.71	33.67	-0.11	19.33	3
15	35.3	1.46	-0.97	-2.09	35.28	4.14	4	2.68	121.74	0.92	0	0.92	37.48	4.25	0	4	0.9	1.14	2.65	36.97	-0.08	20.67	3
16	36.24	1.36	-0.39	-2.09	36.23	3.75	4	2.64	121.26	0.98	0	0.98	36.06	3.85	0	4	0.9	1.07	2.63	35.77	-0.03	22.03	5
17	36.65	1.67	-0.29	-2.11	36.65	4.56	4	2.69	122.81	1.04	0	1.04	34.27	4.69	0	4	0.93	1.02	2.71	34.23	-0.02	19.18	3
18	48.25	1.88	-0.35	-2.15	48.24	3.9	4	2.56	124.34	1.1	0	1.1	42.81	3.99	0	4	0.89	0.97	2.59	43	-0.02	21.95	3
19	30.81	1.04	0.97	-2.15	30.82	3.39	4	2.66	118.95	1.16	0	1.16	25.55	3.52	0	4	0.94	0.92	2.71	25.7	0.06	22.24	5
20	24.64	0.94	0.78	-2.11	24.65	3.81	4	2.77	117.63	1.22	0	1.22	19.22	4.01	0	3	0.99	0.87	2.85	19.24	0.05	19.87	3
21	18.8	0.63	0.75	-2.11	18.81	3.33	3	2.82	114.01	1.28	0	1.28	13.73	3.57	0	3	1	0.83	2.93	13.73	0.04	19.93	3
22	9.82	0.42	0.61	-2.13	9.82	4.25	3	3.11	109.46	1.33	0	1.33	6.38	4.92	0.01	3	1	0.79	3.28	6.38	0.03	16.16	2
23	16.5	0.42	0.97	-2.2	16.51	2.53	4	2.8	110.72	1.39	0	1.39	10.91	2.76	0	3	1	0.76	2.95	10.91	0.05	20.88	2
24	19.11	0.52	0.44	-2.37	19.12	2.73	4	2.76	112.71	1.44	0	1.44	12.25	2.95	0	3	1	0.73	2.92	12.25	0.02	20.95	2
25	20.47	0.84	0.26	-2.31	20.47	4.08	3	2.85	116.32	1.5	0	1.5	12.64	4.4	0	3	1	0.7	3.01	12.64	0.01	18.02	3
26	36.13	1.78	-4.15	-2.1	36.08	4.92	3	2.72	123.22	1.56	0	1.56	22.09	5.14	-0.01	3	1	0.68	2.87	22.09	-0.19	17.48	3
27	49.81	2.3	-4.08	-1.87	49.76	4.62	4	2.6	125.89	1.63	0	1.63	29.61	4.77	-0.01	3	0.98	0.66	2.75	29.92	-0.18	18.76	3
28	71.43	2.3	-4.22	-1.58	71.38	3.22	5	2.38	126.77	1.69	0	1.69	41.26	3.3	0	4	0.89	0.66	2.53	43.39	-0.18	25.06	5
29	69.86	2.4	-4.17	-1.47	69.81	3.44	4	2.41	127.04	1.75	0	1.75	38.83	3.53	0	4	0.91	0.63	2.57	40.61	-0.17	23.73	5
30	95.97	3.24	-3.93	-1.22	95.92	3.37	5	2.31	130	1.82	0	1.82	51.77	3.44	0	4	0.87	0.62	2.46	55.4	-0.16	25.1	5
31	80.1	3.03	-3.96	-0.97	80.05	3.78	4	2.4	129.07	1.88	0	1.88	41.53	3.87	0	4	0.92	0.59	2.57	43.49	-0.15	22.43	5
32	131.68	4.28	-3.57	-0.56	131.64	3.25	5	2.21	132.81	1.95	0	1.95	66.56	3.3	0	5	0.84	0.6	2.37	73.22	-0.13	26.7	5
33	99.94	5.64	-3	-0.1	99.9	5.64	9	2.47	134.16	2.02	0	2.02	48.57	5.76	0	3	0.96	0.54	2.66	49.9	-0.11	16.76	3
34	73.62	3.24	-2.7	0.02	73.59	4.4	4	2.47	129.35	2.08	0	2.08	34.37	4.53	0	4	0.97	0.52	2.69	35.01	-0.09	19.7	3
35	51.27	3.03	-3.22	0.06	51.23	5.91	3	2.67	127.98	2.14	0	2.14	22.89	6.17	0	3	1	0.49	2.91	22.89	-0.11	15.57	3
36	132.2	4.91	-2.99	0.39	132.17	3.71	8	2.26	133.82	2.21	0	2.21	58.77	3.78	0	4	0.89	0.52	2.45	63.8	-0.1	23.73	5
37	211.78	6.06	-2.9	1.23	211.74	2.86	8	2.04	136.51	2.28	0	2.28	91.89	2.89	0	5	0.8	0.54	2.21	107.03	-0.09	30.84	5
38	246.24	7.83	-0.97	1.36	246.23	3.18	8	2.05	137.28	2.35	0	2.35	103.87	3.21	0	5	0.8	0.53	2.21	121.37	-0.03	28.57	5
39	99.94	6.68	-0.29	1.05	99.93	6.69	9	2.53	135.4	2.42	0	2.42	40.37	6.85	0	3	1	0.44	2.78	40.37	-0.01	14.53	3
40	96.8	4.28	0.61	1.15	96.81	4.42	9	2.4	132.07	2.48	0	2.48	38.01	4.54	0	4	0.98	0.43	2.66	38.65	0.02	19.82	3
41	113.72	4.18	-0.2	1.38	113.72	3.67	5	2.29	132.28	2.55	0	2.55	43.63	3.76	0	4	0.94	0.44	2.55	45.93	-0.01	23.06	5
42	74.67	3.03	0.33	1.42	74.67	4.06	4	2.44	128.9	2.61	0	2.61	27.58	4.2	0	4	1	0.41	2.74	27.58	0.01	20.21	3
43	83.23	3.76	0.57	1.39	83.24	4.52	4	2.45	130.75	2.68	0	2.68	30.08	4.67	0	3	1	0.4	2.75	30.08	0.02	19.05	3
44	162.8	5.74	0.48	1.87	162.81	3.53	8	2.18	135.48	2.75	0	2.75	58.3	3.59	0	4	0.91	0.42	2.43	63.63	0.01	24.68	5
45	144.74	4.28	0.71	2.28	144.74	2.96	5	2.15	133.05	2.81	0	2.81	50.47	3.02	0	5	0.91	0.41	2.42	55.26	0.02	27.57	5
46	122.81	4.91	0.72	2.49	122.82	4	8	2.3	133.65	2.88	0	2.88	41.66	4.09	0	4	0.98	0.38	2.6	42.69	0.02	21.53	3
47	119.78	6.37	1.74	2.53	119.8	5.32	9	2.41	135.49	2.95	0	2.95	39.66	5.45	0	3	1	0.36	2.71	39.66	0.04	17.35	3
48	77.69	6.37	3.16	2.6	77.73	8.19	9	2.67	134.44	3.01	0	3.01	24.79	8.53	0	3	1	0.35	2.99	24.79	0.08	12.37	3
49	93.88	5.74	1.69	2.72	93.9	6.12	9	2.52	134.14	3.08	0	3.08	29.48	6.32	0	3	1	0.34	2.84	29.48	0.04	15.4	3
50	124.79	0	1.74	2.98	124.81	0	0	0	87.36	3.12	0	3.12	38.95	0	0	0	1	0.34	4.06	38.95	0.04	69.92	0

	CPT-15	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	53.36	2.19	2.03	0.63	53.39	4.11	4	2.55	125.72	0.06	0	0.06	847.76	4.11	0	8	0.65	6.18	2.08	311.63	2.32	23.8	5
2	62.55	1.36	1.35	0.67	62.57	2.17	5	2.3	122.6	0.12	0	0.12	502.61	2.17	0	6	0.59	3.57	1.93	210.45	0.78	41.79	7
3	56.91	1.36	1.32	0.45	56.93	2.38	5	2.36	122.37	0.19	0	0.19	306.29	2.39	0	5	0.63	3.02	2.04	162.1	0.51	37.59	7
4	13.99	1.25	1.37	0.39	14.01	8.94	3	3.2	118.36	0.24	0	0.24	56.31	9.1	0.01	3	0.93	3.9	2.8	50.78	0.4	11.42	3
5	21.93	1.25	1.16	0.18	21.94	5.71	3	2.92	119.46	0.3	0	0.3	71.13	5.79	0	4	0.86	2.91	2.61	59.57	0.27	16.77	3
6	22.77	0.94	1.32	0.04	22.78	4.13	3	2.82	117.44	0.36	0	0.36	61.76	4.19	0	4	0.84	2.45	2.54	51.84	0.26	21.52	3
7	26.94	1.15	1.06	0.11	26.96	4.26	3	2.77	119.32	0.42	0	0.42	62.77	4.33	0	4	0.84	2.16	2.54	54.11	0.18	21.07	3
8	26.32	1.46	1.06	0.05	26.33	5.55	3	2.86	121.03	0.48	0	0.48	53.5	5.66	0	3	0.89	2	2.66	48.9	0.16	16.99	3
9	21.09	1.36	1.07	-0.14	21.11	6.43	3	2.97	119.95	0.54	0	0.54	37.87	6.6	0	3	0.94	1.87	2.79	36.39	0.14	14.95	3
10	22.87	1.25	0.97	-0.12	22.88	5.48	3	2.9	119.56	0.6	0	0.6	36.95	5.62	0	3	0.93	1.68	2.75	35.47	0.12	16.87	3
11	26.63	1.46	1.06	0.08	26.64	5.49	3	2.85	121.06	0.66	0	0.66	39.16	5.63	0	3	0.92	1.54	2.73	37.77	0.12	16.91	3
12	35.71	1.57	1.25	0.04	35.73	4.38	4	2.69	122.28	0.72	0	0.72	48.31	4.47	0	4	0.88	1.39	2.6	46.08	0.12	20.3	3
13	13.99	1.46	0.92	-0.02	14	10.44	3	3.24	119.49	0.78	0	0.78	16.86	11.06	0.01	3	1	1.35	3.19	16.86	0.08	10.47	2
14	42.82	1.46	1.06	0.11	42.83	3.41	4	2.56	122.21	0.85	0	0.85	49.66	3.48	0	4	0.85	1.21	2.51	47.98	0.09	24.46	5
15	25.69	0.84	1.12	0.06	25.7	3.25	4	2.71	116.87	0.9	0	0.9	27.44	3.37	0	4	0.92	1.16	2.68	27.07	0.09	23	5
16	25.79	0.52	1.16	0.13	25.81	2.02	4	2.58	113.44	0.96	0	0.96	25.87	2.1	0	4	0.88	1.09	2.58	25.56	0.09	28.74	5
17	53.26	1.04	1.32	0.16	53.27	1.96	5	2.33	120.28	1.02	0	1.02	51.19	2	0	5	0.79	1.03	2.33	50.8	0.09	35.45	7
18	109.86	1.15	1.53	-0.37	109.88	1.05	6	1.91	122.75	1.08	0	1.08	100.55	1.06	0	6	0.63	0.99	1.92	101.38	0.1	62.91	7
19	54.2	0.84	1.45	-0.36	54.22	1.54	5	2.25	118.69	1.14	0	1.14	46.5	1.57	0	5	0.78	0.94	2.29	47.3	0.09	39.67	7
20	19.42	0.52	1.45	-0.33	19.44	2.69	4	2.75	112.75	1.2	0	1.2	15.23	2.86	0.01	4	0.99	0.88	2.84	15.26	0.09	22.22	4
21	7.21	0.52	1.45	-0.28	7.22	7.23	3	3.36	110.34	1.25	0	1.25	4.76	8.75	0.02	2	1	0.84	3.53	4.76	0.08	13.22	2
22	33.1	0.73	1.54	-0.13	33.12	2.21	4	2.52	116.52	1.31	0	1.31	24.26	2.3	0	4	0.91	0.82	2.61	24.75	0.08	27.39	5
23	8.56	0.42	1.54	-0.12	8.58	4.87	3	3.19	109.13	1.37	0	1.37	5.28	5.79	0.02	3	1	0.77	3.39	5.28	0.08	15.19	2
24	4.28	0.21	1.64	-0.16	4.3	4.86	3	3.44	102.37	1.42	0	1.42	2.04	7.24	0.04	2	1	0.75	3.78	2.04	0.08	14.2	2
25	6.68	0.21	2.03	-0.12	6.71	3.11	3	3.17	103.45	1.47	0	1.47	3.57	3.99	0.03	3	1	0.72	3.44	3.57	0.1	16.11	2
26	5.22	0.1	2.12	-0.09	5.25	1.99	3	3.16	97.78	1.52	0	1.52	2.46	2.8	0.04	3	1	0.7	3.5	2.46	0.1	16.2	2
27	16.6	0.42	1.72	-0.02	16.63	2.51	4	2.79	110.74	1.57	0	1.57	9.57	2.78	0.01	3	1	0.67	2.99	9.57	0.08	20.27	2
28	19.21	0.63	1.78	0.06	19.24	3.26	4	2.81	114.06	1.63	0	1.63	10.8	3.56	0.01	3	1	0.65	3.01	10.8	0.08	19.18	2
29	40.2	0.42	2.03	0.24	40.23	1.04	5	2.26	112.89	1.69	0	1.69	22.86	1.08	0	5	0.86	0.67	2.43	24.44	0.09	35.69	6
30	24.85	0.73	2.51	0.49	24.88	2.94	4	2.69	115.82	1.74	0	1.74	13.27	3.16	0.01	3	1	0.61	2.91	13.27	0.1	20.79	2
31	13.89	1.04	2.41	0.57	13.92	7.5	3	3.15	117.01	1.8	0	1.8	6.72	8.62	0.01	3	1	0.59	3.41	6.72	0.1	13.07	2
32	275.37	1.57	2.54	1.04	275.41	0.57	6	1.44	127.26	1.87	0	1.87	146.55	0.57	0	6	0.52	0.74	1.54	191.98	0.1	112.25	7
33	156.85	2.92	2.58	1.76	156.88	1.86	6	1.98	130.45	1.93	0	1.93	80.22	1.89	0	5	0.75	0.64	2.12	93.33	0.1	41.98	7
34	61.51	5.43	4.54	1.82	61.56	8.82	9	2.76	132.7	2	0	2	29.81	9.12	0.01	3	1	0.53	2.96	29.81	0.16	11.65	3
35	86.67	6.89	4.73	1.91	86.73	7.95	9	2.63	135.28	2.07	0	2.07	40.99	8.14	0	3	1	0.51	2.83	40.99	0.16	12.63	3
36	133.25	4.91	4.39	1.85	133.3	3.68	8	2.25	133.84	2.13	0	2.13	61.51	3.74	0	4	0.88	0.54	2.43	66.98	0.15	24.01	5
37	116.23	2.51	5.28	1.68	116.29	2.16	5	2.11	128.59	2.2	0	2.2	51.93	2.2	0	5	0.83	0.54	2.31	58.63	0.17	34.52	7
38	113.41	2.82	5.02	1.66	113.47	2.48	5	2.16	129.4	2.26	0	2.26	49.17	2.54	0	5	0.86	0.52	2.37	54.62	0.16	31	5
39	48.45	2.82	4.92	1.56	48.51	5.81	3	2.68	127.32	2.33	0	2.33	19.86	6.1	0.01	3	1	0.46	2.96	19.86	0.15	15.61	3
40	33.73	2.61	5.12	1.48	33.79	7.73	3	2.88	125.88	2.39	0	2.39	13.15	8.31	0.01	3	1	0.44	3.18	13.15	0.15	12.91	3
41	67.88	5.74	4.27	1.04	67.93	8.46	9	2.72	133.35	2.45	0	2.45	26.67	8.77	0	3	1	0.43	2.98	26.67	0.13	12.06	3
42	338.87	5.74	4.91	1.74	338.93	1.69	6	1.74	137.27	2.52	0	2.52	133.3	1.71	0	6	0.69	0.55	1.9	173.84	0.14	50.12	7
43	55.14	2.19	5.01	2.19	55.2	3.97	4	2.53	125.8	2.59	0	2.59	20.34	4.17	0.01	3	1	0.41	2.84	20.34	0.14	19.6	3
44	57.96	2.09	4.97	2.43	58.02	3.6	4	2.48	125.56	2.65	0	2.65	20.9	3.77	0.01	3	1	0.4	2.8	20.9	0.14	20.76	3
45	102.34	2.61	4.91	2.79	102.4	2.55	5	2.2	128.58	2.71	0	2.71	36.74	2.62	0	4	0.93	0.42	2.49	39.32	0.13	28.51	5
46	53.68	2.72	5.02	3.17	53.74	5.05	4	2.61	127.3	2.78	0	2.78	18.35	5.33	0.01	3	1	0.38	2.94	18.35	0.13	16.9	3
47	94.61	3.55	5.2	3.44	94.67	3.75	4	2.35	130.64	2.84	0	2.84	32.31	3.87	0	4	1	0.37	2.67	32.31	0.13	21.71	3
48	50.75	4.18	5.06	3.61	50.81	8.22	3	2.79	130.31	2.91	0	2.91	16.48	8.72	0.01	3	1	0.36	3.12	16.48	0.13	12.39	3
49	89.81	4.91	5.31	3.61	89.87	5.46	9	2.49	132.88	2.97	0	2.97	29.22	5.65	0	3	1	0.36	2.81	29.22	0.13	16.69	3
50	156.95	0	6.14	3.71	157.03	0	0	0	87.36	3.02	0	3.02	51.04	0	0	0	1	0.35	4.06	51.04	0.15	87.19	0

	CPT-16	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	64.64	1.25	-0.17	0.19	64.64	1.94	5	2.26	122.09	0.06	0	0.06	1057.2	1.94	0	6	0.55	4.75	1.81	289.72	-0.2	47.41	7
2	42.5	1.25	-0.3	0.1	42.5	2.95	4	2.52	121.07	0.12	0	0.12	348.32	2.96	0	5	0.66	4.15	2.1	166.09	-0.18	31.38	5
3	28.93	1.78	0	0.07	28.93	6.14	3	2.86	122.68	0.18	0	0.18	157.21	6.18	0	9	0.8	4.05	2.47	110.12	0	16.01	3
4	62.13	3.13	-0.79	0.2	62.12	5.04	4	2.57	128.7	0.25	0	0.25	250.28	5.06	0	9	0.73	2.9	2.29	169.83	-0.23	19.34	3
5	61.09	3.65	-0.84	0.41	61.08	5.98	3	2.63	129.78	0.31	0	0.31	194.67	6.01	0	9	0.77	2.57	2.39	147.59	-0.19	16.46	3
6	236.42	3.13	2.32	0.26	236.45	1.32	6	1.75	131.96	0.38	0	0.38	624.23	1.33	0	6	0.48	1.65	1.62	367.25	0.44	67.69	7
7	61.09	3.03	3.93	-0.57	61.14	4.95	4	2.57	128.41	0.44	0	0.44	137.19	4.99	0	9	0.78	1.97	2.38	113.16	0.64	19.41	3
8	112.99	3.24	2.97	-0.56	113.03	2.86	5	2.21	130.4	0.51	0	0.51	221.73	2.88	0	5	0.67	1.63	2.08	173.59	0.42	32.24	7
9	46.26	2.19	2.78	-0.38	46.3	4.74	4	2.63	125.37	0.57	0	0.57	80.19	4.8	0	4	0.83	1.67	2.49	72.04	0.35	19.74	3
10	61.61	2.51	2.22	-0.16	61.64	4.07	4	2.5	127.05	0.63	0	0.63	96.26	4.11	0	4	0.79	1.5	2.39	86.46	0.25	22.69	5
11	67.88	3.03	2.66	-0.15	67.91	4.46	4	2.5	128.67	0.7	0	0.7	96.28	4.51	0	9	0.8	1.4	2.41	88.71	0.27	21.02	3
12	64.43	3.24	3.38	0.04	64.47	5.02	4	2.56	129.03	0.76	0	0.76	83.53	5.08	0	9	0.83	1.31	2.49	79.1	0.32	18.88	3
13	66.62	3.13	2.94	0.37	66.66	4.7	4	2.52	128.87	0.83	0	0.83	79.61	4.76	0	9	0.83	1.23	2.47	76.37	0.26	19.93	3
14	47.31	2.92	2.55	0.37	47.34	6.18	3	2.71	127.53	0.89	0	0.89	52.14	6.3	0	3	0.91	1.17	2.68	51.36	0.21	15.6	3
15	55.03	2.4	4.07	0.42	55.08	4.36	4	2.56	126.46	0.95	0	0.95	56.74	4.44	0.01	4	0.86	1.09	2.54	55.94	0.31	20.72	3
16	65.27	2.09	4.87	0.34	65.33	3.2	5	2.41	125.85	1.02	0	1.02	63.23	3.25	0.01	5	0.82	1.03	2.41	62.77	0.34	26.57	5
17	125.83	3.97	3.12	0.41	125.87	3.15	5	2.21	132.15	1.08	0	1.08	115.21	3.18	0	5	0.75	0.98	2.22	115.89	0.21	28.71	5
18	109.13	6.16	3.89	0.28	109.17	5.64	9	2.45	135.02	1.15	0	1.15	93.9	5.7	0	9	0.85	0.93	2.48	95.1	0.24	17.16	3
19	75.5	5.95	4.28	0.24	75.55	7.88	9	2.66	133.87	1.22	0	1.22	61.06	8.01	0	9	0.94	0.88	2.71	61.58	0.25	12.71	3
20	93.57	4.07	2.93	0.57	93.6	4.35	9	2.4	131.62	1.28	0	1.28	71.94	4.41	0	4	0.85	0.85	2.46	74.1	0.16	21.19	3
21	73.93	3.24	2.9	0.49	73.97	4.38	4	2.47	129.36	1.35	0	1.35	53.87	4.46	0	4	0.88	0.81	2.54	55.42	0.15	20.63	3
22	65.58	3.45	2.9	0.36	65.62	5.25	4	2.56	129.53	1.41	0	1.41	45.44	5.37	0	4	0.93	0.76	2.66	46.39	0.15	17.68	3
23	80.83	3.13	4.5	0.37	80.88	3.87	4	2.41	129.34	1.48	0	1.48	53.75	3.95	0	4	0.87	0.75	2.5	56.07	0.22	22.69	5
24	79.57	4.07	3.87	0.4	79.62	5.12	9	2.5	131.22	1.54	0	1.54	50.6	5.22	0	4	0.92	0.71	2.61	52.19	0.18	18.17	3
25	98.89	3.55	4.16	0.34	98.94	3.59	5	2.32	130.75	1.61	0	1.61	60.52	3.65	0	4	0.85	0.7	2.44	64.32	0.19	24.4	5
26	89.49	3.03	3.35	0.3	89.54	3.38	5	2.33	129.34	1.67	0	1.67	52.51	3.45	0	4	0.87	0.67	2.46	55.81	0.14	25.08	5
27	76.65	2.82	4.06	0.2	76.7	3.68	4	2.4	128.44	1.74	0	1.74	43.15	3.76	0	4	0.9	0.64	2.55	45.23	0.17	23	5
28	53.78	2.61	4.48	0.18	53.83	4.85	4	2.6	127.01	1.8	0	1.8	28.9	5.02	0.01	3	0.99	0.59	2.78	28.99	0.18	18.1	3
29	86.67	4.18	5.62	0.28	86.74	4.82	9	2.46	131.62	1.87	0	1.87	45.47	4.92	0	4	0.94	0.59	2.62	47.1	0.22	18.92	3
30	79.26	5.85	4.64	0.52	79.32	7.37	9	2.63	133.86	1.93	0	1.93	40.02	7.56	0	3	1	0.55	2.81	40.02	0.17	13.43	3
31	149.12	5.01	5.65	0.91	149.19	3.36	8	2.19	134.27	2	0	2	73.57	3.41	0	5	0.84	0.59	2.35	81.56	0.2	26.33	5
32	125.42	3.76	4.25	0.87	125.47	3	5	2.2	131.75	2.07	0	2.07	59.71	3.05	0	5	0.85	0.57	2.37	65.95	0.15	28.03	5
33	115.81	3.34	4.32	1.36	115.86	2.88	5	2.21	130.69	2.13	0	2.13	53.35	2.94	0	5	0.86	0.55	2.4	58.68	0.15	28.33	5
34	82.18	4.49	3.12	1.78	82.22	5.46	9	2.52	132.02	2.2	0	2.2	36.41	5.61	0	3	1	0.48	2.74	36.45	0.1	16.92	3
35	133.98	6.58	3.59	2.15	134.02	4.91	9	2.35	136	2.27	0	2.27	58.15	4.99	0	4	0.93	0.49	2.55	61.35	0.11	18.96	3
36	170.84	6.47	5.93	2.21	170.92	3.79	8	2.2	136.48	2.33	0	2.33	72.22	3.84	0	4	0.87	0.5	2.39	79.99	0.18	23.86	5
37	143.07	8.25	4.7	2.16	143.12	5.76	9	2.39	137.28	2.4	0	2.4	58.56	5.86	0	4	0.96	0.46	2.61	60.65	0.14	16.6	3
38	102.34	7	4.46	1.95	102.39	6.83	9	2.53	135.8	2.47	0	2.47	40.45	7	0	3	1	0.43	2.78	40.45	0.13	14.28	3
39	159.98	7.83	4.47	1.86	160.04	4.89	9	2.3	137.28	2.54	0	2.54	62.03	4.97	0	4	0.93	0.44	2.53	65.67	0.13	19.08	3
40	206.66	9.19	5	1.8	206.72	4.45	9	2.21	137.28	2.61	0	2.61	78.27	4.5	0	9	0.9	0.45	2.42	85.88	0.14	21	3
41	165.2	9.19	5.06	1.9	165.27	5.56	9	2.34	137.28	2.68	0	2.68	60.74	5.65	0	4	0.96	0.41	2.58	62.94	0.14	17.13	3
42	359.02	8.56	6.62	1.87	359.1	2.38	8	1.85	137.28	2.75	0	2.75	129.81	2.4	0	5	0.75	0.49	2.03	163.96	0.17	37.49	7
43	313.8	12.11	18.71	1.79	314.03	3.86	8	2.06	137.28	2.81	0	2.81	110.61	3.89	0	8	0.85	0.44	2.26	128.59	0.48	24.29	5
44	464.28	13.78	24.39	2.58	464.58	2.97	8	1.88	137.28	2.88	0	2.88	160.18	2.99	0	8	0.77	0.46	2.06	201.68	0.61	31.49	5
45	270.57	10.76	72.4	2.06	271.46	3.96	8	2.1	137.28	2.95	0	2.95	90.98	4.01	0.02	9	0.88	0.41	2.33	103.05	1.77	23.42	5
46	110.9	7.52	59.93	1.67	111.64	6.74	9	2.51	136.53	3.02	0	3.02	35.97	6.92	0.04	3	1	0.35	2.81	35.97	1.43	14.41	3
47	106.83	5.12	62.72	1.32	107.6	4.76	9	2.4	133.63	3.09	0	3.09	33.86	4.9	0.04	3	1	0.34	2.72	33.86	1.46	18.6	3
48	110.8	5.33	56.91	1.2	111.49	4.78	9	2.39	134.01	3.15	0	3.15	34.36	4.92	0.04	3	1	0.34	2.72	34.36	1.3	18.57	3
49	66.73	4.59	54.23	1.26	67.39	6.82	9	2.64	131.7	3.22	0	3.22	19.94	7.16	0.06	3	1	0.33	3	19.94	1.21	14.07	3
50	92.73	5.95	52.46	1.34	93.37	6.37	9	2.53	134.39	3.29	0	3.29	27.41	6.61	0.04	3	1	0.32	2.88	27.41	1.15	14.9	3
51	101.82	5.95	46.88	1.53	102.39	5.81	9	2.48	134.61	3.35	0	3.35	29.53	6.01	0.03	3	1	0.32	2.83	29.53	1.01	15.97	3
52	82.6	3.45	54.09	1.68	83.26	4.14	4	2.42	130.11	3.42	0	3.42	23.36	4.32	0.05	3	1	0.31	2.8	23.36	1.14	19.53	3
53	114.35	4.18	48.06	2.12	114.94	3.63	5	2.29	132.3	3.48	0	3.48	31.98	3.75	0.03	4	1	0.3	2.66	31.98	0.99	22.11	5
54	134.71	5.12	52.89	2.51	135.36	3.78	8	2.26	134.19	3.55	0	3.55	37.11	3.88	0.03	4	1	0.3	2.62	37.11	1.07	22.01	5
55	106.52	5.22	55.08	2.74	107.19	4.87	9	2.4	133.77	3.62	0	3.62	28.62	5.04	0.04	3	1	0.29	2.78	28.62	1.1	18.02	3
56	142.23	4.91	58.26	2.9	142.94	3.43	8	2.21	134.02	3.69	0	3.69	37.78	3.52	0.03	4	1	0.29	2.59	37.78	1.14	23.52	5
57	122.39	6.58	60.48	2.99	123.13	5.34	9	2.4	135.8	3.75	0	3.75	31.8	5.51	0.04	3	1	0.28	2.78	31.8	1.16	17.04	3
58	221.8	9.19	68	3.22	222.64	4.13	8	2.16	137.28	3.82	0	3.82	57.25	4.2	0.02	4	0.99	0.28	2.51	58.17	1.28	21.69	3
59	212.72	8.88	63.94	3.35	213.5	4.16	8	2.18	137.28	3.89	0	3.89	53.87	4.23	0.02	4	1	0.27	2.54	53.87	1.18	21.42	3
60	94.4	4.59	64.67	3.37	95.19	4.83	9	2.43	132.54	3.96	0	3.96	23.06	5.04	0.05	3	1	0.27	2.85	23.06	1.18	17.76	3
61	137.64	4.7	66.46	3.47	138.45	3.39	8	2.21	133.62	4.02	0	4.02	33.41	3.5	0.04	4	1	0.26	2.63	33.41	1.19	23.24	5
62	106.2	4.28	65.01	3.46	107	4	9	2.34	132.31	4.09	0	4.09	25.16	4.16	0.05	3	1	0.26	2.77	25.16	1.14	20.13	3
63	112.89	4.28	65.79	3.55	113.69	3.77	5	2.3	132.46	4.16	0	4.16	26.35	3.91	0.04	4	1	0.25	2.74	26.35	1.14	21.01	3
64	88.35	6.06	63.82	3.61	89.13	6.8	9	2.57	134.4	4.22	0	4.22	20.1	7.13	0.05	3	1	0.25	3	20.1	1.09	14.11	3
65	164.99	9.61	64.17	3.47	165.78	5.8	9	2.36	137.28	4.29	0	4.29	37.62	5.95	0.03	3	1	0.25	2.75	37.62	1.08	16.21	3
66	111.95	7.94	63.4	3.78	112.72	7.04	9	2.52	136.95	4.36	0	4.36	24.85	7.32	0.04	3	1	0.24	2.94	24.85	1.05	13.83	3
67	132.62	6.58	64.76	4.03	133.42	4.93	9	2.35	135.99	4.43	0	4.43	29.12	5.1	0.04	3	1	0.24	2.78	29.12	1.05	17.9	3
68	223.16	9.4	72.15	4.62	224.04	4.19	8	2.17	137.28	4.5	0	4.5	48.82	4.28	0.02	4	1	0.24	2.57	48.82	1.16	21.08	3
69	179.82	8.77	54.96	4.73	180.5	4.86	9	2.27	137.28	4.57	0	4.57	38.53	4.99	0.02	4	1	0.23	2.69	38.53	0.87	18.52	3
70	162.38	8.77	62.85	4.7	163.15	5.38	9	2.33	137.28	4.63	0	4.63	34.2	5.53	0.03	3	1	0.23	2.76	34.2	0.98	17.05	3
71	380.64	13.37	63.23	5.43	381.41	3.5	8	1.99	137.28	4.7	0	4.7	80.09	3.55	0.01	5	0.97	0.24	2.35	83.97	0.97	25.54	5
72	260.86	12.53	74.19	6.06	261.77	4.79	9	2.18	137.28	4.77	0	4.77	53.85	4.88	0.02	4	1	0.22	2.58	53.85	1.12	19.2	3
73	145.57	10.03	67.86	6.36	146.4	6.85	9	2.45	137.28	4.84	0	4.84	29.25	7.08	0.03	3	1	0.22	2.88	29.25	1.01	14.16	3
74	125.21	5.85	75.5	6.35	126.13	4.64	9	2.35	134.99	4.91	0	4.91	24.7	4.82	0.04	3	1	0.22	2.82	24.7	1.11	18.34	3
75	121.14	0	79.05	6.64	122.1	0	0	0	87.36	4.95	0	4.95	23.66	0	0.05	0	1	0.21	4.06	23.66	1.15	48.08	0

	CPT-17	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	65.27	1.36	0.37	-1.06	65.27	2.08	5	2.28	122.7	0.06	0	0.06	1062.2	2.08	0	6	0.55	4.83	1.83	297.66	0.43	44.61	7
2	89.6	2.82	1.15	-1.45	89.61	3.15	5	2.31	128.82	0.13	0	0.13	711.1	3.15	0	8	0.61	3.66	1.98	309.83	0.66	30.57	5
3	101.92	4.7	-0.36	-1.82	101.92	4.61	9	2.4	132.87	0.19	0	0.19	529.53	4.62	0	8	0.67	3.13	2.13	301.32	-0.14	21.29	3
4	132.94	4.59	-1.06	-2.04	132.92	3.46	8	2.23	133.36	0.26	0	0.26	512.56	3.46	0	8	0.63	2.43	2.02	304.51	-0.3	27.96	5
5	94.72	4.28	-0.44	-2.15	94.71	4.52	9	2.41	132.01	0.32	0	0.32	290.53	4.54	0	9	0.71	2.3	2.21	205.12	-0.1	21.5	3
6	69.24	3.97	-0.66	-2.09	69.23	5.73	4	2.58	130.69	0.39	0	0.39	176.39	5.76	0	9	0.78	2.17	2.38	140.98	-0.12	17.1	3
7	104.74	2.92	-0.65	-2.12	104.73	2.79	5	2.22	129.47	0.46	0	0.46	229.16	2.8	0	5	0.66	1.75	2.07	172.25	-0.1	32.96	7
8	73.52	3.55	-0.54	-2.22	73.51	4.83	4	2.51	130.02	0.52	0	0.52	140.4	4.86	0	9	0.77	1.73	2.36	119.58	-0.07	19.88	3
9	90.75	2.92	-0.19	-2.36	90.74	3.22	5	2.31	129.12	0.58	0	0.58	154.26	3.24	0	5	0.72	1.53	2.2	130.26	-0.02	28.48	5
10	77.48	2.4	0.1	-2.51	77.49	3.1	5	2.35	127.29	0.65	0	0.65	118.55	3.13	0	5	0.74	1.43	2.25	104.2	0.01	28.86	5
11	84.9	2.72	0.03	-2.57	84.9	3.2	5	2.33	128.41	0.71	0	0.71	118.17	3.23	0	5	0.74	1.34	2.25	106.68	0	28.18	5
12	60.46	2.72	0.09	-2.6	60.46	4.49	4	2.54	127.58	0.78	0	0.78	76.89	4.55	0	4	0.83	1.29	2.47	72.92	0.01	20.64	3
13	77.9	3.24	-0.73	-2.6	77.89	4.16	4	2.44	129.49	0.84	0	0.84	91.64	4.2	0	4	0.8	1.2	2.39	87.56	-0.06	22.28	5
14	70.7	3.34	-0.09	-2.8	70.7	4.73	4	2.51	129.49	0.91	0	0.91	77.06	4.79	0	4	0.84	1.14	2.48	75.14	-0.01	19.81	3
15	77.9	2.51	0.18	-2.96	77.9	3.22	5	2.36	127.62	0.97	0	0.97	79.36	3.26	0	5	0.79	1.07	2.34	77.91	0.01	27.15	5
16	83.96	2.3	-0.27	-3.28	83.96	2.74	5	2.28	127.16	1.03	0	1.03	80.27	2.77	0	5	0.77	1.02	2.29	79.83	-0.02	30.85	5
17	77.38	2.51	0.19	-3.97	77.38	3.24	5	2.36	127.6	1.1	0	1.1	69.55	3.29	0	5	0.81	0.97	2.38	70.03	0.01	26.67	5
18	81.77	2.4	0.11	-4.56	81.77	2.94	5	2.31	127.42	1.16	0	1.16	69.46	2.98	0	5	0.8	0.93	2.34	70.77	0.01	28.76	5
19	94.82	2.82	0.01	-5.35	94.82	2.97	5	2.27	128.96	1.22	0	1.22	76.4	3.01	0	5	0.79	0.89	2.32	78.79	0	28.89	5
20	94.4	2.92	0.58	-5.86	94.41	3.1	5	2.29	129.21	1.29	0	1.29	72.21	3.14	0	5	0.8	0.85	2.34	75.06	0.03	27.83	5
21	125.52	3.03	0.97	-6.57	125.53	2.41	5	2.13	130.17	1.35	0	1.35	91.66	2.44	0	5	0.75	0.83	2.19	97.58	0.05	34.93	7
22	111.42	2.61	1.16	-6.63	111.44	2.34	5	2.15	128.79	1.42	0	1.42	77.52	2.37	0	5	0.76	0.8	2.22	83.06	0.06	34.84	7
23	94.4	4.91	1.21	-6.9	94.42	5.2	9	2.46	133	1.49	0	1.49	62.56	5.28	0	4	0.89	0.74	2.55	64.86	0.06	18.15	3
24	107.87	7	1.45	-7.1	107.89	6.48	9	2.5	135.92	1.55	0	1.55	68.45	6.58	0	9	0.92	0.7	2.6	70.7	0.07	15.08	3
25	95.76	3.34	2.91	-7.03	95.8	3.49	5	2.32	130.23	1.62	0	1.62	58.18	3.55	0	4	0.86	0.69	2.44	61.85	0.13	24.82	5
26	107.77	4.07	2.78	-7.29	107.8	3.78	5	2.32	131.96	1.68	0	1.68	62.99	3.84	0	4	0.86	0.67	2.44	67.24	0.12	23.54	5
27	63.7	3.97	3.38	-7.79	63.74	6.23	3	2.63	130.49	1.75	0	1.75	35.42	6.4	0	3	1	0.61	2.79	35.49	0.14	15.31	3
28	123.85	5.01	3.28	-8.38	123.89	4.05	9	2.3	133.82	1.82	0	1.82	67.19	4.11	0	4	0.87	0.63	2.44	72.23	0.13	22.43	5
29	107.14	5.64	3.45	-8.9	107.18	5.26	9	2.43	134.33	1.88	0	1.88	55.89	5.36	0	4	0.93	0.59	2.59	58.34	0.13	17.87	3
30	77.59	3.34	3.57	-9.49	77.63	4.3	4	2.45	129.71	1.95	0	1.95	38.84	4.42	0	4	0.95	0.56	2.64	40.1	0.13	20.28	3
31	129.8	3.34	3.97	-9.78	129.85	2.57	5	2.14	130.97	2.01	0	2.01	63.46	2.61	0	5	0.82	0.59	2.3	71.16	0.14	31.7	5
32	161.13	5.22	4.67	-9.88	161.19	3.24	8	2.16	134.76	2.08	0	2.08	76.43	3.28	0	5	0.83	0.57	2.32	85.63	0.16	27.24	5
33	182.02	5.64	5.18	-10.36	182.08	3.1	8	2.11	135.62	2.15	0	2.15	83.71	3.13	0	5	0.82	0.56	2.27	95.25	0.17	28.56	5
34	218.88	6.58	5.15	-11.09	218.94	3	8	2.05	137.2	2.22	0	2.22	97.71	3.04	0	5	0.8	0.55	2.21	113.44	0.17	29.79	5
35	148.29	6.06	5.07	-11.47	148.35	4.08	8	2.26	135.64	2.29	0	2.29	63.9	4.15	0	4	0.89	0.5	2.46	69.31	0.16	22.19	5
36	103.07	5.22	3.96	-10.56	103.12	5.06	9	2.43	133.67	2.35	0	2.35	42.83	5.18	0	4	0.98	0.46	2.66	43.66	0.12	18.11	3
37	186.92	0	4.83	-10.53	186.98	0	0	0	87.36	2.4	0	2.4	77.02	0	0	0	1	0.44	4.06	77.02	0.15	124.32	0

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236 \right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a} \right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$

(applicable only to $I_c < I_{c_cutoff}$)

:: Relative Density, Dr (%) ::

$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$ (applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c_cutoff}$)

:: State Parameter, ψ ::

$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$

:: Peak drained friction angle, φ (°) ::

$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$

$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \leq 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho} \right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))} \right]^{1.25}$$ or user defined

$OCR = k_{OCR} \cdot Q_{tn}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: In situ Stress Ratio, Ko ::

$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Effective Stress Friction Angle, φ' (°) ::

$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$

(applicable for $0.10 < B_q < 1.00$)

References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012
- Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

B.1 Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

B.2 Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses were performed on Two (2) selected samples. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

B.3 Atterberg Limits

Atterberg limits test were performed on three (2) representative samples to assist the classification of the soil and fill materials according to ASTM Standard D4318 test method. The test results are presented in the following table and on Drawing No. B 2, *Atterburg Limits Results*.

Table No. B-1 Atterberg Limit Test Results

Boring No.	Depth (feet)	Soil Classification	Liquid Limit (%)	Plastic Limit (%)	Plastic Index (%)
BH-2	35	Clay (CL)	36	23	13
BH-8	10	Clay (CL)	46	22	24

B.4 Percent Finer than Sieve No. 200

The percent finer than sieve No. 200 tests were performed on three (3) representative soil samples to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM

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Standard D1140 test method. Test results are presented in the Logs of Borings in Appendix A, *Field Exploration*.

Table No. B-2, Percent Passing Sieve # 200 Results

Boring No.	Depth (feet)	Soil Classification	Percent Passing Sieve No. 200
BH-11	15	Silty Sand (SM)	36%
BH-11	25	Silty Sand (SM)	29%
BH-11	35	Silt (ML)	71%

B.5 Maximum Dry Density Test

One (1) laboratory maximum dry density-moisture content relationship test was performed on one representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented on Drawing No. B-3, *Moisture-Density Relationship Results*.

B.6 Direct Shear

Direct shear tests were performed on two (2) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-4 through B-5, *Direct Shear Test Results,* and in the following table:

Table No. B-3, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-2	40	Silt Stone	29	480
BH-7	10	Silty Clay (CL)	31	150

B.7 Consolidation Test

Consolidation tests were performed on two (2) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample

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through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-6 through B-7, *Consolidation Test Results*.

B.8 R-Value Test

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with ASTM D2844 Standard. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-4, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-8	1-5	Silty Clay (CL)	13

B.9 Soil Corrosivity

Two (2) representative soil samples were tested to determine minimum electrical resistivity, pH, and chemical content, including chloride concentrations, and soluble sulfate. The purpose of these tests is to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by EGL in Arcadia, California. The test results received from EGL are included in the following table:

Table No. B-5, Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-1	35	7.62	170	0.071	480
BH-10	10	7.78	190	0.095	570

B.10 Sand Equivalent Test

One (1) representative sample was tested to quantify the relative abundance of sand versus clay in material encountered at the site. The tests were conducted in accordance with ASTM Standard D 2419 laboratory procedure. The test results are presented in the table below.

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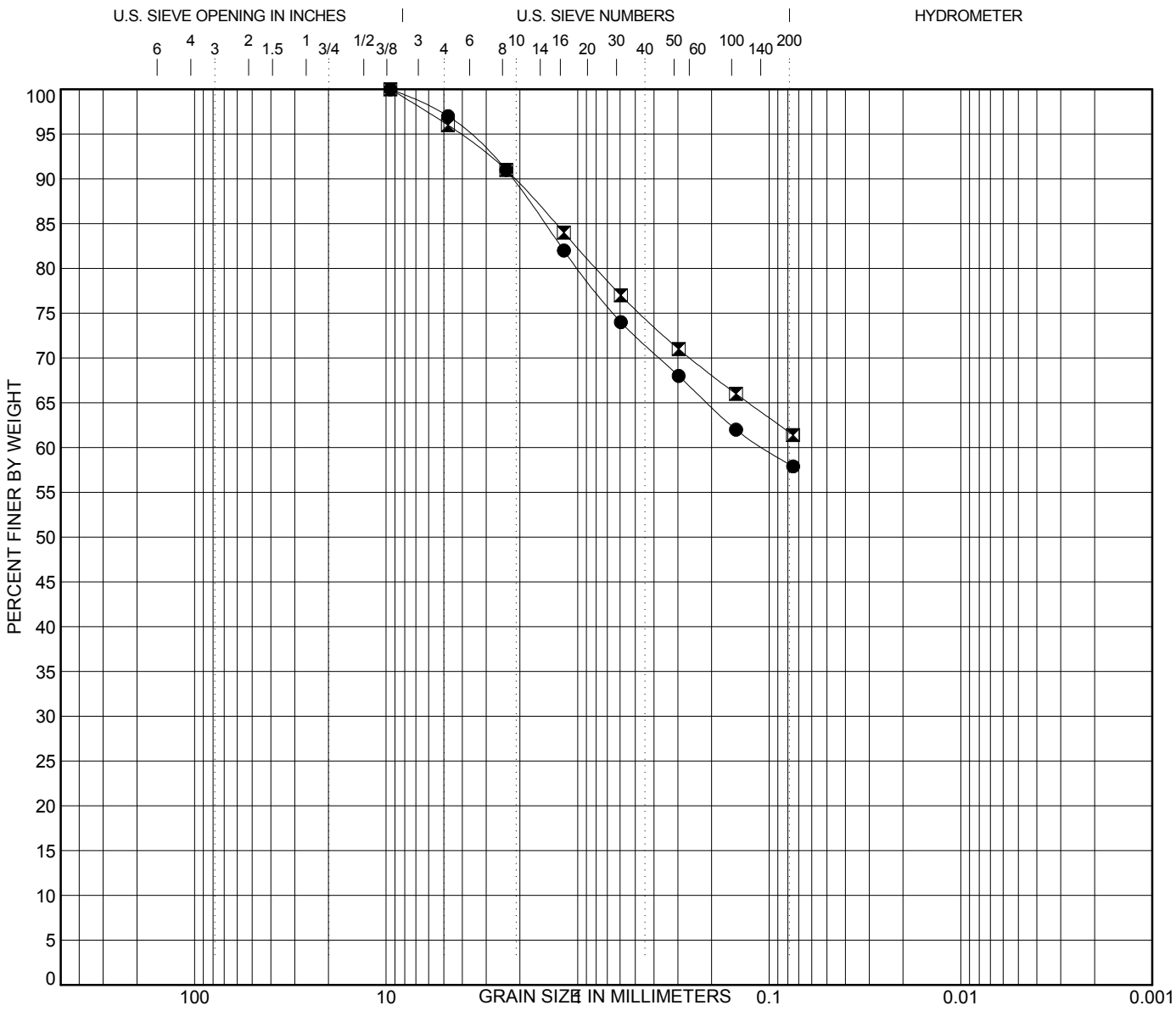
Table No. B-6, Sand Equivalent Test Results

Boring No.	Depth (feet)	Soil Classification	Average Sand Equivalent
BH-7	5	Clay (CL)	5

B.11 Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH- 6**	**0-5**	**SILTY CLAY (CL)**					
⧓	**BH-11**	**0**	**SILTY CLAY (CL)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH- 6**	**0-5**	**9.5**	**0.107**			**3.0**	**39.1**	**57.9**	
⧓	**BH-11**	**0**	**9.5**				**4.0**	**34.6**	**61.4**	

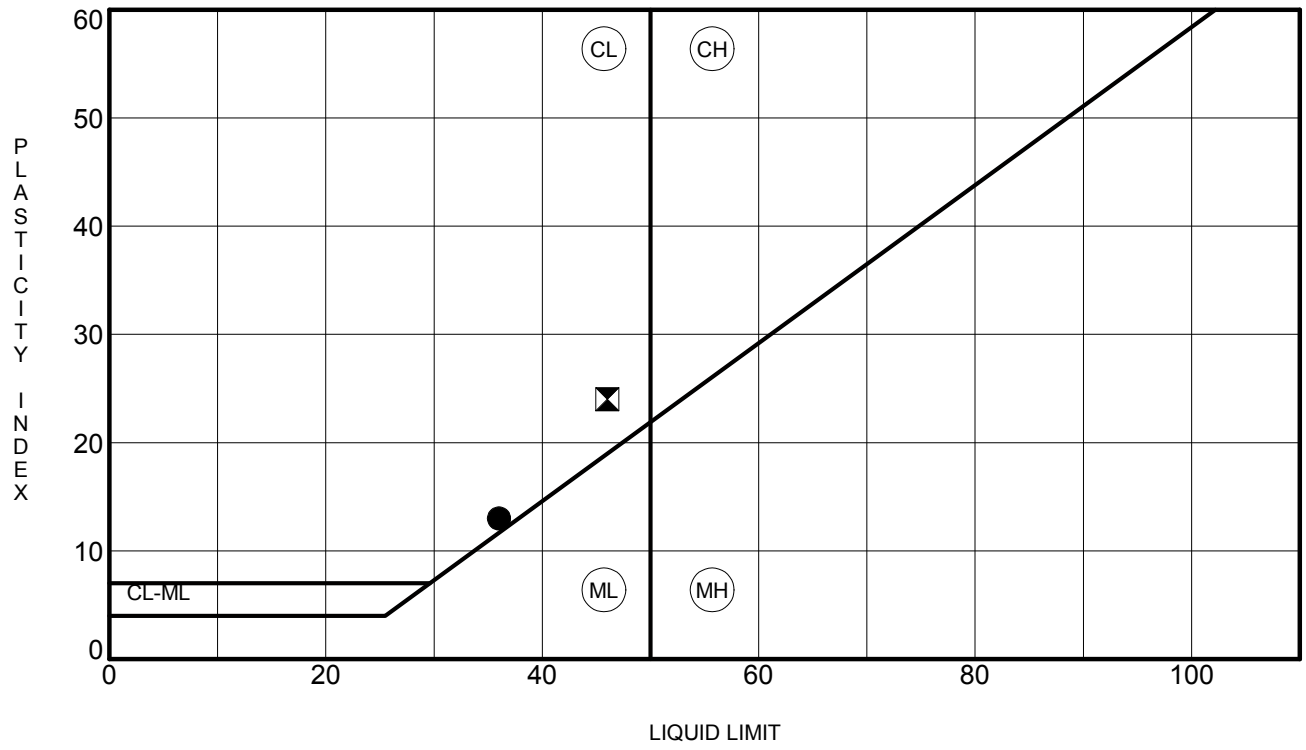
GRAIN SIZE DISTRIBUTION RESULTS

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WALNUT, CALIFORNIA

Project No.
17-31-247-01

Figure No.
B-1



Symbol	Boring No.	Depth (ft)	LL (%)	PL (%)	PI (%)	Description
●	**BH- 2**	**35**	**36**	**23**	**13**	**BEDROCK: MIXED SILTSTONE AND CLAYSTONE**
⧓	**BH- 8**	**10**	**46**	**22**	**24**	**CLAY (CL)**

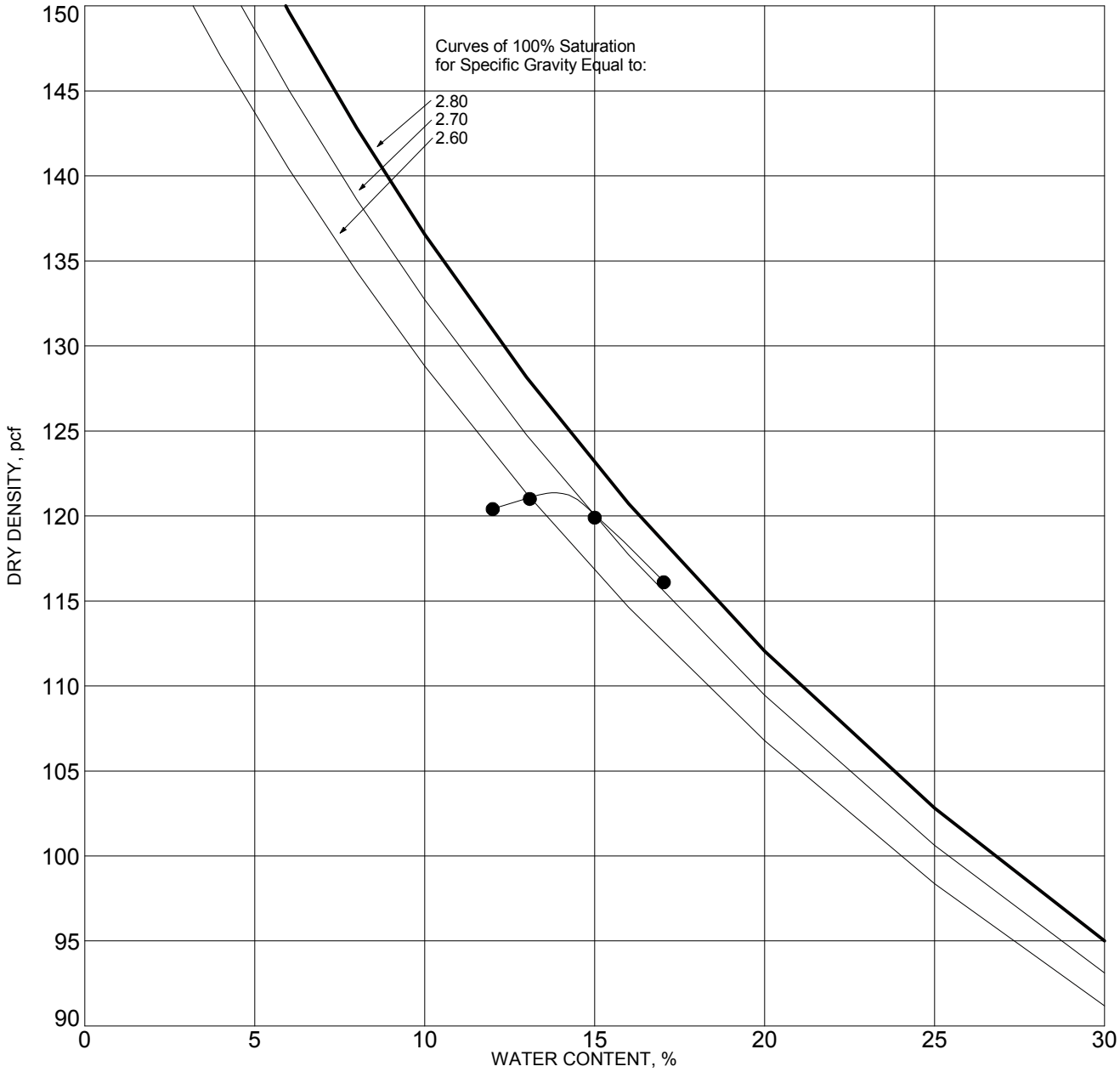
ATTERBERG LIMITS RESULTS

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Figure No.
B-2



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH- 6	0	SILTY CLAY (CL)	D1557 Method B	14	122

NOTE:

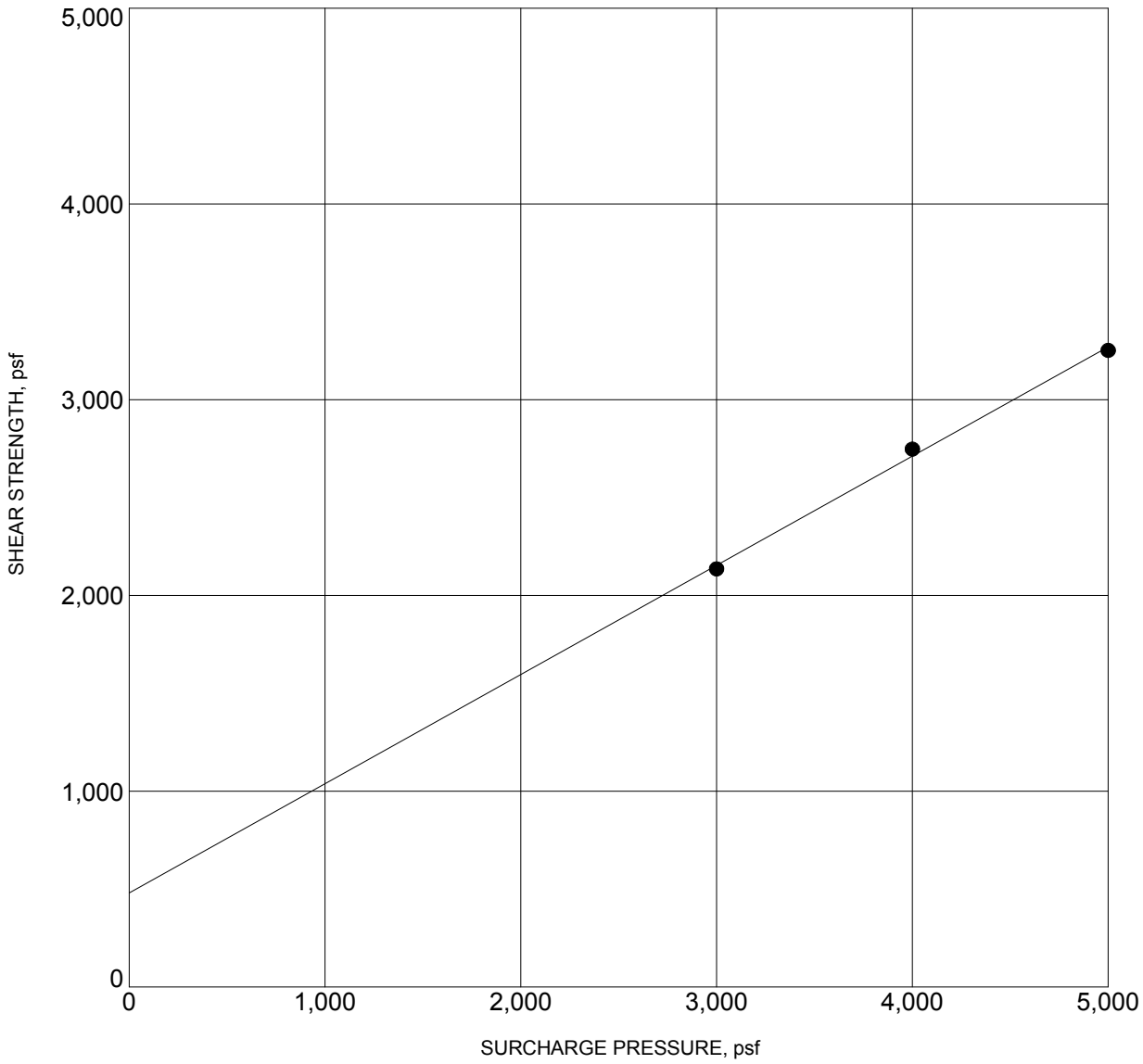
MOISTURE-DENSITY RELATIONSHIP RESULTS

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Figure No.
B-3



BORING NO.	:	**BH- 2**	DEPTH (ft)	:	**40**
DESCRIPTION	:	**BEDROCK: SILTSTONE**			
COHESION (psf)	:	**480**	FRICTION ANGLE (degrees):		**29**
MOISTURE CONTENT (%)	:	**12.0**	DRY DENSITY (pcf)	:	**114.3**

NOTE: Ultimate Strength.

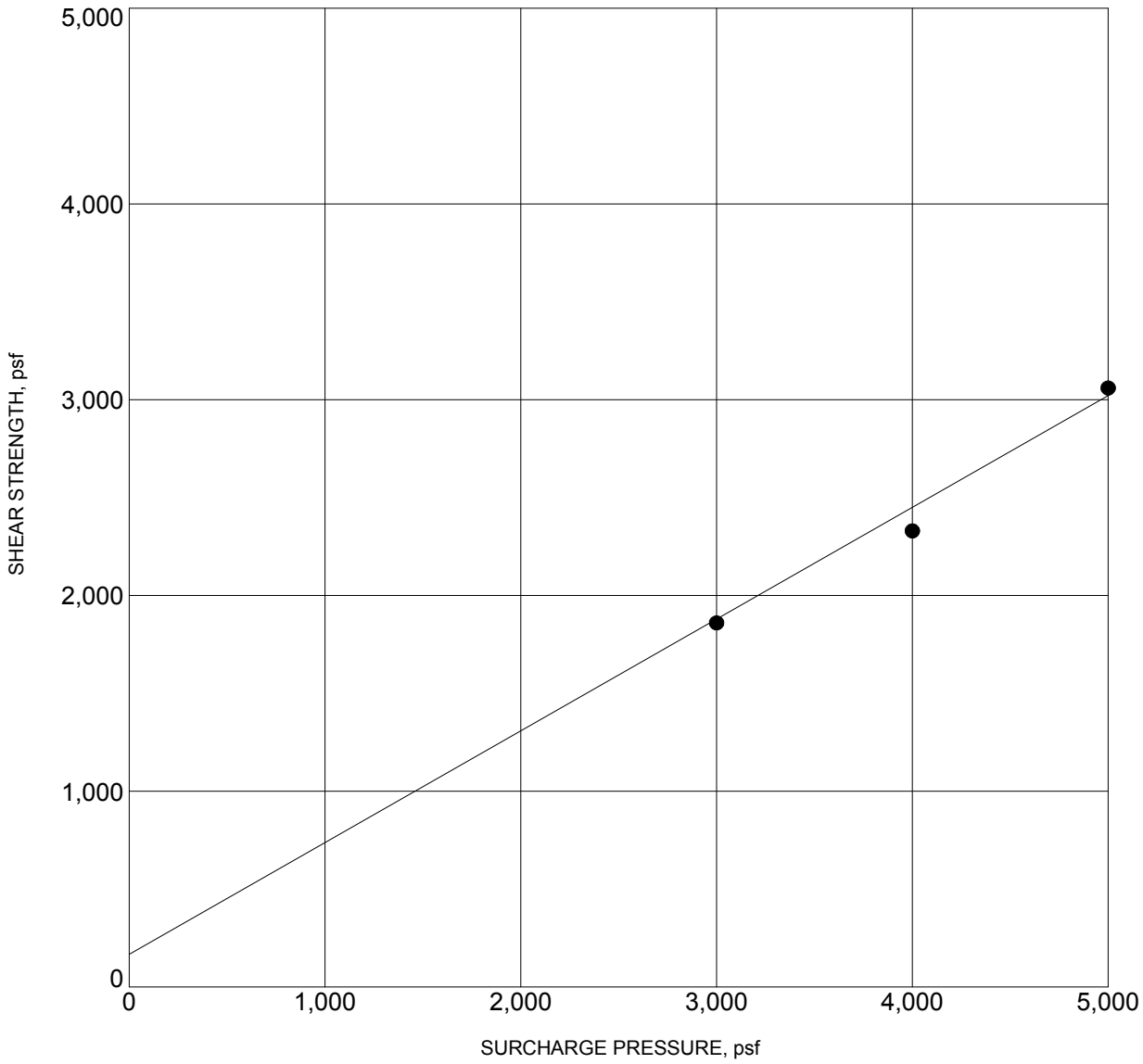
DIRECT SHEAR TEST RESULTS

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Figure No. **B-4**



BORING NO.	:	**BH- 7**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**SILTY CLAY (CL)**			
COHESION (psf)	:	**150**	FRICTION ANGLE (degrees):		**31**
MOISTURE CONTENT (%)	:	**19.0**	DRY DENSITY (pcf)	:	**96.0**

NOTE: Ultimate Strength.

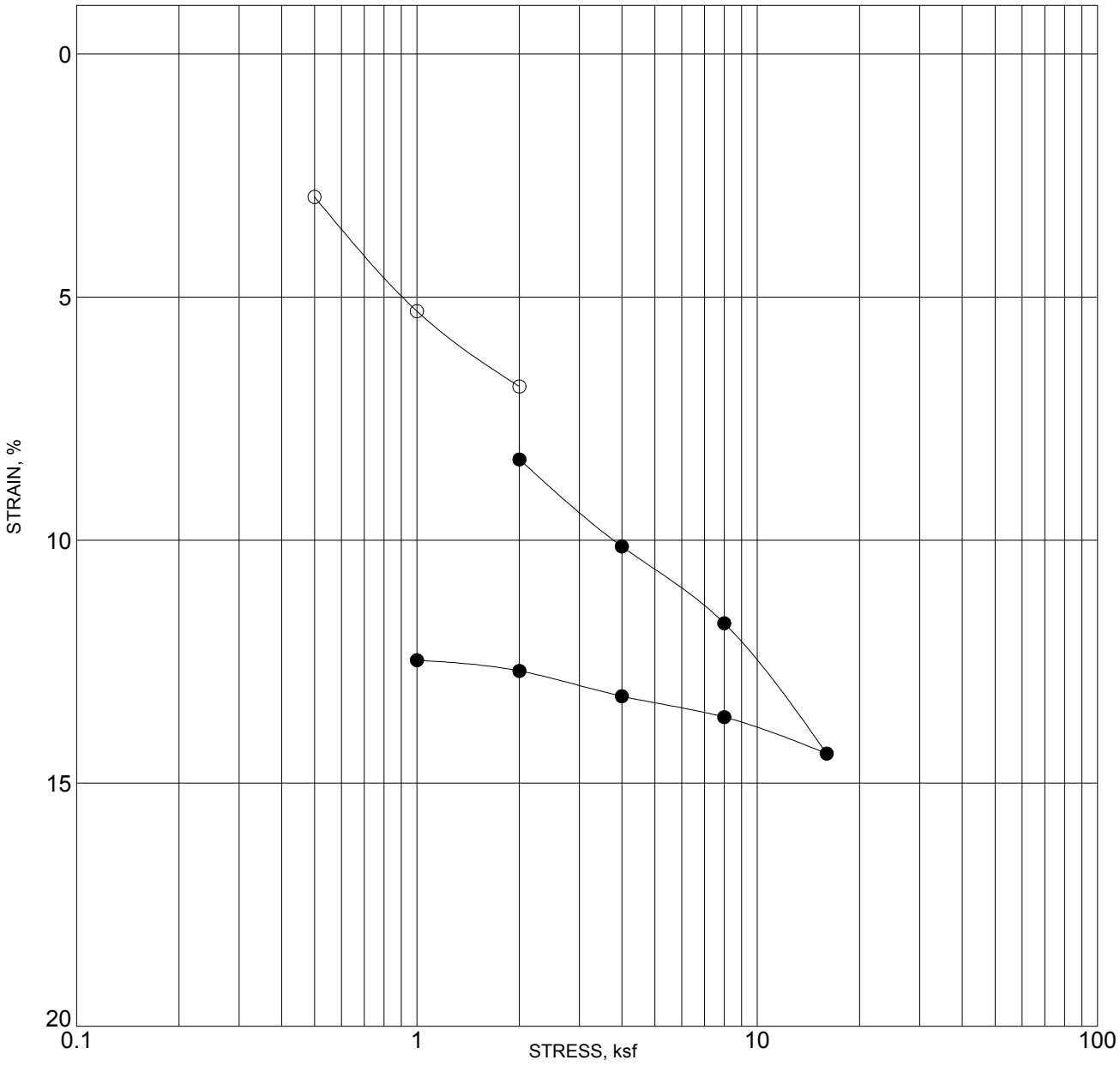
DIRECT SHEAR TEST RESULTS

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Figure No. **B-5**



BORING NO. :	**BH- 3**	DEPTH (ft) :	**40**
DESCRIPTION :	**BEDROCK: SILTSTONE AND SANDSTONE**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**12**	**108.83**	**62**	**0.471**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

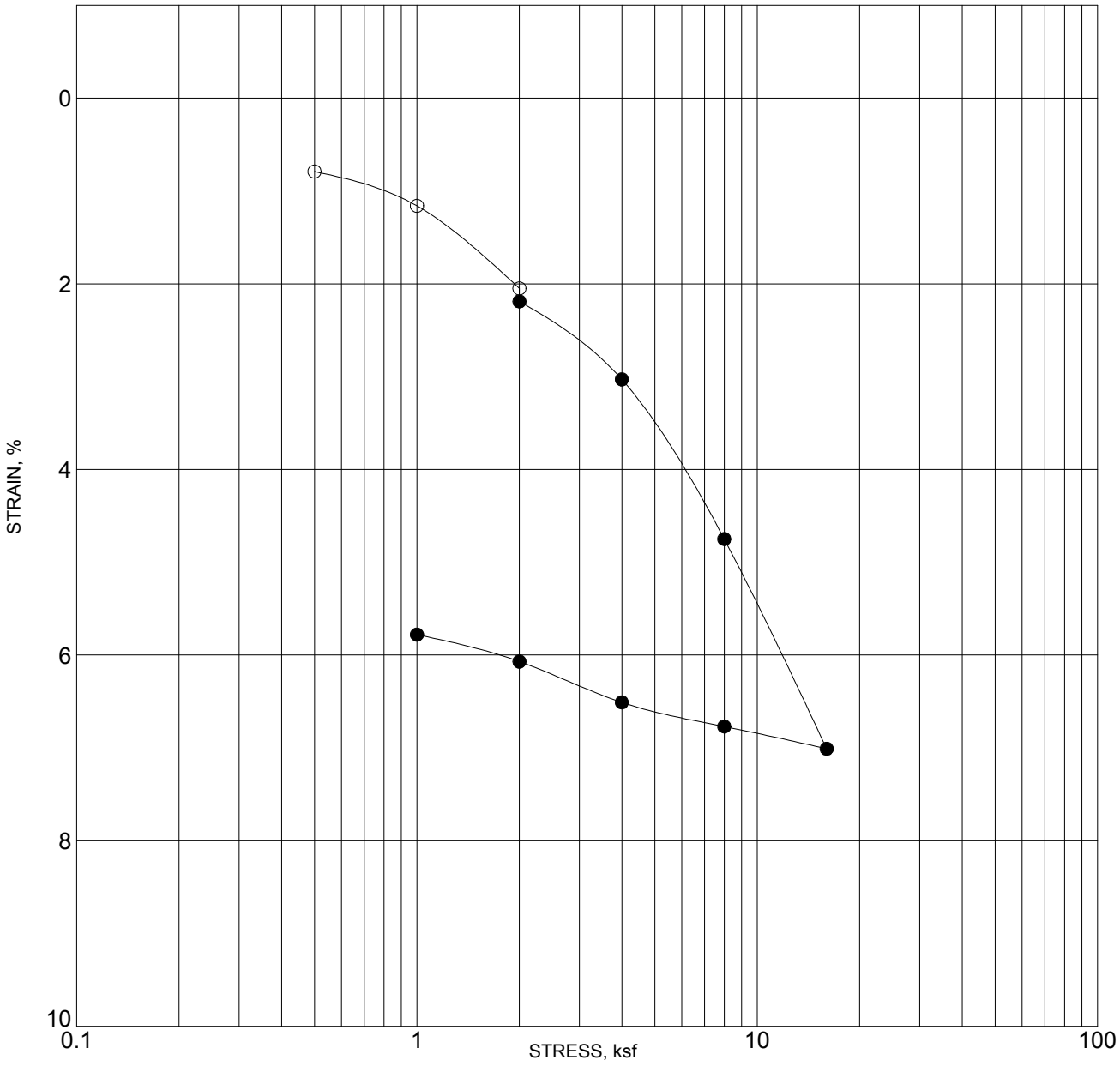
CONSOLIDATION TEST RESULTS

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LOT R PARKING STRUCTURE
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **B-6**



BORING NO. :	**BH- 5**	DEPTH (ft) :	**10**
DESCRIPTION :	**SANDY SILT (ML)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**6**	**106.43**	**29**	**0.537**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

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Figure No. **B-7**

Appendix C

Liquefaction/Seismic Settlement Analysis

APPENDIX C: LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from BH-4, BH-6, CPT-9 and BH-11 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software utilizing BH-4, BH-6, CPT-9 and BH-11. Based on the results of liquefaction analyses indicate the project site is susceptible to liquefaction. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** (Mw)	Peak Ground Acceleration*** (g)
23	6.89	0.776

* Based on research of Los Angeles County Groundwater Wells No. 3145, No. 3155 and No. 3155A
** Based on the 2008 NSHMP PSHA Interactive Deaggregation web site for a return period of 2475 years
***Based on S_{DS}/2.5 per CBC 2013

The estimated potential liquefaction-induced settlement ranges from 0.43 to 2.58 inches with potential differential settlement ranging from 0.22 to 1.29 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

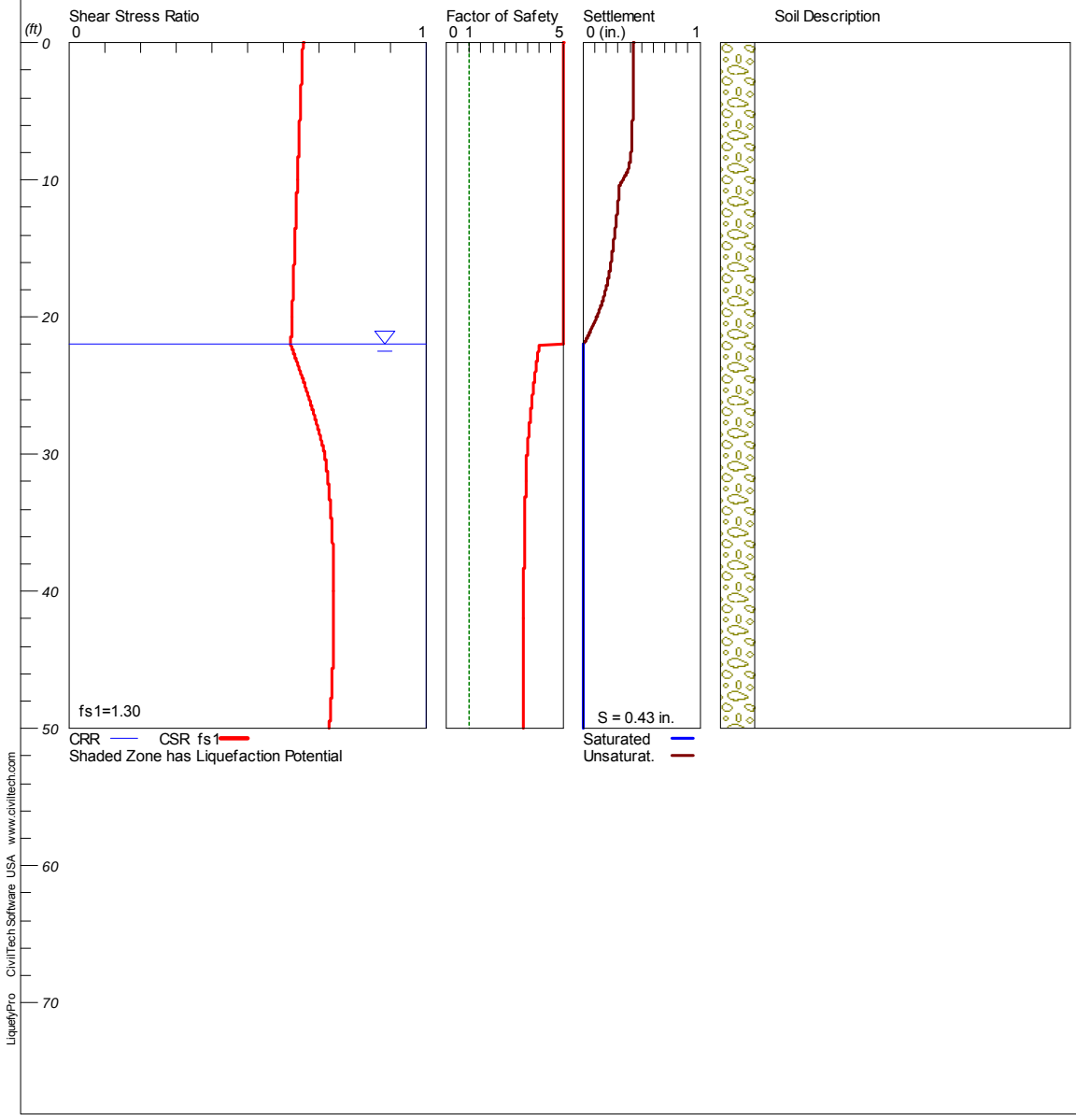
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LIQUEFACTION ANALYSIS

17-31-247-01

Hole No.=4 Water Depth=22 ft

Magnitude=6.89
Acceleration=0.776g



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LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 10/27/2017 9:11:04 AM

Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot R\Liquefaction Analysis\BH4.liq
Title: 17-31-247-01
Subtitle: Parking Lor R Mt sac

Surface Elev.=
Hole No.=4
Depth of Hole= 50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 25.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=4
Depth of Hole=50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 25.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	110.00	61.00
5.00	50.00	110.00	61.00
10.00	29.40	110.00	55.00
15.00	48.00	110.00	36.00
20.00	38.50	110.00	32.00
25.00	50.00	110.00	29.00
30.00	49.00	115.00	50.00
35.00	50.00	115.00	71.00
40.00	49.00	115.00	71.00
45.00	50.00	115.00	71.00
50.00	50.00	115.00	71.00

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.43 in.
Total Settlement of Saturated and Unsaturated Sands=0.43 in.
Differential Settlement=0.217 to 0.287 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.48	0.66	5.00	0.00	0.43	0.43
0.05	2.48	0.66	5.00	0.00	0.43	0.43
0.10	2.48	0.66	5.00	0.00	0.43	0.43
0.15	2.48	0.66	5.00	0.00	0.43	0.43
0.20	2.48	0.66	5.00	0.00	0.43	0.43
0.25	2.48	0.66	5.00	0.00	0.43	0.43
0.30	2.48	0.66	5.00	0.00	0.43	0.43
0.35	2.48	0.66	5.00	0.00	0.43	0.43
0.40	2.48	0.66	5.00	0.00	0.43	0.43
0.45	2.48	0.66	5.00	0.00	0.43	0.43
0.50	2.48	0.65	5.00	0.00	0.43	0.43
0.55	2.48	0.65	5.00	0.00	0.43	0.43
0.60	2.48	0.65	5.00	0.00	0.43	0.43
0.65	2.48	0.65	5.00	0.00	0.43	0.43
0.70	2.48	0.65	5.00	0.00	0.43	0.43
0.75	2.48	0.65	5.00	0.00	0.43	0.43
0.80	2.48	0.65	5.00	0.00	0.43	0.43
0.85	2.48	0.65	5.00	0.00	0.43	0.43
0.90	2.48	0.65	5.00	0.00	0.43	0.43
0.95	2.48	0.65	5.00	0.00	0.43	0.43
1.00	2.48	0.65	5.00	0.00	0.43	0.43

1.05	2.48	0.65	5.00	0.00	0.43	0.43
1.10	2.48	0.65	5.00	0.00	0.43	0.43
1.15	2.48	0.65	5.00	0.00	0.43	0.43
1.20	2.48	0.65	5.00	0.00	0.43	0.43
1.25	2.48	0.65	5.00	0.00	0.43	0.43
1.30	2.48	0.65	5.00	0.00	0.43	0.43
1.35	2.48	0.65	5.00	0.00	0.43	0.43
1.40	2.48	0.65	5.00	0.00	0.43	0.43
1.45	2.48	0.65	5.00	0.00	0.43	0.43
1.50	2.48	0.65	5.00	0.00	0.43	0.43
1.55	2.48	0.65	5.00	0.00	0.43	0.43
1.60	2.48	0.65	5.00	0.00	0.43	0.43
1.65	2.48	0.65	5.00	0.00	0.43	0.43
1.70	2.48	0.65	5.00	0.00	0.43	0.43
1.75	2.48	0.65	5.00	0.00	0.43	0.43
1.80	2.48	0.65	5.00	0.00	0.43	0.43
1.85	2.48	0.65	5.00	0.00	0.43	0.43
1.90	2.48	0.65	5.00	0.00	0.43	0.43
1.95	2.48	0.65	5.00	0.00	0.43	0.43
2.00	2.48	0.65	5.00	0.00	0.43	0.43
2.05	2.48	0.65	5.00	0.00	0.43	0.43
2.10	2.48	0.65	5.00	0.00	0.43	0.43
2.15	2.48	0.65	5.00	0.00	0.43	0.43
2.20	2.48	0.65	5.00	0.00	0.43	0.43
2.25	2.48	0.65	5.00	0.00	0.43	0.43
2.30	2.48	0.65	5.00	0.00	0.43	0.43
2.35	2.48	0.65	5.00	0.00	0.43	0.43
2.40	2.48	0.65	5.00	0.00	0.43	0.43
2.45	2.48	0.65	5.00	0.00	0.43	0.43
2.50	2.48	0.65	5.00	0.00	0.43	0.43
2.55	2.48	0.65	5.00	0.00	0.43	0.43
2.60	2.48	0.65	5.00	0.00	0.43	0.43
2.65	2.48	0.65	5.00	0.00	0.43	0.43
2.70	2.48	0.65	5.00	0.00	0.43	0.43
2.75	2.48	0.65	5.00	0.00	0.43	0.43
2.80	2.48	0.65	5.00	0.00	0.43	0.43
2.85	2.48	0.65	5.00	0.00	0.43	0.43
2.90	2.48	0.65	5.00	0.00	0.43	0.43
2.95	2.48	0.65	5.00	0.00	0.43	0.43
3.00	2.48	0.65	5.00	0.00	0.43	0.43
3.05	2.48	0.65	5.00	0.00	0.43	0.43
3.10	2.48	0.65	5.00	0.00	0.43	0.43
3.15	2.48	0.65	5.00	0.00	0.43	0.43
3.20	2.48	0.65	5.00	0.00	0.43	0.43
3.25	2.48	0.65	5.00	0.00	0.43	0.43
3.30	2.48	0.65	5.00	0.00	0.43	0.43
3.35	2.48	0.65	5.00	0.00	0.43	0.43
3.40	2.48	0.65	5.00	0.00	0.43	0.43
3.45	2.48	0.65	5.00	0.00	0.43	0.43
3.50	2.48	0.65	5.00	0.00	0.43	0.43
3.55	2.48	0.65	5.00	0.00	0.43	0.43
3.60	2.48	0.65	5.00	0.00	0.43	0.43
3.65	2.48	0.65	5.00	0.00	0.43	0.43
3.70	2.48	0.65	5.00	0.00	0.43	0.43
3.75	2.48	0.65	5.00	0.00	0.43	0.43
3.80	2.48	0.65	5.00	0.00	0.43	0.43
3.85	2.48	0.65	5.00	0.00	0.43	0.43
3.90	2.48	0.65	5.00	0.00	0.43	0.43
3.95	2.48	0.65	5.00	0.00	0.43	0.43
4.00	2.48	0.65	5.00	0.00	0.43	0.43
4.05	2.48	0.65	5.00	0.00	0.43	0.43
4.10	2.48	0.65	5.00	0.00	0.43	0.43
4.15	2.48	0.65	5.00	0.00	0.43	0.43
4.20	2.48	0.65	5.00	0.00	0.43	0.43
4.25	2.48	0.65	5.00	0.00	0.43	0.43
4.30	2.48	0.65	5.00	0.00	0.43	0.43
4.35	2.48	0.65	5.00	0.00	0.43	0.43
4.40	2.48	0.65	5.00	0.00	0.43	0.43
4.45	2.48	0.65	5.00	0.00	0.43	0.43
4.50	2.48	0.65	5.00	0.00	0.43	0.43
4.55	2.48	0.65	5.00	0.00	0.43	0.43
4.60	2.48	0.65	5.00	0.00	0.43	0.43
4.65	2.48	0.65	5.00	0.00	0.43	0.43
4.70	2.48	0.65	5.00	0.00	0.43	0.43
4.75	2.48	0.65	5.00	0.00	0.43	0.43
4.80	2.48	0.65	5.00	0.00	0.43	0.43
4.85	2.48	0.65	5.00	0.00	0.43	0.43
4.90	2.48	0.65	5.00	0.00	0.43	0.43
4.95	2.48	0.65	5.00	0.00	0.42	0.42
5.00	2.48	0.65	5.00	0.00	0.42	0.42
5.05	2.48	0.65	5.00	0.00	0.42	0.42
5.10	2.48	0.65	5.00	0.00	0.42	0.42
5.15	2.48	0.65	5.00	0.00	0.42	0.42
5.20	2.48	0.65	5.00	0.00	0.42	0.42
5.25	2.48	0.65	5.00	0.00	0.42	0.42
5.30	2.48	0.65	5.00	0.00	0.42	0.42
5.35	2.48	0.65	5.00	0.00	0.42	0.42
5.40	2.48	0.65	5.00	0.00	0.42	0.42
5.45	2.48	0.65	5.00	0.00	0.42	0.42
5.50	2.48	0.65	5.00	0.00	0.42	0.42

5.55	2.48	0.65	5.00	0.00	0.42	0.42
5.60	2.48	0.65	5.00	0.00	0.42	0.42
5.65	2.48	0.65	5.00	0.00	0.42	0.42
5.70	2.48	0.65	5.00	0.00	0.42	0.42
5.75	2.48	0.65	5.00	0.00	0.42	0.42
5.80	2.48	0.65	5.00	0.00	0.42	0.42
5.85	2.48	0.65	5.00	0.00	0.42	0.42
5.90	2.48	0.65	5.00	0.00	0.42	0.42
5.95	2.48	0.65	5.00	0.00	0.42	0.42
6.00	2.48	0.65	5.00	0.00	0.42	0.42
6.05	2.48	0.65	5.00	0.00	0.42	0.42
6.10	2.48	0.65	5.00	0.00	0.42	0.42
6.15	2.48	0.65	5.00	0.00	0.42	0.42
6.20	2.48	0.65	5.00	0.00	0.42	0.42
6.25	2.48	0.65	5.00	0.00	0.42	0.42
6.30	2.48	0.65	5.00	0.00	0.42	0.42
6.35	2.48	0.65	5.00	0.00	0.42	0.42
6.40	2.48	0.65	5.00	0.00	0.42	0.42
6.45	2.48	0.65	5.00	0.00	0.42	0.42
6.50	2.48	0.65	5.00	0.00	0.42	0.42
6.55	2.48	0.65	5.00	0.00	0.42	0.42
6.60	2.48	0.65	5.00	0.00	0.42	0.42
6.65	2.48	0.65	5.00	0.00	0.42	0.42
6.70	2.48	0.65	5.00	0.00	0.42	0.42
6.75	2.48	0.65	5.00	0.00	0.42	0.42
6.80	2.48	0.65	5.00	0.00	0.42	0.42
6.85	2.48	0.65	5.00	0.00	0.42	0.42
6.90	2.48	0.65	5.00	0.00	0.42	0.42
6.95	2.48	0.65	5.00	0.00	0.42	0.42
7.00	2.48	0.65	5.00	0.00	0.42	0.42
7.05	2.48	0.64	5.00	0.00	0.42	0.42
7.10	2.48	0.64	5.00	0.00	0.42	0.42
7.15	2.48	0.64	5.00	0.00	0.42	0.42
7.20	2.48	0.64	5.00	0.00	0.42	0.42
7.25	2.48	0.64	5.00	0.00	0.42	0.42
7.30	2.48	0.64	5.00	0.00	0.42	0.42
7.35	2.48	0.64	5.00	0.00	0.42	0.42
7.40	2.48	0.64	5.00	0.00	0.42	0.42
7.45	2.48	0.64	5.00	0.00	0.41	0.41
7.50	2.48	0.64	5.00	0.00	0.41	0.41
7.55	2.48	0.64	5.00	0.00	0.41	0.41
7.60	2.48	0.64	5.00	0.00	0.41	0.41
7.65	2.48	0.64	5.00	0.00	0.41	0.41
7.70	2.48	0.64	5.00	0.00	0.41	0.41
7.75	2.48	0.64	5.00	0.00	0.41	0.41
7.80	2.48	0.64	5.00	0.00	0.41	0.41
7.85	2.48	0.64	5.00	0.00	0.41	0.41
7.90	2.48	0.64	5.00	0.00	0.41	0.41
7.95	2.48	0.64	5.00	0.00	0.41	0.41
8.00	2.48	0.64	5.00	0.00	0.41	0.41
8.05	2.48	0.64	5.00	0.00	0.41	0.41
8.10	2.48	0.64	5.00	0.00	0.41	0.41
8.15	2.48	0.64	5.00	0.00	0.41	0.41
8.20	2.48	0.64	5.00	0.00	0.41	0.41
8.25	2.48	0.64	5.00	0.00	0.41	0.41
8.30	2.48	0.64	5.00	0.00	0.41	0.41
8.35	2.48	0.64	5.00	0.00	0.40	0.40
8.40	2.48	0.64	5.00	0.00	0.40	0.40
8.45	2.48	0.64	5.00	0.00	0.40	0.40
8.50	2.48	0.64	5.00	0.00	0.40	0.40
8.55	2.48	0.64	5.00	0.00	0.40	0.40
8.60	2.48	0.64	5.00	0.00	0.40	0.40
8.65	2.48	0.64	5.00	0.00	0.40	0.40
8.70	2.48	0.64	5.00	0.00	0.40	0.40
8.75	2.48	0.64	5.00	0.00	0.40	0.40
8.80	2.48	0.64	5.00	0.00	0.40	0.40
8.85	2.48	0.64	5.00	0.00	0.40	0.40
8.90	2.48	0.64	5.00	0.00	0.39	0.39
8.95	2.48	0.64	5.00	0.00	0.39	0.39
9.00	2.48	0.64	5.00	0.00	0.39	0.39
9.05	2.48	0.64	5.00	0.00	0.39	0.39
9.10	2.48	0.64	5.00	0.00	0.39	0.39
9.15	2.48	0.64	5.00	0.00	0.39	0.39
9.20	2.48	0.64	5.00	0.00	0.39	0.39
9.25	2.48	0.64	5.00	0.00	0.38	0.38
9.30	2.48	0.64	5.00	0.00	0.38	0.38
9.35	2.48	0.64	5.00	0.00	0.38	0.38
9.40	2.48	0.64	5.00	0.00	0.38	0.38
9.45	2.48	0.64	5.00	0.00	0.37	0.37
9.50	2.48	0.64	5.00	0.00	0.37	0.37
9.55	2.48	0.64	5.00	0.00	0.37	0.37
9.60	2.48	0.64	5.00	0.00	0.37	0.37
9.65	2.48	0.64	5.00	0.00	0.36	0.36
9.70	2.48	0.64	5.00	0.00	0.36	0.36
9.75	2.48	0.64	5.00	0.00	0.36	0.36
9.80	2.48	0.64	5.00	0.00	0.35	0.35
9.85	2.48	0.64	5.00	0.00	0.35	0.35
9.90	2.48	0.64	5.00	0.00	0.34	0.34
9.95	2.48	0.64	5.00	0.00	0.34	0.34
10.00	2.48	0.64	5.00	0.00	0.34	0.34

10.05	2.48	0.64	5.00	0.00	0.33	0.33
10.10	2.48	0.64	5.00	0.00	0.33	0.33
10.15	2.48	0.64	5.00	0.00	0.33	0.33
10.20	2.48	0.64	5.00	0.00	0.32	0.32
10.25	2.48	0.64	5.00	0.00	0.32	0.32
10.30	2.48	0.64	5.00	0.00	0.32	0.32
10.35	2.48	0.64	5.00	0.00	0.31	0.31
10.40	2.48	0.64	5.00	0.00	0.31	0.31
10.45	2.48	0.64	5.00	0.00	0.31	0.31
10.50	2.48	0.64	5.00	0.00	0.31	0.31
10.55	2.48	0.64	5.00	0.00	0.31	0.31
10.60	2.48	0.64	5.00	0.00	0.31	0.31
10.65	2.48	0.64	5.00	0.00	0.31	0.31
10.70	2.48	0.64	5.00	0.00	0.31	0.31
10.75	2.48	0.64	5.00	0.00	0.31	0.31
10.80	2.48	0.64	5.00	0.00	0.31	0.31
10.85	2.48	0.64	5.00	0.00	0.31	0.31
10.90	2.48	0.64	5.00	0.00	0.31	0.31
10.95	2.48	0.64	5.00	0.00	0.31	0.31
11.00	2.48	0.64	5.00	0.00	0.30	0.30
11.05	2.48	0.64	5.00	0.00	0.30	0.30
11.10	2.48	0.64	5.00	0.00	0.30	0.30
11.15	2.48	0.64	5.00	0.00	0.30	0.30
11.20	2.48	0.64	5.00	0.00	0.30	0.30
11.25	2.48	0.64	5.00	0.00	0.30	0.30
11.30	2.48	0.64	5.00	0.00	0.30	0.30
11.35	2.48	0.64	5.00	0.00	0.30	0.30
11.40	2.48	0.64	5.00	0.00	0.30	0.30
11.45	2.48	0.64	5.00	0.00	0.30	0.30
11.50	2.48	0.64	5.00	0.00	0.30	0.30
11.55	2.48	0.64	5.00	0.00	0.30	0.30
11.60	2.48	0.64	5.00	0.00	0.30	0.30
11.65	2.48	0.64	5.00	0.00	0.30	0.30
11.70	2.48	0.64	5.00	0.00	0.30	0.30
11.75	2.48	0.64	5.00	0.00	0.30	0.30
11.80	2.48	0.64	5.00	0.00	0.30	0.30
11.85	2.48	0.64	5.00	0.00	0.30	0.30
11.90	2.48	0.64	5.00	0.00	0.30	0.30
11.95	2.48	0.64	5.00	0.00	0.29	0.29
12.00	2.48	0.64	5.00	0.00	0.29	0.29
12.05	2.48	0.64	5.00	0.00	0.29	0.29
12.10	2.48	0.64	5.00	0.00	0.29	0.29
12.15	2.48	0.64	5.00	0.00	0.29	0.29
12.20	2.48	0.64	5.00	0.00	0.29	0.29
12.25	2.48	0.64	5.00	0.00	0.29	0.29
12.30	2.48	0.64	5.00	0.00	0.29	0.29
12.35	2.48	0.64	5.00	0.00	0.29	0.29
12.40	2.48	0.64	5.00	0.00	0.29	0.29
12.45	2.48	0.64	5.00	0.00	0.29	0.29
12.50	2.48	0.64	5.00	0.00	0.29	0.29
12.55	2.48	0.64	5.00	0.00	0.29	0.29
12.60	2.48	0.64	5.00	0.00	0.29	0.29
12.65	2.48	0.64	5.00	0.00	0.29	0.29
12.70	2.48	0.64	5.00	0.00	0.29	0.29
12.75	2.48	0.64	5.00	0.00	0.29	0.29
12.80	2.48	0.64	5.00	0.00	0.28	0.28
12.85	2.48	0.64	5.00	0.00	0.28	0.28
12.90	2.48	0.64	5.00	0.00	0.28	0.28
12.95	2.48	0.64	5.00	0.00	0.28	0.28
13.00	2.48	0.64	5.00	0.00	0.28	0.28
13.05	2.48	0.64	5.00	0.00	0.28	0.28
13.10	2.48	0.64	5.00	0.00	0.28	0.28
13.15	2.48	0.64	5.00	0.00	0.28	0.28
13.20	2.48	0.64	5.00	0.00	0.28	0.28
13.25	2.48	0.64	5.00	0.00	0.28	0.28
13.30	2.48	0.64	5.00	0.00	0.28	0.28
13.35	2.48	0.64	5.00	0.00	0.28	0.28
13.40	2.48	0.64	5.00	0.00	0.28	0.28
13.45	2.48	0.64	5.00	0.00	0.28	0.28
13.50	2.48	0.64	5.00	0.00	0.28	0.28
13.55	2.48	0.64	5.00	0.00	0.27	0.27
13.60	2.48	0.63	5.00	0.00	0.27	0.27
13.65	2.48	0.63	5.00	0.00	0.27	0.27
13.70	2.48	0.63	5.00	0.00	0.27	0.27
13.75	2.48	0.63	5.00	0.00	0.27	0.27
13.80	2.48	0.63	5.00	0.00	0.27	0.27
13.85	2.48	0.63	5.00	0.00	0.27	0.27
13.90	2.48	0.63	5.00	0.00	0.27	0.27
13.95	2.48	0.63	5.00	0.00	0.27	0.27
14.00	2.48	0.63	5.00	0.00	0.27	0.27
14.05	2.48	0.63	5.00	0.00	0.27	0.27
14.10	2.48	0.63	5.00	0.00	0.27	0.27
14.15	2.48	0.63	5.00	0.00	0.27	0.27
14.20	2.48	0.63	5.00	0.00	0.27	0.27
14.25	2.48	0.63	5.00	0.00	0.26	0.26
14.30	2.48	0.63	5.00	0.00	0.26	0.26
14.35	2.48	0.63	5.00	0.00	0.26	0.26
14.40	2.48	0.63	5.00	0.00	0.26	0.26
14.45	2.48	0.63	5.00	0.00	0.26	0.26
14.50	2.48	0.63	5.00	0.00	0.26	0.26

14.55	2.48	0.63	5.00	0.00	0.26	0.26
14.60	2.48	0.63	5.00	0.00	0.26	0.26
14.65	2.48	0.63	5.00	0.00	0.26	0.26
14.70	2.48	0.63	5.00	0.00	0.26	0.26
14.75	2.48	0.63	5.00	0.00	0.26	0.26
14.80	2.48	0.63	5.00	0.00	0.26	0.26
14.85	2.48	0.63	5.00	0.00	0.26	0.26
14.90	2.48	0.63	5.00	0.00	0.26	0.26
14.95	2.48	0.63	5.00	0.00	0.25	0.25
15.00	2.48	0.63	5.00	0.00	0.25	0.25
15.05	2.48	0.63	5.00	0.00	0.25	0.25
15.10	2.48	0.63	5.00	0.00	0.25	0.25
15.15	2.48	0.63	5.00	0.00	0.25	0.25
15.20	2.48	0.63	5.00	0.00	0.25	0.25
15.25	2.48	0.63	5.00	0.00	0.25	0.25
15.30	2.48	0.63	5.00	0.00	0.25	0.25
15.35	2.48	0.63	5.00	0.00	0.25	0.25
15.40	2.48	0.63	5.00	0.00	0.25	0.25
15.45	2.48	0.63	5.00	0.00	0.25	0.25
15.50	2.48	0.63	5.00	0.00	0.25	0.25
15.55	2.48	0.63	5.00	0.00	0.25	0.25
15.60	2.48	0.63	5.00	0.00	0.24	0.24
15.65	2.48	0.63	5.00	0.00	0.24	0.24
15.70	2.48	0.63	5.00	0.00	0.24	0.24
15.75	2.48	0.63	5.00	0.00	0.24	0.24
15.80	2.48	0.63	5.00	0.00	0.24	0.24
15.85	2.48	0.63	5.00	0.00	0.24	0.24
15.90	2.48	0.63	5.00	0.00	0.24	0.24
15.95	2.48	0.63	5.00	0.00	0.24	0.24
16.00	2.48	0.63	5.00	0.00	0.24	0.24
16.05	2.48	0.63	5.00	0.00	0.24	0.24
16.10	2.48	0.63	5.00	0.00	0.24	0.24
16.15	2.48	0.63	5.00	0.00	0.24	0.24
16.20	2.48	0.63	5.00	0.00	0.23	0.23
16.25	2.48	0.63	5.00	0.00	0.23	0.23
16.30	2.48	0.63	5.00	0.00	0.23	0.23
16.35	2.48	0.63	5.00	0.00	0.23	0.23
16.40	2.48	0.63	5.00	0.00	0.23	0.23
16.45	2.48	0.63	5.00	0.00	0.23	0.23
16.50	2.48	0.63	5.00	0.00	0.23	0.23
16.55	2.48	0.63	5.00	0.00	0.23	0.23
16.60	2.48	0.63	5.00	0.00	0.23	0.23
16.65	2.48	0.63	5.00	0.00	0.23	0.23
16.70	2.48	0.63	5.00	0.00	0.22	0.22
16.75	2.48	0.63	5.00	0.00	0.22	0.22
16.80	2.48	0.63	5.00	0.00	0.22	0.22
16.85	2.48	0.63	5.00	0.00	0.22	0.22
16.90	2.48	0.63	5.00	0.00	0.22	0.22
16.95	2.48	0.63	5.00	0.00	0.22	0.22
17.00	2.48	0.63	5.00	0.00	0.22	0.22
17.05	2.48	0.63	5.00	0.00	0.22	0.22
17.10	2.48	0.63	5.00	0.00	0.22	0.22
17.15	2.48	0.63	5.00	0.00	0.21	0.21
17.20	2.48	0.63	5.00	0.00	0.21	0.21
17.25	2.48	0.63	5.00	0.00	0.21	0.21
17.30	2.48	0.63	5.00	0.00	0.21	0.21
17.35	2.48	0.63	5.00	0.00	0.21	0.21
17.40	2.48	0.63	5.00	0.00	0.21	0.21
17.45	2.48	0.63	5.00	0.00	0.21	0.21
17.50	2.48	0.63	5.00	0.00	0.21	0.21
17.55	2.48	0.63	5.00	0.00	0.21	0.21
17.60	2.48	0.63	5.00	0.00	0.20	0.20
17.65	2.48	0.63	5.00	0.00	0.20	0.20
17.70	2.48	0.63	5.00	0.00	0.20	0.20
17.75	2.48	0.63	5.00	0.00	0.20	0.20
17.80	2.48	0.63	5.00	0.00	0.20	0.20
17.85	2.48	0.63	5.00	0.00	0.20	0.20
17.90	2.48	0.63	5.00	0.00	0.20	0.20
17.95	2.48	0.63	5.00	0.00	0.19	0.19
18.00	2.48	0.63	5.00	0.00	0.19	0.19
18.05	2.48	0.63	5.00	0.00	0.19	0.19
18.10	2.48	0.63	5.00	0.00	0.19	0.19
18.15	2.48	0.63	5.00	0.00	0.19	0.19
18.20	2.48	0.63	5.00	0.00	0.19	0.19
18.25	2.48	0.63	5.00	0.00	0.19	0.19
18.30	2.48	0.63	5.00	0.00	0.18	0.18
18.35	2.48	0.63	5.00	0.00	0.18	0.18
18.40	2.48	0.63	5.00	0.00	0.18	0.18
18.45	2.48	0.63	5.00	0.00	0.18	0.18
18.50	2.48	0.63	5.00	0.00	0.18	0.18
18.55	2.48	0.63	5.00	0.00	0.18	0.18
18.60	2.48	0.63	5.00	0.00	0.17	0.17
18.65	2.48	0.63	5.00	0.00	0.17	0.17
18.70	2.48	0.63	5.00	0.00	0.17	0.17
18.75	2.48	0.63	5.00	0.00	0.17	0.17
18.80	2.48	0.63	5.00	0.00	0.17	0.17
18.85	2.48	0.63	5.00	0.00	0.16	0.16
18.90	2.48	0.63	5.00	0.00	0.16	0.16
18.95	2.48	0.63	5.00	0.00	0.16	0.16
19.00	2.48	0.63	5.00	0.00	0.16	0.16

19.05	2.48	0.63	5.00	0.00	0.16	0.16
19.10	2.48	0.63	5.00	0.00	0.16	0.16
19.15	2.48	0.63	5.00	0.00	0.15	0.15
19.20	2.48	0.63	5.00	0.00	0.15	0.15
19.25	2.48	0.63	5.00	0.00	0.15	0.15
19.30	2.48	0.63	5.00	0.00	0.15	0.15
19.35	2.48	0.63	5.00	0.00	0.14	0.14
19.40	2.48	0.63	5.00	0.00	0.14	0.14
19.45	2.48	0.63	5.00	0.00	0.14	0.14
19.50	2.48	0.63	5.00	0.00	0.14	0.14
19.55	2.48	0.63	5.00	0.00	0.14	0.14
19.60	2.48	0.63	5.00	0.00	0.13	0.13
19.65	2.48	0.63	5.00	0.00	0.13	0.13
19.70	2.48	0.63	5.00	0.00	0.13	0.13
19.75	2.48	0.63	5.00	0.00	0.13	0.13
19.80	2.48	0.63	5.00	0.00	0.12	0.12
19.85	2.48	0.63	5.00	0.00	0.12	0.12
19.90	2.48	0.63	5.00	0.00	0.12	0.12
19.95	2.48	0.63	5.00	0.00	0.12	0.12
20.00	2.48	0.63	5.00	0.00	0.11	0.11
20.05	2.48	0.63	5.00	0.00	0.11	0.11
20.10	2.48	0.62	5.00	0.00	0.11	0.11
20.15	2.48	0.62	5.00	0.00	0.11	0.11
20.20	2.48	0.62	5.00	0.00	0.10	0.10
20.25	2.48	0.62	5.00	0.00	0.10	0.10
20.30	2.48	0.62	5.00	0.00	0.10	0.10
20.35	2.48	0.62	5.00	0.00	0.10	0.10
20.40	2.48	0.62	5.00	0.00	0.09	0.09
20.45	2.48	0.62	5.00	0.00	0.09	0.09
20.50	2.48	0.62	5.00	0.00	0.09	0.09
20.55	2.48	0.62	5.00	0.00	0.09	0.09
20.60	2.48	0.62	5.00	0.00	0.08	0.08
20.65	2.48	0.62	5.00	0.00	0.08	0.08
20.70	2.48	0.62	5.00	0.00	0.08	0.08
20.75	2.48	0.62	5.00	0.00	0.07	0.07
20.80	2.48	0.62	5.00	0.00	0.07	0.07
20.85	2.48	0.62	5.00	0.00	0.07	0.07
20.90	2.48	0.62	5.00	0.00	0.07	0.07
20.95	2.48	0.62	5.00	0.00	0.06	0.06
21.00	2.48	0.62	5.00	0.00	0.06	0.06
21.05	2.48	0.62	5.00	0.00	0.06	0.06
21.10	2.48	0.62	5.00	0.00	0.06	0.06
21.15	2.48	0.62	5.00	0.00	0.05	0.05
21.20	2.48	0.62	5.00	0.00	0.05	0.05
21.25	2.48	0.62	5.00	0.00	0.05	0.05
21.30	2.48	0.62	5.00	0.00	0.04	0.04
21.35	2.48	0.62	5.00	0.00	0.04	0.04
21.40	2.48	0.62	5.00	0.00	0.04	0.04
21.45	2.48	0.62	5.00	0.00	0.04	0.04
21.50	2.48	0.62	5.00	0.00	0.03	0.03
21.55	2.48	0.62	5.00	0.00	0.03	0.03
21.60	2.48	0.62	5.00	0.00	0.03	0.03
21.65	2.48	0.62	5.00	0.00	0.02	0.02
21.70	2.48	0.62	5.00	0.00	0.02	0.02
21.75	2.48	0.62	5.00	0.00	0.02	0.02
21.80	2.48	0.62	5.00	0.00	0.02	0.02
21.85	2.48	0.62	5.00	0.00	0.01	0.01
21.90	2.48	0.62	5.00	0.00	0.01	0.01
21.95	2.48	0.62	5.00	0.00	0.01	0.01
22.00	2.48	0.62	5.00	0.00	0.00	0.00
22.05	2.48	0.62	3.99	0.00	0.00	0.00
22.10	2.48	0.62	3.99	0.00	0.00	0.00
22.15	2.48	0.62	3.98	0.00	0.00	0.00
22.20	2.48	0.62	3.98	0.00	0.00	0.00
22.25	2.48	0.62	3.98	0.00	0.00	0.00
22.30	2.48	0.63	3.97	0.00	0.00	0.00
22.35	2.48	0.63	3.97	0.00	0.00	0.00
22.40	2.48	0.63	3.96	0.00	0.00	0.00
22.45	2.48	0.63	3.96	0.00	0.00	0.00
22.50	2.48	0.63	3.95	0.00	0.00	0.00
22.55	2.48	0.63	3.95	0.00	0.00	0.00
22.60	2.48	0.63	3.94	0.00	0.00	0.00
22.65	2.48	0.63	3.94	0.00	0.00	0.00
22.70	2.48	0.63	3.94	0.00	0.00	0.00
22.75	2.48	0.63	3.93	0.00	0.00	0.00
22.80	2.48	0.63	3.93	0.00	0.00	0.00
22.85	2.48	0.63	3.92	0.00	0.00	0.00
22.90	2.48	0.63	3.92	0.00	0.00	0.00
22.95	2.48	0.63	3.91	0.00	0.00	0.00
23.00	2.48	0.64	3.91	0.00	0.00	0.00
23.05	2.48	0.64	3.91	0.00	0.00	0.00
23.10	2.48	0.64	3.90	0.00	0.00	0.00
23.15	2.48	0.64	3.90	0.00	0.00	0.00
23.20	2.48	0.64	3.89	0.00	0.00	0.00
23.25	2.48	0.64	3.89	0.00	0.00	0.00
23.30	2.48	0.64	3.88	0.00	0.00	0.00
23.35	2.48	0.64	3.88	0.00	0.00	0.00
23.40	2.48	0.64	3.88	0.00	0.00	0.00
23.45	2.48	0.64	3.87	0.00	0.00	0.00
23.50	2.48	0.64	3.87	0.00	0.00	0.00

23.55	2.48	0.64	3.86	0.00	0.00	0.00
23.60	2.48	0.64	3.86	0.00	0.00	0.00
23.65	2.48	0.64	3.86	0.00	0.00	0.00
23.70	2.48	0.64	3.85	0.00	0.00	0.00
23.75	2.48	0.65	3.85	0.00	0.00	0.00
23.80	2.48	0.65	3.84	0.00	0.00	0.00
23.85	2.48	0.65	3.84	0.00	0.00	0.00
23.90	2.48	0.65	3.84	0.00	0.00	0.00
23.95	2.48	0.65	3.83	0.00	0.00	0.00
24.00	2.48	0.65	3.83	0.00	0.00	0.00
24.05	2.48	0.65	3.82	0.00	0.00	0.00
24.10	2.48	0.65	3.82	0.00	0.00	0.00
24.15	2.48	0.65	3.82	0.00	0.00	0.00
24.20	2.48	0.65	3.81	0.00	0.00	0.00
24.25	2.48	0.65	3.81	0.00	0.00	0.00
24.30	2.48	0.65	3.81	0.00	0.00	0.00
24.35	2.48	0.65	3.80	0.00	0.00	0.00
24.40	2.48	0.65	3.80	0.00	0.00	0.00
24.45	2.48	0.65	3.79	0.00	0.00	0.00
24.50	2.48	0.66	3.79	0.00	0.00	0.00
24.55	2.48	0.66	3.79	0.00	0.00	0.00
24.60	2.48	0.66	3.78	0.00	0.00	0.00
24.65	2.48	0.66	3.78	0.00	0.00	0.00
24.70	2.48	0.66	3.78	0.00	0.00	0.00
24.75	2.48	0.66	3.77	0.00	0.00	0.00
24.80	2.48	0.66	3.77	0.00	0.00	0.00
24.85	2.48	0.66	3.76	0.00	0.00	0.00
24.90	2.48	0.66	3.76	0.00	0.00	0.00
24.95	2.48	0.66	3.76	0.00	0.00	0.00
25.00	2.48	0.66	3.75	0.00	0.00	0.00
25.05	2.48	0.66	3.75	0.00	0.00	0.00
25.10	2.48	0.66	3.75	0.00	0.00	0.00
25.15	2.48	0.66	3.74	0.00	0.00	0.00
25.20	2.48	0.66	3.74	0.00	0.00	0.00
25.25	2.48	0.66	3.74	0.00	0.00	0.00
25.30	2.48	0.67	3.73	0.00	0.00	0.00
25.35	2.48	0.67	3.73	0.00	0.00	0.00
25.40	2.48	0.67	3.73	0.00	0.00	0.00
25.45	2.48	0.67	3.72	0.00	0.00	0.00
25.50	2.48	0.67	3.72	0.00	0.00	0.00
25.55	2.48	0.67	3.72	0.00	0.00	0.00
25.60	2.48	0.67	3.71	0.00	0.00	0.00
25.65	2.48	0.67	3.71	0.00	0.00	0.00
25.70	2.48	0.67	3.71	0.00	0.00	0.00
25.75	2.48	0.67	3.70	0.00	0.00	0.00
25.80	2.48	0.67	3.70	0.00	0.00	0.00
25.85	2.48	0.67	3.70	0.00	0.00	0.00
25.90	2.48	0.67	3.69	0.00	0.00	0.00
25.95	2.48	0.67	3.69	0.00	0.00	0.00
26.00	2.48	0.67	3.69	0.00	0.00	0.00
26.05	2.48	0.67	3.68	0.00	0.00	0.00
26.10	2.48	0.68	3.68	0.00	0.00	0.00
26.15	2.48	0.68	3.68	0.00	0.00	0.00
26.20	2.48	0.68	3.67	0.00	0.00	0.00
26.25	2.48	0.68	3.67	0.00	0.00	0.00
26.30	2.48	0.68	3.67	0.00	0.00	0.00
26.35	2.48	0.68	3.66	0.00	0.00	0.00
26.40	2.48	0.68	3.66	0.00	0.00	0.00
26.45	2.48	0.68	3.66	0.00	0.00	0.00
26.50	2.48	0.68	3.65	0.00	0.00	0.00
26.55	2.48	0.68	3.65	0.00	0.00	0.00
26.60	2.48	0.68	3.65	0.00	0.00	0.00
26.65	2.48	0.68	3.64	0.00	0.00	0.00
26.70	2.48	0.68	3.64	0.00	0.00	0.00
26.75	2.48	0.68	3.64	0.00	0.00	0.00
26.80	2.48	0.68	3.63	0.00	0.00	0.00
26.85	2.48	0.68	3.63	0.00	0.00	0.00
26.90	2.48	0.68	3.63	0.00	0.00	0.00
26.95	2.48	0.69	3.63	0.00	0.00	0.00
27.00	2.48	0.69	3.62	0.00	0.00	0.00
27.05	2.48	0.69	3.62	0.00	0.00	0.00
27.10	2.48	0.69	3.62	0.00	0.00	0.00
27.15	2.48	0.69	3.61	0.00	0.00	0.00
27.20	2.48	0.69	3.61	0.00	0.00	0.00
27.25	2.48	0.69	3.61	0.00	0.00	0.00
27.30	2.48	0.69	3.61	0.00	0.00	0.00
27.35	2.48	0.69	3.60	0.00	0.00	0.00
27.40	2.48	0.69	3.60	0.00	0.00	0.00
27.45	2.48	0.69	3.60	0.00	0.00	0.00
27.50	2.48	0.69	3.59	0.00	0.00	0.00
27.55	2.48	0.69	3.59	0.00	0.00	0.00
27.60	2.48	0.69	3.59	0.00	0.00	0.00
27.65	2.48	0.69	3.58	0.00	0.00	0.00
27.70	2.48	0.69	3.58	0.00	0.00	0.00
27.75	2.48	0.69	3.58	0.00	0.00	0.00
27.80	2.48	0.69	3.58	0.00	0.00	0.00
27.85	2.48	0.70	3.57	0.00	0.00	0.00
27.90	2.48	0.70	3.57	0.00	0.00	0.00
27.95	2.48	0.70	3.57	0.00	0.00	0.00
28.00	2.48	0.70	3.57	0.00	0.00	0.00

28.05	2.48	0.70	3.56	0.00	0.00	0.00
28.10	2.48	0.70	3.56	0.00	0.00	0.00
28.15	2.48	0.70	3.56	0.00	0.00	0.00
28.20	2.48	0.70	3.55	0.00	0.00	0.00
28.25	2.48	0.70	3.55	0.00	0.00	0.00
28.30	2.48	0.70	3.55	0.00	0.00	0.00
28.35	2.48	0.70	3.55	0.00	0.00	0.00
28.40	2.48	0.70	3.54	0.00	0.00	0.00
28.45	2.48	0.70	3.54	0.00	0.00	0.00
28.50	2.48	0.70	3.54	0.00	0.00	0.00
28.55	2.48	0.70	3.54	0.00	0.00	0.00
28.60	2.48	0.70	3.53	0.00	0.00	0.00
28.65	2.48	0.70	3.53	0.00	0.00	0.00
28.70	2.48	0.70	3.53	0.00	0.00	0.00
28.75	2.48	0.70	3.53	0.00	0.00	0.00
28.80	2.48	0.71	3.52	0.00	0.00	0.00
28.85	2.48	0.71	3.52	0.00	0.00	0.00
28.90	2.48	0.71	3.52	0.00	0.00	0.00
28.95	2.48	0.71	3.51	0.00	0.00	0.00
29.00	2.48	0.71	3.51	0.00	0.00	0.00
29.05	2.48	0.71	3.51	0.00	0.00	0.00
29.10	2.48	0.71	3.51	0.00	0.00	0.00
29.15	2.48	0.71	3.50	0.00	0.00	0.00
29.20	2.48	0.71	3.50	0.00	0.00	0.00
29.25	2.48	0.71	3.50	0.00	0.00	0.00
29.30	2.48	0.71	3.50	0.00	0.00	0.00
29.35	2.48	0.71	3.49	0.00	0.00	0.00
29.40	2.48	0.71	3.49	0.00	0.00	0.00
29.45	2.48	0.71	3.49	0.00	0.00	0.00
29.50	2.48	0.71	3.49	0.00	0.00	0.00
29.55	2.48	0.71	3.48	0.00	0.00	0.00
29.60	2.48	0.71	3.48	0.00	0.00	0.00
29.65	2.48	0.71	3.48	0.00	0.00	0.00
29.70	2.48	0.71	3.48	0.00	0.00	0.00
29.75	2.48	0.71	3.48	0.00	0.00	0.00
29.80	2.48	0.72	3.47	0.00	0.00	0.00
29.85	2.48	0.72	3.47	0.00	0.00	0.00
29.90	2.48	0.72	3.47	0.00	0.00	0.00
29.95	2.48	0.72	3.47	0.00	0.00	0.00
30.00	2.48	0.72	3.46	0.00	0.00	0.00
30.05	2.48	0.72	3.46	0.00	0.00	0.00
30.10	2.48	0.72	3.46	0.00	0.00	0.00
30.15	2.48	0.72	3.46	0.00	0.00	0.00
30.20	2.48	0.72	3.46	0.00	0.00	0.00
30.25	2.48	0.72	3.46	0.00	0.00	0.00
30.30	2.48	0.72	3.46	0.00	0.00	0.00
30.35	2.48	0.72	3.46	0.00	0.00	0.00
30.40	2.48	0.72	3.45	0.00	0.00	0.00
30.45	2.48	0.72	3.45	0.00	0.00	0.00
30.50	2.48	0.72	3.45	0.00	0.00	0.00
30.55	2.48	0.72	3.45	0.00	0.00	0.00
30.60	2.48	0.72	3.45	0.00	0.00	0.00
30.65	2.48	0.72	3.45	0.00	0.00	0.00
30.70	2.48	0.72	3.45	0.00	0.00	0.00
30.75	2.48	0.72	3.45	0.00	0.00	0.00
30.80	2.48	0.72	3.44	0.00	0.00	0.00
30.85	2.48	0.72	3.44	0.00	0.00	0.00
30.90	2.48	0.72	3.44	0.00	0.00	0.00
30.95	2.48	0.72	3.44	0.00	0.00	0.00
31.00	2.48	0.72	3.44	0.00	0.00	0.00
31.05	2.48	0.72	3.44	0.00	0.00	0.00
31.10	2.48	0.72	3.44	0.00	0.00	0.00
31.15	2.48	0.72	3.44	0.00	0.00	0.00
31.20	2.48	0.72	3.44	0.00	0.00	0.00
31.25	2.48	0.72	3.44	0.00	0.00	0.00
31.30	2.48	0.72	3.43	0.00	0.00	0.00
31.35	2.48	0.72	3.43	0.00	0.00	0.00
31.40	2.48	0.72	3.43	0.00	0.00	0.00
31.45	2.48	0.72	3.43	0.00	0.00	0.00
31.50	2.48	0.72	3.43	0.00	0.00	0.00
31.55	2.48	0.72	3.43	0.00	0.00	0.00
31.60	2.48	0.72	3.43	0.00	0.00	0.00
31.65	2.48	0.72	3.43	0.00	0.00	0.00
31.70	2.48	0.73	3.43	0.00	0.00	0.00
31.75	2.48	0.73	3.42	0.00	0.00	0.00
31.80	2.48	0.73	3.42	0.00	0.00	0.00
31.85	2.48	0.73	3.42	0.00	0.00	0.00
31.90	2.48	0.73	3.42	0.00	0.00	0.00
31.95	2.48	0.73	3.42	0.00	0.00	0.00
32.00	2.48	0.73	3.42	0.00	0.00	0.00
32.05	2.48	0.73	3.42	0.00	0.00	0.00
32.10	2.48	0.73	3.42	0.00	0.00	0.00
32.15	2.48	0.73	3.42	0.00	0.00	0.00
32.20	2.48	0.73	3.42	0.00	0.00	0.00
32.25	2.48	0.73	3.42	0.00	0.00	0.00
32.30	2.48	0.73	3.41	0.00	0.00	0.00
32.35	2.48	0.73	3.41	0.00	0.00	0.00
32.40	2.48	0.73	3.41	0.00	0.00	0.00
32.45	2.48	0.73	3.41	0.00	0.00	0.00
32.50	2.48	0.73	3.41	0.00	0.00	0.00

32.55	2.48	0.73	3.41	0.00	0.00	0.00
32.60	2.48	0.73	3.41	0.00	0.00	0.00
32.65	2.48	0.73	3.41	0.00	0.00	0.00
32.70	2.48	0.73	3.41	0.00	0.00	0.00
32.75	2.48	0.73	3.41	0.00	0.00	0.00
32.80	2.48	0.73	3.41	0.00	0.00	0.00
32.85	2.48	0.73	3.40	0.00	0.00	0.00
32.90	2.48	0.73	3.40	0.00	0.00	0.00
32.95	2.48	0.73	3.40	0.00	0.00	0.00
33.00	2.48	0.73	3.40	0.00	0.00	0.00
33.05	2.48	0.73	3.40	0.00	0.00	0.00
33.10	2.48	0.73	3.40	0.00	0.00	0.00
33.15	2.48	0.73	3.40	0.00	0.00	0.00
33.20	2.48	0.73	3.40	0.00	0.00	0.00
33.25	2.48	0.73	3.40	0.00	0.00	0.00
33.30	2.48	0.73	3.40	0.00	0.00	0.00
33.35	2.48	0.73	3.40	0.00	0.00	0.00
33.40	2.48	0.73	3.40	0.00	0.00	0.00
33.45	2.48	0.73	3.40	0.00	0.00	0.00
33.50	2.48	0.73	3.39	0.00	0.00	0.00
33.55	2.48	0.73	3.39	0.00	0.00	0.00
33.60	2.48	0.73	3.39	0.00	0.00	0.00
33.65	2.48	0.73	3.39	0.00	0.00	0.00
33.70	2.48	0.73	3.39	0.00	0.00	0.00
33.75	2.48	0.73	3.39	0.00	0.00	0.00
33.80	2.48	0.73	3.39	0.00	0.00	0.00
33.85	2.48	0.73	3.39	0.00	0.00	0.00
33.90	2.48	0.73	3.39	0.00	0.00	0.00
33.95	2.48	0.73	3.39	0.00	0.00	0.00
34.00	2.48	0.73	3.39	0.00	0.00	0.00
34.05	2.48	0.73	3.39	0.00	0.00	0.00
34.10	2.48	0.73	3.39	0.00	0.00	0.00
34.15	2.48	0.73	3.39	0.00	0.00	0.00
34.20	2.48	0.73	3.38	0.00	0.00	0.00
34.25	2.48	0.73	3.38	0.00	0.00	0.00
34.30	2.48	0.73	3.38	0.00	0.00	0.00
34.35	2.48	0.73	3.38	0.00	0.00	0.00
34.40	2.48	0.73	3.38	0.00	0.00	0.00
34.45	2.48	0.73	3.38	0.00	0.00	0.00
34.50	2.48	0.73	3.38	0.00	0.00	0.00
34.55	2.48	0.73	3.38	0.00	0.00	0.00
34.60	2.48	0.74	3.38	0.00	0.00	0.00
34.65	2.48	0.74	3.38	0.00	0.00	0.00
34.70	2.48	0.74	3.38	0.00	0.00	0.00
34.75	2.48	0.74	3.38	0.00	0.00	0.00
34.80	2.50	0.74	3.40	0.00	0.00	0.00
34.85	2.50	0.74	3.40	0.00	0.00	0.00
34.90	2.50	0.74	3.40	0.00	0.00	0.00
34.95	2.50	0.74	3.40	0.00	0.00	0.00
35.00	2.50	0.74	3.39	0.00	0.00	0.00
35.05	2.50	0.74	3.39	0.00	0.00	0.00
35.10	2.50	0.74	3.39	0.00	0.00	0.00
35.15	2.50	0.74	3.39	0.00	0.00	0.00
35.20	2.50	0.74	3.39	0.00	0.00	0.00
35.25	2.50	0.74	3.39	0.00	0.00	0.00
35.30	2.50	0.74	3.39	0.00	0.00	0.00
35.35	2.50	0.74	3.39	0.00	0.00	0.00
35.40	2.50	0.74	3.39	0.00	0.00	0.00
35.45	2.50	0.74	3.39	0.00	0.00	0.00
35.50	2.50	0.74	3.38	0.00	0.00	0.00
35.55	2.49	0.74	3.38	0.00	0.00	0.00
35.60	2.49	0.74	3.38	0.00	0.00	0.00
35.65	2.49	0.74	3.38	0.00	0.00	0.00
35.70	2.49	0.74	3.38	0.00	0.00	0.00
35.75	2.49	0.74	3.38	0.00	0.00	0.00
35.80	2.49	0.74	3.38	0.00	0.00	0.00
35.85	2.49	0.74	3.38	0.00	0.00	0.00
35.90	2.49	0.74	3.38	0.00	0.00	0.00
35.95	2.49	0.74	3.38	0.00	0.00	0.00
36.00	2.49	0.74	3.38	0.00	0.00	0.00
36.05	2.49	0.74	3.37	0.00	0.00	0.00
36.10	2.49	0.74	3.37	0.00	0.00	0.00
36.15	2.49	0.74	3.37	0.00	0.00	0.00
36.20	2.49	0.74	3.37	0.00	0.00	0.00
36.25	2.49	0.74	3.37	0.00	0.00	0.00
36.30	2.49	0.74	3.37	0.00	0.00	0.00
36.35	2.49	0.74	3.37	0.00	0.00	0.00
36.40	2.49	0.74	3.37	0.00	0.00	0.00
36.45	2.49	0.74	3.37	0.00	0.00	0.00
36.50	2.49	0.74	3.37	0.00	0.00	0.00
36.55	2.49	0.74	3.37	0.00	0.00	0.00
36.60	2.49	0.74	3.37	0.00	0.00	0.00
36.65	2.49	0.74	3.36	0.00	0.00	0.00
36.70	2.49	0.74	3.36	0.00	0.00	0.00
36.75	2.49	0.74	3.36	0.00	0.00	0.00
36.80	2.49	0.74	3.36	0.00	0.00	0.00
36.85	2.49	0.74	3.36	0.00	0.00	0.00
36.90	2.49	0.74	3.36	0.00	0.00	0.00
36.95	2.49	0.74	3.36	0.00	0.00	0.00
37.00	2.49	0.74	3.36	0.00	0.00	0.00

37.05	2.49	0.74	3.36	0.00	0.00	0.00
37.10	2.48	0.74	3.36	0.00	0.00	0.00
37.15	2.48	0.74	3.36	0.00	0.00	0.00
37.20	2.48	0.74	3.36	0.00	0.00	0.00
37.25	2.48	0.74	3.35	0.00	0.00	0.00
37.30	2.48	0.74	3.35	0.00	0.00	0.00
37.35	2.48	0.74	3.35	0.00	0.00	0.00
37.40	2.48	0.74	3.35	0.00	0.00	0.00
37.45	2.48	0.74	3.35	0.00	0.00	0.00
37.50	2.48	0.74	3.35	0.00	0.00	0.00
37.55	2.48	0.74	3.35	0.00	0.00	0.00
37.60	2.48	0.74	3.35	0.00	0.00	0.00
37.65	2.48	0.74	3.35	0.00	0.00	0.00
37.70	2.48	0.74	3.35	0.00	0.00	0.00
37.75	2.48	0.74	3.35	0.00	0.00	0.00
37.80	2.48	0.74	3.35	0.00	0.00	0.00
37.85	2.48	0.74	3.35	0.00	0.00	0.00
37.90	2.48	0.74	3.35	0.00	0.00	0.00
37.95	2.48	0.74	3.34	0.00	0.00	0.00
38.00	2.48	0.74	3.34	0.00	0.00	0.00
38.05	2.48	0.74	3.34	0.00	0.00	0.00
38.10	2.48	0.74	3.34	0.00	0.00	0.00
38.15	2.48	0.74	3.34	0.00	0.00	0.00
38.20	2.48	0.74	3.34	0.00	0.00	0.00
38.25	2.48	0.74	3.34	0.00	0.00	0.00
38.30	2.48	0.74	3.34	0.00	0.00	0.00
38.35	2.48	0.74	3.34	0.00	0.00	0.00
38.40	2.48	0.74	3.34	0.00	0.00	0.00
38.45	2.48	0.74	3.34	0.00	0.00	0.00
38.50	2.48	0.74	3.34	0.00	0.00	0.00
38.55	2.48	0.74	3.34	0.00	0.00	0.00
38.60	2.48	0.74	3.34	0.00	0.00	0.00
38.65	2.48	0.74	3.34	0.00	0.00	0.00
38.70	2.47	0.74	3.34	0.00	0.00	0.00
38.75	2.47	0.74	3.33	0.00	0.00	0.00
38.80	2.47	0.74	3.33	0.00	0.00	0.00
38.85	2.47	0.74	3.33	0.00	0.00	0.00
38.90	2.47	0.74	3.33	0.00	0.00	0.00
38.95	2.47	0.74	3.33	0.00	0.00	0.00
39.00	2.47	0.74	3.33	0.00	0.00	0.00
39.05	2.47	0.74	3.33	0.00	0.00	0.00
39.10	2.47	0.74	3.33	0.00	0.00	0.00
39.15	2.47	0.74	3.33	0.00	0.00	0.00
39.20	2.47	0.74	3.33	0.00	0.00	0.00
39.25	2.47	0.74	3.33	0.00	0.00	0.00
39.30	2.47	0.74	3.33	0.00	0.00	0.00
39.35	2.47	0.74	3.33	0.00	0.00	0.00
39.40	2.47	0.74	3.33	0.00	0.00	0.00
39.45	2.47	0.74	3.33	0.00	0.00	0.00
39.50	2.47	0.74	3.33	0.00	0.00	0.00
39.55	2.47	0.74	3.33	0.00	0.00	0.00
39.60	2.47	0.74	3.32	0.00	0.00	0.00
39.65	2.47	0.74	3.32	0.00	0.00	0.00
39.70	2.47	0.74	3.32	0.00	0.00	0.00
39.75	2.47	0.74	3.32	0.00	0.00	0.00
39.80	2.47	0.74	3.32	0.00	0.00	0.00
39.85	2.47	0.74	3.32	0.00	0.00	0.00
39.90	2.47	0.74	3.32	0.00	0.00	0.00
39.95	2.47	0.74	3.32	0.00	0.00	0.00
40.00	2.47	0.74	3.32	0.00	0.00	0.00
40.05	2.47	0.74	3.32	0.00	0.00	0.00
40.10	2.47	0.74	3.32	0.00	0.00	0.00
40.15	2.47	0.74	3.32	0.00	0.00	0.00
40.20	2.47	0.74	3.32	0.00	0.00	0.00
40.25	2.47	0.74	3.32	0.00	0.00	0.00
40.30	2.46	0.74	3.32	0.00	0.00	0.00
40.35	2.46	0.74	3.32	0.00	0.00	0.00
40.40	2.46	0.74	3.32	0.00	0.00	0.00
40.45	2.46	0.74	3.32	0.00	0.00	0.00
40.50	2.46	0.74	3.32	0.00	0.00	0.00
40.55	2.46	0.74	3.32	0.00	0.00	0.00
40.60	2.46	0.74	3.32	0.00	0.00	0.00
40.65	2.46	0.74	3.31	0.00	0.00	0.00
40.70	2.46	0.74	3.31	0.00	0.00	0.00
40.75	2.46	0.74	3.31	0.00	0.00	0.00
40.80	2.46	0.74	3.31	0.00	0.00	0.00
40.85	2.46	0.74	3.31	0.00	0.00	0.00
40.90	2.46	0.74	3.31	0.00	0.00	0.00
40.95	2.46	0.74	3.31	0.00	0.00	0.00
41.00	2.46	0.74	3.31	0.00	0.00	0.00
41.05	2.46	0.74	3.31	0.00	0.00	0.00
41.10	2.46	0.74	3.31	0.00	0.00	0.00
41.15	2.46	0.74	3.31	0.00	0.00	0.00
41.20	2.46	0.74	3.31	0.00	0.00	0.00
41.25	2.46	0.74	3.31	0.00	0.00	0.00
41.30	2.46	0.74	3.31	0.00	0.00	0.00
41.35	2.46	0.74	3.31	0.00	0.00	0.00
41.40	2.46	0.74	3.31	0.00	0.00	0.00
41.45	2.46	0.74	3.31	0.00	0.00	0.00
41.50	2.46	0.74	3.31	0.00	0.00	0.00

41.55	2.46	0.74	3.31	0.00	0.00	0.00
41.60	2.46	0.74	3.31	0.00	0.00	0.00
41.65	2.46	0.74	3.31	0.00	0.00	0.00
41.70	2.46	0.74	3.31	0.00	0.00	0.00
41.75	2.46	0.74	3.31	0.00	0.00	0.00
41.80	2.46	0.74	3.31	0.00	0.00	0.00
41.85	2.46	0.74	3.31	0.00	0.00	0.00
41.90	2.45	0.74	3.30	0.00	0.00	0.00
41.95	2.45	0.74	3.30	0.00	0.00	0.00
42.00	2.45	0.74	3.30	0.00	0.00	0.00
42.05	2.45	0.74	3.30	0.00	0.00	0.00
42.10	2.45	0.74	3.30	0.00	0.00	0.00
42.15	2.45	0.74	3.30	0.00	0.00	0.00
42.20	2.45	0.74	3.30	0.00	0.00	0.00
42.25	2.45	0.74	3.30	0.00	0.00	0.00
42.30	2.45	0.74	3.30	0.00	0.00	0.00
42.35	2.45	0.74	3.30	0.00	0.00	0.00
42.40	2.45	0.74	3.30	0.00	0.00	0.00
42.45	2.45	0.74	3.30	0.00	0.00	0.00
42.50	2.45	0.74	3.30	0.00	0.00	0.00
42.55	2.45	0.74	3.30	0.00	0.00	0.00
42.60	2.45	0.74	3.30	0.00	0.00	0.00
42.65	2.45	0.74	3.30	0.00	0.00	0.00
42.70	2.45	0.74	3.30	0.00	0.00	0.00
42.75	2.45	0.74	3.30	0.00	0.00	0.00
42.80	2.45	0.74	3.30	0.00	0.00	0.00
42.85	2.45	0.74	3.30	0.00	0.00	0.00
42.90	2.45	0.74	3.30	0.00	0.00	0.00
42.95	2.45	0.74	3.30	0.00	0.00	0.00
43.00	2.45	0.74	3.30	0.00	0.00	0.00
43.05	2.45	0.74	3.30	0.00	0.00	0.00
43.10	2.45	0.74	3.30	0.00	0.00	0.00
43.15	2.45	0.74	3.30	0.00	0.00	0.00
43.20	2.45	0.74	3.30	0.00	0.00	0.00
43.25	2.45	0.74	3.30	0.00	0.00	0.00
43.30	2.45	0.74	3.30	0.00	0.00	0.00
43.35	2.45	0.74	3.30	0.00	0.00	0.00
43.40	2.45	0.74	3.30	0.00	0.00	0.00
43.45	2.45	0.74	3.30	0.00	0.00	0.00
43.50	2.45	0.74	3.30	0.00	0.00	0.00
43.55	2.44	0.74	3.30	0.00	0.00	0.00
43.60	2.44	0.74	3.30	0.00	0.00	0.00
43.65	2.44	0.74	3.30	0.00	0.00	0.00
43.70	2.44	0.74	3.30	0.00	0.00	0.00
43.75	2.44	0.74	3.30	0.00	0.00	0.00
43.80	2.44	0.74	3.29	0.00	0.00	0.00
43.85	2.44	0.74	3.29	0.00	0.00	0.00
43.90	2.44	0.74	3.29	0.00	0.00	0.00
43.95	2.44	0.74	3.29	0.00	0.00	0.00
44.00	2.44	0.74	3.29	0.00	0.00	0.00
44.05	2.44	0.74	3.29	0.00	0.00	0.00
44.10	2.44	0.74	3.29	0.00	0.00	0.00
44.15	2.44	0.74	3.29	0.00	0.00	0.00
44.20	2.44	0.74	3.29	0.00	0.00	0.00
44.25	2.44	0.74	3.29	0.00	0.00	0.00
44.30	2.44	0.74	3.29	0.00	0.00	0.00
44.35	2.44	0.74	3.29	0.00	0.00	0.00
44.40	2.44	0.74	3.29	0.00	0.00	0.00
44.45	2.44	0.74	3.29	0.00	0.00	0.00
44.50	2.44	0.74	3.29	0.00	0.00	0.00
44.55	2.44	0.74	3.29	0.00	0.00	0.00
44.60	2.44	0.74	3.29	0.00	0.00	0.00
44.65	2.44	0.74	3.29	0.00	0.00	0.00
44.70	2.44	0.74	3.29	0.00	0.00	0.00
44.75	2.44	0.74	3.29	0.00	0.00	0.00
44.80	2.44	0.74	3.29	0.00	0.00	0.00
44.85	2.44	0.74	3.29	0.00	0.00	0.00
44.90	2.44	0.74	3.29	0.00	0.00	0.00
44.95	2.44	0.74	3.29	0.00	0.00	0.00
45.00	2.44	0.74	3.29	0.00	0.00	0.00
45.05	2.44	0.74	3.29	0.00	0.00	0.00
45.10	2.44	0.74	3.29	0.00	0.00	0.00
45.15	2.43	0.74	3.29	0.00	0.00	0.00
45.20	2.43	0.74	3.29	0.00	0.00	0.00
45.25	2.43	0.74	3.29	0.00	0.00	0.00
45.30	2.43	0.74	3.29	0.00	0.00	0.00
45.35	2.43	0.74	3.29	0.00	0.00	0.00
45.40	2.43	0.74	3.29	0.00	0.00	0.00
45.45	2.43	0.74	3.29	0.00	0.00	0.00
45.50	2.43	0.74	3.29	0.00	0.00	0.00
45.55	2.43	0.74	3.29	0.00	0.00	0.00
45.60	2.43	0.74	3.29	0.00	0.00	0.00
45.65	2.43	0.74	3.29	0.00	0.00	0.00
45.70	2.43	0.74	3.29	0.00	0.00	0.00
45.75	2.43	0.74	3.29	0.00	0.00	0.00
45.80	2.43	0.74	3.29	0.00	0.00	0.00
45.85	2.43	0.74	3.29	0.00	0.00	0.00
45.90	2.43	0.74	3.29	0.00	0.00	0.00
45.95	2.43	0.74	3.29	0.00	0.00	0.00
46.00	2.43	0.74	3.29	0.00	0.00	0.00

46.05	2.43	0.74	3.29	0.00	0.00	0.00
46.10	2.43	0.74	3.29	0.00	0.00	0.00
46.15	2.43	0.74	3.29	0.00	0.00	0.00
46.20	2.43	0.74	3.29	0.00	0.00	0.00
46.25	2.43	0.74	3.29	0.00	0.00	0.00
46.30	2.43	0.74	3.29	0.00	0.00	0.00
46.35	2.43	0.74	3.29	0.00	0.00	0.00
46.40	2.43	0.74	3.29	0.00	0.00	0.00
46.45	2.43	0.74	3.29	0.00	0.00	0.00
46.50	2.43	0.74	3.29	0.00	0.00	0.00
46.55	2.43	0.74	3.29	0.00	0.00	0.00
46.60	2.43	0.74	3.29	0.00	0.00	0.00
46.65	2.43	0.74	3.29	0.00	0.00	0.00
46.70	2.43	0.74	3.29	0.00	0.00	0.00
46.75	2.43	0.74	3.29	0.00	0.00	0.00
46.80	2.43	0.74	3.29	0.00	0.00	0.00
46.85	2.42	0.74	3.29	0.00	0.00	0.00
46.90	2.42	0.74	3.29	0.00	0.00	0.00
46.95	2.42	0.74	3.29	0.00	0.00	0.00
47.00	2.42	0.74	3.29	0.00	0.00	0.00
47.05	2.42	0.74	3.29	0.00	0.00	0.00
47.10	2.42	0.74	3.29	0.00	0.00	0.00
47.15	2.42	0.74	3.29	0.00	0.00	0.00
47.20	2.42	0.74	3.29	0.00	0.00	0.00
47.25	2.42	0.74	3.29	0.00	0.00	0.00
47.30	2.42	0.74	3.29	0.00	0.00	0.00
47.35	2.42	0.74	3.29	0.00	0.00	0.00
47.40	2.42	0.74	3.29	0.00	0.00	0.00
47.45	2.42	0.74	3.29	0.00	0.00	0.00
47.50	2.42	0.74	3.29	0.00	0.00	0.00
47.55	2.42	0.74	3.29	0.00	0.00	0.00
47.60	2.42	0.74	3.29	0.00	0.00	0.00
47.65	2.42	0.74	3.29	0.00	0.00	0.00
47.70	2.42	0.74	3.29	0.00	0.00	0.00
47.75	2.42	0.74	3.29	0.00	0.00	0.00
47.80	2.42	0.74	3.29	0.00	0.00	0.00
47.85	2.42	0.74	3.29	0.00	0.00	0.00
47.90	2.42	0.73	3.29	0.00	0.00	0.00
47.95	2.42	0.73	3.29	0.00	0.00	0.00
48.00	2.42	0.73	3.29	0.00	0.00	0.00
48.05	2.42	0.73	3.29	0.00	0.00	0.00
48.10	2.42	0.73	3.29	0.00	0.00	0.00
48.15	2.42	0.73	3.29	0.00	0.00	0.00
48.20	2.42	0.73	3.29	0.00	0.00	0.00
48.25	2.42	0.73	3.29	0.00	0.00	0.00
48.30	2.42	0.73	3.29	0.00	0.00	0.00
48.35	2.42	0.73	3.29	0.00	0.00	0.00
48.40	2.42	0.73	3.29	0.00	0.00	0.00
48.45	2.42	0.73	3.29	0.00	0.00	0.00
48.50	2.41	0.73	3.29	0.00	0.00	0.00
48.55	2.41	0.73	3.29	0.00	0.00	0.00
48.60	2.41	0.73	3.29	0.00	0.00	0.00
48.65	2.41	0.73	3.29	0.00	0.00	0.00
48.70	2.41	0.73	3.29	0.00	0.00	0.00
48.75	2.41	0.73	3.29	0.00	0.00	0.00
48.80	2.41	0.73	3.29	0.00	0.00	0.00
48.85	2.41	0.73	3.29	0.00	0.00	0.00
48.90	2.41	0.73	3.29	0.00	0.00	0.00
48.95	2.41	0.73	3.29	0.00	0.00	0.00
49.00	2.41	0.73	3.29	0.00	0.00	0.00
49.05	2.41	0.73	3.29	0.00	0.00	0.00
49.10	2.41	0.73	3.29	0.00	0.00	0.00
49.15	2.41	0.73	3.29	0.00	0.00	0.00
49.20	2.41	0.73	3.29	0.00	0.00	0.00
49.25	2.41	0.73	3.29	0.00	0.00	0.00
49.30	2.41	0.73	3.29	0.00	0.00	0.00
49.35	2.41	0.73	3.29	0.00	0.00	0.00
49.40	2.41	0.73	3.29	0.00	0.00	0.00
49.45	2.41	0.73	3.29	0.00	0.00	0.00
49.50	2.41	0.73	3.29	0.00	0.00	0.00
49.55	2.41	0.73	3.29	0.00	0.00	0.00
49.60	2.41	0.73	3.30	0.00	0.00	0.00
49.65	2.41	0.73	3.30	0.00	0.00	0.00
49.70	2.41	0.73	3.30	0.00	0.00	0.00
49.75	2.41	0.73	3.30	0.00	0.00	0.00
49.80	2.41	0.73	3.30	0.00	0.00	0.00
49.85	2.41	0.73	3.30	0.00	0.00	0.00
49.90	2.41	0.73	3.30	0.00	0.00	0.00
49.95	2.41	0.73	3.30	0.00	0.00	0.00
50.00	2.41	0.73	3.30	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf

S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

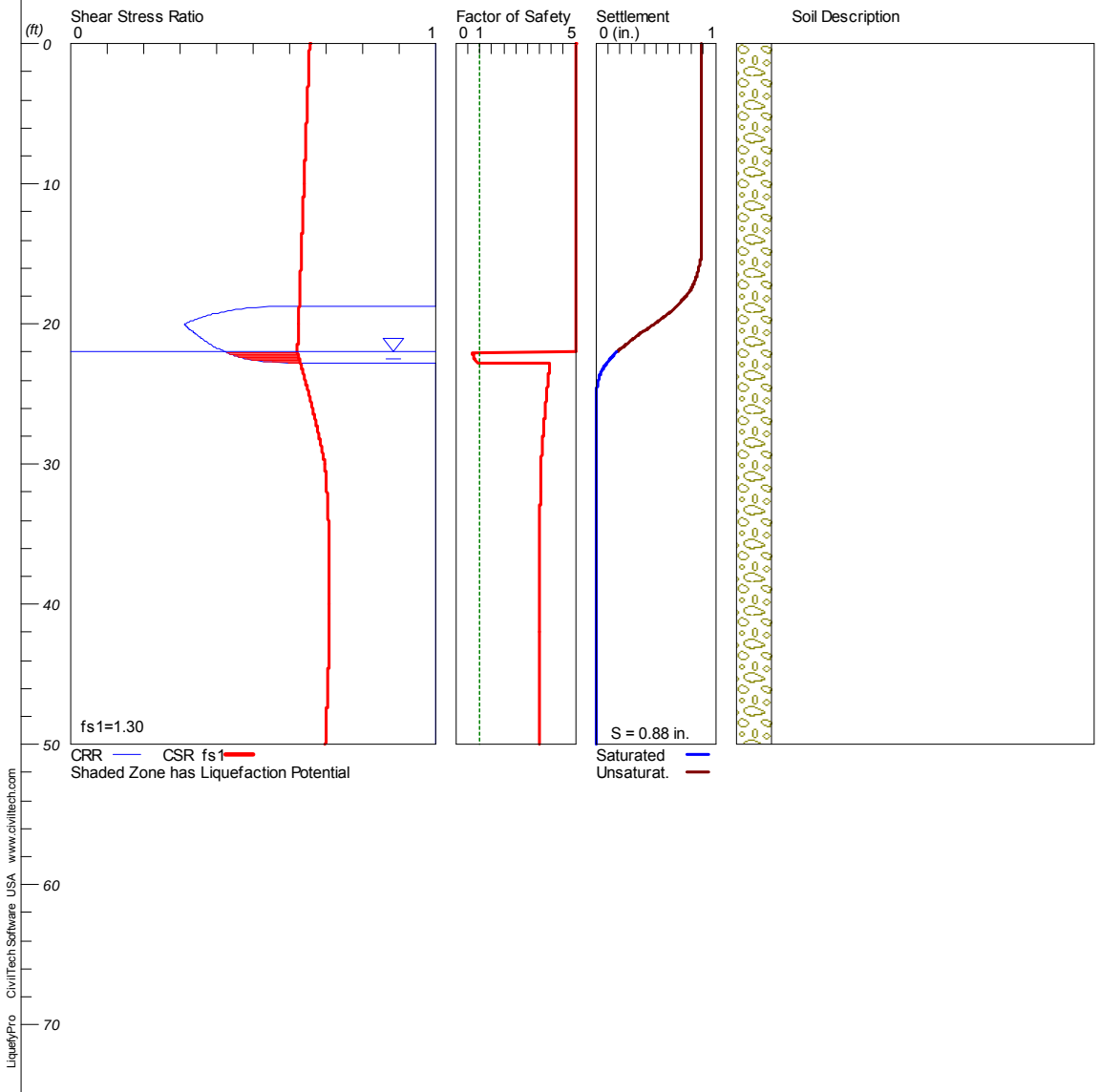
17-31-247-01

Hole No.=6 Water Depth=22 ft

Ground Improvement of Fill=5 ft

Magnitude=6.89

Acceleration=0.776g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot R\Liquefaction Analysis\BH6.liq
Title: 17-31-247-01
Subtitle: Parking Lor R Mt sac

Surface Elev.=
Hole No.=6
Depth of Hole= 50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 22.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=6
Depth of Hole=50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 22.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

Fill on Top= 5 ft Fill Unit Weight= 125 pcf
Depth of this report is based on original ground surface, not based on fill
 1 atm (atmosphere) = 1 tsf (ton/ft2)

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	122.00	NoLiq
5.00	50.00	110.00	NoLiq
10.00	21.00	100.00	NoLiq
15.00	16.00	96.00	NoLiq
20.00	10.00	115.00	36.00
25.00	10.00	120.00	NoLiq
30.00	50.00	125.00	50.00
35.00	64.00	120.00	71.00
40.00	50.00	117.00	71.00
45.00	37.00	110.00	71.00
50.00	50.00	90.00	71.00

Output Results:
Settlement of Saturated Sands=0.16 in.
Settlement of Unsaturated Sands=0.72 in.
Total Settlement of Saturated and Unsaturated Sands=0.88 in.
Differential Settlement=0.441 to 0.582 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.16	0.72	0.88
3.00	2.00	0.65	5.00	0.16	0.72	0.88
6.00	2.00	0.65	5.00	0.16	0.72	0.88
9.00	2.00	0.64	5.00	0.16	0.72	0.88
12.00	2.00	0.64	5.00	0.16	0.72	0.88
15.00	2.48	0.63	5.00	0.16	0.72	0.88
18.00	2.48	0.63	5.00	0.16	0.59	0.75
21.00	0.36	0.62	5.00	0.16	0.15	0.32
24.00	2.48	0.64	3.86	0.02	0.00	0.02
27.00	2.48	0.67	3.69	0.00	0.00	0.00
30.00	2.48	0.70	3.56	0.00	0.00	0.00
33.00	2.48	0.71	3.52	0.00	0.00	0.00
36.00	2.48	0.71	3.50	0.00	0.00	0.00
39.00	2.49	0.71	3.50	0.00	0.00	0.00
42.00	2.47	0.71	3.48	0.00	0.00	0.00
45.00	2.45	0.71	3.47	0.00	0.00	0.00
48.00	2.44	0.70	3.47	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

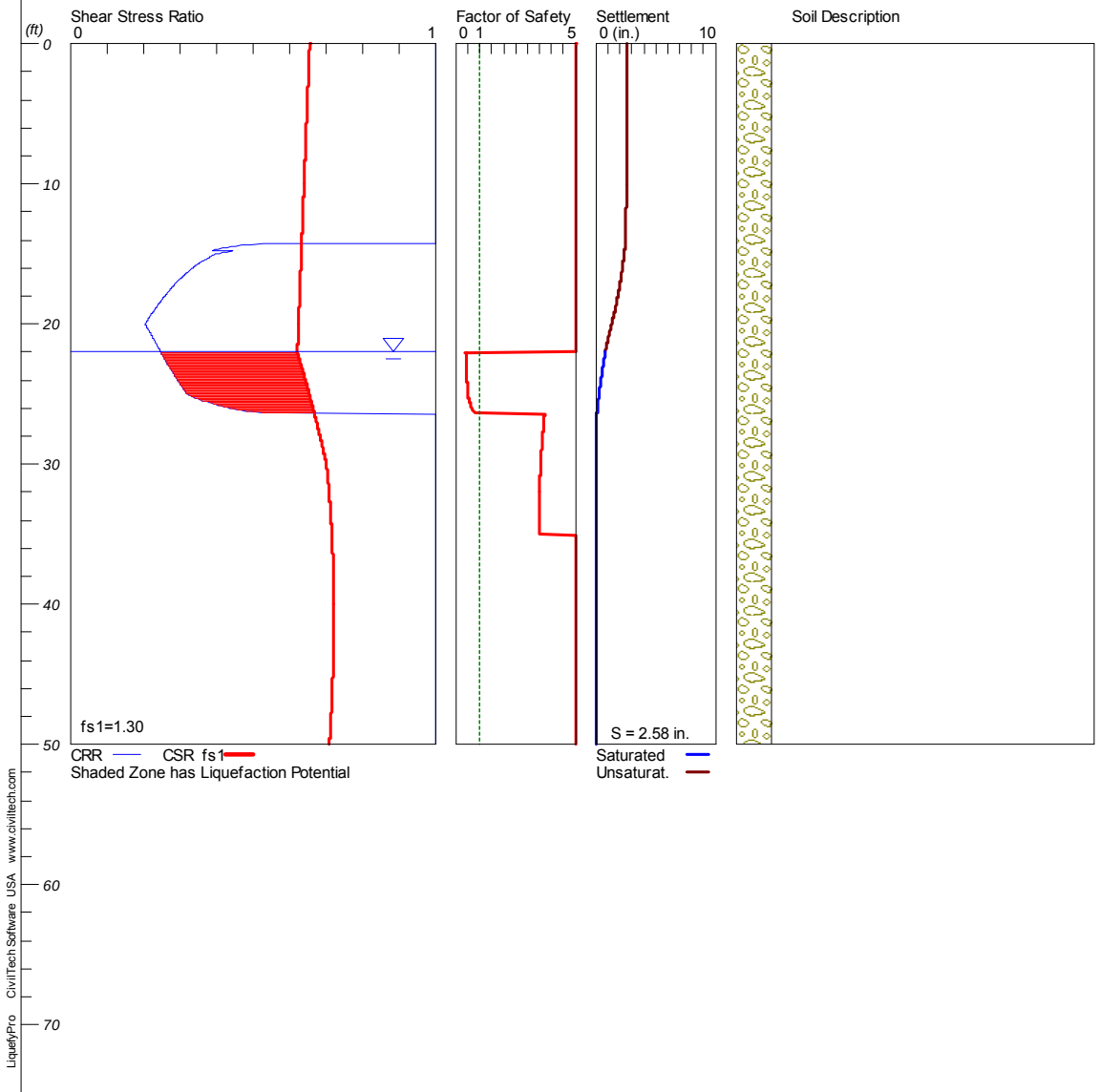
17-31-247-01

Hole No.=11 Water Depth=22 ft

Ground Improvement of Fill=5 ft

Magnitude=6.89

Acceleration=0.776g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot R\Liquefaction Analysis\BH11.liq
Title: 17-31-247-01
Subtitle: Parking Lor R Mt sac

Surface Elev.=
Hole No.=11
Depth of Hole= 50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 22.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=11
Depth of Hole=50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 22.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

Fill on Top= 5 ft Fill Unit Weight= 125 pcf
Depth of this report is based on original ground surface, not based on fill
1 atm (atmosphere) = 1 tsf (ton/ft2)

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	110.00	NoLiq
5.00	50.00	110.00	NoLiq
10.00	17.50	88.00	NoLiq
15.00	10.00	109.00	36.00
20.00	5.00	110.00	36.00
25.00	12.60	104.00	29.00
30.00	27.00	110.00	55.00
35.00	18.20	110.00	NoLiq
40.00	15.00	110.00	NoLiq
45.00	50.00	110.00	NoLiq
50.00	39.00	110.00	NoLiq

Output Results:
Settlement of Saturated Sands=0.75 in.
Settlement of Unsaturated Sands=1.83 in.
Total Settlement of Saturated and Unsaturated Sands=2.58 in.
Differential Settlement=1.289 to 1.702 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.75	1.83	2.58
0.05	2.00	0.66	5.00	0.75	1.83	2.58
0.10	2.00	0.66	5.00	0.75	1.83	2.58
0.15	2.00	0.66	5.00	0.75	1.83	2.58
0.20	2.00	0.66	5.00	0.75	1.83	2.58
0.25	2.00	0.66	5.00	0.75	1.83	2.58
0.30	2.00	0.66	5.00	0.75	1.83	2.58
0.35	2.00	0.66	5.00	0.75	1.83	2.58
0.40	2.00	0.66	5.00	0.75	1.83	2.58
0.45	2.00	0.66	5.00	0.75	1.83	2.58
0.50	2.00	0.65	5.00	0.75	1.83	2.58
0.55	2.00	0.65	5.00	0.75	1.83	2.58
0.60	2.00	0.65	5.00	0.75	1.83	2.58
0.65	2.00	0.65	5.00	0.75	1.83	2.58
0.70	2.00	0.65	5.00	0.75	1.83	2.58
0.75	2.00	0.65	5.00	0.75	1.83	2.58
0.80	2.00	0.65	5.00	0.75	1.83	2.58

0.85	2.00	0.65	5.00	0.75	1.83	2.58
0.90	2.00	0.65	5.00	0.75	1.83	2.58
0.95	2.00	0.65	5.00	0.75	1.83	2.58
1.00	2.00	0.65	5.00	0.75	1.83	2.58
1.05	2.00	0.65	5.00	0.75	1.83	2.58
1.10	2.00	0.65	5.00	0.75	1.83	2.58
1.15	2.00	0.65	5.00	0.75	1.83	2.58
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1.25	2.00	0.65	5.00	0.75	1.83	2.58
1.30	2.00	0.65	5.00	0.75	1.83	2.58
1.35	2.00	0.65	5.00	0.75	1.83	2.58
1.40	2.00	0.65	5.00	0.75	1.83	2.58
1.45	2.00	0.65	5.00	0.75	1.83	2.58
1.50	2.00	0.65	5.00	0.75	1.83	2.58
1.55	2.00	0.65	5.00	0.75	1.83	2.58
1.60	2.00	0.65	5.00	0.75	1.83	2.58
1.65	2.00	0.65	5.00	0.75	1.83	2.58
1.70	2.00	0.65	5.00	0.75	1.83	2.58
1.75	2.00	0.65	5.00	0.75	1.83	2.58
1.80	2.00	0.65	5.00	0.75	1.83	2.58
1.85	2.00	0.65	5.00	0.75	1.83	2.58
1.90	2.00	0.65	5.00	0.75	1.83	2.58
1.95	2.00	0.65	5.00	0.75	1.83	2.58
2.00	2.00	0.65	5.00	0.75	1.83	2.58
2.05	2.00	0.65	5.00	0.75	1.83	2.58
2.10	2.00	0.65	5.00	0.75	1.83	2.58
2.15	2.00	0.65	5.00	0.75	1.83	2.58
2.20	2.00	0.65	5.00	0.75	1.83	2.58
2.25	2.00	0.65	5.00	0.75	1.83	2.58
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2.60	2.00	0.65	5.00	0.75	1.83	2.58
2.65	2.00	0.65	5.00	0.75	1.83	2.58
2.70	2.00	0.65	5.00	0.75	1.83	2.58
2.75	2.00	0.65	5.00	0.75	1.83	2.58
2.80	2.00	0.65	5.00	0.75	1.83	2.58
2.85	2.00	0.65	5.00	0.75	1.83	2.58
2.90	2.00	0.65	5.00	0.75	1.83	2.58
2.95	2.00	0.65	5.00	0.75	1.83	2.58
3.00	2.00	0.65	5.00	0.75	1.83	2.58
3.05	2.00	0.65	5.00	0.75	1.83	2.58
3.10	2.00	0.65	5.00	0.75	1.83	2.58
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4.00	2.00	0.65	5.00	0.75	1.83	2.58
4.05	2.00	0.65	5.00	0.75	1.83	2.58
4.10	2.00	0.65	5.00	0.75	1.83	2.58
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5.75	2.00	0.65	5.00	0.75	1.83	2.58
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6.90	2.00	0.65	5.00	0.75	1.83	2.58
6.95	2.00	0.65	5.00	0.75	1.83	2.58
7.00	2.00	0.65	5.00	0.75	1.83	2.58
7.05	2.00	0.64	5.00	0.75	1.83	2.58
7.10	2.00	0.64	5.00	0.75	1.83	2.58
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7.70	2.00	0.64	5.00	0.75	1.83	2.58
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7.80	2.00	0.64	5.00	0.75	1.83	2.58
7.85	2.00	0.64	5.00	0.75	1.83	2.58
7.90	2.00	0.64	5.00	0.75	1.83	2.58
7.95	2.00	0.64	5.00	0.75	1.83	2.58
8.00	2.00	0.64	5.00	0.75	1.83	2.58
8.05	2.00	0.64	5.00	0.75	1.83	2.58
8.10	2.00	0.64	5.00	0.75	1.83	2.58
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8.25	2.00	0.64	5.00	0.75	1.83	2.58
8.30	2.00	0.64	5.00	0.75	1.83	2.58
8.35	2.00	0.64	5.00	0.75	1.83	2.58
8.40	2.00	0.64	5.00	0.75	1.83	2.58
8.45	2.00	0.64	5.00	0.75	1.83	2.58
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8.55	2.00	0.64	5.00	0.75	1.83	2.58
8.60	2.00	0.64	5.00	0.75	1.83	2.58
8.65	2.00	0.64	5.00	0.75	1.83	2.58
8.70	2.00	0.64	5.00	0.75	1.83	2.58
8.75	2.00	0.64	5.00	0.75	1.83	2.58
8.80	2.00	0.64	5.00	0.75	1.83	2.58
8.85	2.00	0.64	5.00	0.75	1.83	2.58
8.90	2.00	0.64	5.00	0.75	1.83	2.58
8.95	2.00	0.64	5.00	0.75	1.83	2.58
9.00	2.00	0.64	5.00	0.75	1.83	2.58
9.05	2.00	0.64	5.00	0.75	1.83	2.58
9.10	2.00	0.64	5.00	0.75	1.83	2.58
9.15	2.00	0.64	5.00	0.75	1.83	2.58
9.20	2.00	0.64	5.00	0.75	1.83	2.58
9.25	2.00	0.64	5.00	0.75	1.83	2.58
9.30	2.00	0.64	5.00	0.75	1.83	2.58
9.35	2.00	0.64	5.00	0.75	1.83	2.58
9.40	2.00	0.64	5.00	0.75	1.83	2.58
9.45	2.00	0.64	5.00	0.75	1.83	2.58
9.50	2.00	0.64	5.00	0.75	1.83	2.58
9.55	2.00	0.64	5.00	0.75	1.83	2.58
9.60	2.00	0.64	5.00	0.75	1.83	2.58
9.65	2.00	0.64	5.00	0.75	1.83	2.58
9.70	2.00	0.64	5.00	0.75	1.83	2.58
9.75	2.00	0.64	5.00	0.75	1.83	2.58
9.80	2.00	0.64	5.00	0.75	1.83	2.58

9.85	2.00	0.64	5.00	0.75	1.83	2.58
9.90	2.00	0.64	5.00	0.75	1.83	2.58
9.95	2.00	0.64	5.00	0.75	1.83	2.58
10.00	2.48	0.64	5.00	0.75	1.83	2.58
10.05	2.48	0.64	5.00	0.75	1.83	2.58
10.10	2.48	0.64	5.00	0.75	1.83	2.58
10.15	2.48	0.64	5.00	0.75	1.83	2.58
10.20	2.48	0.64	5.00	0.75	1.83	2.57
10.25	2.48	0.64	5.00	0.75	1.83	2.57
10.30	2.48	0.64	5.00	0.75	1.82	2.57
10.35	2.48	0.64	5.00	0.75	1.82	2.57
10.40	2.48	0.64	5.00	0.75	1.82	2.56
10.45	2.48	0.64	5.00	0.75	1.81	2.56
10.50	2.48	0.64	5.00	0.75	1.81	2.56
10.55	2.48	0.64	5.00	0.75	1.81	2.55
10.60	2.48	0.64	5.00	0.75	1.80	2.55
10.65	2.48	0.64	5.00	0.75	1.80	2.55
10.70	2.48	0.64	5.00	0.75	1.80	2.54
10.75	2.48	0.64	5.00	0.75	1.79	2.54
10.80	2.48	0.64	5.00	0.75	1.79	2.54
10.85	2.48	0.64	5.00	0.75	1.79	2.53
10.90	2.48	0.64	5.00	0.75	1.78	2.53
10.95	2.48	0.64	5.00	0.75	1.78	2.53
11.00	2.48	0.64	5.00	0.75	1.78	2.52
11.05	2.48	0.64	5.00	0.75	1.77	2.52
11.10	2.48	0.64	5.00	0.75	1.77	2.52
11.15	2.48	0.64	5.00	0.75	1.77	2.52
11.20	2.48	0.64	5.00	0.75	1.77	2.52
11.25	2.48	0.64	5.00	0.75	1.77	2.52
11.30	2.48	0.64	5.00	0.75	1.77	2.52
11.35	2.48	0.64	5.00	0.75	1.77	2.52
11.40	2.48	0.64	5.00	0.75	1.77	2.52
11.45	2.48	0.64	5.00	0.75	1.77	2.51
11.50	2.48	0.64	5.00	0.75	1.77	2.51
11.55	2.48	0.64	5.00	0.75	1.77	2.51
11.60	2.48	0.64	5.00	0.75	1.77	2.51
11.65	2.48	0.64	5.00	0.75	1.77	2.51
11.70	2.48	0.64	5.00	0.75	1.77	2.51
11.75	2.48	0.64	5.00	0.75	1.76	2.51
11.80	2.48	0.64	5.00	0.75	1.76	2.51
11.85	2.48	0.64	5.00	0.75	1.76	2.51
11.90	2.48	0.64	5.00	0.75	1.76	2.51
11.95	2.48	0.64	5.00	0.75	1.76	2.51
12.00	2.48	0.64	5.00	0.75	1.76	2.51
12.05	2.48	0.64	5.00	0.75	1.76	2.51
12.10	2.48	0.64	5.00	0.75	1.76	2.51
12.15	2.48	0.64	5.00	0.75	1.76	2.51
12.20	2.48	0.64	5.00	0.75	1.76	2.50
12.25	2.48	0.64	5.00	0.75	1.76	2.50
12.30	2.48	0.64	5.00	0.75	1.76	2.50
12.35	2.48	0.64	5.00	0.75	1.76	2.50
12.40	2.48	0.64	5.00	0.75	1.76	2.50
12.45	2.48	0.64	5.00	0.75	1.75	2.50
12.50	2.48	0.64	5.00	0.75	1.75	2.50
12.55	2.48	0.64	5.00	0.75	1.75	2.50
12.60	2.48	0.64	5.00	0.75	1.75	2.50
12.65	2.48	0.64	5.00	0.75	1.75	2.50
12.70	2.48	0.64	5.00	0.75	1.75	2.50
12.75	2.48	0.64	5.00	0.75	1.75	2.50
12.80	2.48	0.64	5.00	0.75	1.75	2.49
12.85	2.48	0.64	5.00	0.75	1.75	2.49
12.90	2.48	0.64	5.00	0.75	1.75	2.49
12.95	2.48	0.64	5.00	0.75	1.75	2.49
13.00	2.48	0.64	5.00	0.75	1.74	2.49
13.05	2.48	0.64	5.00	0.75	1.74	2.49
13.10	2.48	0.64	5.00	0.75	1.74	2.49
13.15	2.48	0.64	5.00	0.75	1.74	2.49
13.20	2.48	0.64	5.00	0.75	1.74	2.49
13.25	2.48	0.64	5.00	0.75	1.74	2.48
13.30	2.48	0.64	5.00	0.75	1.74	2.48
13.35	2.48	0.64	5.00	0.75	1.73	2.48
13.40	2.48	0.64	5.00	0.75	1.73	2.48
13.45	2.48	0.64	5.00	0.75	1.73	2.48
13.50	2.48	0.64	5.00	0.75	1.73	2.48
13.55	2.48	0.64	5.00	0.75	1.73	2.47
13.60	2.48	0.63	5.00	0.75	1.73	2.47
13.65	2.48	0.63	5.00	0.75	1.72	2.47
13.70	2.48	0.63	5.00	0.75	1.72	2.47
13.75	2.48	0.63	5.00	0.75	1.72	2.46
13.80	2.48	0.63	5.00	0.75	1.72	2.46
13.85	2.48	0.63	5.00	0.75	1.71	2.46
13.90	2.48	0.63	5.00	0.75	1.71	2.46
13.95	2.48	0.63	5.00	0.75	1.71	2.45
14.00	2.48	0.63	5.00	0.75	1.71	2.45
14.05	2.48	0.63	5.00	0.75	1.70	2.45
14.10	2.48	0.63	5.00	0.75	1.70	2.44
14.15	2.48	0.63	5.00	0.75	1.69	2.44
14.20	2.48	0.63	5.00	0.75	1.69	2.44
14.25	2.48	0.63	5.00	0.75	1.69	2.43
14.30	0.53	0.63	5.00	0.75	1.68	2.43

14.35	0.49	0.63	5.00	0.75	1.68	2.42
14.40	0.47	0.63	5.00	0.75	1.67	2.42
14.45	0.45	0.63	5.00	0.75	1.67	2.42
14.50	0.44	0.63	5.00	0.75	1.66	2.41
14.55	0.43	0.63	5.00	0.75	1.66	2.40
14.60	0.42	0.63	5.00	0.75	1.65	2.40
14.65	0.41	0.63	5.00	0.75	1.65	2.39
14.70	0.40	0.63	5.00	0.75	1.64	2.39
14.75	0.39	0.63	5.00	0.75	1.63	2.38
14.80	0.44	0.63	5.00	0.75	1.63	2.37
14.85	0.43	0.63	5.00	0.75	1.62	2.37
14.90	0.42	0.63	5.00	0.75	1.61	2.36
14.95	0.41	0.63	5.00	0.75	1.61	2.35
15.00	0.40	0.63	5.00	0.75	1.60	2.35
15.05	0.39	0.63	5.00	0.75	1.59	2.34
15.10	0.39	0.63	5.00	0.75	1.59	2.33
15.15	0.39	0.63	5.00	0.75	1.58	2.33
15.20	0.38	0.63	5.00	0.75	1.57	2.32
15.25	0.38	0.63	5.00	0.75	1.56	2.31
15.30	0.38	0.63	5.00	0.75	1.56	2.30
15.35	0.37	0.63	5.00	0.75	1.55	2.30
15.40	0.37	0.63	5.00	0.75	1.54	2.29
15.45	0.37	0.63	5.00	0.75	1.53	2.28
15.50	0.36	0.63	5.00	0.75	1.53	2.27
15.55	0.36	0.63	5.00	0.75	1.52	2.27
15.60	0.36	0.63	5.00	0.75	1.51	2.26
15.65	0.35	0.63	5.00	0.75	1.50	2.25
15.70	0.35	0.63	5.00	0.75	1.50	2.24
15.75	0.35	0.63	5.00	0.75	1.49	2.23
15.80	0.35	0.63	5.00	0.75	1.48	2.23
15.85	0.34	0.63	5.00	0.75	1.47	2.22
15.90	0.34	0.63	5.00	0.75	1.46	2.21
15.95	0.34	0.63	5.00	0.75	1.46	2.20
16.00	0.33	0.63	5.00	0.75	1.45	2.19
16.05	0.33	0.63	5.00	0.75	1.44	2.19
16.10	0.33	0.63	5.00	0.75	1.43	2.18
16.15	0.33	0.63	5.00	0.75	1.42	2.17
16.20	0.33	0.63	5.00	0.75	1.41	2.16
16.25	0.32	0.63	5.00	0.75	1.41	2.15
16.30	0.32	0.63	5.00	0.75	1.40	2.14
16.35	0.32	0.63	5.00	0.75	1.39	2.13
16.40	0.32	0.63	5.00	0.75	1.38	2.13
16.45	0.31	0.63	5.00	0.75	1.37	2.12
16.50	0.31	0.63	5.00	0.75	1.36	2.11
16.55	0.31	0.63	5.00	0.75	1.35	2.10
16.60	0.31	0.63	5.00	0.75	1.34	2.09
16.65	0.31	0.63	5.00	0.75	1.33	2.08
16.70	0.30	0.63	5.00	0.75	1.33	2.07
16.75	0.30	0.63	5.00	0.75	1.32	2.06
16.80	0.30	0.63	5.00	0.75	1.31	2.05
16.85	0.30	0.63	5.00	0.75	1.30	2.04
16.90	0.30	0.63	5.00	0.75	1.29	2.03
16.95	0.29	0.63	5.00	0.75	1.28	2.03
17.00	0.29	0.63	5.00	0.75	1.27	2.02
17.05	0.29	0.63	5.00	0.75	1.26	2.01
17.10	0.29	0.63	5.00	0.75	1.25	2.00
17.15	0.29	0.63	5.00	0.75	1.24	1.99
17.20	0.28	0.63	5.00	0.75	1.23	1.98
17.25	0.28	0.63	5.00	0.75	1.22	1.97
17.30	0.28	0.63	5.00	0.75	1.21	1.96
17.35	0.28	0.63	5.00	0.75	1.20	1.95
17.40	0.28	0.63	5.00	0.75	1.19	1.94
17.45	0.28	0.63	5.00	0.75	1.18	1.93
17.50	0.27	0.63	5.00	0.75	1.17	1.92
17.55	0.27	0.63	5.00	0.75	1.16	1.91
17.60	0.27	0.63	5.00	0.75	1.15	1.90
17.65	0.27	0.63	5.00	0.75	1.14	1.89
17.70	0.27	0.63	5.00	0.75	1.13	1.87
17.75	0.27	0.63	5.00	0.75	1.12	1.86
17.80	0.26	0.63	5.00	0.75	1.11	1.85
17.85	0.26	0.63	5.00	0.75	1.10	1.84
17.90	0.26	0.63	5.00	0.75	1.09	1.83
17.95	0.26	0.63	5.00	0.75	1.07	1.82
18.00	0.26	0.63	5.00	0.75	1.06	1.81
18.05	0.26	0.63	5.00	0.75	1.05	1.80
18.10	0.26	0.63	5.00	0.75	1.04	1.79
18.15	0.25	0.63	5.00	0.75	1.03	1.78
18.20	0.25	0.63	5.00	0.75	1.02	1.76
18.25	0.25	0.63	5.00	0.75	1.01	1.75
18.30	0.25	0.63	5.00	0.75	1.00	1.74
18.35	0.25	0.63	5.00	0.75	0.98	1.73
18.40	0.25	0.63	5.00	0.75	0.97	1.72
18.45	0.25	0.63	5.00	0.75	0.96	1.71
18.50	0.24	0.63	5.00	0.75	0.95	1.69
18.55	0.24	0.63	5.00	0.75	0.94	1.68
18.60	0.24	0.63	5.00	0.75	0.92	1.67
18.65	0.24	0.63	5.00	0.75	0.91	1.66
18.70	0.24	0.63	5.00	0.75	0.90	1.65
18.75	0.24	0.63	5.00	0.75	0.89	1.63
18.80	0.24	0.63	5.00	0.75	0.87	1.62

18.85	0.23	0.63	5.00	0.75	0.86	1.61
18.90	0.23	0.63	5.00	0.75	0.85	1.60
18.95	0.23	0.63	5.00	0.75	0.84	1.58
19.00	0.23	0.63	5.00	0.75	0.82	1.57
19.05	0.23	0.63	5.00	0.75	0.81	1.56
19.10	0.23	0.63	5.00	0.75	0.80	1.54
19.15	0.23	0.63	5.00	0.75	0.78	1.53
19.20	0.22	0.63	5.00	0.75	0.77	1.52
19.25	0.22	0.63	5.00	0.75	0.76	1.50
19.30	0.22	0.63	5.00	0.75	0.74	1.49
19.35	0.22	0.63	5.00	0.75	0.73	1.48
19.40	0.22	0.63	5.00	0.75	0.72	1.46
19.45	0.22	0.63	5.00	0.75	0.70	1.45
19.50	0.22	0.63	5.00	0.75	0.69	1.44
19.55	0.22	0.63	5.00	0.75	0.68	1.42
19.60	0.21	0.63	5.00	0.75	0.66	1.41
19.65	0.21	0.63	5.00	0.75	0.65	1.39
19.70	0.21	0.63	5.00	0.75	0.63	1.38
19.75	0.21	0.63	5.00	0.75	0.62	1.37
19.80	0.21	0.63	5.00	0.75	0.60	1.35
19.85	0.21	0.63	5.00	0.75	0.59	1.34
19.90	0.21	0.63	5.00	0.75	0.58	1.32
19.95	0.21	0.63	5.00	0.75	0.56	1.31
20.00	0.20	0.63	5.00	0.75	0.55	1.29
20.05	0.21	0.63	5.00	0.75	0.53	1.28
20.10	0.21	0.62	5.00	0.75	0.52	1.26
20.15	0.21	0.62	5.00	0.75	0.50	1.25
20.20	0.21	0.62	5.00	0.75	0.49	1.23
20.25	0.21	0.62	5.00	0.75	0.47	1.22
20.30	0.21	0.62	5.00	0.75	0.46	1.20
20.35	0.21	0.62	5.00	0.75	0.44	1.19
20.40	0.21	0.62	5.00	0.75	0.43	1.17
20.45	0.21	0.62	5.00	0.75	0.41	1.16
20.50	0.22	0.62	5.00	0.75	0.40	1.15
20.55	0.22	0.62	5.00	0.75	0.38	1.13
20.60	0.22	0.62	5.00	0.75	0.37	1.12
20.65	0.22	0.62	5.00	0.75	0.36	1.10
20.70	0.22	0.62	5.00	0.75	0.34	1.09
20.75	0.22	0.62	5.00	0.75	0.33	1.08
20.80	0.22	0.62	5.00	0.75	0.32	1.06
20.85	0.22	0.62	5.00	0.75	0.30	1.05
20.90	0.22	0.62	5.00	0.75	0.29	1.03
20.95	0.23	0.62	5.00	0.75	0.28	1.02
21.00	0.23	0.62	5.00	0.75	0.26	1.01
21.05	0.23	0.62	5.00	0.75	0.25	0.99
21.10	0.23	0.62	5.00	0.75	0.24	0.98
21.15	0.23	0.62	5.00	0.75	0.22	0.97
21.20	0.23	0.62	5.00	0.75	0.21	0.96
21.25	0.23	0.62	5.00	0.75	0.20	0.94
21.30	0.23	0.62	5.00	0.75	0.18	0.93
21.35	0.23	0.62	5.00	0.75	0.17	0.92
21.40	0.23	0.62	5.00	0.75	0.16	0.90
21.45	0.24	0.62	5.00	0.75	0.15	0.89
21.50	0.24	0.62	5.00	0.75	0.13	0.88
21.55	0.24	0.62	5.00	0.75	0.12	0.87
21.60	0.24	0.62	5.00	0.75	0.11	0.85
21.65	0.24	0.62	5.00	0.75	0.10	0.84
21.70	0.24	0.62	5.00	0.75	0.08	0.83
21.75	0.24	0.62	5.00	0.75	0.07	0.82
21.80	0.24	0.62	5.00	0.75	0.06	0.81
21.85	0.24	0.62	5.00	0.75	0.05	0.79
21.90	0.24	0.62	5.00	0.75	0.04	0.78
21.95	0.25	0.62	5.00	0.75	0.02	0.77
22.00	0.25	0.62	5.00	0.75	0.01	0.76
22.05	0.25	0.62	0.40*	0.75	0.00	0.75
22.10	0.25	0.62	0.40*	0.74	0.00	0.74
22.15	0.25	0.62	0.40*	0.73	0.00	0.73
22.20	0.25	0.62	0.40*	0.72	0.00	0.72
22.25	0.25	0.62	0.40*	0.71	0.00	0.71
22.30	0.25	0.62	0.41*	0.70	0.00	0.70
22.35	0.25	0.63	0.41*	0.69	0.00	0.69
22.40	0.26	0.63	0.41*	0.68	0.00	0.68
22.45	0.26	0.63	0.41*	0.67	0.00	0.67
22.50	0.26	0.63	0.41*	0.66	0.00	0.66
22.55	0.26	0.63	0.41*	0.65	0.00	0.65
22.60	0.26	0.63	0.41*	0.64	0.00	0.64
22.65	0.26	0.63	0.42*	0.63	0.00	0.63
22.70	0.26	0.63	0.42*	0.62	0.00	0.62
22.75	0.26	0.63	0.42*	0.61	0.00	0.61
22.80	0.26	0.63	0.42*	0.60	0.00	0.60
22.85	0.27	0.63	0.42*	0.59	0.00	0.59
22.90	0.27	0.63	0.42*	0.59	0.00	0.59
22.95	0.27	0.63	0.42*	0.58	0.00	0.58
23.00	0.27	0.63	0.43*	0.57	0.00	0.57
23.05	0.27	0.63	0.43*	0.56	0.00	0.56
23.10	0.27	0.63	0.43*	0.55	0.00	0.55
23.15	0.27	0.63	0.43*	0.54	0.00	0.54
23.20	0.27	0.64	0.43*	0.53	0.00	0.53
23.25	0.28	0.64	0.43*	0.52	0.00	0.52
23.30	0.28	0.64	0.43*	0.51	0.00	0.51

23.35	0.28	0.64	0.44*	0.51	0.00	0.51
23.40	0.28	0.64	0.44*	0.50	0.00	0.50
23.45	0.28	0.64	0.44*	0.49	0.00	0.49
23.50	0.28	0.64	0.44*	0.48	0.00	0.48
23.55	0.28	0.64	0.44*	0.47	0.00	0.47
23.60	0.28	0.64	0.44*	0.46	0.00	0.46
23.65	0.28	0.64	0.45*	0.45	0.00	0.45
23.70	0.29	0.64	0.45*	0.44	0.00	0.44
23.75	0.29	0.64	0.45*	0.44	0.00	0.44
23.80	0.29	0.64	0.45*	0.43	0.00	0.43
23.85	0.29	0.64	0.45*	0.42	0.00	0.42
23.90	0.29	0.64	0.45*	0.41	0.00	0.41
23.95	0.29	0.64	0.45*	0.40	0.00	0.40
24.00	0.29	0.64	0.46*	0.39	0.00	0.39
24.05	0.29	0.64	0.46*	0.39	0.00	0.39
24.10	0.30	0.65	0.46*	0.38	0.00	0.38
24.15	0.30	0.65	0.46*	0.37	0.00	0.37
24.20	0.30	0.65	0.46*	0.36	0.00	0.36
24.25	0.30	0.65	0.46*	0.35	0.00	0.35
24.30	0.30	0.65	0.47*	0.34	0.00	0.34
24.35	0.30	0.65	0.47*	0.34	0.00	0.34
24.40	0.30	0.65	0.47*	0.33	0.00	0.33
24.45	0.30	0.65	0.47*	0.32	0.00	0.32
24.50	0.31	0.65	0.47*	0.31	0.00	0.31
24.55	0.31	0.65	0.47*	0.30	0.00	0.30
24.60	0.31	0.65	0.47*	0.30	0.00	0.30
24.65	0.31	0.65	0.48*	0.29	0.00	0.29
24.70	0.31	0.65	0.48*	0.28	0.00	0.28
24.75	0.31	0.65	0.48*	0.27	0.00	0.27
24.80	0.31	0.65	0.48*	0.26	0.00	0.26
24.85	0.32	0.65	0.48*	0.26	0.00	0.26
24.90	0.32	0.65	0.48*	0.25	0.00	0.25
24.95	0.32	0.65	0.49*	0.24	0.00	0.24
25.00	0.32	0.65	0.49*	0.23	0.00	0.23
25.05	0.32	0.66	0.49*	0.22	0.00	0.22
25.10	0.33	0.66	0.50*	0.22	0.00	0.22
25.15	0.33	0.66	0.51*	0.21	0.00	0.21
25.20	0.34	0.66	0.51*	0.20	0.00	0.20
25.25	0.34	0.66	0.52*	0.19	0.00	0.19
25.30	0.35	0.66	0.53*	0.19	0.00	0.19
25.35	0.35	0.66	0.53*	0.18	0.00	0.18
25.40	0.36	0.66	0.54*	0.17	0.00	0.17
25.45	0.36	0.66	0.55*	0.17	0.00	0.17
25.50	0.37	0.66	0.56*	0.16	0.00	0.16
25.55	0.37	0.66	0.57*	0.15	0.00	0.15
25.60	0.38	0.66	0.57*	0.14	0.00	0.14
25.65	0.39	0.66	0.58*	0.14	0.00	0.14
25.70	0.39	0.66	0.59*	0.13	0.00	0.13
25.75	0.40	0.66	0.60*	0.12	0.00	0.12
25.80	0.40	0.66	0.61*	0.12	0.00	0.12
25.85	0.41	0.66	0.62*	0.11	0.00	0.11
25.90	0.42	0.66	0.63*	0.11	0.00	0.11
25.95	0.43	0.66	0.64*	0.10	0.00	0.10
26.00	0.44	0.66	0.66*	0.09	0.00	0.09
26.05	0.44	0.67	0.67*	0.09	0.00	0.09
26.10	0.45	0.67	0.68*	0.08	0.00	0.08
26.15	0.47	0.67	0.70*	0.08	0.00	0.08
26.20	0.48	0.67	0.72*	0.07	0.00	0.07
26.25	0.50	0.67	0.75*	0.07	0.00	0.07
26.30	0.52	0.67	0.78*	0.06	0.00	0.06
26.35	0.57	0.67	0.85*	0.06	0.00	0.06
26.40	2.48	0.67	3.71	0.05	0.00	0.05
26.45	2.48	0.67	3.71	0.05	0.00	0.05
26.50	2.48	0.67	3.71	0.04	0.00	0.04
26.55	2.48	0.67	3.71	0.04	0.00	0.04
26.60	2.48	0.67	3.70	0.04	0.00	0.04
26.65	2.48	0.67	3.70	0.03	0.00	0.03
26.70	2.48	0.67	3.70	0.03	0.00	0.03
26.75	2.48	0.67	3.69	0.03	0.00	0.03
26.80	2.48	0.67	3.69	0.02	0.00	0.02
26.85	2.48	0.67	3.69	0.02	0.00	0.02
26.90	2.48	0.67	3.69	0.02	0.00	0.02
26.95	2.48	0.67	3.68	0.02	0.00	0.02
27.00	2.48	0.67	3.68	0.01	0.00	0.01
27.05	2.48	0.68	3.68	0.01	0.00	0.01
27.10	2.48	0.68	3.68	0.01	0.00	0.01
27.15	2.48	0.68	3.67	0.01	0.00	0.01
27.20	2.48	0.68	3.67	0.01	0.00	0.01
27.25	2.48	0.68	3.67	0.01	0.00	0.01
27.30	2.48	0.68	3.67	0.01	0.00	0.01
27.35	2.48	0.68	3.66	0.01	0.00	0.01
27.40	2.48	0.68	3.66	0.01	0.00	0.01
27.45	2.48	0.68	3.66	0.00	0.00	0.00
27.50	2.48	0.68	3.66	0.00	0.00	0.00
27.55	2.48	0.68	3.65	0.00	0.00	0.00
27.60	2.48	0.68	3.65	0.00	0.00	0.00
27.65	2.48	0.68	3.65	0.00	0.00	0.00
27.70	2.48	0.68	3.65	0.00	0.00	0.00
27.75	2.48	0.68	3.64	0.00	0.00	0.00
27.80	2.48	0.68	3.64	0.00	0.00	0.00

27.85	2.48	0.68	3.64	0.00	0.00	0.00
27.90	2.48	0.68	3.64	0.00	0.00	0.00
27.95	2.48	0.68	3.63	0.00	0.00	0.00
28.00	2.48	0.68	3.63	0.00	0.00	0.00
28.05	2.48	0.68	3.63	0.00	0.00	0.00
28.10	2.48	0.69	3.63	0.00	0.00	0.00
28.15	2.48	0.69	3.62	0.00	0.00	0.00
28.20	2.48	0.69	3.62	0.00	0.00	0.00
28.25	2.48	0.69	3.62	0.00	0.00	0.00
28.30	2.48	0.69	3.62	0.00	0.00	0.00
28.35	2.48	0.69	3.61	0.00	0.00	0.00
28.40	2.48	0.69	3.61	0.00	0.00	0.00
28.45	2.48	0.69	3.61	0.00	0.00	0.00
28.50	2.48	0.69	3.61	0.00	0.00	0.00
28.55	2.48	0.69	3.60	0.00	0.00	0.00
28.60	2.48	0.69	3.60	0.00	0.00	0.00
28.65	2.48	0.69	3.60	0.00	0.00	0.00
28.70	2.48	0.69	3.60	0.00	0.00	0.00
28.75	2.48	0.69	3.59	0.00	0.00	0.00
28.80	2.48	0.69	3.59	0.00	0.00	0.00
28.85	2.48	0.69	3.59	0.00	0.00	0.00
28.90	2.48	0.69	3.59	0.00	0.00	0.00
28.95	2.48	0.69	3.59	0.00	0.00	0.00
29.00	2.48	0.69	3.58	0.00	0.00	0.00
29.05	2.48	0.69	3.58	0.00	0.00	0.00
29.10	2.48	0.69	3.58	0.00	0.00	0.00
29.15	2.48	0.69	3.58	0.00	0.00	0.00
29.20	2.48	0.70	3.57	0.00	0.00	0.00
29.25	2.48	0.70	3.57	0.00	0.00	0.00
29.30	2.48	0.70	3.57	0.00	0.00	0.00
29.35	2.48	0.70	3.57	0.00	0.00	0.00
29.40	2.48	0.70	3.57	0.00	0.00	0.00
29.45	2.48	0.70	3.56	0.00	0.00	0.00
29.50	2.48	0.70	3.56	0.00	0.00	0.00
29.55	2.48	0.70	3.56	0.00	0.00	0.00
29.60	2.48	0.70	3.56	0.00	0.00	0.00
29.65	2.48	0.70	3.55	0.00	0.00	0.00
29.70	2.48	0.70	3.55	0.00	0.00	0.00
29.75	2.48	0.70	3.55	0.00	0.00	0.00
29.80	2.48	0.70	3.55	0.00	0.00	0.00
29.85	2.48	0.70	3.55	0.00	0.00	0.00
29.90	2.48	0.70	3.54	0.00	0.00	0.00
29.95	2.48	0.70	3.54	0.00	0.00	0.00
30.00	2.48	0.70	3.54	0.00	0.00	0.00
30.05	2.48	0.70	3.54	0.00	0.00	0.00
30.10	2.48	0.70	3.54	0.00	0.00	0.00
30.15	2.48	0.70	3.54	0.00	0.00	0.00
30.20	2.48	0.70	3.54	0.00	0.00	0.00
30.25	2.48	0.70	3.53	0.00	0.00	0.00
30.30	2.48	0.70	3.53	0.00	0.00	0.00
30.35	2.48	0.70	3.53	0.00	0.00	0.00
30.40	2.48	0.70	3.53	0.00	0.00	0.00
30.45	2.48	0.70	3.53	0.00	0.00	0.00
30.50	2.48	0.70	3.53	0.00	0.00	0.00
30.55	2.48	0.70	3.53	0.00	0.00	0.00
30.60	2.48	0.70	3.53	0.00	0.00	0.00
30.65	2.48	0.70	3.53	0.00	0.00	0.00
30.70	2.48	0.70	3.53	0.00	0.00	0.00
30.75	2.48	0.70	3.52	0.00	0.00	0.00
30.80	2.48	0.70	3.52	0.00	0.00	0.00
30.85	2.48	0.71	3.52	0.00	0.00	0.00
30.90	2.48	0.71	3.52	0.00	0.00	0.00
30.95	2.48	0.71	3.52	0.00	0.00	0.00
31.00	2.48	0.71	3.52	0.00	0.00	0.00
31.05	2.48	0.71	3.52	0.00	0.00	0.00
31.10	2.48	0.71	3.52	0.00	0.00	0.00
31.15	2.48	0.71	3.52	0.00	0.00	0.00
31.20	2.48	0.71	3.52	0.00	0.00	0.00
31.25	2.48	0.71	3.52	0.00	0.00	0.00
31.30	2.48	0.71	3.51	0.00	0.00	0.00
31.35	2.48	0.71	3.51	0.00	0.00	0.00
31.40	2.48	0.71	3.51	0.00	0.00	0.00
31.45	2.48	0.71	3.51	0.00	0.00	0.00
31.50	2.48	0.71	3.51	0.00	0.00	0.00
31.55	2.48	0.71	3.51	0.00	0.00	0.00
31.60	2.48	0.71	3.51	0.00	0.00	0.00
31.65	2.48	0.71	3.51	0.00	0.00	0.00
31.70	2.48	0.71	3.51	0.00	0.00	0.00
31.75	2.48	0.71	3.51	0.00	0.00	0.00
31.80	2.48	0.71	3.51	0.00	0.00	0.00
31.85	2.48	0.71	3.51	0.00	0.00	0.00
31.90	2.48	0.71	3.50	0.00	0.00	0.00
31.95	2.48	0.71	3.50	0.00	0.00	0.00
32.00	2.48	0.71	3.50	0.00	0.00	0.00
32.05	2.48	0.71	3.50	0.00	0.00	0.00
32.10	2.48	0.71	3.50	0.00	0.00	0.00
32.15	2.48	0.71	3.50	0.00	0.00	0.00
32.20	2.48	0.71	3.50	0.00	0.00	0.00
32.25	2.48	0.71	3.50	0.00	0.00	0.00
32.30	2.48	0.71	3.50	0.00	0.00	0.00

32.35	2.48	0.71	3.50	0.00	0.00	0.00
32.40	2.48	0.71	3.50	0.00	0.00	0.00
32.45	2.48	0.71	3.50	0.00	0.00	0.00
32.50	2.48	0.71	3.50	0.00	0.00	0.00
32.55	2.48	0.71	3.49	0.00	0.00	0.00
32.60	2.48	0.71	3.49	0.00	0.00	0.00
32.65	2.48	0.71	3.49	0.00	0.00	0.00
32.70	2.48	0.71	3.49	0.00	0.00	0.00
32.75	2.48	0.71	3.49	0.00	0.00	0.00
32.80	2.48	0.71	3.49	0.00	0.00	0.00
32.85	2.48	0.71	3.49	0.00	0.00	0.00
32.90	2.48	0.71	3.49	0.00	0.00	0.00
32.95	2.48	0.71	3.49	0.00	0.00	0.00
33.00	2.48	0.71	3.49	0.00	0.00	0.00
33.05	2.48	0.71	3.49	0.00	0.00	0.00
33.10	2.48	0.71	3.49	0.00	0.00	0.00
33.15	2.48	0.71	3.49	0.00	0.00	0.00
33.20	2.48	0.71	3.49	0.00	0.00	0.00
33.25	2.48	0.71	3.49	0.00	0.00	0.00
33.30	2.48	0.71	3.48	0.00	0.00	0.00
33.35	2.48	0.71	3.48	0.00	0.00	0.00
33.40	2.48	0.71	3.48	0.00	0.00	0.00
33.45	2.48	0.71	3.48	0.00	0.00	0.00
33.50	2.48	0.71	3.48	0.00	0.00	0.00
33.55	2.48	0.71	3.48	0.00	0.00	0.00
33.60	2.48	0.71	3.48	0.00	0.00	0.00
33.65	2.48	0.71	3.48	0.00	0.00	0.00
33.70	2.48	0.71	3.48	0.00	0.00	0.00
33.75	2.48	0.71	3.48	0.00	0.00	0.00
33.80	2.48	0.71	3.48	0.00	0.00	0.00
33.85	2.48	0.71	3.48	0.00	0.00	0.00
33.90	2.48	0.71	3.48	0.00	0.00	0.00
33.95	2.48	0.71	3.48	0.00	0.00	0.00
34.00	2.48	0.71	3.48	0.00	0.00	0.00
34.05	2.48	0.71	3.48	0.00	0.00	0.00
34.10	2.48	0.71	3.47	0.00	0.00	0.00
34.15	2.48	0.72	3.47	0.00	0.00	0.00
34.20	2.48	0.72	3.47	0.00	0.00	0.00
34.25	2.48	0.72	3.47	0.00	0.00	0.00
34.30	2.48	0.72	3.47	0.00	0.00	0.00
34.35	2.48	0.72	3.47	0.00	0.00	0.00
34.40	2.48	0.72	3.47	0.00	0.00	0.00
34.45	2.48	0.72	3.47	0.00	0.00	0.00
34.50	2.48	0.72	3.47	0.00	0.00	0.00
34.55	2.48	0.72	3.47	0.00	0.00	0.00
34.60	2.48	0.72	3.47	0.00	0.00	0.00
34.65	2.48	0.72	3.47	0.00	0.00	0.00
34.70	2.48	0.72	3.47	0.00	0.00	0.00
34.75	2.48	0.72	3.47	0.00	0.00	0.00
34.80	2.48	0.72	3.47	0.00	0.00	0.00
34.85	2.48	0.72	3.47	0.00	0.00	0.00
34.90	2.48	0.72	3.47	0.00	0.00	0.00
34.95	2.48	0.72	3.47	0.00	0.00	0.00
35.00	2.48	0.72	3.47	0.00	0.00	0.00
35.05	2.00	0.72	5.00	0.00	0.00	0.00
35.10	2.00	0.72	5.00	0.00	0.00	0.00
35.15	2.00	0.72	5.00	0.00	0.00	0.00
35.20	2.00	0.72	5.00	0.00	0.00	0.00
35.25	2.00	0.72	5.00	0.00	0.00	0.00
35.30	2.00	0.72	5.00	0.00	0.00	0.00
35.35	2.00	0.72	5.00	0.00	0.00	0.00
35.40	2.00	0.72	5.00	0.00	0.00	0.00
35.45	2.00	0.72	5.00	0.00	0.00	0.00
35.50	2.00	0.72	5.00	0.00	0.00	0.00
35.55	2.00	0.72	5.00	0.00	0.00	0.00
35.60	2.00	0.72	5.00	0.00	0.00	0.00
35.65	2.00	0.72	5.00	0.00	0.00	0.00
35.70	2.00	0.72	5.00	0.00	0.00	0.00
35.75	2.00	0.72	5.00	0.00	0.00	0.00
35.80	2.00	0.72	5.00	0.00	0.00	0.00
35.85	2.00	0.72	5.00	0.00	0.00	0.00
35.90	2.00	0.72	5.00	0.00	0.00	0.00
35.95	2.00	0.72	5.00	0.00	0.00	0.00
36.00	2.00	0.72	5.00	0.00	0.00	0.00
36.05	2.00	0.72	5.00	0.00	0.00	0.00
36.10	2.00	0.72	5.00	0.00	0.00	0.00
36.15	2.00	0.72	5.00	0.00	0.00	0.00
36.20	2.00	0.72	5.00	0.00	0.00	0.00
36.25	2.00	0.72	5.00	0.00	0.00	0.00
36.30	2.00	0.72	5.00	0.00	0.00	0.00
36.35	2.00	0.72	5.00	0.00	0.00	0.00
36.40	2.00	0.72	5.00	0.00	0.00	0.00
36.45	2.00	0.72	5.00	0.00	0.00	0.00
36.50	2.00	0.72	5.00	0.00	0.00	0.00
36.55	2.00	0.72	5.00	0.00	0.00	0.00
36.60	2.00	0.72	5.00	0.00	0.00	0.00
36.65	2.00	0.72	5.00	0.00	0.00	0.00
36.70	2.00	0.72	5.00	0.00	0.00	0.00
36.75	2.00	0.72	5.00	0.00	0.00	0.00
36.80	2.00	0.72	5.00	0.00	0.00	0.00

36.85	2.00	0.72	5.00	0.00	0.00	0.00
36.90	2.00	0.72	5.00	0.00	0.00	0.00
36.95	2.00	0.72	5.00	0.00	0.00	0.00
37.00	2.00	0.72	5.00	0.00	0.00	0.00
37.05	2.00	0.72	5.00	0.00	0.00	0.00
37.10	2.00	0.72	5.00	0.00	0.00	0.00
37.15	2.00	0.72	5.00	0.00	0.00	0.00
37.20	2.00	0.72	5.00	0.00	0.00	0.00
37.25	2.00	0.72	5.00	0.00	0.00	0.00
37.30	2.00	0.72	5.00	0.00	0.00	0.00
37.35	2.00	0.72	5.00	0.00	0.00	0.00
37.40	2.00	0.72	5.00	0.00	0.00	0.00
37.45	2.00	0.72	5.00	0.00	0.00	0.00
37.50	2.00	0.72	5.00	0.00	0.00	0.00
37.55	2.00	0.72	5.00	0.00	0.00	0.00
37.60	2.00	0.72	5.00	0.00	0.00	0.00
37.65	2.00	0.72	5.00	0.00	0.00	0.00
37.70	2.00	0.72	5.00	0.00	0.00	0.00
37.75	2.00	0.72	5.00	0.00	0.00	0.00
37.80	2.00	0.72	5.00	0.00	0.00	0.00
37.85	2.00	0.72	5.00	0.00	0.00	0.00
37.90	2.00	0.72	5.00	0.00	0.00	0.00
37.95	2.00	0.72	5.00	0.00	0.00	0.00
38.00	2.00	0.72	5.00	0.00	0.00	0.00
38.05	2.00	0.72	5.00	0.00	0.00	0.00
38.10	2.00	0.72	5.00	0.00	0.00	0.00
38.15	2.00	0.72	5.00	0.00	0.00	0.00
38.20	2.00	0.72	5.00	0.00	0.00	0.00
38.25	2.00	0.72	5.00	0.00	0.00	0.00
38.30	2.00	0.72	5.00	0.00	0.00	0.00
38.35	2.00	0.72	5.00	0.00	0.00	0.00
38.40	2.00	0.72	5.00	0.00	0.00	0.00
38.45	2.00	0.72	5.00	0.00	0.00	0.00
38.50	2.00	0.72	5.00	0.00	0.00	0.00
38.55	2.00	0.72	5.00	0.00	0.00	0.00
38.60	2.00	0.72	5.00	0.00	0.00	0.00
38.65	2.00	0.72	5.00	0.00	0.00	0.00
38.70	2.00	0.72	5.00	0.00	0.00	0.00
38.75	2.00	0.72	5.00	0.00	0.00	0.00
38.80	2.00	0.72	5.00	0.00	0.00	0.00
38.85	2.00	0.72	5.00	0.00	0.00	0.00
38.90	2.00	0.72	5.00	0.00	0.00	0.00
38.95	2.00	0.72	5.00	0.00	0.00	0.00
39.00	2.00	0.72	5.00	0.00	0.00	0.00
39.05	2.00	0.72	5.00	0.00	0.00	0.00
39.10	2.00	0.72	5.00	0.00	0.00	0.00
39.15	2.00	0.72	5.00	0.00	0.00	0.00
39.20	2.00	0.72	5.00	0.00	0.00	0.00
39.25	2.00	0.72	5.00	0.00	0.00	0.00
39.30	2.00	0.72	5.00	0.00	0.00	0.00
39.35	2.00	0.72	5.00	0.00	0.00	0.00
39.40	2.00	0.72	5.00	0.00	0.00	0.00
39.45	2.00	0.72	5.00	0.00	0.00	0.00
39.50	2.00	0.72	5.00	0.00	0.00	0.00
39.55	2.00	0.72	5.00	0.00	0.00	0.00
39.60	2.00	0.72	5.00	0.00	0.00	0.00
39.65	2.00	0.72	5.00	0.00	0.00	0.00
39.70	2.00	0.72	5.00	0.00	0.00	0.00
39.75	2.00	0.72	5.00	0.00	0.00	0.00
39.80	2.00	0.72	5.00	0.00	0.00	0.00
39.85	2.00	0.72	5.00	0.00	0.00	0.00
39.90	2.00	0.72	5.00	0.00	0.00	0.00
39.95	2.00	0.72	5.00	0.00	0.00	0.00
40.00	2.00	0.72	5.00	0.00	0.00	0.00
40.05	2.00	0.72	5.00	0.00	0.00	0.00
40.10	2.00	0.72	5.00	0.00	0.00	0.00
40.15	2.00	0.72	5.00	0.00	0.00	0.00
40.20	2.00	0.72	5.00	0.00	0.00	0.00
40.25	2.00	0.72	5.00	0.00	0.00	0.00
40.30	2.00	0.72	5.00	0.00	0.00	0.00
40.35	2.00	0.72	5.00	0.00	0.00	0.00
40.40	2.00	0.72	5.00	0.00	0.00	0.00
40.45	2.00	0.72	5.00	0.00	0.00	0.00
40.50	2.00	0.72	5.00	0.00	0.00	0.00
40.55	2.00	0.72	5.00	0.00	0.00	0.00
40.60	2.00	0.72	5.00	0.00	0.00	0.00
40.65	2.00	0.72	5.00	0.00	0.00	0.00
40.70	2.00	0.72	5.00	0.00	0.00	0.00
40.75	2.00	0.72	5.00	0.00	0.00	0.00
40.80	2.00	0.72	5.00	0.00	0.00	0.00
40.85	2.00	0.72	5.00	0.00	0.00	0.00
40.90	2.00	0.72	5.00	0.00	0.00	0.00
40.95	2.00	0.72	5.00	0.00	0.00	0.00
41.00	2.00	0.72	5.00	0.00	0.00	0.00
41.05	2.00	0.72	5.00	0.00	0.00	0.00
41.10	2.00	0.72	5.00	0.00	0.00	0.00
41.15	2.00	0.72	5.00	0.00	0.00	0.00
41.20	2.00	0.72	5.00	0.00	0.00	0.00
41.25	2.00	0.72	5.00	0.00	0.00	0.00
41.30	2.00	0.72	5.00	0.00	0.00	0.00

41.35	2.00	0.72	5.00	0.00	0.00	0.00
41.40	2.00	0.72	5.00	0.00	0.00	0.00
41.45	2.00	0.72	5.00	0.00	0.00	0.00
41.50	2.00	0.72	5.00	0.00	0.00	0.00
41.55	2.00	0.72	5.00	0.00	0.00	0.00
41.60	2.00	0.72	5.00	0.00	0.00	0.00
41.65	2.00	0.72	5.00	0.00	0.00	0.00
41.70	2.00	0.72	5.00	0.00	0.00	0.00
41.75	2.00	0.72	5.00	0.00	0.00	0.00
41.80	2.00	0.72	5.00	0.00	0.00	0.00
41.85	2.00	0.72	5.00	0.00	0.00	0.00
41.90	2.00	0.72	5.00	0.00	0.00	0.00
41.95	2.00	0.72	5.00	0.00	0.00	0.00
42.00	2.00	0.72	5.00	0.00	0.00	0.00
42.05	2.00	0.72	5.00	0.00	0.00	0.00
42.10	2.00	0.72	5.00	0.00	0.00	0.00
42.15	2.00	0.72	5.00	0.00	0.00	0.00
42.20	2.00	0.72	5.00	0.00	0.00	0.00
42.25	2.00	0.72	5.00	0.00	0.00	0.00
42.30	2.00	0.72	5.00	0.00	0.00	0.00
42.35	2.00	0.72	5.00	0.00	0.00	0.00
42.40	2.00	0.72	5.00	0.00	0.00	0.00
42.45	2.00	0.72	5.00	0.00	0.00	0.00
42.50	2.00	0.72	5.00	0.00	0.00	0.00
42.55	2.00	0.72	5.00	0.00	0.00	0.00
42.60	2.00	0.72	5.00	0.00	0.00	0.00
42.65	2.00	0.72	5.00	0.00	0.00	0.00
42.70	2.00	0.72	5.00	0.00	0.00	0.00
42.75	2.00	0.72	5.00	0.00	0.00	0.00
42.80	2.00	0.72	5.00	0.00	0.00	0.00
42.85	2.00	0.72	5.00	0.00	0.00	0.00
42.90	2.00	0.72	5.00	0.00	0.00	0.00
42.95	2.00	0.72	5.00	0.00	0.00	0.00
43.00	2.00	0.72	5.00	0.00	0.00	0.00
43.05	2.00	0.72	5.00	0.00	0.00	0.00
43.10	2.00	0.72	5.00	0.00	0.00	0.00
43.15	2.00	0.72	5.00	0.00	0.00	0.00
43.20	2.00	0.72	5.00	0.00	0.00	0.00
43.25	2.00	0.72	5.00	0.00	0.00	0.00
43.30	2.00	0.72	5.00	0.00	0.00	0.00
43.35	2.00	0.72	5.00	0.00	0.00	0.00
43.40	2.00	0.72	5.00	0.00	0.00	0.00
43.45	2.00	0.72	5.00	0.00	0.00	0.00
43.50	2.00	0.72	5.00	0.00	0.00	0.00
43.55	2.00	0.72	5.00	0.00	0.00	0.00
43.60	2.00	0.72	5.00	0.00	0.00	0.00
43.65	2.00	0.72	5.00	0.00	0.00	0.00
43.70	2.00	0.72	5.00	0.00	0.00	0.00
43.75	2.00	0.72	5.00	0.00	0.00	0.00
43.80	2.00	0.72	5.00	0.00	0.00	0.00
43.85	2.00	0.72	5.00	0.00	0.00	0.00
43.90	2.00	0.72	5.00	0.00	0.00	0.00
43.95	2.00	0.72	5.00	0.00	0.00	0.00
44.00	2.00	0.72	5.00	0.00	0.00	0.00
44.05	2.00	0.72	5.00	0.00	0.00	0.00
44.10	2.00	0.72	5.00	0.00	0.00	0.00
44.15	2.00	0.72	5.00	0.00	0.00	0.00
44.20	2.00	0.72	5.00	0.00	0.00	0.00
44.25	2.00	0.72	5.00	0.00	0.00	0.00
44.30	2.00	0.72	5.00	0.00	0.00	0.00
44.35	2.00	0.72	5.00	0.00	0.00	0.00
44.40	2.00	0.72	5.00	0.00	0.00	0.00
44.45	2.00	0.72	5.00	0.00	0.00	0.00
44.50	2.00	0.72	5.00	0.00	0.00	0.00
44.55	2.00	0.72	5.00	0.00	0.00	0.00
44.60	2.00	0.72	5.00	0.00	0.00	0.00
44.65	2.00	0.72	5.00	0.00	0.00	0.00
44.70	2.00	0.72	5.00	0.00	0.00	0.00
44.75	2.00	0.72	5.00	0.00	0.00	0.00
44.80	2.00	0.72	5.00	0.00	0.00	0.00
44.85	2.00	0.72	5.00	0.00	0.00	0.00
44.90	2.00	0.72	5.00	0.00	0.00	0.00
44.95	2.00	0.72	5.00	0.00	0.00	0.00
45.00	2.00	0.72	5.00	0.00	0.00	0.00
45.05	2.00	0.72	5.00	0.00	0.00	0.00
45.10	2.00	0.72	5.00	0.00	0.00	0.00
45.15	2.00	0.72	5.00	0.00	0.00	0.00
45.20	2.00	0.72	5.00	0.00	0.00	0.00
45.25	2.00	0.72	5.00	0.00	0.00	0.00
45.30	2.00	0.72	5.00	0.00	0.00	0.00
45.35	2.00	0.72	5.00	0.00	0.00	0.00
45.40	2.00	0.72	5.00	0.00	0.00	0.00
45.45	2.00	0.72	5.00	0.00	0.00	0.00
45.50	2.00	0.72	5.00	0.00	0.00	0.00
45.55	2.00	0.72	5.00	0.00	0.00	0.00
45.60	2.00	0.72	5.00	0.00	0.00	0.00
45.65	2.00	0.72	5.00	0.00	0.00	0.00
45.70	2.00	0.72	5.00	0.00	0.00	0.00
45.75	2.00	0.72	5.00	0.00	0.00	0.00
45.80	2.00	0.72	5.00	0.00	0.00	0.00

45.85	2.00	0.72	5.00	0.00	0.00	0.00
45.90	2.00	0.72	5.00	0.00	0.00	0.00
45.95	2.00	0.72	5.00	0.00	0.00	0.00
46.00	2.00	0.72	5.00	0.00	0.00	0.00
46.05	2.00	0.72	5.00	0.00	0.00	0.00
46.10	2.00	0.72	5.00	0.00	0.00	0.00
46.15	2.00	0.72	5.00	0.00	0.00	0.00
46.20	2.00	0.72	5.00	0.00	0.00	0.00
46.25	2.00	0.72	5.00	0.00	0.00	0.00
46.30	2.00	0.72	5.00	0.00	0.00	0.00
46.35	2.00	0.72	5.00	0.00	0.00	0.00
46.40	2.00	0.72	5.00	0.00	0.00	0.00
46.45	2.00	0.72	5.00	0.00	0.00	0.00
46.50	2.00	0.72	5.00	0.00	0.00	0.00
46.55	2.00	0.72	5.00	0.00	0.00	0.00
46.60	2.00	0.72	5.00	0.00	0.00	0.00
46.65	2.00	0.72	5.00	0.00	0.00	0.00
46.70	2.00	0.72	5.00	0.00	0.00	0.00
46.75	2.00	0.72	5.00	0.00	0.00	0.00
46.80	2.00	0.72	5.00	0.00	0.00	0.00
46.85	2.00	0.72	5.00	0.00	0.00	0.00
46.90	2.00	0.72	5.00	0.00	0.00	0.00
46.95	2.00	0.72	5.00	0.00	0.00	0.00
47.00	2.00	0.72	5.00	0.00	0.00	0.00
47.05	2.00	0.72	5.00	0.00	0.00	0.00
47.10	2.00	0.72	5.00	0.00	0.00	0.00
47.15	2.00	0.72	5.00	0.00	0.00	0.00
47.20	2.00	0.72	5.00	0.00	0.00	0.00
47.25	2.00	0.72	5.00	0.00	0.00	0.00
47.30	2.00	0.72	5.00	0.00	0.00	0.00
47.35	2.00	0.72	5.00	0.00	0.00	0.00
47.40	2.00	0.72	5.00	0.00	0.00	0.00
47.45	2.00	0.72	5.00	0.00	0.00	0.00
47.50	2.00	0.72	5.00	0.00	0.00	0.00
47.55	2.00	0.72	5.00	0.00	0.00	0.00
47.60	2.00	0.72	5.00	0.00	0.00	0.00
47.65	2.00	0.72	5.00	0.00	0.00	0.00
47.70	2.00	0.72	5.00	0.00	0.00	0.00
47.75	2.00	0.72	5.00	0.00	0.00	0.00
47.80	2.00	0.71	5.00	0.00	0.00	0.00
47.85	2.00	0.71	5.00	0.00	0.00	0.00
47.90	2.00	0.71	5.00	0.00	0.00	0.00
47.95	2.00	0.71	5.00	0.00	0.00	0.00
48.00	2.00	0.71	5.00	0.00	0.00	0.00
48.05	2.00	0.71	5.00	0.00	0.00	0.00
48.10	2.00	0.71	5.00	0.00	0.00	0.00
48.15	2.00	0.71	5.00	0.00	0.00	0.00
48.20	2.00	0.71	5.00	0.00	0.00	0.00
48.25	2.00	0.71	5.00	0.00	0.00	0.00
48.30	2.00	0.71	5.00	0.00	0.00	0.00
48.35	2.00	0.71	5.00	0.00	0.00	0.00
48.40	2.00	0.71	5.00	0.00	0.00	0.00
48.45	2.00	0.71	5.00	0.00	0.00	0.00
48.50	2.00	0.71	5.00	0.00	0.00	0.00
48.55	2.00	0.71	5.00	0.00	0.00	0.00
48.60	2.00	0.71	5.00	0.00	0.00	0.00
48.65	2.00	0.71	5.00	0.00	0.00	0.00
48.70	2.00	0.71	5.00	0.00	0.00	0.00
48.75	2.00	0.71	5.00	0.00	0.00	0.00
48.80	2.00	0.71	5.00	0.00	0.00	0.00
48.85	2.00	0.71	5.00	0.00	0.00	0.00
48.90	2.00	0.71	5.00	0.00	0.00	0.00
48.95	2.00	0.71	5.00	0.00	0.00	0.00
49.00	2.00	0.71	5.00	0.00	0.00	0.00
49.05	2.00	0.71	5.00	0.00	0.00	0.00
49.10	2.00	0.71	5.00	0.00	0.00	0.00
49.15	2.00	0.71	5.00	0.00	0.00	0.00
49.20	2.00	0.71	5.00	0.00	0.00	0.00
49.25	2.00	0.71	5.00	0.00	0.00	0.00
49.30	2.00	0.71	5.00	0.00	0.00	0.00
49.35	2.00	0.71	5.00	0.00	0.00	0.00
49.40	2.00	0.71	5.00	0.00	0.00	0.00
49.45	2.00	0.71	5.00	0.00	0.00	0.00
49.50	2.00	0.71	5.00	0.00	0.00	0.00
49.55	2.00	0.71	5.00	0.00	0.00	0.00
49.60	2.00	0.71	5.00	0.00	0.00	0.00
49.65	2.00	0.71	5.00	0.00	0.00	0.00
49.70	2.00	0.71	5.00	0.00	0.00	0.00
49.75	2.00	0.71	5.00	0.00	0.00	0.00
49.80	2.00	0.71	5.00	0.00	0.00	0.00
49.85	2.00	0.71	5.00	0.00	0.00	0.00
49.90	2.00	0.71	5.00	0.00	0.00	0.00
49.95	2.00	0.71	5.00	0.00	0.00	0.00
50.00	2.00	0.71	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft2)

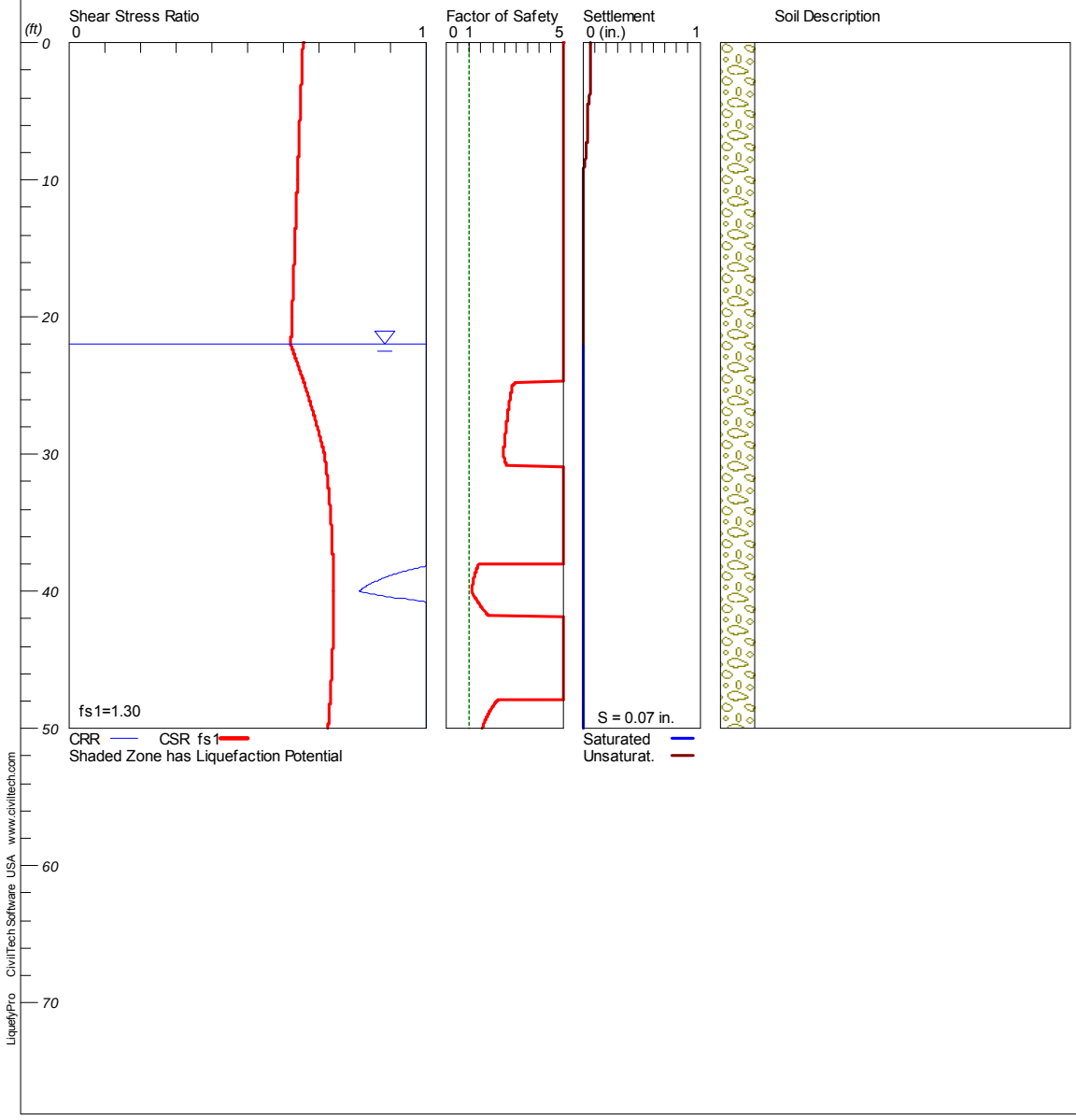
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

17-31-247-01

Hole No.=CPT 9 Water Depth=22 ft

Magnitude=6.89
Acceleration=0.776g



****

LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot R\Liquefaction Analysis\CPT 9.liq
Title: 17-31-247-01
Subtitle: Parking Lot R Mt sac

Surface Elev.=
Hole No.=CPT 9
Depth of Hole= 50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 24.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:

Surface Elev.=
Hole No.=CPT 9
Depth of Hole=50.00 ft
Water Table during Earthquake= 22.00 ft
Water Table during In-Situ Testing= 24.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	57.50	1.88	3.27	110.00	0.00	0.50
5.00	26.90	1.36	5.06	110.00	0.00	0.50
10.00	28.70	1.57	5.47	110.00	0.00	0.50
15.00	33.80	1.88	5.56	110.00	0.00	0.50
20.00	16.20	0.73	4.51	110.00	0.00	0.50
25.00	71.90	3.60	5.01	115.00	0.00	0.50
30.00	83.30	4.18	5.02	115.00	0.00	0.50
35.00	50.40	2.50	4.96	115.00	0.00	0.50
40.00	89.10	3.50	3.93	115.00	0.00	0.50
45.00	82.30	5.00	6.08	120.00	0.00	0.50
50.00	114.70	5.00	4.36	120.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.07 in.
Total Settlement of Saturated and Unsaturated Sands=0.07 in.
Differential Settlement=0.033 to 0.044 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	0.07	0.07
0.05	2.58	0.66	5.00	0.00	0.07	0.07
0.10	2.58	0.66	5.00	0.00	0.07	0.07
0.15	2.58	0.66	5.00	0.00	0.07	0.07
0.20	2.58	0.66	5.00	0.00	0.07	0.07
0.25	2.58	0.66	5.00	0.00	0.07	0.07
0.30	2.58	0.66	5.00	0.00	0.07	0.07
0.35	2.58	0.66	5.00	0.00	0.07	0.07
0.40	2.58	0.66	5.00	0.00	0.07	0.07
0.45	2.58	0.66	5.00	0.00	0.07	0.07
0.50	2.58	0.65	5.00	0.00	0.07	0.07
0.55	2.58	0.65	5.00	0.00	0.07	0.07
0.60	2.58	0.65	5.00	0.00	0.07	0.07
0.65	2.58	0.65	5.00	0.00	0.07	0.07
0.70	2.58	0.65	5.00	0.00	0.07	0.07
0.75	2.58	0.65	5.00	0.00	0.07	0.07
0.80	2.58	0.65	5.00	0.00	0.07	0.07
0.85	2.58	0.65	5.00	0.00	0.07	0.07
0.90	2.58	0.65	5.00	0.00	0.07	0.07
0.95	2.58	0.65	5.00	0.00	0.07	0.07
1.00	2.58	0.65	5.00	0.00	0.07	0.07
1.05	2.58	0.65	5.00	0.00	0.07	0.07
1.10	2.58	0.65	5.00	0.00	0.07	0.07

1.15	2.58	0.65	5.00	0.00	0.07	0.07
1.20	2.58	0.65	5.00	0.00	0.07	0.07
1.25	2.58	0.65	5.00	0.00	0.07	0.07
1.30	2.57	0.65	5.00	0.00	0.06	0.06
1.35	2.46	0.65	5.00	0.00	0.06	0.06
1.40	2.35	0.65	5.00	0.00	0.06	0.06
1.45	2.25	0.65	5.00	0.00	0.06	0.06
1.50	2.16	0.65	5.00	0.00	0.06	0.06
1.55	2.08	0.65	5.00	0.00	0.06	0.06
1.60	2.00	0.65	5.00	0.00	0.06	0.06
1.65	1.93	0.65	5.00	0.00	0.06	0.06
1.70	1.86	0.65	5.00	0.00	0.06	0.06
1.75	1.80	0.65	5.00	0.00	0.06	0.06
1.80	1.74	0.65	5.00	0.00	0.06	0.06
1.85	1.69	0.65	5.00	0.00	0.06	0.06
1.90	1.64	0.65	5.00	0.00	0.06	0.06
1.95	1.59	0.65	5.00	0.00	0.06	0.06
2.00	1.55	0.65	5.00	0.00	0.06	0.06
2.05	1.51	0.65	5.00	0.00	0.06	0.06
2.10	1.47	0.65	5.00	0.00	0.06	0.06
2.15	1.43	0.65	5.00	0.00	0.06	0.06
2.20	1.40	0.65	5.00	0.00	0.06	0.06
2.25	1.37	0.65	5.00	0.00	0.06	0.06
2.30	1.34	0.65	5.00	0.00	0.06	0.06
2.35	1.31	0.65	5.00	0.00	0.06	0.06
2.40	1.28	0.65	5.00	0.00	0.06	0.06
2.45	1.26	0.65	5.00	0.00	0.06	0.06
2.50	1.24	0.65	5.00	0.00	0.06	0.06
2.55	1.21	0.65	5.00	0.00	0.06	0.06
2.60	1.19	0.65	5.00	0.00	0.06	0.06
2.65	1.18	0.65	5.00	0.00	0.06	0.06
2.70	1.16	0.65	5.00	0.00	0.06	0.06
2.75	1.14	0.65	5.00	0.00	0.06	0.06
2.80	1.13	0.65	5.00	0.00	0.06	0.06
2.85	1.11	0.65	5.00	0.00	0.06	0.06
2.90	1.10	0.65	5.00	0.00	0.06	0.06
2.95	1.09	0.65	5.00	0.00	0.06	0.06
3.00	1.08	0.65	5.00	0.00	0.06	0.06
3.05	1.07	0.65	5.00	0.00	0.06	0.06
3.10	1.06	0.65	5.00	0.00	0.06	0.06
3.15	1.05	0.65	5.00	0.00	0.06	0.06
3.20	1.05	0.65	5.00	0.00	0.06	0.06
3.25	1.04	0.65	5.00	0.00	0.06	0.06
3.30	1.03	0.65	5.00	0.00	0.06	0.06
3.35	1.03	0.65	5.00	0.00	0.06	0.06
3.40	1.03	0.65	5.00	0.00	0.06	0.06
3.45	1.03	0.65	5.00	0.00	0.06	0.06
3.50	1.03	0.65	5.00	0.00	0.06	0.06
3.55	1.03	0.65	5.00	0.00	0.06	0.06
3.60	1.03	0.65	5.00	0.00	0.06	0.06
3.65	1.03	0.65	5.00	0.00	0.06	0.06
3.70	1.04	0.65	5.00	0.00	0.06	0.06
3.75	1.04	0.65	5.00	0.00	0.06	0.06
3.80	1.05	0.65	5.00	0.00	0.05	0.05
3.85	1.06	0.65	5.00	0.00	0.05	0.05
3.90	1.07	0.65	5.00	0.00	0.05	0.05
3.95	1.08	0.65	5.00	0.00	0.05	0.05
4.00	1.10	0.65	5.00	0.00	0.05	0.05
4.05	1.12	0.65	5.00	0.00	0.05	0.05
4.10	1.14	0.65	5.00	0.00	0.05	0.05
4.15	1.16	0.65	5.00	0.00	0.05	0.05
4.20	1.18	0.65	5.00	0.00	0.05	0.05
4.25	1.21	0.65	5.00	0.00	0.05	0.05
4.30	1.24	0.65	5.00	0.00	0.05	0.05
4.35	1.28	0.65	5.00	0.00	0.05	0.05
4.40	1.32	0.65	5.00	0.00	0.04	0.04
4.45	1.37	0.65	5.00	0.00	0.04	0.04
4.50	1.42	0.65	5.00	0.00	0.04	0.04
4.55	1.48	0.65	5.00	0.00	0.04	0.04
4.60	1.55	0.65	5.00	0.00	0.04	0.04
4.65	1.63	0.65	5.00	0.00	0.04	0.04
4.70	1.72	0.65	5.00	0.00	0.04	0.04
4.75	1.82	0.65	5.00	0.00	0.04	0.04
4.80	1.95	0.65	5.00	0.00	0.04	0.04
4.85	2.09	0.65	5.00	0.00	0.04	0.04
4.90	2.26	0.65	5.00	0.00	0.04	0.04
4.95	2.33	0.65	5.00	0.00	0.04	0.04
5.00	1.76	0.65	5.00	0.00	0.04	0.04
5.05	1.78	0.65	5.00	0.00	0.04	0.04
5.10	1.79	0.65	5.00	0.00	0.04	0.04
5.15	1.81	0.65	5.00	0.00	0.04	0.04
5.20	1.82	0.65	5.00	0.00	0.04	0.04
5.25	1.84	0.65	5.00	0.00	0.04	0.04
5.30	1.85	0.65	5.00	0.00	0.04	0.04
5.35	1.87	0.65	5.00	0.00	0.04	0.04
5.40	1.89	0.65	5.00	0.00	0.04	0.04
5.45	1.91	0.65	5.00	0.00	0.04	0.04
5.50	1.92	0.65	5.00	0.00	0.04	0.04
5.55	1.94	0.65	5.00	0.00	0.04	0.04
5.60	1.96	0.65	5.00	0.00	0.04	0.04

5.65	1.99	0.65	5.00	0.00	0.04	0.04
5.70	2.01	0.65	5.00	0.00	0.04	0.04
5.75	2.03	0.65	5.00	0.00	0.04	0.04
5.80	2.05	0.65	5.00	0.00	0.04	0.04
5.85	2.08	0.65	5.00	0.00	0.04	0.04
5.90	2.10	0.65	5.00	0.00	0.04	0.04
5.95	2.13	0.65	5.00	0.00	0.04	0.04
6.00	2.15	0.65	5.00	0.00	0.04	0.04
6.05	2.18	0.65	5.00	0.00	0.04	0.04
6.10	2.21	0.65	5.00	0.00	0.04	0.04
6.15	2.24	0.65	5.00	0.00	0.04	0.04
6.20	2.27	0.65	5.00	0.00	0.04	0.04
6.25	2.30	0.65	5.00	0.00	0.04	0.04
6.30	2.33	0.65	5.00	0.00	0.04	0.04
6.35	2.36	0.65	5.00	0.00	0.04	0.04
6.40	2.40	0.65	5.00	0.00	0.04	0.04
6.45	2.43	0.65	5.00	0.00	0.04	0.04
6.50	2.47	0.65	5.00	0.00	0.03	0.03
6.55	2.50	0.65	5.00	0.00	0.03	0.03
6.60	2.54	0.65	5.00	0.00	0.03	0.03
6.65	2.58	0.65	5.00	0.00	0.03	0.03
6.70	2.58	0.65	5.00	0.00	0.03	0.03
6.75	2.58	0.65	5.00	0.00	0.03	0.03
6.80	2.58	0.65	5.00	0.00	0.03	0.03
6.85	2.58	0.65	5.00	0.00	0.03	0.03
6.90	2.58	0.65	5.00	0.00	0.03	0.03
6.95	2.58	0.65	5.00	0.00	0.03	0.03
7.00	2.58	0.65	5.00	0.00	0.03	0.03
7.05	2.58	0.64	5.00	0.00	0.03	0.03
7.10	2.58	0.64	5.00	0.00	0.03	0.03
7.15	2.55	0.64	5.00	0.00	0.03	0.03
7.20	2.51	0.64	5.00	0.00	0.03	0.03
7.25	2.48	0.64	5.00	0.00	0.03	0.03
7.30	2.45	0.64	5.00	0.00	0.03	0.03
7.35	2.43	0.64	5.00	0.00	0.03	0.03
7.40	2.40	0.64	5.00	0.00	0.03	0.03
7.45	2.37	0.64	5.00	0.00	0.03	0.03
7.50	2.34	0.64	5.00	0.00	0.03	0.03
7.55	2.32	0.64	5.00	0.00	0.03	0.03
7.60	2.29	0.64	5.00	0.00	0.03	0.03
7.65	2.26	0.64	5.00	0.00	0.03	0.03
7.70	2.24	0.64	5.00	0.00	0.03	0.03
7.75	2.21	0.64	5.00	0.00	0.03	0.03
7.80	2.19	0.64	5.00	0.00	0.03	0.03
7.85	2.17	0.64	5.00	0.00	0.03	0.03
7.90	2.14	0.64	5.00	0.00	0.03	0.03
7.95	2.12	0.64	5.00	0.00	0.02	0.02
8.00	2.10	0.64	5.00	0.00	0.02	0.02
8.05	2.07	0.64	5.00	0.00	0.02	0.02
8.10	2.05	0.64	5.00	0.00	0.02	0.02
8.15	2.03	0.64	5.00	0.00	0.02	0.02
8.20	2.01	0.64	5.00	0.00	0.02	0.02
8.25	1.99	0.64	5.00	0.00	0.02	0.02
8.30	1.97	0.64	5.00	0.00	0.02	0.02
8.35	1.95	0.64	5.00	0.00	0.02	0.02
8.40	1.93	0.64	5.00	0.00	0.02	0.02
8.45	1.91	0.64	5.00	0.00	0.02	0.02
8.50	1.89	0.64	5.00	0.00	0.02	0.02
8.55	1.87	0.64	5.00	0.00	0.02	0.02
8.60	1.85	0.64	5.00	0.00	0.02	0.02
8.65	1.84	0.64	5.00	0.00	0.02	0.02
8.70	1.82	0.64	5.00	0.00	0.01	0.01
8.75	1.80	0.64	5.00	0.00	0.01	0.01
8.80	1.78	0.64	5.00	0.00	0.01	0.01
8.85	1.77	0.64	5.00	0.00	0.01	0.01
8.90	1.75	0.64	5.00	0.00	0.01	0.01
8.95	1.74	0.64	5.00	0.00	0.01	0.01
9.00	1.72	0.64	5.00	0.00	0.01	0.01
9.05	1.70	0.64	5.00	0.00	0.01	0.01
9.10	1.69	0.64	5.00	0.00	0.01	0.01
9.15	1.67	0.64	5.00	0.00	0.00	0.00
9.20	1.66	0.64	5.00	0.00	0.00	0.00
9.25	1.64	0.64	5.00	0.00	0.00	0.00
9.30	2.00	0.64	5.00	0.00	0.00	0.00
9.35	2.00	0.64	5.00	0.00	0.00	0.00
9.40	2.00	0.64	5.00	0.00	0.00	0.00
9.45	2.00	0.64	5.00	0.00	0.00	0.00
9.50	2.00	0.64	5.00	0.00	0.00	0.00
9.55	2.00	0.64	5.00	0.00	0.00	0.00
9.60	2.00	0.64	5.00	0.00	0.00	0.00
9.65	2.00	0.64	5.00	0.00	0.00	0.00
9.70	2.00	0.64	5.00	0.00	0.00	0.00
9.75	2.00	0.64	5.00	0.00	0.00	0.00
9.80	2.00	0.64	5.00	0.00	0.00	0.00
9.85	2.00	0.64	5.00	0.00	0.00	0.00
9.90	2.00	0.64	5.00	0.00	0.00	0.00
9.95	2.00	0.64	5.00	0.00	0.00	0.00
10.00	2.00	0.64	5.00	0.00	0.00	0.00
10.05	2.00	0.64	5.00	0.00	0.00	0.00
10.10	2.00	0.64	5.00	0.00	0.00	0.00

10.15	2.00	0.64	5.00	0.00	0.00	0.00
10.20	2.00	0.64	5.00	0.00	0.00	0.00
10.25	2.00	0.64	5.00	0.00	0.00	0.00
10.30	2.00	0.64	5.00	0.00	0.00	0.00
10.35	2.00	0.64	5.00	0.00	0.00	0.00
10.40	2.00	0.64	5.00	0.00	0.00	0.00
10.45	2.00	0.64	5.00	0.00	0.00	0.00
10.50	2.00	0.64	5.00	0.00	0.00	0.00
10.55	2.00	0.64	5.00	0.00	0.00	0.00
10.60	2.00	0.64	5.00	0.00	0.00	0.00
10.65	2.00	0.64	5.00	0.00	0.00	0.00
10.70	2.00	0.64	5.00	0.00	0.00	0.00
10.75	2.00	0.64	5.00	0.00	0.00	0.00
10.80	2.00	0.64	5.00	0.00	0.00	0.00
10.85	2.00	0.64	5.00	0.00	0.00	0.00
10.90	2.00	0.64	5.00	0.00	0.00	0.00
10.95	2.00	0.64	5.00	0.00	0.00	0.00
11.00	2.00	0.64	5.00	0.00	0.00	0.00
11.05	2.00	0.64	5.00	0.00	0.00	0.00
11.10	2.00	0.64	5.00	0.00	0.00	0.00
11.15	2.00	0.64	5.00	0.00	0.00	0.00
11.20	2.00	0.64	5.00	0.00	0.00	0.00
11.25	2.00	0.64	5.00	0.00	0.00	0.00
11.30	2.00	0.64	5.00	0.00	0.00	0.00
11.35	2.00	0.64	5.00	0.00	0.00	0.00
11.40	2.00	0.64	5.00	0.00	0.00	0.00
11.45	2.00	0.64	5.00	0.00	0.00	0.00
11.50	2.00	0.64	5.00	0.00	0.00	0.00
11.55	2.00	0.64	5.00	0.00	0.00	0.00
11.60	2.00	0.64	5.00	0.00	0.00	0.00
11.65	2.00	0.64	5.00	0.00	0.00	0.00
11.70	2.00	0.64	5.00	0.00	0.00	0.00
11.75	2.00	0.64	5.00	0.00	0.00	0.00
11.80	2.00	0.64	5.00	0.00	0.00	0.00
11.85	2.00	0.64	5.00	0.00	0.00	0.00
11.90	2.00	0.64	5.00	0.00	0.00	0.00
11.95	2.00	0.64	5.00	0.00	0.00	0.00
12.00	2.00	0.64	5.00	0.00	0.00	0.00
12.05	2.00	0.64	5.00	0.00	0.00	0.00
12.10	2.00	0.64	5.00	0.00	0.00	0.00
12.15	2.00	0.64	5.00	0.00	0.00	0.00
12.20	2.00	0.64	5.00	0.00	0.00	0.00
12.25	2.00	0.64	5.00	0.00	0.00	0.00
12.30	2.00	0.64	5.00	0.00	0.00	0.00
12.35	2.00	0.64	5.00	0.00	0.00	0.00
12.40	2.00	0.64	5.00	0.00	0.00	0.00
12.45	2.00	0.64	5.00	0.00	0.00	0.00
12.50	2.00	0.64	5.00	0.00	0.00	0.00
12.55	2.00	0.64	5.00	0.00	0.00	0.00
12.60	2.00	0.64	5.00	0.00	0.00	0.00
12.65	2.00	0.64	5.00	0.00	0.00	0.00
12.70	2.00	0.64	5.00	0.00	0.00	0.00
12.75	2.00	0.64	5.00	0.00	0.00	0.00
12.80	2.00	0.64	5.00	0.00	0.00	0.00
12.85	2.00	0.64	5.00	0.00	0.00	0.00
12.90	2.00	0.64	5.00	0.00	0.00	0.00
12.95	2.00	0.64	5.00	0.00	0.00	0.00
13.00	2.00	0.64	5.00	0.00	0.00	0.00
13.05	2.00	0.64	5.00	0.00	0.00	0.00
13.10	2.00	0.64	5.00	0.00	0.00	0.00
13.15	2.00	0.64	5.00	0.00	0.00	0.00
13.20	2.00	0.64	5.00	0.00	0.00	0.00
13.25	2.00	0.64	5.00	0.00	0.00	0.00
13.30	2.00	0.64	5.00	0.00	0.00	0.00
13.35	2.00	0.64	5.00	0.00	0.00	0.00
13.40	2.00	0.64	5.00	0.00	0.00	0.00
13.45	2.00	0.64	5.00	0.00	0.00	0.00
13.50	2.00	0.64	5.00	0.00	0.00	0.00
13.55	2.00	0.64	5.00	0.00	0.00	0.00
13.60	2.00	0.63	5.00	0.00	0.00	0.00
13.65	2.00	0.63	5.00	0.00	0.00	0.00
13.70	2.00	0.63	5.00	0.00	0.00	0.00
13.75	2.00	0.63	5.00	0.00	0.00	0.00
13.80	2.00	0.63	5.00	0.00	0.00	0.00
13.85	2.00	0.63	5.00	0.00	0.00	0.00
13.90	2.00	0.63	5.00	0.00	0.00	0.00
13.95	2.00	0.63	5.00	0.00	0.00	0.00
14.00	2.00	0.63	5.00	0.00	0.00	0.00
14.05	2.00	0.63	5.00	0.00	0.00	0.00
14.10	2.00	0.63	5.00	0.00	0.00	0.00
14.15	2.00	0.63	5.00	0.00	0.00	0.00
14.20	2.00	0.63	5.00	0.00	0.00	0.00
14.25	2.00	0.63	5.00	0.00	0.00	0.00
14.30	2.00	0.63	5.00	0.00	0.00	0.00
14.35	2.00	0.63	5.00	0.00	0.00	0.00
14.40	2.00	0.63	5.00	0.00	0.00	0.00
14.45	2.00	0.63	5.00	0.00	0.00	0.00
14.50	2.00	0.63	5.00	0.00	0.00	0.00
14.55	2.00	0.63	5.00	0.00	0.00	0.00
14.60	2.00	0.63	5.00	0.00	0.00	0.00

14.65	2.00	0.63	5.00	0.00	0.00	0.00
14.70	2.00	0.63	5.00	0.00	0.00	0.00
14.75	2.00	0.63	5.00	0.00	0.00	0.00
14.80	2.00	0.63	5.00	0.00	0.00	0.00
14.85	2.00	0.63	5.00	0.00	0.00	0.00
14.90	2.00	0.63	5.00	0.00	0.00	0.00
14.95	2.00	0.63	5.00	0.00	0.00	0.00
15.00	2.00	0.63	5.00	0.00	0.00	0.00
15.05	2.00	0.63	5.00	0.00	0.00	0.00
15.10	2.00	0.63	5.00	0.00	0.00	0.00
15.15	2.00	0.63	5.00	0.00	0.00	0.00
15.20	2.00	0.63	5.00	0.00	0.00	0.00
15.25	2.00	0.63	5.00	0.00	0.00	0.00
15.30	2.00	0.63	5.00	0.00	0.00	0.00
15.35	2.00	0.63	5.00	0.00	0.00	0.00
15.40	2.00	0.63	5.00	0.00	0.00	0.00
15.45	2.00	0.63	5.00	0.00	0.00	0.00
15.50	2.00	0.63	5.00	0.00	0.00	0.00
15.55	2.00	0.63	5.00	0.00	0.00	0.00
15.60	2.00	0.63	5.00	0.00	0.00	0.00
15.65	2.00	0.63	5.00	0.00	0.00	0.00
15.70	2.00	0.63	5.00	0.00	0.00	0.00
15.75	2.00	0.63	5.00	0.00	0.00	0.00
15.80	2.00	0.63	5.00	0.00	0.00	0.00
15.85	2.00	0.63	5.00	0.00	0.00	0.00
15.90	2.00	0.63	5.00	0.00	0.00	0.00
15.95	2.00	0.63	5.00	0.00	0.00	0.00
16.00	2.00	0.63	5.00	0.00	0.00	0.00
16.05	2.00	0.63	5.00	0.00	0.00	0.00
16.10	2.00	0.63	5.00	0.00	0.00	0.00
16.15	2.00	0.63	5.00	0.00	0.00	0.00
16.20	2.00	0.63	5.00	0.00	0.00	0.00
16.25	2.00	0.63	5.00	0.00	0.00	0.00
16.30	2.00	0.63	5.00	0.00	0.00	0.00
16.35	2.00	0.63	5.00	0.00	0.00	0.00
16.40	2.00	0.63	5.00	0.00	0.00	0.00
16.45	2.00	0.63	5.00	0.00	0.00	0.00
16.50	2.00	0.63	5.00	0.00	0.00	0.00
16.55	2.00	0.63	5.00	0.00	0.00	0.00
16.60	2.00	0.63	5.00	0.00	0.00	0.00
16.65	2.00	0.63	5.00	0.00	0.00	0.00
16.70	2.00	0.63	5.00	0.00	0.00	0.00
16.75	2.00	0.63	5.00	0.00	0.00	0.00
16.80	2.00	0.63	5.00	0.00	0.00	0.00
16.85	2.00	0.63	5.00	0.00	0.00	0.00
16.90	2.00	0.63	5.00	0.00	0.00	0.00
16.95	2.00	0.63	5.00	0.00	0.00	0.00
17.00	2.00	0.63	5.00	0.00	0.00	0.00
17.05	2.00	0.63	5.00	0.00	0.00	0.00
17.10	2.00	0.63	5.00	0.00	0.00	0.00
17.15	2.00	0.63	5.00	0.00	0.00	0.00
17.20	2.00	0.63	5.00	0.00	0.00	0.00
17.25	2.00	0.63	5.00	0.00	0.00	0.00
17.30	2.00	0.63	5.00	0.00	0.00	0.00
17.35	2.00	0.63	5.00	0.00	0.00	0.00
17.40	2.00	0.63	5.00	0.00	0.00	0.00
17.45	2.00	0.63	5.00	0.00	0.00	0.00
17.50	2.00	0.63	5.00	0.00	0.00	0.00
17.55	2.00	0.63	5.00	0.00	0.00	0.00
17.60	2.00	0.63	5.00	0.00	0.00	0.00
17.65	2.00	0.63	5.00	0.00	0.00	0.00
17.70	2.00	0.63	5.00	0.00	0.00	0.00
17.75	2.00	0.63	5.00	0.00	0.00	0.00
17.80	2.00	0.63	5.00	0.00	0.00	0.00
17.85	2.00	0.63	5.00	0.00	0.00	0.00
17.90	2.00	0.63	5.00	0.00	0.00	0.00
17.95	2.00	0.63	5.00	0.00	0.00	0.00
18.00	2.00	0.63	5.00	0.00	0.00	0.00
18.05	2.00	0.63	5.00	0.00	0.00	0.00
18.10	2.00	0.63	5.00	0.00	0.00	0.00
18.15	2.00	0.63	5.00	0.00	0.00	0.00
18.20	2.00	0.63	5.00	0.00	0.00	0.00
18.25	2.00	0.63	5.00	0.00	0.00	0.00
18.30	2.00	0.63	5.00	0.00	0.00	0.00
18.35	2.00	0.63	5.00	0.00	0.00	0.00
18.40	2.00	0.63	5.00	0.00	0.00	0.00
18.45	2.00	0.63	5.00	0.00	0.00	0.00
18.50	2.00	0.63	5.00	0.00	0.00	0.00
18.55	2.00	0.63	5.00	0.00	0.00	0.00
18.60	2.00	0.63	5.00	0.00	0.00	0.00
18.65	2.00	0.63	5.00	0.00	0.00	0.00
18.70	2.00	0.63	5.00	0.00	0.00	0.00
18.75	2.00	0.63	5.00	0.00	0.00	0.00
18.80	2.00	0.63	5.00	0.00	0.00	0.00
18.85	2.00	0.63	5.00	0.00	0.00	0.00
18.90	2.00	0.63	5.00	0.00	0.00	0.00
18.95	2.00	0.63	5.00	0.00	0.00	0.00
19.00	2.00	0.63	5.00	0.00	0.00	0.00
19.05	2.00	0.63	5.00	0.00	0.00	0.00
19.10	2.00	0.63	5.00	0.00	0.00	0.00

19.15	2.00	0.63	5.00	0.00	0.00	0.00
19.20	2.00	0.63	5.00	0.00	0.00	0.00
19.25	2.00	0.63	5.00	0.00	0.00	0.00
19.30	2.00	0.63	5.00	0.00	0.00	0.00
19.35	2.00	0.63	5.00	0.00	0.00	0.00
19.40	2.00	0.63	5.00	0.00	0.00	0.00
19.45	2.00	0.63	5.00	0.00	0.00	0.00
19.50	2.00	0.63	5.00	0.00	0.00	0.00
19.55	2.00	0.63	5.00	0.00	0.00	0.00
19.60	2.00	0.63	5.00	0.00	0.00	0.00
19.65	2.00	0.63	5.00	0.00	0.00	0.00
19.70	2.00	0.63	5.00	0.00	0.00	0.00
19.75	2.00	0.63	5.00	0.00	0.00	0.00
19.80	2.00	0.63	5.00	0.00	0.00	0.00
19.85	2.00	0.63	5.00	0.00	0.00	0.00
19.90	2.00	0.63	5.00	0.00	0.00	0.00
19.95	2.00	0.63	5.00	0.00	0.00	0.00
20.00	2.00	0.63	5.00	0.00	0.00	0.00
20.05	2.00	0.63	5.00	0.00	0.00	0.00
20.10	2.00	0.62	5.00	0.00	0.00	0.00
20.15	2.00	0.62	5.00	0.00	0.00	0.00
20.20	2.00	0.62	5.00	0.00	0.00	0.00
20.25	2.00	0.62	5.00	0.00	0.00	0.00
20.30	2.00	0.62	5.00	0.00	0.00	0.00
20.35	2.00	0.62	5.00	0.00	0.00	0.00
20.40	2.00	0.62	5.00	0.00	0.00	0.00
20.45	2.00	0.62	5.00	0.00	0.00	0.00
20.50	2.00	0.62	5.00	0.00	0.00	0.00
20.55	2.00	0.62	5.00	0.00	0.00	0.00
20.60	2.00	0.62	5.00	0.00	0.00	0.00
20.65	2.00	0.62	5.00	0.00	0.00	0.00
20.70	2.00	0.62	5.00	0.00	0.00	0.00
20.75	2.00	0.62	5.00	0.00	0.00	0.00
20.80	2.00	0.62	5.00	0.00	0.00	0.00
20.85	2.00	0.62	5.00	0.00	0.00	0.00
20.90	2.00	0.62	5.00	0.00	0.00	0.00
20.95	2.00	0.62	5.00	0.00	0.00	0.00
21.00	2.00	0.62	5.00	0.00	0.00	0.00
21.05	2.00	0.62	5.00	0.00	0.00	0.00
21.10	2.00	0.62	5.00	0.00	0.00	0.00
21.15	2.00	0.62	5.00	0.00	0.00	0.00
21.20	2.00	0.62	5.00	0.00	0.00	0.00
21.25	2.00	0.62	5.00	0.00	0.00	0.00
21.30	2.00	0.62	5.00	0.00	0.00	0.00
21.35	2.00	0.62	5.00	0.00	0.00	0.00
21.40	2.00	0.62	5.00	0.00	0.00	0.00
21.45	2.00	0.62	5.00	0.00	0.00	0.00
21.50	2.00	0.62	5.00	0.00	0.00	0.00
21.55	2.00	0.62	5.00	0.00	0.00	0.00
21.60	2.00	0.62	5.00	0.00	0.00	0.00
21.65	2.00	0.62	5.00	0.00	0.00	0.00
21.70	2.00	0.62	5.00	0.00	0.00	0.00
21.75	2.00	0.62	5.00	0.00	0.00	0.00
21.80	2.00	0.62	5.00	0.00	0.00	0.00
21.85	2.00	0.62	5.00	0.00	0.00	0.00
21.90	2.00	0.62	5.00	0.00	0.00	0.00
21.95	2.00	0.62	5.00	0.00	0.00	0.00
22.00	2.00	0.62	5.00	0.00	0.00	0.00
22.05	2.00	0.62	5.00	0.00	0.00	0.00
22.10	2.00	0.62	5.00	0.00	0.00	0.00
22.15	2.00	0.62	5.00	0.00	0.00	0.00
22.20	2.00	0.62	5.00	0.00	0.00	0.00
22.25	2.00	0.62	5.00	0.00	0.00	0.00
22.30	2.00	0.63	5.00	0.00	0.00	0.00
22.35	2.00	0.63	5.00	0.00	0.00	0.00
22.40	2.00	0.63	5.00	0.00	0.00	0.00
22.45	2.00	0.63	5.00	0.00	0.00	0.00
22.50	2.00	0.63	5.00	0.00	0.00	0.00
22.55	2.00	0.63	5.00	0.00	0.00	0.00
22.60	2.00	0.63	5.00	0.00	0.00	0.00
22.65	2.00	0.63	5.00	0.00	0.00	0.00
22.70	2.00	0.63	5.00	0.00	0.00	0.00
22.75	2.00	0.63	5.00	0.00	0.00	0.00
22.80	2.00	0.63	5.00	0.00	0.00	0.00
22.85	2.00	0.63	5.00	0.00	0.00	0.00
22.90	2.00	0.63	5.00	0.00	0.00	0.00
22.95	2.00	0.63	5.00	0.00	0.00	0.00
23.00	2.00	0.64	5.00	0.00	0.00	0.00
23.05	2.00	0.64	5.00	0.00	0.00	0.00
23.10	2.00	0.64	5.00	0.00	0.00	0.00
23.15	2.00	0.64	5.00	0.00	0.00	0.00
23.20	2.00	0.64	5.00	0.00	0.00	0.00
23.25	2.00	0.64	5.00	0.00	0.00	0.00
23.30	2.00	0.64	5.00	0.00	0.00	0.00
23.35	2.00	0.64	5.00	0.00	0.00	0.00
23.40	2.00	0.64	5.00	0.00	0.00	0.00
23.45	2.00	0.64	5.00	0.00	0.00	0.00
23.50	2.00	0.64	5.00	0.00	0.00	0.00
23.55	2.00	0.64	5.00	0.00	0.00	0.00
23.60	2.00	0.64	5.00	0.00	0.00	0.00

23.65	2.00	0.64	5.00	0.00	0.00	0.00
23.70	2.00	0.64	5.00	0.00	0.00	0.00
23.75	2.00	0.65	5.00	0.00	0.00	0.00
23.80	2.00	0.65	5.00	0.00	0.00	0.00
23.85	2.00	0.65	5.00	0.00	0.00	0.00
23.90	2.00	0.65	5.00	0.00	0.00	0.00
23.95	2.00	0.65	5.00	0.00	0.00	0.00
24.00	2.00	0.65	5.00	0.00	0.00	0.00
24.05	2.00	0.65	5.00	0.00	0.00	0.00
24.10	2.00	0.65	5.00	0.00	0.00	0.00
24.15	2.00	0.65	5.00	0.00	0.00	0.00
24.20	2.00	0.65	5.00	0.00	0.00	0.00
24.25	2.00	0.65	5.00	0.00	0.00	0.00
24.30	2.00	0.65	5.00	0.00	0.00	0.00
24.35	2.00	0.65	5.00	0.00	0.00	0.00
24.40	2.00	0.65	5.00	0.00	0.00	0.00
24.45	2.00	0.65	5.00	0.00	0.00	0.00
24.50	2.00	0.66	5.00	0.00	0.00	0.00
24.55	2.00	0.66	5.00	0.00	0.00	0.00
24.60	2.00	0.66	5.00	0.00	0.00	0.00
24.65	2.00	0.66	5.00	0.00	0.00	0.00
24.70	2.00	0.66	5.00	0.00	0.00	0.00
24.75	1.96	0.66	2.98	0.00	0.00	0.00
24.80	1.94	0.66	2.94	0.00	0.00	0.00
24.85	1.92	0.66	2.92	0.00	0.00	0.00
24.90	1.91	0.66	2.89	0.00	0.00	0.00
24.95	1.89	0.66	2.86	0.00	0.00	0.00
25.00	1.88	0.66	2.84	0.00	0.00	0.00
25.05	1.88	0.66	2.83	0.00	0.00	0.00
25.10	1.87	0.66	2.83	0.00	0.00	0.00
25.15	1.87	0.66	2.82	0.00	0.00	0.00
25.20	1.87	0.66	2.82	0.00	0.00	0.00
25.25	1.87	0.66	2.81	0.00	0.00	0.00
25.30	1.87	0.67	2.81	0.00	0.00	0.00
25.35	1.86	0.67	2.80	0.00	0.00	0.00
25.40	1.86	0.67	2.80	0.00	0.00	0.00
25.45	1.86	0.67	2.79	0.00	0.00	0.00
25.50	1.86	0.67	2.78	0.00	0.00	0.00
25.55	1.86	0.67	2.78	0.00	0.00	0.00
25.60	1.86	0.67	2.77	0.00	0.00	0.00
25.65	1.85	0.67	2.77	0.00	0.00	0.00
25.70	1.85	0.67	2.76	0.00	0.00	0.00
25.75	1.85	0.67	2.76	0.00	0.00	0.00
25.80	1.85	0.67	2.75	0.00	0.00	0.00
25.85	1.85	0.67	2.75	0.00	0.00	0.00
25.90	1.85	0.67	2.74	0.00	0.00	0.00
25.95	1.84	0.67	2.74	0.00	0.00	0.00
26.00	1.84	0.67	2.74	0.00	0.00	0.00
26.05	1.84	0.67	2.73	0.00	0.00	0.00
26.10	1.84	0.67	2.73	0.00	0.00	0.00
26.15	1.84	0.68	2.72	0.00	0.00	0.00
26.20	1.84	0.68	2.72	0.00	0.00	0.00
26.25	1.83	0.68	2.71	0.00	0.00	0.00
26.30	1.83	0.68	2.71	0.00	0.00	0.00
26.35	1.83	0.68	2.70	0.00	0.00	0.00
26.40	1.83	0.68	2.70	0.00	0.00	0.00
26.45	1.83	0.68	2.69	0.00	0.00	0.00
26.50	1.83	0.68	2.69	0.00	0.00	0.00
26.55	1.83	0.68	2.69	0.00	0.00	0.00
26.60	1.82	0.68	2.68	0.00	0.00	0.00
26.65	1.82	0.68	2.68	0.00	0.00	0.00
26.70	1.82	0.68	2.67	0.00	0.00	0.00
26.75	1.82	0.68	2.67	0.00	0.00	0.00
26.80	1.82	0.68	2.66	0.00	0.00	0.00
26.85	1.82	0.68	2.66	0.00	0.00	0.00
26.90	1.82	0.68	2.66	0.00	0.00	0.00
26.95	1.82	0.68	2.65	0.00	0.00	0.00
27.00	1.81	0.69	2.65	0.00	0.00	0.00
27.05	1.81	0.69	2.64	0.00	0.00	0.00
27.10	1.81	0.69	2.64	0.00	0.00	0.00
27.15	1.81	0.69	2.64	0.00	0.00	0.00
27.20	1.81	0.69	2.63	0.00	0.00	0.00
27.25	1.81	0.69	2.63	0.00	0.00	0.00
27.30	1.81	0.69	2.62	0.00	0.00	0.00
27.35	1.81	0.69	2.62	0.00	0.00	0.00
27.40	1.80	0.69	2.62	0.00	0.00	0.00
27.45	1.80	0.69	2.61	0.00	0.00	0.00
27.50	1.80	0.69	2.61	0.00	0.00	0.00
27.55	1.80	0.69	2.61	0.00	0.00	0.00
27.60	1.80	0.69	2.60	0.00	0.00	0.00
27.65	1.80	0.69	2.60	0.00	0.00	0.00
27.70	1.80	0.69	2.59	0.00	0.00	0.00
27.75	1.80	0.69	2.59	0.00	0.00	0.00
27.80	1.80	0.69	2.59	0.00	0.00	0.00
27.85	1.79	0.69	2.58	0.00	0.00	0.00
27.90	1.79	0.70	2.58	0.00	0.00	0.00
27.95	1.79	0.70	2.58	0.00	0.00	0.00
28.00	1.79	0.70	2.57	0.00	0.00	0.00
28.05	1.79	0.70	2.57	0.00	0.00	0.00
28.10	1.79	0.70	2.57	0.00	0.00	0.00

28.15	1.79	0.70	2.56	0.00	0.00	0.00
28.20	1.79	0.70	2.56	0.00	0.00	0.00
28.25	1.79	0.70	2.56	0.00	0.00	0.00
28.30	1.79	0.70	2.55	0.00	0.00	0.00
28.35	1.78	0.70	2.55	0.00	0.00	0.00
28.40	1.78	0.70	2.55	0.00	0.00	0.00
28.45	1.78	0.70	2.54	0.00	0.00	0.00
28.50	1.78	0.70	2.54	0.00	0.00	0.00
28.55	1.78	0.70	2.54	0.00	0.00	0.00
28.60	1.78	0.70	2.53	0.00	0.00	0.00
28.65	1.78	0.70	2.53	0.00	0.00	0.00
28.70	1.78	0.70	2.53	0.00	0.00	0.00
28.75	1.78	0.70	2.52	0.00	0.00	0.00
28.80	1.78	0.70	2.52	0.00	0.00	0.00
28.85	1.78	0.70	2.52	0.00	0.00	0.00
28.90	1.77	0.71	2.52	0.00	0.00	0.00
28.95	1.77	0.71	2.51	0.00	0.00	0.00
29.00	1.77	0.71	2.51	0.00	0.00	0.00
29.05	1.77	0.71	2.51	0.00	0.00	0.00
29.10	1.77	0.71	2.50	0.00	0.00	0.00
29.15	1.77	0.71	2.50	0.00	0.00	0.00
29.20	1.77	0.71	2.50	0.00	0.00	0.00
29.25	1.77	0.71	2.50	0.00	0.00	0.00
29.30	1.77	0.71	2.49	0.00	0.00	0.00
29.35	1.77	0.71	2.49	0.00	0.00	0.00
29.40	1.77	0.71	2.49	0.00	0.00	0.00
29.45	1.77	0.71	2.48	0.00	0.00	0.00
29.50	1.77	0.71	2.48	0.00	0.00	0.00
29.55	1.76	0.71	2.48	0.00	0.00	0.00
29.60	1.76	0.71	2.48	0.00	0.00	0.00
29.65	1.76	0.71	2.47	0.00	0.00	0.00
29.70	1.76	0.71	2.47	0.00	0.00	0.00
29.75	1.76	0.71	2.47	0.00	0.00	0.00
29.80	1.76	0.71	2.47	0.00	0.00	0.00
29.85	1.76	0.71	2.46	0.00	0.00	0.00
29.90	1.76	0.72	2.46	0.00	0.00	0.00
29.95	1.76	0.72	2.46	0.00	0.00	0.00
30.00	1.76	0.72	2.46	0.00	0.00	0.00
30.05	1.76	0.72	2.46	0.00	0.00	0.00
30.10	1.77	0.72	2.47	0.00	0.00	0.00
30.15	1.77	0.72	2.47	0.00	0.00	0.00
30.20	1.78	0.72	2.48	0.00	0.00	0.00
30.25	1.78	0.72	2.48	0.00	0.00	0.00
30.30	1.79	0.72	2.49	0.00	0.00	0.00
30.35	1.79	0.72	2.50	0.00	0.00	0.00
30.40	1.80	0.72	2.50	0.00	0.00	0.00
30.45	1.80	0.72	2.51	0.00	0.00	0.00
30.50	1.81	0.72	2.52	0.00	0.00	0.00
30.55	1.82	0.72	2.53	0.00	0.00	0.00
30.60	1.82	0.72	2.54	0.00	0.00	0.00
30.65	1.83	0.72	2.55	0.00	0.00	0.00
30.70	1.84	0.72	2.56	0.00	0.00	0.00
30.75	1.85	0.72	2.57	0.00	0.00	0.00
30.80	1.86	0.72	2.58	0.00	0.00	0.00
30.85	1.86	0.72	2.59	0.00	0.00	0.00
30.90	2.00	0.72	5.00	0.00	0.00	0.00
30.95	2.00	0.72	5.00	0.00	0.00	0.00
31.00	2.00	0.72	5.00	0.00	0.00	0.00
31.05	2.00	0.72	5.00	0.00	0.00	0.00
31.10	2.00	0.72	5.00	0.00	0.00	0.00
31.15	2.00	0.72	5.00	0.00	0.00	0.00
31.20	2.00	0.72	5.00	0.00	0.00	0.00
31.25	2.00	0.72	5.00	0.00	0.00	0.00
31.30	2.00	0.72	5.00	0.00	0.00	0.00
31.35	2.00	0.72	5.00	0.00	0.00	0.00
31.40	2.00	0.72	5.00	0.00	0.00	0.00
31.45	2.00	0.72	5.00	0.00	0.00	0.00
31.50	2.00	0.72	5.00	0.00	0.00	0.00
31.55	2.00	0.72	5.00	0.00	0.00	0.00
31.60	2.00	0.72	5.00	0.00	0.00	0.00
31.65	2.00	0.72	5.00	0.00	0.00	0.00
31.70	2.00	0.72	5.00	0.00	0.00	0.00
31.75	2.00	0.72	5.00	0.00	0.00	0.00
31.80	2.00	0.72	5.00	0.00	0.00	0.00
31.85	2.00	0.72	5.00	0.00	0.00	0.00
31.90	2.00	0.72	5.00	0.00	0.00	0.00
31.95	2.00	0.73	5.00	0.00	0.00	0.00
32.00	2.00	0.73	5.00	0.00	0.00	0.00
32.05	2.00	0.73	5.00	0.00	0.00	0.00
32.10	2.00	0.73	5.00	0.00	0.00	0.00
32.15	2.00	0.73	5.00	0.00	0.00	0.00
32.20	2.00	0.73	5.00	0.00	0.00	0.00
32.25	2.00	0.73	5.00	0.00	0.00	0.00
32.30	2.00	0.73	5.00	0.00	0.00	0.00
32.35	2.00	0.73	5.00	0.00	0.00	0.00
32.40	2.00	0.73	5.00	0.00	0.00	0.00
32.45	2.00	0.73	5.00	0.00	0.00	0.00
32.50	2.00	0.73	5.00	0.00	0.00	0.00
32.55	2.00	0.73	5.00	0.00	0.00	0.00
32.60	2.00	0.73	5.00	0.00	0.00	0.00

32.65	2.00	0.73	5.00	0.00	0.00	0.00
32.70	2.00	0.73	5.00	0.00	0.00	0.00
32.75	2.00	0.73	5.00	0.00	0.00	0.00
32.80	2.00	0.73	5.00	0.00	0.00	0.00
32.85	2.00	0.73	5.00	0.00	0.00	0.00
32.90	2.00	0.73	5.00	0.00	0.00	0.00
32.95	2.00	0.73	5.00	0.00	0.00	0.00
33.00	2.00	0.73	5.00	0.00	0.00	0.00
33.05	2.00	0.73	5.00	0.00	0.00	0.00
33.10	2.00	0.73	5.00	0.00	0.00	0.00
33.15	2.00	0.73	5.00	0.00	0.00	0.00
33.20	2.00	0.73	5.00	0.00	0.00	0.00
33.25	2.00	0.73	5.00	0.00	0.00	0.00
33.30	2.00	0.73	5.00	0.00	0.00	0.00
33.35	2.00	0.73	5.00	0.00	0.00	0.00
33.40	2.00	0.73	5.00	0.00	0.00	0.00
33.45	2.00	0.73	5.00	0.00	0.00	0.00
33.50	2.00	0.73	5.00	0.00	0.00	0.00
33.55	2.00	0.73	5.00	0.00	0.00	0.00
33.60	2.00	0.73	5.00	0.00	0.00	0.00
33.65	2.00	0.73	5.00	0.00	0.00	0.00
33.70	2.00	0.73	5.00	0.00	0.00	0.00
33.75	2.00	0.73	5.00	0.00	0.00	0.00
33.80	2.00	0.73	5.00	0.00	0.00	0.00
33.85	2.00	0.73	5.00	0.00	0.00	0.00
33.90	2.00	0.73	5.00	0.00	0.00	0.00
33.95	2.00	0.73	5.00	0.00	0.00	0.00
34.00	2.00	0.73	5.00	0.00	0.00	0.00
34.05	2.00	0.73	5.00	0.00	0.00	0.00
34.10	2.00	0.73	5.00	0.00	0.00	0.00
34.15	2.00	0.73	5.00	0.00	0.00	0.00
34.20	2.00	0.73	5.00	0.00	0.00	0.00
34.25	2.00	0.73	5.00	0.00	0.00	0.00
34.30	2.00	0.73	5.00	0.00	0.00	0.00
34.35	2.00	0.73	5.00	0.00	0.00	0.00
34.40	2.00	0.73	5.00	0.00	0.00	0.00
34.45	2.00	0.73	5.00	0.00	0.00	0.00
34.50	2.00	0.73	5.00	0.00	0.00	0.00
34.55	2.00	0.73	5.00	0.00	0.00	0.00
34.60	2.00	0.73	5.00	0.00	0.00	0.00
34.65	2.00	0.73	5.00	0.00	0.00	0.00
34.70	2.00	0.73	5.00	0.00	0.00	0.00
34.75	2.00	0.73	5.00	0.00	0.00	0.00
34.80	2.00	0.73	5.00	0.00	0.00	0.00
34.85	2.00	0.73	5.00	0.00	0.00	0.00
34.90	2.00	0.73	5.00	0.00	0.00	0.00
34.95	2.00	0.73	5.00	0.00	0.00	0.00
35.00	2.00	0.73	5.00	0.00	0.00	0.00
35.05	2.00	0.73	5.00	0.00	0.00	0.00
35.10	2.00	0.74	5.00	0.00	0.00	0.00
35.15	2.00	0.74	5.00	0.00	0.00	0.00
35.20	2.00	0.74	5.00	0.00	0.00	0.00
35.25	2.00	0.74	5.00	0.00	0.00	0.00
35.30	2.00	0.74	5.00	0.00	0.00	0.00
35.35	2.00	0.74	5.00	0.00	0.00	0.00
35.40	2.00	0.74	5.00	0.00	0.00	0.00
35.45	2.00	0.74	5.00	0.00	0.00	0.00
35.50	2.00	0.74	5.00	0.00	0.00	0.00
35.55	2.00	0.74	5.00	0.00	0.00	0.00
35.60	2.00	0.74	5.00	0.00	0.00	0.00
35.65	2.00	0.74	5.00	0.00	0.00	0.00
35.70	2.00	0.74	5.00	0.00	0.00	0.00
35.75	2.00	0.74	5.00	0.00	0.00	0.00
35.80	2.00	0.74	5.00	0.00	0.00	0.00
35.85	2.00	0.74	5.00	0.00	0.00	0.00
35.90	2.00	0.74	5.00	0.00	0.00	0.00
35.95	2.00	0.74	5.00	0.00	0.00	0.00
36.00	2.00	0.74	5.00	0.00	0.00	0.00
36.05	2.00	0.74	5.00	0.00	0.00	0.00
36.10	2.00	0.74	5.00	0.00	0.00	0.00
36.15	2.00	0.74	5.00	0.00	0.00	0.00
36.20	2.00	0.74	5.00	0.00	0.00	0.00
36.25	2.00	0.74	5.00	0.00	0.00	0.00
36.30	2.00	0.74	5.00	0.00	0.00	0.00
36.35	2.00	0.74	5.00	0.00	0.00	0.00
36.40	2.00	0.74	5.00	0.00	0.00	0.00
36.45	2.00	0.74	5.00	0.00	0.00	0.00
36.50	2.00	0.74	5.00	0.00	0.00	0.00
36.55	2.00	0.74	5.00	0.00	0.00	0.00
36.60	2.00	0.74	5.00	0.00	0.00	0.00
36.65	2.00	0.74	5.00	0.00	0.00	0.00
36.70	2.00	0.74	5.00	0.00	0.00	0.00
36.75	2.00	0.74	5.00	0.00	0.00	0.00
36.80	2.00	0.74	5.00	0.00	0.00	0.00
36.85	2.00	0.74	5.00	0.00	0.00	0.00
36.90	2.00	0.74	5.00	0.00	0.00	0.00
36.95	2.00	0.74	5.00	0.00	0.00	0.00
37.00	2.00	0.74	5.00	0.00	0.00	0.00
37.05	2.00	0.74	5.00	0.00	0.00	0.00
37.10	2.00	0.74	5.00	0.00	0.00	0.00

37.15	2.00	0.74	5.00	0.00	0.00	0.00
37.20	2.00	0.74	5.00	0.00	0.00	0.00
37.25	2.00	0.74	5.00	0.00	0.00	0.00
37.30	2.00	0.74	5.00	0.00	0.00	0.00
37.35	2.00	0.74	5.00	0.00	0.00	0.00
37.40	2.00	0.74	5.00	0.00	0.00	0.00
37.45	2.00	0.74	5.00	0.00	0.00	0.00
37.50	2.00	0.74	5.00	0.00	0.00	0.00
37.55	2.00	0.74	5.00	0.00	0.00	0.00
37.60	2.00	0.74	5.00	0.00	0.00	0.00
37.65	2.00	0.74	5.00	0.00	0.00	0.00
37.70	2.00	0.74	5.00	0.00	0.00	0.00
37.75	2.00	0.74	5.00	0.00	0.00	0.00
37.80	2.00	0.74	5.00	0.00	0.00	0.00
37.85	2.00	0.74	5.00	0.00	0.00	0.00
37.90	2.00	0.74	5.00	0.00	0.00	0.00
37.95	2.00	0.74	5.00	0.00	0.00	0.00
38.00	1.04	0.74	1.40	0.00	0.00	0.00
38.05	1.03	0.74	1.39	0.00	0.00	0.00
38.10	1.02	0.74	1.37	0.00	0.00	0.00
38.15	1.01	0.74	1.36	0.00	0.00	0.00
38.20	1.00	0.74	1.35	0.00	0.00	0.00
38.25	0.99	0.74	1.33	0.00	0.00	0.00
38.30	0.98	0.74	1.32	0.00	0.00	0.00
38.35	0.97	0.74	1.31	0.00	0.00	0.00
38.40	0.96	0.74	1.30	0.00	0.00	0.00
38.45	0.95	0.74	1.29	0.00	0.00	0.00
38.50	0.95	0.74	1.28	0.00	0.00	0.00
38.55	0.94	0.74	1.27	0.00	0.00	0.00
38.60	0.93	0.74	1.26	0.00	0.00	0.00
38.65	0.92	0.74	1.25	0.00	0.00	0.00
38.70	0.92	0.74	1.24	0.00	0.00	0.00
38.75	0.91	0.74	1.23	0.00	0.00	0.00
38.80	0.91	0.74	1.22	0.00	0.00	0.00
38.85	0.90	0.74	1.21	0.00	0.00	0.00
38.90	0.89	0.74	1.21	0.00	0.00	0.00
38.95	0.89	0.74	1.20	0.00	0.00	0.00
39.00	0.88	0.74	1.19	0.00	0.00	0.00
39.05	0.88	0.74	1.19	0.00	0.00	0.00
39.10	0.87	0.74	1.18	0.00	0.00	0.00
39.15	0.87	0.74	1.17	0.00	0.00	0.00
39.20	0.86	0.74	1.17	0.00	0.00	0.00
39.25	0.86	0.74	1.16	0.00	0.00	0.00
39.30	0.86	0.74	1.16	0.00	0.00	0.00
39.35	0.85	0.74	1.15	0.00	0.00	0.00
39.40	0.85	0.74	1.14	0.00	0.00	0.00
39.45	0.84	0.74	1.14	0.00	0.00	0.00
39.50	0.84	0.74	1.13	0.00	0.00	0.00
39.55	0.84	0.74	1.13	0.00	0.00	0.00
39.60	0.83	0.74	1.13	0.00	0.00	0.00
39.65	0.83	0.74	1.12	0.00	0.00	0.00
39.70	0.83	0.74	1.12	0.00	0.00	0.00
39.75	0.83	0.74	1.11	0.00	0.00	0.00
39.80	0.82	0.74	1.11	0.00	0.00	0.00
39.85	0.82	0.74	1.11	0.00	0.00	0.00
39.90	0.82	0.74	1.10	0.00	0.00	0.00
39.95	0.82	0.74	1.10	0.00	0.00	0.00
40.00	0.81	0.74	1.10	0.00	0.00	0.00
40.05	0.82	0.74	1.11	0.00	0.00	0.00
40.10	0.83	0.74	1.12	0.00	0.00	0.00
40.15	0.84	0.74	1.14	0.00	0.00	0.00
40.20	0.86	0.74	1.15	0.00	0.00	0.00
40.25	0.87	0.74	1.17	0.00	0.00	0.00
40.30	0.88	0.74	1.18	0.00	0.00	0.00
40.35	0.89	0.74	1.20	0.00	0.00	0.00
40.40	0.90	0.74	1.22	0.00	0.00	0.00
40.45	0.91	0.74	1.23	0.00	0.00	0.00
40.50	0.93	0.74	1.25	0.00	0.00	0.00
40.55	0.94	0.74	1.27	0.00	0.00	0.00
40.60	0.95	0.74	1.29	0.00	0.00	0.00
40.65	0.97	0.74	1.30	0.00	0.00	0.00
40.70	0.98	0.74	1.32	0.00	0.00	0.00
40.75	0.99	0.74	1.34	0.00	0.00	0.00
40.80	1.01	0.74	1.36	0.00	0.00	0.00
40.85	1.02	0.74	1.38	0.00	0.00	0.00
40.90	1.04	0.74	1.40	0.00	0.00	0.00
40.95	1.05	0.74	1.42	0.00	0.00	0.00
41.00	1.07	0.74	1.44	0.00	0.00	0.00
41.05	1.09	0.74	1.46	0.00	0.00	0.00
41.10	1.10	0.74	1.49	0.00	0.00	0.00
41.15	1.12	0.74	1.51	0.00	0.00	0.00
41.20	1.14	0.74	1.53	0.00	0.00	0.00
41.25	1.15	0.74	1.56	0.00	0.00	0.00
41.30	1.17	0.74	1.58	0.00	0.00	0.00
41.35	1.19	0.74	1.61	0.00	0.00	0.00
41.40	1.21	0.74	1.63	0.00	0.00	0.00
41.45	1.23	0.74	1.66	0.00	0.00	0.00
41.50	1.25	0.74	1.69	0.00	0.00	0.00
41.55	1.27	0.74	1.71	0.00	0.00	0.00
41.60	1.29	0.74	1.74	0.00	0.00	0.00

41.65	1.31	0.74	1.77	0.00	0.00	0.00
41.70	1.34	0.74	1.80	0.00	0.00	0.00
41.75	1.36	0.74	1.83	0.00	0.00	0.00
41.80	1.38	0.74	1.87	0.00	0.00	0.00
41.85	2.00	0.74	5.00	0.00	0.00	0.00
41.90	2.00	0.74	5.00	0.00	0.00	0.00
41.95	2.00	0.74	5.00	0.00	0.00	0.00
42.00	2.00	0.74	5.00	0.00	0.00	0.00
42.05	2.00	0.74	5.00	0.00	0.00	0.00
42.10	2.00	0.74	5.00	0.00	0.00	0.00
42.15	2.00	0.74	5.00	0.00	0.00	0.00
42.20	2.00	0.74	5.00	0.00	0.00	0.00
42.25	2.00	0.74	5.00	0.00	0.00	0.00
42.30	2.00	0.74	5.00	0.00	0.00	0.00
42.35	2.00	0.74	5.00	0.00	0.00	0.00
42.40	2.00	0.74	5.00	0.00	0.00	0.00
42.45	2.00	0.74	5.00	0.00	0.00	0.00
42.50	2.00	0.74	5.00	0.00	0.00	0.00
42.55	2.00	0.74	5.00	0.00	0.00	0.00
42.60	2.00	0.74	5.00	0.00	0.00	0.00
42.65	2.00	0.74	5.00	0.00	0.00	0.00
42.70	2.00	0.74	5.00	0.00	0.00	0.00
42.75	2.00	0.74	5.00	0.00	0.00	0.00
42.80	2.00	0.74	5.00	0.00	0.00	0.00
42.85	2.00	0.74	5.00	0.00	0.00	0.00
42.90	2.00	0.74	5.00	0.00	0.00	0.00
42.95	2.00	0.74	5.00	0.00	0.00	0.00
43.00	2.00	0.74	5.00	0.00	0.00	0.00
43.05	2.00	0.74	5.00	0.00	0.00	0.00
43.10	2.00	0.74	5.00	0.00	0.00	0.00
43.15	2.00	0.74	5.00	0.00	0.00	0.00
43.20	2.00	0.74	5.00	0.00	0.00	0.00
43.25	2.00	0.74	5.00	0.00	0.00	0.00
43.30	2.00	0.74	5.00	0.00	0.00	0.00
43.35	2.00	0.74	5.00	0.00	0.00	0.00
43.40	2.00	0.74	5.00	0.00	0.00	0.00
43.45	2.00	0.74	5.00	0.00	0.00	0.00
43.50	2.00	0.74	5.00	0.00	0.00	0.00
43.55	2.00	0.74	5.00	0.00	0.00	0.00
43.60	2.00	0.74	5.00	0.00	0.00	0.00
43.65	2.00	0.74	5.00	0.00	0.00	0.00
43.70	2.00	0.74	5.00	0.00	0.00	0.00
43.75	2.00	0.74	5.00	0.00	0.00	0.00
43.80	2.00	0.74	5.00	0.00	0.00	0.00
43.85	2.00	0.74	5.00	0.00	0.00	0.00
43.90	2.00	0.74	5.00	0.00	0.00	0.00
43.95	2.00	0.74	5.00	0.00	0.00	0.00
44.00	2.00	0.74	5.00	0.00	0.00	0.00
44.05	2.00	0.74	5.00	0.00	0.00	0.00
44.10	2.00	0.74	5.00	0.00	0.00	0.00
44.15	2.00	0.74	5.00	0.00	0.00	0.00
44.20	2.00	0.74	5.00	0.00	0.00	0.00
44.25	2.00	0.74	5.00	0.00	0.00	0.00
44.30	2.00	0.74	5.00	0.00	0.00	0.00
44.35	2.00	0.74	5.00	0.00	0.00	0.00
44.40	2.00	0.74	5.00	0.00	0.00	0.00
44.45	2.00	0.74	5.00	0.00	0.00	0.00
44.50	2.00	0.74	5.00	0.00	0.00	0.00
44.55	2.00	0.74	5.00	0.00	0.00	0.00
44.60	2.00	0.74	5.00	0.00	0.00	0.00
44.65	2.00	0.74	5.00	0.00	0.00	0.00
44.70	2.00	0.74	5.00	0.00	0.00	0.00
44.75	2.00	0.74	5.00	0.00	0.00	0.00
44.80	2.00	0.74	5.00	0.00	0.00	0.00
44.85	2.00	0.74	5.00	0.00	0.00	0.00
44.90	2.00	0.74	5.00	0.00	0.00	0.00
44.95	2.00	0.74	5.00	0.00	0.00	0.00
45.00	2.00	0.74	5.00	0.00	0.00	0.00
45.05	2.00	0.74	5.00	0.00	0.00	0.00
45.10	2.00	0.74	5.00	0.00	0.00	0.00
45.15	2.00	0.74	5.00	0.00	0.00	0.00
45.20	2.00	0.74	5.00	0.00	0.00	0.00
45.25	2.00	0.74	5.00	0.00	0.00	0.00
45.30	2.00	0.74	5.00	0.00	0.00	0.00
45.35	2.00	0.74	5.00	0.00	0.00	0.00
45.40	2.00	0.74	5.00	0.00	0.00	0.00
45.45	2.00	0.74	5.00	0.00	0.00	0.00
45.50	2.00	0.74	5.00	0.00	0.00	0.00
45.55	2.00	0.74	5.00	0.00	0.00	0.00
45.60	2.00	0.74	5.00	0.00	0.00	0.00
45.65	2.00	0.74	5.00	0.00	0.00	0.00
45.70	2.00	0.74	5.00	0.00	0.00	0.00
45.75	2.00	0.74	5.00	0.00	0.00	0.00
45.80	2.00	0.74	5.00	0.00	0.00	0.00
45.85	2.00	0.74	5.00	0.00	0.00	0.00
45.90	2.00	0.74	5.00	0.00	0.00	0.00
45.95	2.00	0.74	5.00	0.00	0.00	0.00
46.00	2.00	0.74	5.00	0.00	0.00	0.00
46.05	2.00	0.74	5.00	0.00	0.00	0.00
46.10	2.00	0.74	5.00	0.00	0.00	0.00

46.15	2.00	0.74	5.00	0.00	0.00	0.00
46.20	2.00	0.74	5.00	0.00	0.00	0.00
46.25	2.00	0.74	5.00	0.00	0.00	0.00
46.30	2.00	0.74	5.00	0.00	0.00	0.00
46.35	2.00	0.74	5.00	0.00	0.00	0.00
46.40	2.00	0.74	5.00	0.00	0.00	0.00
46.45	2.00	0.74	5.00	0.00	0.00	0.00
46.50	2.00	0.74	5.00	0.00	0.00	0.00
46.55	2.00	0.74	5.00	0.00	0.00	0.00
46.60	2.00	0.73	5.00	0.00	0.00	0.00
46.65	2.00	0.73	5.00	0.00	0.00	0.00
46.70	2.00	0.73	5.00	0.00	0.00	0.00
46.75	2.00	0.73	5.00	0.00	0.00	0.00
46.80	2.00	0.73	5.00	0.00	0.00	0.00
46.85	2.00	0.73	5.00	0.00	0.00	0.00
46.90	2.00	0.73	5.00	0.00	0.00	0.00
46.95	2.00	0.73	5.00	0.00	0.00	0.00
47.00	2.00	0.73	5.00	0.00	0.00	0.00
47.05	2.00	0.73	5.00	0.00	0.00	0.00
47.10	2.00	0.73	5.00	0.00	0.00	0.00
47.15	2.00	0.73	5.00	0.00	0.00	0.00
47.20	2.00	0.73	5.00	0.00	0.00	0.00
47.25	2.00	0.73	5.00	0.00	0.00	0.00
47.30	2.00	0.73	5.00	0.00	0.00	0.00
47.35	2.00	0.73	5.00	0.00	0.00	0.00
47.40	2.00	0.73	5.00	0.00	0.00	0.00
47.45	2.00	0.73	5.00	0.00	0.00	0.00
47.50	2.00	0.73	5.00	0.00	0.00	0.00
47.55	2.00	0.73	5.00	0.00	0.00	0.00
47.60	2.00	0.73	5.00	0.00	0.00	0.00
47.65	2.00	0.73	5.00	0.00	0.00	0.00
47.70	2.00	0.73	5.00	0.00	0.00	0.00
47.75	2.00	0.73	5.00	0.00	0.00	0.00
47.80	2.00	0.73	5.00	0.00	0.00	0.00
47.85	2.00	0.73	5.00	0.00	0.00	0.00
47.90	1.63	0.73	2.23	0.00	0.00	0.00
47.95	1.61	0.73	2.20	0.00	0.00	0.00
48.00	1.59	0.73	2.18	0.00	0.00	0.00
48.05	1.57	0.73	2.15	0.00	0.00	0.00
48.10	1.56	0.73	2.13	0.00	0.00	0.00
48.15	1.54	0.73	2.10	0.00	0.00	0.00
48.20	1.52	0.73	2.08	0.00	0.00	0.00
48.25	1.50	0.73	2.06	0.00	0.00	0.00
48.30	1.49	0.73	2.03	0.00	0.00	0.00
48.35	1.47	0.73	2.01	0.00	0.00	0.00
48.40	1.46	0.73	1.99	0.00	0.00	0.00
48.45	1.44	0.73	1.97	0.00	0.00	0.00
48.50	1.43	0.73	1.95	0.00	0.00	0.00
48.55	1.41	0.73	1.93	0.00	0.00	0.00
48.60	1.40	0.73	1.91	0.00	0.00	0.00
48.65	1.38	0.73	1.90	0.00	0.00	0.00
48.70	1.37	0.73	1.88	0.00	0.00	0.00
48.75	1.36	0.73	1.86	0.00	0.00	0.00
48.80	1.35	0.73	1.85	0.00	0.00	0.00
48.85	1.33	0.73	1.83	0.00	0.00	0.00
48.90	1.32	0.73	1.81	0.00	0.00	0.00
48.95	1.31	0.73	1.80	0.00	0.00	0.00
49.00	1.30	0.73	1.78	0.00	0.00	0.00
49.05	1.29	0.73	1.77	0.00	0.00	0.00
49.10	1.28	0.73	1.75	0.00	0.00	0.00
49.15	1.27	0.73	1.74	0.00	0.00	0.00
49.20	1.26	0.73	1.73	0.00	0.00	0.00
49.25	1.25	0.73	1.71	0.00	0.00	0.00
49.30	1.24	0.73	1.70	0.00	0.00	0.00
49.35	1.23	0.73	1.69	0.00	0.00	0.00
49.40	1.22	0.73	1.68	0.00	0.00	0.00
49.45	1.21	0.73	1.66	0.00	0.00	0.00
49.50	1.20	0.73	1.65	0.00	0.00	0.00
49.55	1.19	0.73	1.64	0.00	0.00	0.00
49.60	1.18	0.73	1.63	0.00	0.00	0.00
49.65	1.18	0.73	1.62	0.00	0.00	0.00
49.70	1.17	0.73	1.61	0.00	0.00	0.00
49.75	1.16	0.73	1.60	0.00	0.00	0.00
49.80	1.15	0.73	1.59	0.00	0.00	0.00
49.85	1.15	0.73	1.58	0.00	0.00	0.00
49.90	1.14	0.73	1.57	0.00	0.00	0.00
49.95	1.13	0.73	1.56	0.00	0.00	0.00
50.00	1.12	0.73	1.55	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands

S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Appendix D

Earthwork Specifications

APPENDIX D: EARTHWORK SPECIFICATIONS

D.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D.2 Site Inspection

- The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

- This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

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D.3 Authority of the Geotechnical Engineer

- The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

- As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

- The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D.4 Site Clearing

- Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavements, utilities, trees and vegetation.

- Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D.5 Excavations

- Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D.6 Preparation of Fill Areas

- All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

- In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 5 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All undocumented fill should be removed and replaced with compacted fill. The excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations

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before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

- The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

- Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

- All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D.7 Placement and Compaction of Fill

- Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

- Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    - All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

    - Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

- Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

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- All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

- Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

- Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

- Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

- It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

- Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

- Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

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- Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter, and rocks shall be well mixed with finer soil.

- The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

- Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

- The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

- The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

- Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

- It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

- Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D.9 Observation and Testing

- During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

- Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than

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specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

- A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

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Department of Conservation
California Geological Survey
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Sacramento, CA 95814
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Edmund G. Brown Jr., *Governor*
John G. Parrish, Ph.D., *State Geologist*

Mr. Gary Nellesen
Director of Facilities
Mt. San Antonio College District
1100 North Grand Avenue,
Walnut, CA 91789

March 26, 2018

Subject: **Engineering Geology and Seismology Review for**
Mt. San Antonio Community College – Lot R Tennis and Parking Structure
1100 North Grand Avenue, Walnut, CA 91789
CGS Application No. 03-CGS3298

Dear Mr. Nellesen:

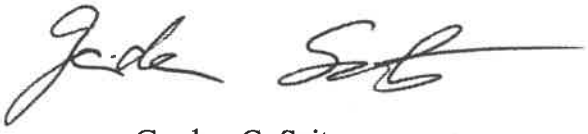
In accordance with your request and transmittal of documents received on February 8, 2018, the California Geological Survey has reviewed the engineering geology and seismology aspects of the consulting report prepared for Mt. San Antonio Community College. It is our understanding that this project involves the construction of a multi-story parking and tennis court structure. This review was performed in accordance with Title 24, California Code of Regulations, 2016 California Building Code (CBC) and followed CGS Note 48 guidelines. We reviewed the following report:

> **Geotechnical Study Report, Proposed Lot R Tennis and Parking Structure, Mt. San Antonio College, Walnut, California:** Converse Consultants, 717 South Myrtle Avenue, Monrovia, CA 91016; Converse Project No. 17-31-247-, report dated December 1, 2017, 43 pages, 11 tables, 12 drawings, 4 appendices.

Based on our review, the consultants provide a thorough assessment of engineering and geologic hazard issues with respect to the proposed improvements. The principal concerns identified by the consultants are the potential for strong ground shaking, and differential settlement across the sedimentary bedrock to alluvium cut/fill boundary that bisects the proposed structure. The consultants recommend site-specific spectral acceleration parameters of S_{DS} = **1.446*g*** and S_{D1} = **0.784*g***, which are considered reasonable.

In conclusion, ***the engineering geology and seismology issues at this site are adequately assessed in the referenced report***. If you have any further questions about this review letter, please contact the reviewer.

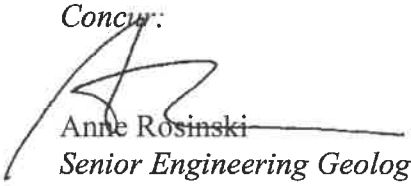
Respectfully submitted,





Gordon G. Seitz
Engineering Geologist,
PG 5514, CEG 1718
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Concur:



Anne Rosinski
Senior Engineering Geologist
PG 7481, CEG 2353



Enclosures:

Note 48 Checklist Review Comments
Keyed to: *Note 48 - Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings*

Copies to:

Mark B. Schluter, *Certified Engineering Geologist* and Siva K. Sivathasan, *Registered Geotechnical Engineer*
Converse Consultants, 717 South Myrtle Avenue, Monrovia, CA 91016

Kenneth Salyer, *Architect*
HMC Architects, 3546 Concours Street, Ontario, CA 91764

Ted Beckwith, *Senior Structural Engineer*
Division of State Architect, 700 North Alameda Street, Suite 5-500, Los Angeles, CA 90012

Note 48 Checklist Review Comments

In the numbered paragraphs below, this review is keyed to the paragraph numbers of California Geological Survey Note 48 (October, 2013 edition), *Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings.*

Project Location

1. Site Location Map, Street Address, County Name: Adequately addressed. The consultants provide a figure with the site plotted on a 7½-minute USGS quadrangle base-map.
2. Plot Plan with Exploration Data with Building Footprint Adequately addressed. The consultants provide a plot plan with identifying markers such as streets, buildings, and property lines.
3. Site Coordinates: Adequately addressed. Latitude and Longitude provided in report: 34.0455°N, 117.8383°W

Engineering Geology/Site Characterization

4. Regional Geology and Regional Fault Maps: Adequately addressed. The consultants provide an illustration with the site plotted.
5. Geologic Map of Site: Adequately addressed. The consultants provide a detailed geologic map with proper symbols and geologic legend.
6. Subsurface Geology: Adequately addressed. The site in the area of the proposed structure was characterized by 11 hollow stem boring ranging up to 80 ft. in depth, and 17 CPT soundings ranging up to 75 ft. in depth. Previous grading at the site has resulted in the proposed building footprint area consisting of cut and fill areas. The majority of the proposed structure area, the northeastern portion consists of formational sedimentary bedrock with some fill materials stored on the surface. The western and southern areas that are a parking lot are fill areas, ranging up to 10 ft. of fill overlying alluvial soils to depths of up to 45 ft., with groundwater observed at a depth of approximately 20 ft.
7. Geologic Cross Sections: Adequately addressed.
8. Active Faulting & Coseismic Deformation Across Site: Adequately addressed. The consultants report the site is not located in an earthquake fault zone.
9. Geologic Hazard Zones (Liquefaction & Landslides): Adequately addressed. The consultants provide figures showing the project site in relation to the official CGS hazard zones. The site is not located in an earthquake-induced landslide zone, however, the western and southern portions are located in a liquefaction zone.
10. Geotechnical Testing of Representative Samples: Adequately addressed.
11. Geological Consideration of Grading Plans and Foundation Plans: Adequately addressed. The proposed structure is underlain by very dense formational bedrock on the east, and more settlement-prone alluvium on the south and west portions. To mitigate differential settlement across this boundary the consultants recommend over-excavation and re-compaction, and the use of a geofabric reinforcement. Additionally, the consultants address the possibility that temporary shoring and tie-back may be required for the cut areas where retaining walls are planned.

Seismology & Calculation of Earthquake Ground Motion

12. Evaluation of Historic Seismicity: Marginally Adequate. The consultants provide a table No. 1 "Summary of Regional Faults" that lists the San Andreas Fault 1857 earthquake as a M7.4, when the consensus magnitude is M7.9.
13. Classify the Geologic Subgrade (Site Class): Marginally Adequate. The consultants used a Vs30 of 390m/s for calculating the ground motions at the site, which matches the site observations. However, they erroneously reported a site class D, even though the site conditions result in a site class C.
14. General Procedure Seismic Parameters: Adequately addressed. The consultants report the following parameters derived from a map-based analysis:
    $S_S = 2.185g$ and $S_1 = 0.780g$
    $S_{DS} = 1.457g$ and $S_{D1} = 0.676g$
15. Seismic Design Category: Adequately addressed. The consultants report a seismic design category E.
16. Site-Specific Ground Motion Analysis: Adequately addressed. The consultants' deterministic and probabilistic MCE spectra appear reasonable based on comparison with results from the State-Wide Model (from Petersen and others, 2008). The consultants report their site-specific seismic design parameters are: **$S_{DS} = 1.446g$** and **$S_{D1} = 0.784g$**. The site-specific ground motion analysis presented appears to be reasonable and in accordance with ASCE 7-10
17. Deaggregated Seismic Source Parameters: Adequately addressed.
18. Time-Histories of Earthquake Ground Motion: Not applicable.

Liquefaction/Seismic Settlement Analysis

19. Geologic Setting for Occurrence of Seismically Induced Liquefaction: Adequately addressed. The consultants characterize the subsurface soil conditions with CPT boring 9, and hollow stem auger borings 4, 6, and 11. They used groundwater levels of 22 ft, which appear reasonable. Encountered water levels were deeper. The data appear to support the consultants' conclusion that liquefaction of some layers may occur with some associated ground settlement.
20. Seismic Settlement Calculations: Adequately addressed. The consultants provide a liquefaction analysis, that indicates a **total seismic settlement of up to 2.6 inches, and differential settlements up to 1.3 inches** combining saturated and unsaturated soils. The liquefaction modeling indicates the potentially liquefiable layers occur at depths below 22 ft. The data appear to support the consultants' conclusion that liquefaction of some layers may occur with some associated ground settlement.
21. Other Liquefaction Effects: Not applicable.
22. Mitigation Options for Liquefaction: Not applicable.

Slope Stability Analysis

23. Geologic Setting for Occurrence of Landslides: Adequately addressed. The consultants report that the absence of significant ground slopes results in the very low potential for landslides to impact the proposed development. This assessment appears reasonable.
24. Determination of Static and Dynamic Strength Parameters: Not applicable.
25. Determination of Pseudo-Static Coefficient (Keq): Not applicable.
26. Identify Critical Slip Surfaces for Static and Dynamic Analyses: Not applicable.
27. Dynamic Site Conditions: Not applicable.
28. Mitigation Options/Other Slope Failure: Not applicable.

Other Geologic Hazards or Adverse Site Conditions

29. Expansive Soils: Adequately addressed. The consultants report the near surface soils are low to moderately expansive. However, they also indicate that highly expansive soils may be excavated and their use as near surface fill should be avoided.
30. Corrosive/Reactive Geochemistry of the Geologic Subgrade: Adequately addressed.
31. Conditional Geologic Assessment: Selected geologic hazards addressed by the consultants are listed below:
    C. Flooding: Adequately addressed. The consultants report the site is located in a FEMA zone D, areas in which flood hazards are undetermined, but possible. Furthermore, the consultants conclude that due to the absence of shallow groundwater, distance to bodies of water, and regional flood control structures, the potential for flooding at the site is considered remote.

Report Documentation

32. Geology, Seismology, and Geotechnical References: Adequately addressed.
33. Certified Engineering Geologist: Adequately addressed.
    Mark B. Schluter, Certified Engineering Geologist #1415
34. Registered Geotechnical Engineer: Adequately addressed.
    Siva K. Sivathasan, Registered Geotechnical Engineer #2708

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

NATURAL HISTORY MUSEUM
LOS ANGELES COUNTY

Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

5 April 2018

Psomas
3 Hutton Centre Drive, Suite 200
Santa Ana, CA 92707-8794

Attn: Charles Cisneros, Senior Archaeologist / Project Manager

re: Paleontological Resources for the proposed Temple Avenue Project, Psomas Project 3MTS010200, in the City of Walnut, Los Angeles County, project area

Dear Charles:

I have conducted a thorough search of our Vertebrate Paleontology records for the proposed Temple Avenue Project, Psomas Project 3MTS010200, in the City of Walnut, Los Angeles County, project area as outlined on the portion of the San Dimas USGS topographic quadrangle map that you sent to me via e-mail on 22 March 2018. We have no vertebrate fossil localities that lie directly within the boundaries of the proposed project area, but we do have localities somewhat nearby from sedimentary deposits similar to those that may occur at depth in the proposed project area.

In the lower lying terrain in the southwestern portion and the eastern margin of the proposed project area the surface deposits consist of younger Quaternary Alluvium, derived as alluvial fan deposits from the San Jose Hills immediately to the north. These deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but they may be underlain by older sedimentary deposits that do contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from similar older Quaternary deposits is LACM 8014, east-southeast of the proposed project area in the northeastern Puente Hills just southwest of the intersection of the Riverside Freeway (Highway 60) and the Corona Freeway (Highway 71), that produced a fossil specimen of bison, *Bison*. A little farther to the east-southeast from the proposed project area, in English Canyon west of Chino, our older Quaternary locality LACM 1728 produced fossil specimens of horse, *Equus*, and camel, *Camelops*, at a depth of 15 to 20 feet below the surface.

In the surrounding elevated terrain there are exposures of the marine late Miocene Puente Formation, also sometimes considered to be part of the Monterey Formation in this area with the youngest member of the Puente Formation referred to as the Sycamore Canyon Formation. Our closest vertebrate fossil locality from the Puente Formation is LACM 6171, due west of the proposed project area in the hills on the west side of Collegewood Drive, that produced a fossil fish specimen of herring, *Ganolytes*. Our next closest fossil vertebrate locality from the Puente Formation is LACM 7153, just south of east of the proposed project area south of Temple Avenue and west of Valley Boulevard, that produced many specimens of fossil pipefish including the holotype (name bearing specimen of a species new to science) of the pipefish *Syngnathus emeritus*, published by R. A. Fritzsche in 1980 (Revision of the eastern Pacific Syngnathidae (Pisces: Syngnathiformes), including both Recent and fossil forms. Proceedings of the California Academy of Sciences, 42(6):181-227). Further to the southeast of the proposed project area, in Diamond Bar south and west of the intersection of the Pomona Freeway (Highway 60) and the Orange Freeway (Highway 57), our Puente Formation locality LACM 7190 produced a fauna of fossil fish including deep sea smelts, Bathylagidae, lantern fish, Myctophidae, jacks, Carangidae, and herrings, *Ganolytes* and *Etringus*.

Shallow excavations in the younger Quaternary Alluvium exposed throughout the proposed project area probably will not uncover significant vertebrate fossil remains. Deeper excavations there that extend down into older deposits, however, may well encounter significant fossil vertebrate specimens. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Sediment samples should also be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Mt. San Antonio College Parking & Circulation MP
1100 N. Grand Avenue
Walnut, CA 91789

Inquiry Number: 5085390.2s
October 24, 2017

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

1100 N. GRAND AVENUE
WALNUT, CA 91789

COORDINATES

Latitude (North):	34.0459290 - 34° 2' 45.34''
Longitude (West):	117.8413910 - 117° 50' 29.00''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	422338.4
UTM Y (Meters):	3767373.2
Elevation:	737 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619080 SAN DIMAS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140527, 20140515, 20140513
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
1100 N. GRAND AVENUE
WALNUT, CA 91789

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	MT. SAN ANTONIO COLL	1100 GRAND	LUST, HIST CORTESE, NPDES		TP
A2	MT SAN ANTONIO COLLE	1100 N GRAND AVE	LOS ANGELES CO. HMS		TP
A3	MT. SAN ANTONIO COLL	1100 GRAND AVE., N.	RGA LUST		TP
A4	MT. SAN ANTONIO COLL	1100 GRAND AVE N	RGA LUST		TP
A5	MT. SAN ANTONIO COMM	1100 NGRAND AVE	EMI		TP
A6	OAKDALE MEMORIAL PAR	1100 GRAND AVE N	FINDS		TP
A7	RUBEN R FLORES	1100 N GRAND AVE	PEST LIC		TP
A8	MT. SAN ANTONIO COMM	1100 N GRAND AVE BLD	EMI		TP
A9	VERIZON WIRELESS: BU	1100 NORTH GRAND AVE	FINDS		TP
A10	MT SAN ANTONIO COMMU	1100 N. GRAND AVENUE	EMI		TP
A11	CITY OF WALNUT/MT SA	1100 N GRAND AVE	HAZNET		TP
A12	MT SAN ANTONIO COLLE	1100 N GRAND AVE	HAZNET		TP
A13	MT. SAC WEST PARCEL	1100 N GRAND AVENUE	NPDES		TP
A14	MT. SAN ANTONIO COLL	1100 N GRAND AVENUE	AST		TP
A15	MTSAC MAJOR GRADING	1100 N GRAND AVENUE	ECHO		TP
A16	M C P URETHANES DIV	1100 N GRAND AVE TRA	HAZNET		TP
A17	MT. SAN ANTONIO COMM	1100 N GRAND AVE	RCRA-LQG, UST, SWEEPS UST, HIST UST, CA FID UST,...		TP
A18	MT SAN ANTONIO COMM	1100 N GRAND AVE	HAZNET		TP
A19	LA COUNTY SANITATION	1100 N GRAND AVE	HAZNET, NPDES		TP
A20	MSAC PARKING STRUCTU	1100 NORTH GRAND AVE	NPDES		TP
Reg	SAN GABRIEL VALLEY		AOCONCERN	Same	3676, 0.696, SE
B21	ARMY FIELD OP HOSPIT		ENVIROSTOR	Higher	1 ft.
22	MY KIDS	1902 E EDINGER AVE	FINDS	Higher	1 ft.
23	POMONA BRICK COMPANY	1000' N GRAND 1800'	WMUDS/SWAT	Lower	1 ft.
B24	SPADRA GENERAL HOSP		ENVIROSTOR	Higher	1 ft.
C25	ROGERS KEN CHEVRON S	1201 GRAND	EDR Hist Auto	Lower	47, 0.009, WSW
C26	EXXON #7-6245	1203 GRAND	LUST, HIST CORTESE	Lower	52, 0.010, WSW
C27	LEE DAVID	1229 N GRAND AVE	EDR Hist Cleaner	Lower	121, 0.023, WSW
C28	SPACE AGE 39 MINUTE	1229 N GRAND AVE	RCRA-SQG, FINDS, ECHO, EMI, HAZNET	Lower	121, 0.023, WSW
D29	COLLEGEWOOD CLEANERS	1317 N GRAND AVE	EDR Hist Cleaner	Higher	123, 0.023, West
D30	COLLEGEWOOD CLEANERS	1317 GRAND AVE	EDR Hist Cleaner	Higher	123, 0.023, West
E31	A PLUS CLEANERS	1355 N GRAND AVE	EDR Hist Cleaner	Higher	123, 0.023, West
E32	LEWIS CLEANERS	1345 N GRAND AVE	EDR Hist Cleaner	Higher	123, 0.023, West
33	DON JIREH	21074 GRANITE WELLS	EDR Hist Cleaner	Higher	154, 0.029, NNW
C34	CHEVRON USA SS 20202	1203 N GRAND AVE	UST	Lower	178, 0.034, WSW
C35	CHEVRON 202029	1203 N GRAND AVE.	RCRA-LQG, FINDS, ECHO	Lower	178, 0.034, WSW
C36	DAVES CHEVRON INC	1203 N GRAND AVE	EDR Hist Auto	Lower	178, 0.034, WSW
C37	CHEVRON #20-2029	1203 N GRAND AVE	LUST	Lower	178, 0.034, WSW
D38	LEES SHELL SERVICE	1325 N GRAND	EDR Hist Auto	Higher	200, 0.038, West

MAPPED SITES SUMMARY

Target Property Address:
1100 N. GRAND AVENUE
WALNUT, CA 91789

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
39	SUPER FOCUS	1205 N GRAND AVE	RCRA-SQG, SWEEPS UST, FINDS, ECHO, HAZNET	Lower	285, 0.054, WSW
40	DISCOUNT TIRES & AUT	21050 STODDARD WELLS	EDR Hist Auto	Higher	412, 0.078, NNW
F41	RITZ CLEANERS	20747 5 AMAR RD	RCRA-SQG, FINDS, ECHO, DRYCLEANERS	Lower	610, 0.116, WSW
F42	RITZ CLEANERS	20747 AMAR RD STE 5	EDR Hist Cleaner	Lower	610, 0.116, WSW
43	SPADRA LDFL	4125 W VALLEY BLVD	SEMS-ARCHIVE, RCRA-SQG, ENVIROSTOR, SWF/LF,...	Lower	3022, 0.572, ESE
44	TITECH	4000 WEST VALLEY BLV	ENVIROSTOR, VCP, DEED, CHMIRS	Lower	3257, 0.617, ESE
45	WESTHOFF ELEMENTARY	1323 COUNTRY HOLLOW	ENVIROSTOR, SCH	Higher	3913, 0.741, WSW
46	CONSOLIDATED PRECISI	4200 W VALLEY BLVD	ENVIROSTOR, TRIS, ICIS, US AIRS, EMI, LOS ANGELES...	Lower	4028, 0.763, SE
47	IMI TITECH TITANIUM	4000 W. VALLEY BLVD.	ENVIROSTOR, SLIC, WIP	Lower	4172, 0.790, ESE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 8 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
MT. SAN ANTONIO COLL 1100 GRAND WALNUT, CA 91789	LUST Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed Facility Id: I-13394 Status: Case Closed Global Id: T0603704066 Global ID: T0603704066 HIST CORTESE Reg Id: I-13394 NPDES	N/A
MT SAN ANTONIO COLLE 1100 N GRAND AVE WALNUT, CA 91789	LOS ANGELES CO. HMS Facility ID: 013117-041166	N/A
MT. SAN ANTONIO COLL 1100 GRAND AVE., N. WALNUT, CA	RGA LUST	N/A
MT. SAN ANTONIO COLL 1100 GRAND AVE N WALNUT, CA	RGA LUST	N/A
MT. SAN ANTONIO COMM 1100 NGRAND AVE WALNUT, CA 91789	EMI Facility Id: 4347	N/A
OAKDALE MEMORIAL PAR 1100 GRAND AVE N WALNUT, CA 91789	FINDS Registry ID:: 110065771150	N/A
RUBEN R FLORES 1100 N GRAND AVE WALNUT, CA 91789	PEST LIC	N/A
MT. SAN ANTONIO COMM 1100 N GRAND AVE BLD WALNUT, CA 91789	EMI Facility Id: 4347	N/A
VERIZON WIRELESS: BU 1100 NORTH GRAND AVE WALNUT, CA 91789	FINDS	N/A

EXECUTIVE SUMMARY

Registry ID:: 110065372180

MT SAN ANTONIO COMMU 1100 N. GRAND AVENUE WALNUT, CA 91789	EMI Facility Id: 4347	N/A
CITY OF WALNUT/MT SA 1100 N GRAND AVE WALNUT, CA 91789	HAZNET GEPAID: CAH777001122	N/A
MT SAN ANTONIO COLLE 1100 N GRAND AVE WALNUT, CA 91789	HAZNET GEPAID: CAL000069089	N/A
MT. SAC WEST PARCEL 1100 N GRAND AVENUE WALNUT, CA 91789	NPDES Facility Status: Active	N/A
MT. SAN ANTONIO COLL 1100 N GRAND AVENUE WALNUT, CA 91789	AST	N/A
MTSAC MAJOR GRADING 1100 N GRAND AVENUE WALNUT, CA 91789	ECHO	N/A
M C P URETHANES DIV 1100 N GRAND AVE TRA WALNUT, CA 91789	HAZNET GEPAID: CAP000056457	N/A
MT. SAN ANTONIO COMM 1100 N GRAND AVE WALNUT, CA 91789	RCRA-LQG EPA ID:: CAD102985108 UST Database: UST, Date of Government Version: 06/12/2017 Facility Id: LACoFA0012888 Facility Id: 13394 SWEEPS UST Status: A Tank Status: A Comp Number: 13394 HIST UST	CAD102985108

	Facility Id: 00000029605 CA FID UST Facility Id: 19002882 Status: A FINDS Registry ID:: 110002421825 ECHO EMI Facility Id: 4347 LOS ANGELES CO. HMS Facility ID: 013117-013394 NPDES Facility Status: Active Facility Status: Terminated	
MT SAN ANTONIO COMM 1100 N GRAND AVE WALNUT, CA 91789	HAZNET GEPAID: CAD102985108	N/A
LA COUNTY SANITATION 1100 N GRAND AVE WALNUT, CA 91789	HAZNET GEPAID: CAH111000883 NPDES Facility Status: Active	N/A
MSAC PARKING STRUCTU 1100 NORTH GRAND AVE WALNUT, CA 91789	NPDES Facility Status: Terminated	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

EXECUTIVE SUMMARY

Federal CERCLIS list

FEDERAL FACILITY---------- Federal Facility Site Information listing
SEMS---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-CESQG---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS---------- Land Use Control Information System
US ENG CONTROLS---------- Engineering Controls Sites List
US INST CONTROL---------- Sites with Institutional Controls

Federal ERNS list

ERNS---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST---------- Leaking Underground Storage Tanks on Indian Land
SLIC---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST---------- Underground Storage Tank Listing
INDIAN UST---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP---------- Voluntary Cleanup Program Properties
INDIAN VCP---------- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS---------- Considered Brownfieds Sites Listing

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System

PRP - Potentially Responsible Parties
PADS - PCB Activity Database System
ICIS - Integrated Compliance Information System
FTTS - FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS - Material Licensing Tracking System
COAL ASH DOE - Steam-Electric Plant Operation Data
COAL ASH EPA - Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER - PCB Transformer Registration Database
RADINFO - Radiation Information Database
HIST FTTS - FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS - Incident and Accident Data
CONSENT - Superfund (CERCLA) Consent Decrees
INDIAN RESERV - Indian Reservations
FUSRAP - Formerly Utilized Sites Remedial Action Program
UMTRA - Uranium Mill Tailings Sites
LEAD SMELTERS - Lead Smelter Sites
US AIRS - Aerometric Information Retrieval System Facility Subsystem
US MINES - Mines Master Index File
ABANDONED MINES - Abandoned Mines
UXO - Unexploded Ordnance Sites
DOCKET HWC - Hazardous Waste Compliance Docket Listing
FUELS PROGRAM - EPA Fuels Program Registered Listing
CA BOND EXP. PLAN - Bond Expenditure Plan
Cortese - "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings - CUPA Resources List
ENF - Enforcement Action Listing
Financial Assurance - Financial Assurance Information Listing
ICE - ICE
HWT - Registered Hazardous Waste Transporter Database
MINES - Mines Site Location Listing
MWMP - Medical Waste Management Program Listing
PROC - Certified Processors Database
Notify 65 - Proposition 65 Records
LA Co. Site Mitigation - Site Mitigation List
UIC - UIC Listing
WASTEWATER PITS - Oil Wastewater Pits Listing
WDS - Waste Discharge System
WIP - Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP - EDR Proprietary Manufactured Gas Plants

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF - Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 09/13/2017 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHEVRON 202029	***1203 N GRAND AVE.***	***WSW 0 - 1/8 (0.034 mi.)***	***C35***	***81***

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 09/13/2017 has revealed that there are 3 RCRA-SQG sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SPACE AGE 39 MINUTE	***1229 N GRAND AVE***	***WSW 0 - 1/8 (0.023 mi.)***	***C28***	***75***
SUPER FOCUS	***1205 N GRAND AVE***	***WSW 0 - 1/8 (0.054 mi.)***	***39***	***86***
RITZ CLEANERS	***20747 5 AMAR RD***	***WSW 0 - 1/8 (0.116 mi.)***	***F41***	***89***

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to,

identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/31/2017 has revealed that there are 7 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ARMY FIELD OP HOSPIT Facility Id: 80000970 Status: Inactive - Needs Evaluation		0 - 1/8 (0.000 mi.)	B21	68
SPADRA GENERAL HOSP Facility Id: 80000481 Status: Inactive - Needs Evaluation		0 - 1/8 (0.000 mi.)	B24	71
WESTHOFF ELEMENTARY Facility Id: 19010024 Status: Inactive - Withdrawn	***1323 COUNTRY HOLLOW***	***WSW 1/2 - 1 (0.741 mi.)***	***45***	***130***

Lower Elevation	Address	Direction / Distance	Map ID	Page
SPADRA LDFL Facility Id: 19490004 Status: Refer: RWQCB	***4125 W VALLEY BLVD***	***ESE 1/2 - 1 (0.572 mi.)***	***43***	***92***
TITECH Facility Id: 19340790 Status: Certified O&M - Land Use Restrictions Only	***4000 WEST VALLEY BLV***	***ESE 1/2 - 1 (0.617 mi.)***	***44***	***122***
CONSOLIDATED PRECISI Facility Id: 80001677 Facility Id: 71002577 Status: Inactive - Needs Evaluation Status: Refer: Other Agency	***4200 W VALLEY BLVD***	***SE 1/2 - 1 (0.763 mi.)***	***46***	***132***
IMI TITECH TITANIUM Facility Id: 71003095 Status: Refer: Other Agency	***4000 W. VALLEY BLVD.***	***ESE 1/2 - 1 (0.790 mi.)***	***47***	***163***

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON #7-6245 Database: LUST REG 4, Date of Government Version: 09/07/2004 Database: LUST, Date of Government Version: 06/12/2017 Status: Completed - Case Closed	***1203 GRAND***	***WSW 0 - 1/8 (0.010 mi.)***	***C26***	***72***

Facility Id: I-13371
Status: Case Closed
Global Id: T0603704064
Global ID: T0603704064

CHEVRON #20-2029 | 1203 N GRAND AVE | WSW 0 - 1/8 (0.034 mi.) | C37 | 84
Database: LUST, Date of Government Version: 06/12/2017
Status: Completed - Case Closed
Global Id: T0603789797

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHEVRON USA SS 20202	1203 N GRAND AVE	WSW 0 - 1/8 (0.034 mi.)	C34	80
Database: UST, Date of Government Version: 06/12/2017 Facility Id: LACoFA0012889 Facility Id: 21182				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: The Waste Management Unit Database System is used for program tracking and inventory of waste management units. The source is the State Water Resources Control Board.

A review of the WMUDS/SWAT list, as provided by EDR, and dated 04/01/2000 has revealed that there is 1 WMUDS/SWAT site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
POMONA BRICK COMPANY	1000' N GRAND 1800'	0 - 1/8 (0.000 mi.)	23	70

Local Lists of Hazardous waste / Contaminated Sites

AOCONCERN: San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

A review of the AOCONCERN list, as provided by EDR, and dated 03/30/2009 has revealed that there is 1 AOCONCERN site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SAN GABRIEL VALLEY		SE 1/2 - 1 (0.696 mi.)	0	68

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SUPER FOCUS	***1205 N GRAND AVE***	***WSW 0 - 1/8 (0.054 mi.)***	***39***	***86***
Status: A Tank Status: A Comp Number: 13371				

Other Ascertainable Records

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 07/23/2017 has revealed that there is 1 FINDS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MY KIDS	1902 E EDINGER AVE	0 - 1/8 (0.000 mi.)	22	69

DRYCLEANERS: A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaners' agents; linen supply; coin-operated laundries and cleaning; drycleaning plants except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

A review of the DRYCLEANERS list, as provided by EDR, and dated 08/02/2017 has revealed that there is 1 DRYCLEANERS site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
RITZ CLEANERS	***20747 5 AMAR RD***	***WSW 0 - 1/8 (0.116 mi.)***	***F41***	***89***
EPA Id: CA0000839852				

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON #7-6245	***1203 GRAND***	***WSW 0 - 1/8 (0.010 mi.)***	***C26***	***72***
Reg Id: I-13371				

HWP: Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

A review of the HWP list, as provided by EDR, and dated 05/22/2017 has revealed that there is 1 HWP site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CONSOLIDATED PRECISI	***4200 W VALLEY BLVD***	***SE 1/2 - 1 (0.763 mi.)***	***46***	***132***
EPA Id: CAD076243815				
Cleanup Status: NON-OPERATING				

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there are 4 EDR Hist Auto sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LEES SHELL SERVICE	1325 N GRAND	W 0 - 1/8 (0.038 mi.)	D38	85
DISCOUNT TIRES & AUT	21050 STODDARD WELLS	NNW 0 - 1/8 (0.078 mi.)	40	89

Lower Elevation	Address	Direction / Distance	Map ID	Page
ROGERS KEN CHEVRON S	1201 GRAND	WSW 0 - 1/8 (0.009 mi.)	C25	72
DAVES CHEVRON INC	1203 N GRAND AVE	WSW 0 - 1/8 (0.034 mi.)	C36	83

EXECUTIVE SUMMARY

EDR Hist Cleaner: EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

A review of the EDR Hist Cleaner list, as provided by EDR, has revealed that there are 7 EDR Hist Cleaner sites within approximately 0.125 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
COLLEGEWOOD CLEANERS	1317 N GRAND AVE	W 0 - 1/8 (0.023 mi.)	D29	79
COLLEGEWOOD CLEANERS	1317 GRAND AVE	W 0 - 1/8 (0.023 mi.)	D30	79
A PLUS CLEANERS	1355 N GRAND AVE	W 0 - 1/8 (0.023 mi.)	E31	79
LEWIS CLEANERS	1345 N GRAND AVE	W 0 - 1/8 (0.023 mi.)	E32	80
DON JIREH	21074 GRANITE WELLS	NNW 0 - 1/8 (0.029 mi.)	33	80

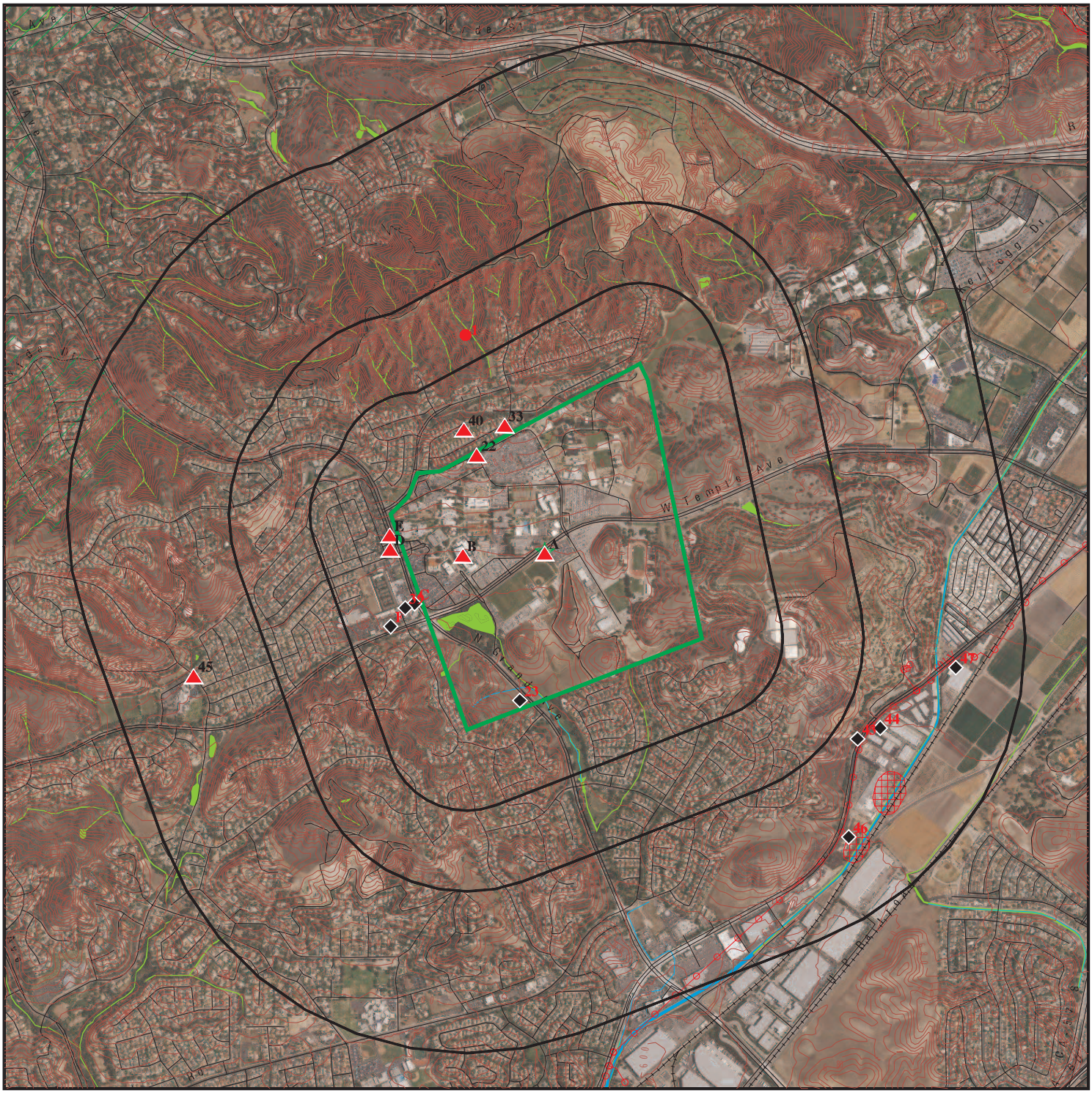
Lower Elevation	Address	Direction / Distance	Map ID	Page
LEE DAVID	1229 N GRAND AVE	WSW 0 - 1/8 (0.023 mi.)	C27	74
RITZ CLEANERS	20747 AMAR RD STE 5	WSW 0 - 1/8 (0.116 mi.)	F42	91

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 5085390.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Upgradient Area

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Mt. San Antonio College Parking & Circulation MP	CLIENT:	Bonterra Psomas
ADDRESS:	1100 N. Grand Avenue Walnut CA 91789	CONTACT:	Ashley Mccoy
		INQUIRY #:	5085390.2s
LAT/LONG:	34.045929 / 117.841391	DATE:	October 24, 2017 3:44 pm

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DETAIL MAP - 5085390.2S


NEW DAWN
COLLEGEWOOD ELEMENTARY
SPRING GABLES ICE ODH HOME
KID JUNCTION PRESCHOOL
KID JUNCTION
KID JUNCTION
LEE FAMILY CHILD CARE
LEE FAMILY CHILD CARE
INTERNATIONAL SCHOOL OF MONTESORI
INTERNATIONAL SCHOOL OF MONTESORI
INTERNATIONAL SCHOOL OF MONTESORI
MT SAN ANTONIO COLLEGE
CHILD DEVELOPMENT CENTER
CHILD DEVELOPMENT CENTER
B COOK MOBILE X RAY AND EKA
Walnut Dr
Pomona Dr
Service Rd
Brookhurst Dr
Sunset Ridge Rd
Sunset Ridge Rd
Sunset Canyon Rd
Sunset Canyon Rd
Stonybrook Dr
Stonybrook Dr
E Snow Creek Rd
Roundup Dr
Roundup Dr
Buckskin Dr
Buckskin Dr
Blossom Rd
Blossom Rd
Brookhurst Rd
Brookhurst Rd
Brookhurst Ave
Brookhurst Ave
Brookhurst Ave

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250	1	1	0	NR	NR	NR	2
RCRA-SQG	0.250		3	0	NR	NR	NR	3
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		2	0	0	5	NR	7
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500	1	2	0	0	NR	NR	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250	1	1	0	NR	NR	NR	2
AST	0.250	1	0	0	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		1	0	0	NR	NR	1
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
AOCONCERN	1.000		0	0	0	1	NR	1
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250	1	1	0	NR	NR	NR	2
HIST UST	0.250	1	0	0	NR	NR	NR	1
CA FID UST	0.250	1	0	0	NR	NR	NR	1
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001	3	1	NR	NR	NR	NR	4
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001	2	0	NR	NR	NR	NR	2
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		1	0	NR	NR	NR	1
EMI	0.001	4	0	NR	NR	NR	NR	4

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001	5	0	NR	NR	NR	NR	5
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500	1	1	0	0	NR	NR	2
LOS ANGELES CO. HMS	0.001	2	0	NR	NR	NR	NR	2
HWP	1.000		0	0	0	1	NR	1
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001	5	0	NR	NR	NR	NR	5
PEST LIC	0.001	1	0	NR	NR	NR	NR	1
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		4	NR	NR	NR	NR	4
EDR Hist Cleaner	0.125		7	NR	NR	NR	NR	7
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001	2	0	NR	NR	NR	NR	2
- Totals --		32	25	0	0	7	0	64

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **MT. SAN ANTONIO COLLEGE** **LUST** **S104406606**
Target **1100 GRAND** **HIST CORTESE** **N/A**
Property **WALNUT, CA 91789** **NPDES**

Site 1 of 20 in cluster A

Actual:
737 ft.

LUST:

Region:	STATE
Global Id:	T0603704066
Latitude:	34.04299
Longitude:	-117.847463
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	06/19/1998
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Worker:	JFL
Local Agency:	LOS ANGELES COUNTY
RB Case Number:	I-13394
LOC Case Number:	Not reported
File Location:	Not reported
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0603704066
Contact Type:	Regional Board Caseworker
Contact Name:	JOE F. LUERA
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	320 W. 4TH STREET, SUITE 200
City:	LOS ANGELES
Email:	joe.luera@waterboards.ca.gov
Phone Number:	Not reported

Global Id:	T0603704066
Contact Type:	Local Agency Caseworker
Contact Name:	JOHN AWUJO
Organization Name:	LOS ANGELES COUNTY
Address:	900 S FREMONT AVE
City:	ALHAMBRA
Email:	jawujo@dpw.lacounty.gov
Phone Number:	6264583507

Status History:

Global Id:	T0603704066
Status:	Completed - Case Closed
Status Date:	06/19/1998

Global Id:	T0603704066
Status:	Open - Case Begin Date
Status Date:	10/02/1990

Global Id:	T0603704066
Status:	Open - Site Assessment
Status Date:	10/02/1990

Global Id:	T0603704066

MT. SAN ANTONIO COLLEGE (Continued) **S104406606**

Status: Open - Site Assessment
Status Date: 05/11/1995

Regulatory Activities:
Global Id: T0603704066
Action Type: Other
Date: 11/05/1990
Action: Leak Reported

Global Id: T0603704066
Action Type: Other
Date: 10/10/1990
Action: Leak Discovery

Global Id: T0603704066
Action Type: Other
Date: 10/10/1990
Action: Leak Stopped

LUST REG 4:
Region: 4
Regional Board: 04
County: Los Angeles
Facility Id: I-13394
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: Not reported
Case Type: Groundwater
Abatement Method Used at the Site: Not reported
Global ID: T0603704066
W Global ID: Not reported
Staff: JFL
Local Agency: 19000
Cross Street: TEMPLE AVE.
Enforcement Type: Not reported
Date Leak Discovered: 10/10/1990
Date Leak First Reported: 11/5/1990
Date Leak Record Entered: 12/5/1990
Date Confirmation Began: Not reported
Date Leak Stopped: 10/10/1990
Date Case Last Changed on Database: 7/15/1998
Date the Case was Closed: 6/19/1998
How Leak Discovered: OM
How Leak Stopped: Not reported
Cause of Leak: UNK
Leak Source: UNK
Operator: LOEFFLER, ROBERT D.
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 11293.748330965903149726619852
Source of Cleanup Funding: UNK
Preliminary Site Assessment Workplan Submitted: Not reported
Preliminary Site Assessment Began: 10/2/1990
Pollution Characterization Began: 5/11/1995

MT. SAN ANTONIO COLLEGE (Continued) **S104406606**

Remediation Plan Submitted: Not reported
Remedial Action Underway: Not reported
Post Remedial Action Monitoring Began: Not reported
Enforcement Action Date: Not reported
Historical Max MTBE Date: 1/1/1965
Hist Max MTBE Conc in Groundwater: 16
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: MT. SAN ANTONIO COLLEGE
RP Address: 1100 N GRAND AVE., WALNUT CA 91789
Program: LUST
Lat/Long: 34.0416769 / -1
Local Agency Staff: Not reported
Beneficial Use: Not reported
Priority: LOP/HIGH - ADMINISTRATIVE (CLOSURE/SB2004/ENFORCEMENT)
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: TANKS REMOVED. SOIL EXCAVATION CONDUCTED. MTBE NOT TESTED UNTIL 9/97. 02/12/98 - GW MON RPT-4TH QTR 1997 07/15/98 - RPT OF WELL ABANDONMENT

HIST CORTESE:
Region: CORTESE
Facility County Code: 19
Reg By: LTNKA
Reg Id: I-13394

NPDES:
Npdes Number: Not reported
Facility Status: Not reported
Agency Id: Not reported
Region: 4
Regulatory Measure Id: 437907
Order No: Not reported
Regulatory Measure Type: Construction
Place Id: Not reported
WDID: 4 19C366971
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: 05/15/2014
Discharge Name: Not reported
Discharge Address: Not reported
Discharge City: Not reported
Discharge State: Not reported
Discharge Zip: Not reported
RECEIVED DATE: 06/05/2013
PROCESSED DATE: 07/02/2013
STATUS CODE NAME: Terminated

MT. SAN ANTONIO COLLEGE (Continued) **S104406606**

STATUS DATE:	09/10/2014
PLACE SIZE:	2.55
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Gary Nellesen
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	909-274-5176
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	GNellesen@MtSAC.edu
OPERATOR NAME:	Mt San Antonio Collge
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Private Individual
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Avenue
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Gary Nellesen
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	Community College
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	05-JUN-13
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

A2
Target
Property

MT SAN ANTONIO COLLEGE
1100 N GRAND AVE
WALNUT, CA 91789

LOS ANGELES CO. HMS

S106409691
N/A

Site 2 of 20 in cluster A

Actual:
737 ft.

LOS ANGELES CO. HMS:

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000727478
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000727479
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000727480
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000728086
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000728090
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000728093

MT SAN ANTONIO COLLEGE (Continued) **S106409691**

Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000728098
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000728108
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000426474
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000727459
Permit Status: Permit

Region: LA
Permit Category: I
Facility Id: 013117-041166
Facility Type: 01
Facility Status: Permit
Area: 6L
Permit Number: 000727469
Permit Status: Permit

A3 **MT. SAN ANTONIO COLLEGE** **RGA LUST** **S114657425**
Target **1100 GRAND AVE., N.** **N/A**
Property **WALNUT, CA**

Site 3 of 20 in cluster A

Actual: RGA LUST:
737 ft.

1993 MT. SAN ANTONIO COLLEGE 1100 GRAND AVE., N.

A4 **MT. SAN ANTONIO COLLEGE** **RGA LUST** **S114657424**
Target **1100 GRAND AVE N** **N/A**
Property **WALNUT, CA**

Site 4 of 20 in cluster A

Actual:
737 ft.

RGA LUST:

2012	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2011	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2010	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2009	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2008	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2007	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2006	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2005	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2003	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2002	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2001	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
2000	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
1998	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
1997	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
1996	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
1995	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N
1994	MT. SAN ANTONIO COLLEGE	1100 GRAND AVE N

A5 **MT. SAN ANTONIO COMMUNITY COLL** **EMI** **S116288934**
Target **1100 NGRAND AVE** **N/A**
Property **WALNUT, CA 91789**

Site 5 of 20 in cluster A

Actual:
737 ft.

EMI:

Year:	2011
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.43007028439
Reactive Organic Gases Tons/Yr:	0.19942
Carbon Monoxide Emissions Tons/Yr:	2.53961
NOX - Oxides of Nitrogen Tons/Yr:	3.10057
SOX - Oxides of Sulphur Tons/Yr:	0.02982
Particulate Matter Tons/Yr:	0.40615
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.40494328

A6 **OAKDALE MEMORIAL PARK** **FINDS** **1023286053**
Target **1100 GRAND AVE N** **N/A**
Property **WALNUT, CA 91789**

Site 6 of 20 in cluster A

Actual:
737 ft.

FINDS:

Registry ID: 110065771150

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A7 **RUBEN R FLORES** **PEST LIC** **S120766213**
Target **1100 N GRAND AVE** **N/A**
Property **WALNUT, CA 91789**

Site 7 of 20 in cluster A

Actual:
737 ft.

PEST LIC:

Facility Type:	QAL
Categories:	B
License No:	138324
Issued or Renewed Date:	02/07/2017
Expiration Date:	12/31/2018

A8 **MT. SAN ANTONIO COMMUNITY COLLEGE** **EMI** **S120713644**
Target **1100 N GRAND AVE BLDG 60 #1** **N/A**
Property **WALNUT, CA 91789**

Site 8 of 20 in cluster A

Actual:
737 ft.

EMI:

Year:	2015
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.3052448328
Reactive Organic Gases Tons/Yr:	1.218668692
Carbon Monoxide Emissions Tons/Yr:	13.490511443
NOX - Oxides of Nitrogen Tons/Yr:	0.825883545
SOX - Oxides of Sulphur Tons/Yr:	0.039014572
Particulate Matter Tons/Yr:	0.39564222
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.39300199638

A9 **VERIZON WIRELESS: BUZZARD PEAK** **FINDS** **1023248769**
Target **1100 NORTH GRAND AVENUE** **N/A**
Property **WALNUT, CA 91789**

Site 9 of 20 in cluster A

Actual:
737 ft.

FINDS:

Registry ID: 110065372180

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

A10 **MT SAN ANTONIO COMMUNITY COLLE** **EMI** **S106836026**
Target **1100 N. GRAND AVENUE** **N/A**
Property **WALNUT, CA 91789**

Site 10 of 20 in cluster A

Actual:
737 ft.

EMI:

Year:	1990
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	6
Reactive Organic Gases Tons/Yr:	5
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

A11 **CITY OF WALNUT/MT SAN ANTONIO COLLEGE** **HAZNET** **S113021274**
Target **1100 N GRAND AVE** **N/A**
Property **WALNUT, CA 91789**

Site 11 of 20 in cluster A

Actual:
737 ft.

HAZNET:

envid:	S113021274
Year:	1999
GEPAID:	CAH777001122
Contact:	LA COUNTY SANITATION DISTRICT
Telephone:	5629089572
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	AZD049318009

CITY OF WALNUT/MT SAN ANTONIO COLLEGE (Continued) **S113021274**

TSD County: Not reported
Waste Category: Household waste
Disposal Method: Not reported
Tons: .8428
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: S113021274
Year: 1999
GEPAID: CAH777001122
Contact: LA COUNTY SANITATION DISTRICT
Telephone: 5629089572
Mailing Name: Not reported
Mailing Address: 1955 WORKMAN MILL RD
Mailing City,St,Zip: WHITTIER, CA 906010000
Gen County: Not reported
TSD EPA ID: CAD099452708
TSD County: Not reported
Waste Category: Waste oil and mixed oil
Disposal Method: Recycler
Tons: 6.3592
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: S113021274
Year: 1999
GEPAID: CAH777001122
Contact: LA COUNTY SANITATION DISTRICT
Telephone: 5629089572
Mailing Name: Not reported
Mailing Address: 1955 WORKMAN MILL RD
Mailing City,St,Zip: WHITTIER, CA 906010000
Gen County: Not reported
TSD EPA ID: CAD099452708
TSD County: Not reported
Waste Category: Unspecified organic liquid mixture
Disposal Method: Transfer Station
Tons: 1.1676
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: S113021274
Year: 1999
GEPAID: CAH777001122
Contact: LA COUNTY SANITATION DISTRICT
Telephone: 5629089572
Mailing Name: Not reported
Mailing Address: 1955 WORKMAN MILL RD
Mailing City,St,Zip: WHITTIER, CA 906010000
Gen County: Not reported
TSD EPA ID: CAD050806850
TSD County: Not reported
Waste Category: Household waste
Disposal Method: Transfer Station

CITY OF WALNUT/MT SAN ANTONIO COLLEGE (Continued) **S113021274**

Tons:	54.2521
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

A12 **MT SAN ANTONIO COLLEGE** **HAZNET** **S113048271**
Target **1100 N GRAND AVE** **N/A**
Property **WALNUT, CA 91789**

Site 12 of 20 in cluster A

Actual:
737 ft.

HAZNET:

envid:	S113048271
Year:	2011
GEPAID:	CAL000069089
Contact:	INACTIVE PER 2ND LTR 10-25-93
Telephone:	7145945611
Mailing Name:	Not reported
Mailing Address:	1100 GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAD982444481
TSD County:	Not reported
Waste Category:	Other inorganic solid waste
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.05
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

A13 **MT. SAC WEST PARCEL** **NPDES** **S119086290**
Target **1100 N GRAND AVENUE** **N/A**
Property **WALNUT, CA 91789**

Site 13 of 20 in cluster A

Actual:
737 ft.

NPDES:

Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	479881
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C378229
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/21/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California

MT. SAC WEST PARCEL (Continued) **S119086290**

Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

MT. SAC WEST PARCEL (Continued) **S119086290**

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	479881
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C378229
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	10/21/2016
PROCESSED DATE:	11/21/2016
STATUS CODE NAME:	Active
STATUS DATE:	11/21/2016
PLACE SIZE:	17.3
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Manager Facilities Support
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N

MT. SAC WEST PARCEL (Continued) **S119086290**

CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	Community College
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek Reach 2
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	21-OCT-16
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

A14 **MT. SAN ANTONIO COLLEGE** **AST** **A100422560**
Target **1100 N GRAND AVENUE** **N/A**
Property **WALNUT, CA 91789**

Site 14 of 20 in cluster A

Actual:
737 ft.

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Mt. San Antonio College
Total Gallons:	Not reported
CERSID:	10294564
Facility ID:	LACoFA0012888
Business Name:	Mt. San Antonio College
Phone:	(909) 594-5611
Fax:	Not reported
Mailing Address:	1100 N. Grand Avenue
Mailing Address City:	Walnut
Mailing Address State:	CA
Mailing Address Zip Code:	91789
Operator Name:	Mt. San Antonio College
Operator Phone:	(909) 594-5611
Owner Phone:	(909) 594-5611
Owner Mail Address:	1100 N Grand Avenue
Owner State:	CA
Owner Zip Code:	91789
Owner Country:	United States
Property Owner Name:	Mt. San Antonio College
Property Owner Phone:	(909) 594-5611
Property Owner Mailing Address:	1100 N Grand Avenue
Property Owner City:	Walnut
Property Owner Stat :	CA
Property Owner Zip Code:	91789
Property Owner Country:	United States
EPAID:	CAD102985108

A15 **MTSAC MAJOR GRADING TEMP PARKING** **ECHO** **1023696567**
Target Property **1100 N GRAND AVENUE** **N/A**
WALNUT, CA 91789

Site 15 of 20 in cluster A

Actual: 737 ft.

ECHO:
Envid: 1023696567
Registry ID: 110070093643
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070093643

A16 **M C P URETHANES DIV M C P INDUSTRIES INC** **HAZNET** **S113170519**
Target Property **1100 N GRAND AVE TRACK STADIUM** **N/A**
WALNUT, CA 91789

Site 16 of 20 in cluster A

Actual: 737 ft.

HAZNET:
envid: S113170519
Year: 2000
GEPAID: CAP000056457
Contact: --
Telephone: --
Mailing Name: Not reported
Mailing Address: 1100 N Grand Ave Track Stadium
Mailing City,St,Zip: WALNUT, CA 917891399
Gen County: Not reported
TSD EPA ID: CAT000646117
TSD County: Not reported
Waste Category: Other organic solids
Disposal Method: Disposal, Land Fill
Tons: 136.53
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: S113170519
Year: 1999
GEPAID: CAP000056457
Contact: M C P URETHANES DIV M C P INDU
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1100 N Grand Ave Track Stadium
Mailing City,St,Zip: WALNUT, CA 917891399
Gen County: Not reported
TSD EPA ID: CAD008302903
TSD County: Not reported
Waste Category: Oxygenated solvents (acetone, butanol, ethyl acetate, etc.)
Disposal Method: Recycler
Tons: 1.1467
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: S113170519
Year: 1999
GEPAID: CAP000056457
Contact: M C P URETHANES DIV M C P INDU
Telephone: 0000000000
Mailing Name: Not reported

M C P URETHANES DIV M C P INDUSTRIES INC (Continued) **S113170519**

Mailing Address:	1100 N Grand Ave Track Stadium
Mailing City,St,Zip:	WALNUT, CA 917891399
Gen County:	Not reported
TSD EPA ID:	CAD097030993
TSD County:	Not reported
Waste Category:	Other inorganic solid waste
Disposal Method:	Disposal, Other
Tons:	.6880
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles
envid:	S113170519
Year:	1999
GEPAID:	CAP000056457
Contact:	M C P URETHANES DIV M C P INDU
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1100 N Grand Ave Track Stadium
Mailing City,St,Zip:	WALNUT, CA 917891399
Gen County:	Not reported
TSD EPA ID:	CAD008302903
TSD County:	Not reported
Waste Category:	Aqueous solution with total organic residues 10 percent or more
Disposal Method:	Recycler
Tons:	2.0000
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

A17 **MT. SAN ANTONIO COMMUNITY COLL** **RCRA-LQG** **1000376753**
Target Property **1100 N GRAND AVE** **UST** **CAD102985108**
WALNUT, CA 91789 **SWEEPS UST**
HIST UST
Site 17 of 20 in cluster A **CA FID UST**
FINDS
Actual: 737 ft. **ECHO**
EMI
LOS ANGELES CO. HMS
NPDES

RCRA-LQG:

Date form received by agency:	06/01/2016
Facility name:	MT SAN ANTONIO COLLEGE
Facility address:	1100 N GRAND AVE WALNUT, CA 91789
EPA ID:	CAD102985108
Mailing address:	N GRAND AVE WALNUT, CA 91789
Contact:	KAREN SALDANA
Contact address:	N GRAND AVE WALNUT, CA 91789
Contact country:	US
Contact telephone:	909-594-5611
Telephone ext.:	5501
Contact email:	KSALDANA@MTSAC.EDU
EPA Region:	09
Classification:	Large Quantity Generator

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name: MT. SAN ANTONIO COLLEGE
Owner/operator address: N GRAND AVE
WALNUT, CA 91789
Owner/operator country: US
Owner/operator telephone: 909-274-7500
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Owner
Owner/Op start date: 06/30/1946
Owner/Op end date: Not reported

Owner/operator name: MT. SAN ANTONIO COMMUNITY COLLEGE
Owner/operator address: 1100 N. GRAND AVENUE
WALNUT, CA 91789
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Owner
Owner/Op start date: 06/30/1946
Owner/Op end date: Not reported

Owner/operator name: MT. SAN ANTONIO COMMUNITY COLLEGE
Owner/operator address: Not reported
Not reported
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Operator
Owner/Op start date: 06/30/1946
Owner/Op end date: Not reported

Owner/operator name: MT. SAN ANTONIO COLLEGE
Owner/operator address: Not reported
Not reported
Owner/operator country: Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: District
Owner/Operator Type: Operator
Owner/Op start date: 06/30/1946
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: Yes
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: 121
. Waste name: Alkaline solution (pH >12.5) with metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 151
. Waste name: Asbestos-containing waste

. Waste code: 172
. Waste name: Metal dust (see 121) and machining waste

. Waste code: 181
. Waste name: Other inorganic solid waste

. Waste code: 214
. Waste name: Unspecified solvent mixture

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 352
. Waste name: Other organic solids

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

. Waste code: 541
. Waste name: Photochemicals / photo processing waste

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 725
. Waste name: Liquids with mercury > 20 mg/l

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D013
. Waste name: LINDANE (1,2,3,4,5,6-HEXA-CHLOROCYCLOHEXANE, GAMMA ISOMER)

. Waste code: D015
. Waste name: TOXAPHENE (C10 H10 CL8, TECHNICAL CHLORINATED CAMPHENE, 67-69 PERCENT CHLORINE)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE,

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Historical Generators:
Date form received by agency: 03/01/2014
Site name: MT SAN ANTONIO COLLEGE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D009
. Waste name: MERCURY

. Waste code: D011
. Waste name: SILVER

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE,

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P048
. Waste name: 2,4-DINITROPHENOL (OR) PHENOL, 2,4-DINITRO-

Date form received by agency: 07/18/2008
Site name: MT. SAN ANTONIO COMMUNITY COLLEGE
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D011
. Waste name: SILVER

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D038

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

. Waste name: PYRIDINE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F004
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: CRESOLS, CRESYLIC ACID, AND NITROBENZENE; AND THE STILL BOTTOMS FROM THE RECOVERY OF THESE SOLVENTS; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: P108

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

. Waste name: STRYCHNIDIN-10-ONE, & SALTS (OR) STRYCHNINE, & SALTS

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U006
. Waste name: ACETYL CHLORIDE (C,R,T)

. Waste code: U011
. Waste name: 1H-1,2,4-TRIAZOL-3-AMINE (OR) AMITROLE

. Waste code: U019
. Waste name: BENZENE (I,T)

. Waste code: U031
. Waste name: 1-BUTANOL (I) (OR) N-BUTYL ALCOHOL (I)

. Waste code: U044
. Waste name: CHLOROFORM (OR) METHANE, TRICHLORO-

. Waste code: U056
. Waste name: BENZENE, HEXAHYDRO- (I) (OR) CYCLOHEXANE (I)

. Waste code: U075
. Waste name: DICHLORODIFLUOROMETHANE (OR) METHANE, DICHLORODIFLUORO-

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U133
. Waste name: HYDRAZINE (R,T)

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U162
. Waste name: 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER (I,T) (OR) METHYL METHACRYLATE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U404
. Waste name: ETHANAMINE, N,N-DIETHYL- (OR) TRIETHYLAMINE

Date form received by agency: 05/03/1990
Site name: MT SAN ANTONIO COMM COLLEGE DIST
Classification: Large Quantity Generator

Date form received by agency: 12/06/1985
Site name: MT SAN ANTONIO COMMUNITY COLLEGE DIST
Classification: Not a generator, verified

Biennial Reports:

Last Biennial Reporting Year: 2017

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Annual Waste Handled:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs):	3100
Waste code:	D002
Waste name:	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs):	4534
Waste code:	D003
Waste name:	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs):	67
Waste code:	D004
Waste name:	ARSENIC
Amount (Lbs):	2336
Waste code:	D005
Waste name:	BARIUM
Amount (Lbs):	2336
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	2336
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	253
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	67
Waste code:	D010
Waste name:	SELENIUM
Amount (Lbs):	2336
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	253

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Waste code: D013
Waste name: LINDANE
Amount (Lbs): 2113

Waste code: D015
Waste name: TOXAPHENE
Amount (Lbs): 67

Waste code: D018
Waste name: BENZENE
Amount (Lbs): 2336

Waste code: D035
Waste name: METHYL ETHYL KETONE
Amount (Lbs): 583

Waste code: F002
Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 2336

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 583

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 583

Violation Status: No violations found

UST:
Facility ID: LACoFA0012888
Permitting Agency: Los Angeles County Fire Department
Latitude: 34.04317

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Longitude: -117.84769

Facility ID: 13394
Permitting Agency: LOS ANGELES COUNTY
Latitude: 34.046319
Longitude: -117.8471045

SWEEPS UST:
Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000001
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: 11

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000002
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000003
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000004
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000005
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000006
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013394-000007
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	13394
Number:	9
Board Of Equalization:	44-010155
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013394-000008
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	13394
Number:	9
Board Of Equalization:	44-010155
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013394-000009
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	13394
Number:	9
Board Of Equalization:	44-010155
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013394-000010
Tank Status:	A

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

Status: Active
Comp Number: 13394
Number: 9
Board Of Equalization: 44-010155
Referral Date: 06-30-89
Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013394-000011
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

HIST UST:
File Number: 0002810C
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0002810C.pdf
Region: STATE
Facility ID: 00000029605
Facility Type: Other
Other Type: COMMUNITY COLLEGE
Contact Name: MR. LARRY STOUT
Telephone: 7145945611
Owner Name: MT. SAN ANTONIO COMMUNITY COLL
Owner Address: 1100 NOTH GRAND AVENUE
Owner City,St,Zip: WALNUT, CA 91789
Total Tanks: 0013

Tank Num: 001
Container Num: 5E
Year Installed: 1968
Tank Capacity: 00000000
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: 3/16"
Leak Detection: Pressure Test

Tank Num: 002
Container Num: 3B
Year Installed: 1968
Tank Capacity: 00000500
Tank Used for: PRODUCT
Type of Fuel: 06
Container Construction Thickness: 1/4"
Leak Detection: Pressure Test

Tank Num: 003

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Container Num:	3A
Year Installed:	1968
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	1/4"
Leak Detection:	Pressure Test

Tank Num:	004
Container Num:	5A
Year Installed:	1968
Tank Capacity:	00010310
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	1/4"
Leak Detection:	Pressure Test

Tank Num:	005
Container Num:	5C
Year Installed:	Not reported
Tank Capacity:	00001000
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual

Tank Num:	006
Container Num:	5D
Year Installed:	Not reported
Tank Capacity:	00005000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Pressure Test

Tank Num:	007
Container Num:	4A
Year Installed:	Not reported
Tank Capacity:	00000560
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Container Construction Thickness:	Not reported
Leak Detection:	Visual

Tank Num:	008
Container Num:	5B
Year Installed:	1968
Tank Capacity:	00002015
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	3/16"
Leak Detection:	Pressure Test

Tank Num:	009
Container Num:	4B
Year Installed:	Not reported
Tank Capacity:	00001000

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 010
Container Num: 1B
Year Installed: 1985
Tank Capacity: 00001000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 1/4
Leak Detection: Sensor Instrument

Tank Num: 011
Container Num: 1A
Year Installed: 1985
Tank Capacity: 00001000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: 1/4
Leak Detection: Sensor Instrument

Click here for Geo Tracker PDF:

CA FID UST:
Facility ID: 19002882
Regulated By: UTNKA
Regulated ID: 00029605
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 8180000000
Mail To: Not reported
Mailing Address: 1100 N GRAND AVE
Mailing Address 2: Not reported
Mailing City,St,Zip: WALNUT
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

FINDS:

Registry ID: 110002421825

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

HAZARDOUS WASTE BIENNIAL REPORTER

STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000376753
Registry ID:	110002421825
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002421825

EMI:

Year:	1995
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	1
Reactive Organic Gases Tons/Yr:	1
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1996
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1997

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1998
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1999
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2000
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2001
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3
Reactive Organic Gases Tons/Yr:	2
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	2
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2002
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5
Reactive Organic Gases Tons/Yr:	4
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	12
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	2003
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5
Reactive Organic Gases Tons/Yr:	4
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

SOX - Oxides of Sulphur Tons/Yr: 12
Particulate Matter Tons/Yr: 0
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0

Year: 2004
County Code: 19
Air Basin: SC
Facility ID: 4347
Air District Name: SC
SIC Code: 8222
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 5.353427
Reactive Organic Gases Tons/Yr: 4.2
Carbon Monoxide Emissions Tons/Yr: 1.167
NOX - Oxides of Nitrogen Tons/Yr: 4.959
SOX - Oxides of Sulphur Tons/Yr: 11.6221
Particulate Matter Tons/Yr: 0.25
Part. Matter 10 Micrometers and Smllr Tons/Yr: 0.25

Year: 2006
County Code: 19
Air Basin: SC
Facility ID: 4347
Air District Name: SC
SIC Code: 8222
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 4.032171999560406870
Reactive Organic Gases Tons/Yr: .889
Carbon Monoxide Emissions Tons/Yr: 9.935
NOX - Oxides of Nitrogen Tons/Yr: 2.3
SOX - Oxides of Sulphur Tons/Yr: .054
Particulate Matter Tons/Yr: .655
Part. Matter 10 Micrometers and Smllr Tons/Yr: .648184

Year: 2007
County Code: 19
Air Basin: SC
Facility ID: 4347
Air District Name: SC
SIC Code: 8222
Air District Name: SOUTH COAST AQMD
Community Health Air Pollution Info System: Not reported
Consolidated Emission Reporting Rule: Not reported
Total Organic Hydrocarbon Gases Tons/Yr: 3.883104256054055294
Reactive Organic Gases Tons/Yr: .889
Carbon Monoxide Emissions Tons/Yr: 9.935
NOX - Oxides of Nitrogen Tons/Yr: 2.3
SOX - Oxides of Sulphur Tons/Yr: .054
Particulate Matter Tons/Yr: .655
Part. Matter 10 Micrometers and Smllr Tons/Yr: .652006

Year: 2008
County Code: 19

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	5.116786627700767845
Reactive Organic Gases Tons/Yr:	1.22388555
Carbon Monoxide Emissions Tons/Yr:	10.11051
NOX - Oxides of Nitrogen Tons/Yr:	2.332345
SOX - Oxides of Sulphur Tons/Yr:	.04189435
Particulate Matter Tons/Yr:	.69004175
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.6837857195

Year:	2009
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4.4127814755959101
Reactive Organic Gases Tons/Yr:	0.51000000000000001
Carbon Monoxide Emissions Tons/Yr:	2.3199999999999998
NOX - Oxides of Nitrogen Tons/Yr:	2.04
SOX - Oxides of Sulphur Tons/Yr:	3.3340000000000002E-2
Particulate Matter Tons/Yr:	0.59999999999999998
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.59699999999999998

Year:	2010
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	4.2732576299256699
Reactive Organic Gases Tons/Yr:	0.50321000000000005
Carbon Monoxide Emissions Tons/Yr:	2.2438199999999999
NOX - Oxides of Nitrogen Tons/Yr:	1.96882
SOX - Oxides of Sulphur Tons/Yr:	4.0000000000000001E-2
Particulate Matter Tons/Yr:	0.58479999999999999
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.58176735999999996

Year:	2012
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.74446120434
Reactive Organic Gases Tons/Yr:	0.32972
Carbon Monoxide Emissions Tons/Yr:	4.5924
NOX - Oxides of Nitrogen Tons/Yr:	5.49815
SOX - Oxides of Sulphur Tons/Yr:	0.042700399
Particulate Matter Tons/Yr:	0.58365
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.58258032

Year:	2013
County Code:	19
Air Basin:	SC
Facility ID:	4347
Air District Name:	SC
SIC Code:	8222
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	3.2403640786
Reactive Organic Gases Tons/Yr:	0.39458
Carbon Monoxide Emissions Tons/Yr:	2.08307
NOX - Oxides of Nitrogen Tons/Yr:	1.77614
SOX - Oxides of Sulphur Tons/Yr:	0.03842111
Particulate Matter Tons/Yr:	0.60536
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.60239192

LOS ANGELES CO. HMS:

Region:	LA
Permit Category:	T
Facility Id:	013117-013394
Facility Type:	0
Facility Status:	Permit
Area:	6L
Permit Number:	00005449T
Permit Status:	Permit

NPDES:

Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	446446
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C370142
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/01/2014
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Npdes Number:	CAS000002
Facility Status:	Terminated
Agency Id:	0
Region:	4
Regulatory Measure Id:	447062
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C370254
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/14/2014
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	01/09/2017
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	468397
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C375127
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	01/21/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	468397
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C375127
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

RECEIVED DATE:	01/07/2016
PROCESSED DATE:	01/21/2016
STATUS CODE NAME:	Active
STATUS DATE:	01/21/2016
PLACE SIZE:	5.76
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	Educational
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek Reach 2
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	07-JAN-16
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	344100
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C351619
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	06/11/2014
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	05/09/2008
PROCESSED DATE:	04/22/2008
STATUS CODE NAME:	Terminated
STATUS DATE:	10/21/2014
PLACE SIZE:	3
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Remo Colindres
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	909-468-4443
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Gary Nellesen
OPERATOR CONTACT TITLE:	Director Of Facilitites
OPERATOR CONTACT PHONE:	909-594-5611
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Howard
DEVELOPER ADDRESS:	1100 N Grand Ave BLDG 23
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Howard Holman
DEVELOPER CONTACT TITLE:	Facilities Project Manager
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Educationa
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Gary Nellesen
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	30-JUN-10
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	446446
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C370142
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	06/30/2014
PROCESSED DATE:	07/01/2014
STATUS CODE NAME:	Active
STATUS DATE:	07/01/2014
PLACE SIZE:	24
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Manager, Facilities Support Services
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Manager, Facilities Support Services
OPERATOR CONTACT PHONE:	909-274-5175

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Manager, Facilities Support Services
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	educational institution
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	30-JUN-14
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	447062
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C370254
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	01/09/2017
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

RECEIVED DATE:	06/24/2014
PROCESSED DATE:	07/14/2014
STATUS CODE NAME:	Terminated
STATUS DATE:	03/29/2017
PLACE SIZE:	1.5
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Manager, Facilities Support Services
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Manager, Facilities Support Services
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Manager, Facilities Support Services
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	College
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek Reach 2
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	24-JUN-14
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	437893
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C367179
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	10/08/2014
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	07/11/2013
PROCESSED DATE:	07/22/2013
STATUS CODE NAME:	Terminated
STATUS DATE:	12/04/2014
PLACE SIZE:	2.34
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Gary Nellesen
FACILITY CONTACT TITLE:	Director of Facilities
FACILITY CONTACT PHONE:	909-274-5176
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	gnellesen@mtsac.edu
OPERATOR NAME:	Mt San Antonio Collge
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Private Individual
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Avenue
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Gary Nellesen
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	School
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	11-JUL-13
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	484772
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C379762
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	05/09/2017
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

Npdes Number:	CAS000002
Facility Status:	Terminated
Agency Id:	0
Region:	4
Regulatory Measure Id:	437893
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C367179
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	07/22/2013
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	10/08/2014
Discharge Name:	Mt San Antonio Collge
Discharge Address:	1100 N Grand Avenue
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	484772
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C379762
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	04/06/2017
PROCESSED DATE:	05/09/2017
STATUS CODE NAME:	Active
STATUS DATE:	05/09/2017
PLACE SIZE:	32.6
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Manager, Facilities Support Services
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Manager, Facilities Support Services
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Manager, Facilities Support Services
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	909-274-4555
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N

MT. SAN ANTONIO COMMUNITY COLL (Continued) **1000376753**

CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	community college
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek Reach 2
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	06-APR-17
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

A18 **MT SAN ANTONIO COMM COLLEGE DIST** **HAZNET** **S113002374**
Target **1100 N GRAND AVE** **N/A**
Property **WALNUT, CA 91789**

Site 18 of 20 in cluster A

Actual:
737 ft.

HAZNET:

envid:	S113002374
Year:	2016
GEPAID:	CAD102985108
Contact:	MELONE CRUSE
Telephone:	9092745567
Mailing Name:	Not reported
Mailing Address:	1100 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917890000
Gen County:	Los Angeles
TSD EPA ID:	NVT330010000
TSD County:	99
Waste Category:	Other organic solids
Disposal Method:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons:	0.861
Cat Decode:	Other organic solids
Method Decode:	Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Facility County:	Los Angeles

envid:	S113002374
Year:	2016
GEPAID:	CAD102985108
Contact:	MELONE CRUSE
Telephone:	9092745567
Mailing Name:	Not reported
Mailing Address:	1100 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917890000
Gen County:	Los Angeles
TSD EPA ID:	CAD028409019
TSD County:	Los Angeles
Waste Category:	Other inorganic solid waste

MT SAN ANTONIO COMM COLLEGE DIST (Continued) **S113002374**

Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	1.6856
Cat Decode:	Other inorganic solid waste
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Los Angeles

envid:	S113002374
Year:	2016
GEPAID:	CAD102985108
Contact:	MELONE CRUSE
Telephone:	9092745567
Mailing Name:	Not reported
Mailing Address:	1100 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917890000
Gen County:	Los Angeles
TSD EPA ID:	TXD982560294
TSD County:	99
Waste Category:	Liquids with pH <= 2
Disposal Method:	Not reported
Tons:	0.2502
Cat Decode:	Liquids with pH <= 2
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	S113002374
Year:	2016
GEPAID:	CAD102985108
Contact:	MELONE CRUSE
Telephone:	9092745567
Mailing Name:	Not reported
Mailing Address:	1100 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917890000
Gen County:	Los Angeles
TSD EPA ID:	MOD981123391
TSD County:	99
Waste Category:	Unspecified solvent mixture
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.348
Cat Decode:	Unspecified solvent mixture
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Los Angeles

envid:	S113002374
Year:	2016
GEPAID:	CAD102985108
Contact:	MELONE CRUSE
Telephone:	9092745567
Mailing Name:	Not reported
Mailing Address:	1100 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917890000
Gen County:	Los Angeles
TSD EPA ID:	MOD981123391
TSD County:	99

MT SAN ANTONIO COMM COLLEGE DIST (Continued) **S113002374**

Waste Category:	Alkaline solution without metals pH >= 12.5
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.17085
Cat Decode:	Alkaline solution without metals pH >= 12.5
Method Decode:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County:	Los Angeles

Click this hyperlink while viewing on your computer to access
723 additional CA_HAZNET: record(s) in the EDR Site Report.

A19 **LA COUNTY SANITATION DISTRICT** **HAZNET** **S113020327**
Target **1100 N GRAND AVE** **NPDES** **N/A**
Property **WALNUT, CA 91789**

Site 19 of 20 in cluster A

Actual:
737 ft.

HAZNET:

envid:	S113020327
Year:	2002
GEPAID:	CAH111000883
Contact:	JOE REILLY
Telephone:	5626997411
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAD008302903
TSD County:	Not reported
Waste Category:	Household waste
Disposal Method:	Transfer Station
Tons:	6.12
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	S113020327
Year:	2002
GEPAID:	CAH111000883
Contact:	JOE REILLY
Telephone:	5626997411
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAT080014079
TSD County:	Not reported
Waste Category:	Household waste
Disposal Method:	Transfer Station
Tons:	0.25
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	S113020327
Year:	2002
GEPAID:	CAH111000883

LA COUNTY SANITATION DISTRICT (Continued) **S113020327**

Contact:	JOE REILLY
Telephone:	5626997411
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAT080014079
TSD County:	Not reported
Waste Category:	Not reported
Disposal Method:	Transfer Station
Tons:	Not reported
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	S113020327
Year:	2002
GEPAID:	CAH111000883
Contact:	JOE REILLY
Telephone:	5626997411
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAD008302903
TSD County:	Not reported
Waste Category:	Household waste
Disposal Method:	Recycler
Tons:	57.28
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	S113020327
Year:	2002
GEPAID:	CAH111000883
Contact:	JOE REILLY
Telephone:	5626997411
Mailing Name:	Not reported
Mailing Address:	1955 WORKMAN MILL RD
Mailing City,St,Zip:	WHITTIER, CA 906010000
Gen County:	Not reported
TSD EPA ID:	CAT000646117
TSD County:	Not reported
Waste Category:	Household waste
Disposal Method:	Disposal, Land Fill
Tons:	0.4
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

Click this hyperlink while viewing on your computer to access
3 additional CA_HAZNET: record(s) in the EDR Site Report.

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported

LA COUNTY SANITATION DISTRICT (Continued) **S113020327**

Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	449744
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C371170
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	10/01/2014
PROCESSED DATE:	10/15/2014
STATUS CODE NAME:	Active
STATUS DATE:	10/15/2014
PLACE SIZE:	1.2
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	Alabama
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	9092745175
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N
CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N

LA COUNTY SANITATION DISTRICT (Continued) **S113020327**

CONSTYPE OTHER DESRIPTION:	Community College
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	01-OCT-14
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	449744
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C371170
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/15/2014
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Mt San Antonio College
Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported

LA COUNTY SANITATION DISTRICT (Continued) **S113020327**

OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

A20 **MSAC PARKING STRUCTURE** **NPDES** **S117705749**
Target **1100 NORTH GRAND AVENUE** **N/A**
Property **WALNUT, CA 91789**

Site 20 of 20 in cluster A

Actual:
737 ft.

NPDES:

Npdes Number:	CAS000002
Facility Status:	Terminated
Agency Id:	0
Region:	4
Regulatory Measure Id:	453657
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19C372703
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/17/2015
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	10/21/2016
Discharge Name:	Mt San Antonio College

MSAC PARKING STRUCTURE (Continued) **S117705749**

Discharge Address:	1100 N Grand Ave
Discharge City:	Walnut
Discharge State:	California
Discharge Zip:	91789
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported

MSAC PARKING STRUCTURE (Continued) **S117705749**

PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	4
Regulatory Measure Id:	453657
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	4 19C372703
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	10/21/2016
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	04/01/2015
PROCESSED DATE:	04/17/2015
STATUS CODE NAME:	Terminated
STATUS DATE:	12/12/2016
PLACE SIZE:	16.78
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Rebecca Mitchell
FACILITY CONTACT TITLE:	Manager, Facilities Support Services
FACILITY CONTACT PHONE:	909-274-5175
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR NAME:	Mt San Antonio College
OPERATOR ADDRESS:	1100 N Grand Ave
OPERATOR CITY:	Walnut
OPERATOR STATE:	California
OPERATOR ZIP:	91789
OPERATOR CONTACT NAME:	Rebecca Mitchell
OPERATOR CONTACT TITLE:	Manager, Facilities Support Services
OPERATOR CONTACT PHONE:	909-274-5175
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	bmitchell@mtsac.edu
OPERATOR TYPE:	Special District
DEVELOPER NAME:	Mt San Antonio College
DEVELOPER ADDRESS:	1100 N Grand Ave
DEVELOPER CITY:	Walnut
DEVELOPER STATE:	California
DEVELOPER ZIP:	91789
DEVELOPER CONTACT NAME:	Rebecca Mitchell
DEVELOPER CONTACT TITLE:	Manager, Facilities Support Services
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	N
CONSTYPE BELOW GROUND IND:	N

MSAC PARKING STRUCTURE (Continued) **S117705749**

CONSTYPE CABLE LINE IND:	N
CONSTYPE COMM LINE IND:	N
CONSTYPE COMMERTIAL IND:	N
CONSTYPE ELECTRICAL LINE IND:	N
CONSTYPE GAS LINE IND:	N
CONSTYPE INDUSTRIAL IND:	N
CONSTYPE OTHER DESRIPTION:	community college
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	N
CONSTYPE RESIDENTIAL IND:	N
CONSTYPE TRANSPORT IND:	N
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	N
CONSTYPE WATER SEWER IND:	N
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	San Jose Creek Reach 2
CERTIFIER NAME:	Rebecca Mitchell
CERTIFIER TITLE:	Manager, Facilities Support Services
CERTIFICATION DATE:	01-APR-15
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

Areas of Concern
SE
1/2-1
3676 ft.

SAN GABRIEL VALLEY **AOCONCERN** **CCA0000001** **N/A**

LOS ANGELES (County), CA

AOCONCERN:
area where VOC contamination is at or above the MCL as designated by region 9 EPA office

---

B21

< 1/8
1 ft.

Relative: Higher

Actual: 737 ft.

ARMY FIELD OP HOSPITAL **ENVIROSTOR** **S107735864** **N/A**

WALNUT, CA

Site 1 of 2 in cluster B

ENVIROSTOR:

Facility ID:	80000970
Status:	Inactive - Needs Evaluation
Status Date:	07/01/2005
Site Code:	Not reported
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Douglas Bautista
Division Branch:	Cleanup Cypress
Assembly:	55
Senate:	29

ARMY FIELD OP HOSPITAL (Continued) **S107735864**

Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	DERA
Latitude:	34.04583
Longitude:	-117.8458
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CA99799FA35300
Alias Type:	Federal Facility ID
Alias Name:	J09CA7324
Alias Type:	INPR
Alias Name:	80000970
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Inventory Project Report (INPR)
Completed Date:	07/09/1999
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

---

22 **MY KIDS** **FINDS** **1016292853**
1902 E EDINGER AVE **N/A**
< 1/8 **WALNUT, CA 91789**
1 ft.

FINDS:

Relative: Higher

Registry ID: 110011645363

Actual: 859 ft.

Environmental Interest/Information System

NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

23 **POMONA BRICK COMPANY** **WMUDS/SWAT** **S101613083**
1000' N GRAND 1800' W WHITE AV **N/A**
< 1/8 **POMONA, CA**
1 ft.

Relative:
Lower

Actual:
698 ft.

WMUDS/SWAT:

Edit Date:	Not reported
Complexity:	Not reported
Primary Waste:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Base Meridian:	Not reported
NPID:	Not reported
Tonnage:	0
Regional Board ID:	Not reported
Municipal Solid Waste:	False
Superorder:	False
Open To Public:	False
Waste List:	False
Agency Type:	Not reported
Agency Name:	POMONA BRICK COMPANY
Agency Department:	Not reported
Agency Address:	Not reported
Agency City,St,Zip:	Not reported
Agency Contact:	Not reported
Agency Telephone:	Not reported
Land Owner Name:	Not reported
Land Owner Address:	Not reported
Land Owner City,St,Zip:	CA
Land Owner Contact:	Not reported
Land Owner Phone:	Not reported
Region:	4
Facility Type:	Not reported
Facility Description:	Not reported
Facility Telephone:	Not reported
SWAT Facility Name:	Not reported
Primary SIC:	Not reported
Secondary SIC:	Not reported
Comments:	Not reported
Last Facility Editors:	Not reported
Waste Discharge System:	False
Solid Waste Assessment Test Program:	True
Toxic Pits Cleanup Act Program:	False
Resource Conservation Recovery Act:	False
Department of Defence:	False
Solid Waste Assessment Test Program:	POMONA BRICK COMPANY
Threat to Water Quality:	Not reported
Sub Chapter 15:	False
Regional Board Project Officer:	LT
Number of WMUDS at Facility:	1
Section Range:	Not reported
RCRA Facility:	Not reported
Waste Discharge Requirements:	Not reported
Self-Monitoring Rept. Frequency:	Not reported
Waste Discharge System ID:	4 190341NUR
Solid Waste Information ID:	Not reported

B24 **SPADRA GENERAL HOSP** **ENVIROSTOR** **S107737395**
N/A

< 1/8
1 ft.

SPADRA, CA

Site 2 of 2 in cluster B

Relative:
Higher

Actual:
737 ft.

ENVIROSTOR:

Facility ID:	80000481
Status:	Inactive - Needs Evaluation
Status Date:	07/01/2005
Site Code:	Not reported
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	Not reported
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Douglas Bautista
Division Branch:	Cleanup Cypress
Assembly:	55
Senate:	29
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	DERA
Latitude:	34.04583
Longitude:	-117.8458
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CA99799F563200
Alias Type:	Federal Facility ID
Alias Name:	J09CA0634
Alias Type:	INPR
Alias Name:	80000481
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	Not reported
Completed Sub Area Name:	Not reported
Completed Document Type:	Not reported
Completed Date:	Not reported
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

C25
WSW
< 1/8
0.009 mi.
47 ft.

ROGERS KEN CHEVRON SERVICE
1201 GRAND
WALNUT, CA 91789

EDR Hist Auto **1022177636**
N/A

Site 1 of 8 in cluster C

Relative:
Lower

Actual:
721 ft.

EDR Hist Auto

Year:	Name:	Type:
1974	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1975	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1976	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1977	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1978	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1979	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1980	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1982	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1983	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1985	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1986	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations
1987	ROGERS KEN CHEVRON SERVICE	Gasoline Service Stations

C26
WSW
< 1/8
0.010 mi.
52 ft.

EXXON #7-6245
1203 GRAND
WALNUT, CA 90789

LUST **S102429469**
HIST CORTESE **N/A**

Site 2 of 8 in cluster C

Relative:
Lower

Actual:
721 ft.

LUST:

Region:	STATE
Global Id:	T0603704064
Latitude:	34.043192
Longitude:	-117.848393
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	07/19/1996
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Worker:	YR
Local Agency:	LOS ANGELES COUNTY
RB Case Number:	I-13371
LOC Case Number:	Not reported
File Location:	Not reported
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0603704064
Contact Type:	Local Agency Caseworker
Contact Name:	JOHN AWUJO
Organization Name:	LOS ANGELES COUNTY
Address:	900 S FREMONT AVE
City:	ALHAMBRA
Email:	jawujo@dpw.lacounty.gov
Phone Number:	6264583507

Global Id:	T0603704064
Contact Type:	Regional Board Caseworker

EXXON #7-6245 (Continued) **S102429469**

Contact Name: YUE RONG
Organization Name: LOS ANGELES RWQCB (REGION 4)
Address: 320 W. 4TH ST., SUITE 200
City: Los Angeles
Email: yrong@waterboards.ca.gov
Phone Number: Not reported

Status History:
Global Id: T0603704064
Status: Completed - Case Closed
Status Date: 07/19/1996

Global Id: T0603704064
Status: Open - Case Begin Date
Status Date: 04/14/1992

Global Id: T0603704064
Status: Open - Site Assessment
Status Date: 04/14/1992

Regulatory Activities:
Global Id: T0603704064
Action Type: Other
Date: 06/29/1992
Action: Leak Reported

Global Id: T0603704064
Action Type: Other
Date: 04/14/1992
Action: Leak Discovery

LUST REG 4:
Region: 4
Regional Board: 04
County: Los Angeles
Facility Id: I-13371
Status: Case Closed
Substance: Gasoline
Substance Quantity: Not reported
Local Case No: Not reported
Case Type: Groundwater
Abatement Method Used at the Site: Not reported
Global ID: T0603704064
W Global ID: Not reported
Staff: UNK
Local Agency: 19000
Cross Street: AMAR
Enforcement Type: Not reported
Date Leak Discovered: 4/14/1992
Date Leak First Reported: 6/29/1992
Date Leak Record Entered: 7/12/1992
Date Confirmation Began: Not reported
Date Leak Stopped: Not reported
Date Case Last Changed on Database: 12/31/1996
Date the Case was Closed: 7/19/1996

EXXON #7-6245 (Continued) **S102429469**

How Leak Discovered: Subsurface Monitoring
How Leak Stopped: Not reported
Cause of Leak: UNK
Leak Source: UNK
Operator: AKA I-21182
Water System: Not reported
Well Name: Not reported
Approx. Dist To Production Well (ft): 12118.748111014085266643235422
Source of Cleanup Funding: UNK
Preliminary Site Assessment Workplan Submitted: Not reported
Preliminary Site Assessment Began: Not reported
Pollution Characterization Began: 4/14/1992
Remediation Plan Submitted: Not reported
Remedial Action Underway: Not reported
Post Remedial Action Monitoring Began: Not reported
Enforcement Action Date: Not reported
Historical Max MTBE Date: Not reported
Hist Max MTBE Conc in Groundwater: Not reported
Hist Max MTBE Conc in Soil: Not reported
Significant Interim Remedial Action Taken: Not reported
GW Qualifier: Not reported
Soil Qualifier: Not reported
Organization: Not reported
Owner Contact: Not reported
Responsible Party: EXXON COMPANY, U.S.A.
RP Address: 23101 LAKE CENTER DR, SUITE 250, LAKE FOREST CA 92630
Program: LUST
Lat/Long: 34.0429439 / -1
Local Agency Staff: Not reported
Beneficial Use: Not reported
Priority: Not reported
Cleanup Fund Id: Not reported
Suspended: Not reported
Assigned Name: Not reported
Summary: SITE IS LISTED AS 1203 IN DPW'S MAGIC LIST, 1205 IN LOP LISTAKA I-21182 IN DPW, NO ENTRY IN LOP LIST 03/25/96 CASE ASSIGNED TO NA 10/28/96 WELL ABANDONMENT REPORT

HIST CORTESE:
Region: CORTESE
Facility County Code: 19
Reg By: LTNKA
Reg Id: I-13371

C27
WSW
< 1/8
0.023 mi.
121 ft.

LEE DAVID **EDR Hist Cleaner** **1018667340**
1229 N GRAND AVE **N/A**
WALNUT, CA 91789

Site 3 of 8 in cluster C

Relative: Lower

Actual: 722 ft.

EDR Hist Cleaner

Year:	Name:	Type:
1987	ALARCO INC	Drycleaning Plants, Except Rugs
1988	ALARCO INC	Drycleaning Plants, Except Rugs
1989	ALARCO INC	Drycleaning Plants, Except Rugs

LEE DAVID (Continued) **1018667340**

1990	ALARCO INC	Drycleaning Plants, Except Rugs
1991	ALARCO INC	Drycleaning Plants, Except Rugs
1992	ALARCO INC	Drycleaning Plants, Except Rugs
1993	ALARCO INC	Drycleaning Plants, Except Rugs
1996	LEE DAVID	Garment Pressing And Cleaners' Agents
1997	LEE DAVID	Garment Pressing And Cleaners' Agents
1998	LEE DAVID	Garment Pressing And Cleaners' Agents
1999	LEE DAVID	Garment Pressing And Cleaners' Agents
2000	LEE DAVID	Garment Pressing And Cleaners' Agents
2001	LEE DAVID	Garment Pressing And Cleaners' Agents
2002	LEE DAVID	Garment Pressing And Cleaners' Agents

C28 **SPACE AGE 39 MINUTE CLEANER** **RCRA-SQG** **1000168223**
WSW **1229 N GRAND AVE** **FINDS** **CAD982036097**
< 1/8 **WALNUT, CA 91789** **ECHO**
0.023 mi. **EMI**
121 ft. **Site 4 of 8 in cluster C** **HAZNET**

Relative:
Lower

Actual:
722 ft.

RCRA-SQG:

Date form received by agency:	09/01/1996
Facility name:	SPACE AGE 39 MINUTE CLEANER
Facility address:	1229 N GRAND AVE WALNUT, CA 91789
EPA ID:	CAD982036097
Mailing address:	N GRAND AVE WALNUT, CA 91789
Contact:	Not reported
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	AL MADRID
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999
Owner/operator country:	Not reported
Owner/operator telephone:	415-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	NOT REQUIRED
Owner/operator address:	NOT REQUIRED NOT REQUIRED, ME 99999

SPACE AGE 39 MINUTE CLEANER (Continued) **1000168223**

Owner/operator country: Not reported
Owner/operator telephone: 415-555-1212
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002784158

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000168223
Registry ID: 110002784158
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002784158

EMI:
Year: 1987
County Code: 19
Air Basin: SC
Facility ID: 57665
Air District Name: SC

SPACE AGE 39 MINUTE CLEANER (Continued) **1000168223**

SIC Code:	9999
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Year:	1990
County Code:	19
Air Basin:	SC
Facility ID:	75718
Air District Name:	SC
SIC Code:	7216
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	2
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

HAZNET:

envid:	1000168223
Year:	1994
GEPAID:	CAD982036097
Contact:	Not reported
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1229 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917891343
Gen County:	Not reported
TSD EPA ID:	CAT000613893
TSD County:	Not reported
Waste Category:	Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method:	Transfer Station
Tons:	.1450
Cat Decode:	Not reported
Method Decode:	Not reported
Facility County:	Los Angeles

envid:	1000168223
Year:	1993
GEPAID:	CAD982036097
Contact:	Not reported
Telephone:	0000000000
Mailing Name:	Not reported
Mailing Address:	1229 N GRAND AVE
Mailing City,St,Zip:	WALNUT, CA 917891343
Gen County:	Not reported

SPACE AGE 39 MINUTE CLEANER (Continued) **1000168223**

TSD EPA ID: CAT000613893
TSD County: Not reported
Waste Category: Not reported
Disposal Method: Not reported
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: 1000168223
Year: 1993
GEPAID: CAD982036097
Contact: Not reported
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1229 N GRAND AVE
Mailing City,St,Zip: WALNUT, CA 917891343
Gen County: Not reported
TSD EPA ID: CAT003613893
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L
Disposal Method: Not reported
Tons: 4.00000000000
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: 1000168223
Year: 1993
GEPAID: CAD982036097
Contact: Not reported
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1229 N GRAND AVE
Mailing City,St,Zip: WALNUT, CA 917891343
Gen County: Not reported
TSD EPA ID: CAT000613893
TSD County: Not reported
Waste Category: Not reported
Disposal Method: Transfer Station
Tons: 0
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: 1000168223
Year: 1993
GEPAID: CAD982036097
Contact: Not reported
Telephone: 0000000000
Mailing Name: Not reported
Mailing Address: 1229 N GRAND AVE
Mailing City,St,Zip: WALNUT, CA 917891343
Gen County: Not reported
TSD EPA ID: CAT000613893
TSD County: Not reported
Waste Category: Liquids with halogenated organic compounds >= 1,000 Mg./L

SPACE AGE 39 MINUTE CLEANER (Continued) **1000168223**

Disposal Method: Transfer Station
Tons: 0.32250000000
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

Click this hyperlink while viewing on your computer to access
1 additional CA_HAZNET: record(s) in the EDR Site Report.

D29 **COLLEGEWOOD CLEANERS** **EDR Hist Cleaner** **1018920257**
West **1317 N GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.023 mi.
123 ft. **Site 1 of 3 in cluster D**

Relative: EDR Hist Cleaner
Higher

Actual: **740 ft.**

Year:	Name:	Type:
1991	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1992	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1993	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1994	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1995	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1996	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents

D30 **COLLEGEWOOD CLEANERS** **EDR Hist Cleaner** **1018407354**
West **1317 GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.023 mi.
123 ft. **Site 2 of 3 in cluster D**

Relative: EDR Hist Cleaner
Higher

Actual: **740 ft.**

Year:	Name:	Type:
1985	COLLEGEWOOD CLEANERS	Garment Pressing And Cleaners' Agents
1986	COLLEGEWOOD CLEANERS	Garment Pressing And Cleaners' Agents
1987	COLLEGEWOOD CLEANERS	Garment Pressing And Cleaners' Agents
1988	COLLEGEWOOD CLEANERS	Garment Pressing And Cleaners' Agents
1989	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents
1990	COLLEGEWOOD CLEANERS	Laundry And Drycleaner Agents

E31 **A PLUS CLEANERS** **EDR Hist Cleaner** **1019918850**
West **1355 N GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.023 mi.
123 ft. **Site 1 of 2 in cluster E**

Relative: EDR Hist Cleaner
Higher

Actual: **759 ft.**

Year:	Name:	Type:
2003	MAYFLOWER CLEANERS	Drycleaning Plants, Except Rugs
2004	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2005	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2006	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2007	A PLUS CLEANERS	Drycleaning Plants, Except Rugs

A PLUS CLEANERS (Continued) **1019918850**

2008	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2009	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2010	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2011	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2012	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2013	A PLUS CLEANERS	Drycleaning Plants, Except Rugs
2014	A PLUS CLEANERS	Drycleaning Plants, Except Rugs

E32 **LEWIS CLEANERS** **EDR Hist Cleaner** **1020027420**
West **1345 N GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.023 mi.
123 ft. **Site 2 of 2 in cluster E**

Relative: EDR Hist Cleaner
Higher

Year:	Name:	Type:
Actual: 1988	LEWIS CLEANERS	Drycleaning Plants, Except Rugs
757 ft. 1989	LEWIS CLEANERS	Drycleaning Plants, Except Rugs

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33 **DON JIREH** **EDR Hist Cleaner** **1018484458**
NNW **21074 GRANITE WELLS RD** **N/A**
< 1/8 **WALNUT, CA 91789**
0.029 mi.
154 ft.

Relative: EDR Hist Cleaner
Higher

Year:	Name:	Type:
Actual: 2001	DON JIREH	Carpet And Upholstery Cleaning
903 ft. 2002	DON JIREH	Carpet And Upholstery Cleaning

C34 **CHEVRON USA SS 202029** **UST** **U003777397**
WSW **1203 N GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.034 mi.
178 ft. **Site 5 of 8 in cluster C**

Relative: UST:
Lower

Actual: Facility ID:	21182
725 ft. Permitting Agency:	LOS ANGELES COUNTY
Latitude:	34.0445032
Longitude:	-117.8468885

Facility ID:	LACoFA0012889
Permitting Agency:	Los Angeles County Fire Department
Latitude:	34.04318
Longitude:	-117.8484

C35 WSW < 1/8 0.034 mi. 178 ft. **CHEVRON 202029**
1203 N GRAND AVE.
WALNUT, CA 91789
Site 6 of 8 in cluster C

RCRA-LQG 1000820192
FINDS CAD983662198
ECHO

Relative: Lower

Actual: 725 ft.

RCRA-LQG:

Date form received by agency:	02/19/2008
Facility name:	CHEVRON 202029
Facility address:	1203 N GRAND AVE. WALNUT, CA 91789
EPA ID:	CAD983662198
Mailing address:	PO BOX 6004 SAN RAMON, CA 94583
Contact:	KATHY L NORRIS
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	925-842-5931
Contact email:	NAWTDESK@CHEVRON.COM
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	CHEVRON PRODUCTS CO.
Owner/operator address:	PO BOX 6004 SAN RAMON, CA 94583
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	08/11/1992
Owner/Op end date:	Not reported

Owner/operator name:	CHEVRON PRODUCTS CO.
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator

CHEVRON 202029 (Continued) **1000820192**

Owner/Op start date: 08/11/1992
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

Historical Generators:
Date form received by agency: 02/23/2004
Site name: CHEVRON 202029
Classification: Small Quantity Generator

Date form received by agency: 02/23/2004
Site name: CHEVRON 202029
Classification: Large Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

Date form received by agency: 05/16/2002
Site name: CHEVRON STATION NO 202029
Classification: Small Quantity Generator

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D018
. Waste name: BENZENE

Violation Status: No violations found

FINDS:

Registry ID: 110002894789

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for

CHEVRON 202029 (Continued) **1000820192**

generators, transporters, and treatment, storage, and disposal facilities.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

STATE MASTER

HAZARDOUS WASTE BIENNIAL REPORTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000820192
Registry ID:	110002894789
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002894789

C36 **DAVES CHEVRON INC** **EDR Hist Auto** **1021501433**
WSW **1203 N GRAND AVE** **N/A**
< 1/8 **WALNUT, CA 91789**
0.034 mi.
178 ft. **Site 7 of 8 in cluster C**

Relative: **Lower**

Actual: **725 ft.**

EDR Hist Auto

Year:	Name:	Type:
1989	EXXON CO USA	Gasoline Service Stations
1991	EXXON CO USA	Gasoline Service Stations
1992	EXXON CO USA	Gasoline Service Stations
1993	EXXON CO USA	Gasoline Service Stations
1994	EXXON CO USA	Gasoline Service Stations
1995	CHEVRON FOOD MART	Gasoline Service Stations
1996	CHEVRON FOOD MART	Gasoline Service Stations
1997	CHEVRON FOOD MART	Gasoline Service Stations
1998	CHEVRON FOOD MART	Gasoline Service Stations
1999	CHEVRON FOOD MART	Gasoline Service Stations
2000	DAVES CHEVRON	Gasoline Service Stations
2001	DAVES CHEVRON	Gasoline Service Stations
2002	DAVES CHEVRON	Gasoline Service Stations
2003	DAVES CHEVRON	Gasoline Service Stations
2004	DAVES CHEVRON	Gasoline Service Stations
2005	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2006	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2007	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2008	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2009	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2010	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2011	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2012	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2013	DAVES CHEVRON INC	Gasoline Service Stations, NEC
2014	DAVES CHEVRON INC	Gasoline Service Stations, NEC

C37
WSW
< 1/8
0.034 mi.
178 ft.

CHEVRON #20-2029
1203 N GRAND AVE
WALNUT, CA 91789

Site 8 of 8 in cluster C

LUST **S103625466**
N/A

Relative:
Lower

Actual:
725 ft.

LUST:

Region:	STATE
Global Id:	T0603789797
Latitude:	34.0430369944063
Longitude:	-117.848373278608
Case Type:	LUST Cleanup Site
Status:	Completed - Case Closed
Status Date:	01/19/2016
Lead Agency:	LOS ANGELES RWQCB (REGION 4)
Case Worker:	ALT
Local Agency:	LOS ANGELES COUNTY
RB Case Number:	I-13371A
LOC Case Number:	Not reported
File Location:	Local Agency
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Gasoline
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

Contact:

Global Id:	T0603789797
Contact Type:	Regional Board Caseworker
Contact Name:	ADAM TAING
Organization Name:	LOS ANGELES RWQCB (REGION 4)
Address:	320 West 4th Street
City:	LOS ANGELES
Email:	adam.taing@waterboards.ca.gov
Phone Number:	2135766752

Global Id:	T0603789797
Contact Type:	Local Agency Caseworker
Contact Name:	PHILLIP GHARIBIANS-TABRIZI
Organization Name:	LOS ANGELES COUNTY
Address:	900 S. FREMONT AVE.
City:	ALHAMBRA
Email:	pgharibians@dpw.lacounty.gov
Phone Number:	Not reported

Status History:

Global Id:	T0603789797
Status:	Completed - Case Closed
Status Date:	01/19/2016

Global Id:	T0603789797
Status:	Open - Case Begin Date
Status Date:	12/04/2002

Global Id:	T0603789797
Status:	Open - Eligible for Closure
Status Date:	09/28/2015

Global Id:	T0603789797

CHEVRON #20-2029 (Continued) **S103625466**

Status: Open - Site Assessment
Status Date: 02/03/2005

Regulatory Activities:

Global Id: T0603789797
Action Type: Other
Date: 04/02/2003
Action: Leak Reported

Global Id: T0603789797
Action Type: RESPONSE
Date: 07/15/2013
Action: Other Report / Document

Global Id: T0603789797
Action Type: ENFORCEMENT
Date: 01/19/2016
Action: Closure/No Further Action Letter

Global Id: T0603789797
Action Type: ENFORCEMENT
Date: 11/18/2015
Action: Notification - Preclosure

Global Id: T0603789797
Action Type: REMEDIATION
Date: 02/03/2005
Action: Not reported

Global Id: T0603789797
Action Type: ENFORCEMENT
Date: 05/03/2013
Action: Staff Letter

Global Id: T0603789797
Action Type: ENFORCEMENT
Date: 04/04/2013
Action: Referral to Regional Board

Global Id: T0603789797
Action Type: Other
Date: 12/04/2002
Action: Leak Discovery

D38 **LEES SHELL SERVICE** **EDR Hist Auto** **1021462419**
West **1325 N GRAND** **N/A**
< 1/8 **WALNUT, CA 91789**
0.038 mi.
200 ft. **Site 3 of 3 in cluster D**

Relative: Higher

EDR Hist Auto

Actual: 746 ft.

Year:	Name:	Type:
1969	LEES SHELL SERVICE	Gasoline Service Stations
1971	LEES SHELL SERVICE	Gasoline Service Stations

39
WSW
< 1/8
0.054 mi.
285 ft.

SUPER FOCUS
1205 N GRAND AVE
WALNUT, CA 91789

RCRA-SQG
SWEEPS UST
FINDS
ECHO
HAZNET

1000686514
CAD983638347

Relative:
Lower

Actual:
722 ft.

RCRA-SQG:

Date form received by agency:	02/27/1992
Facility name:	SUPER FOCUS
Facility address:	1205 N GRAND AVE WALNUT, CA 91789
EPA ID:	CAD983638347
Contact:	STEVEN NGUYEN
Contact address:	1205 N GRAND AVE WALNUT, CA 91789
Contact country:	US
Contact telephone:	714-594-1213
Contact email:	Not reported
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	STEVEN NGUYEN
Owner/operator address:	1205 N GRAND AVE WALNUT, CA 91789
Owner/operator country:	Not reported
Owner/operator telephone:	714-594-1213
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

SUPER FOCUS (Continued) **1000686514**

SWEEPS UST:

Status:	Active
Comp Number:	13371
Number:	9
Board Of Equalization:	44-000285
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013371-000001
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	4

Status:	Active
Comp Number:	13371
Number:	9
Board Of Equalization:	44-000285
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013371-000002
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	13371
Number:	9
Board Of Equalization:	44-000285
Referral Date:	06-30-89
Action Date:	Not reported
Created Date:	06-30-89
Owner Tank Id:	Not reported
SWRCB Tank Id:	19-000-013371-000003
Tank Status:	A
Capacity:	Not reported
Active Date:	06-30-89
Tank Use:	UNKNOWN
STG:	W
Content:	Not reported
Number Of Tanks:	Not reported

Status:	Active
Comp Number:	13371
Number:	9
Board Of Equalization:	44-000285
Referral Date:	06-30-89

SUPER FOCUS (Continued) **1000686514**

Action Date: Not reported
Created Date: 06-30-89
Owner Tank Id: Not reported
SWRCB Tank Id: 19-000-013371-000004
Tank Status: A
Capacity: Not reported
Active Date: 06-30-89
Tank Use: UNKNOWN
STG: W
Content: Not reported
Number Of Tanks: Not reported

FINDS:

Registry ID: 110002877664

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000686514
Registry ID: 110002877664
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002877664

HAZNET:
envid: 1000686514
Year: 1998
GEPAID: CAD983638347
Contact: STEVEN NGUYEN
Telephone: 7145941213
Mailing Name: Not reported
Mailing Address: 1205 N GRAND AVE
Mailing City,St,Zip: WALNUT, CA 917890000
Gen County: Not reported
TSD EPA ID: CAD108040858
TSD County: Not reported
Waste Category: Photochemicals/photoprocessing waste
Disposal Method: Recycler
Tons: .7422
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

envid: 1000686514
Year: 1997
GEPAID: CAD983638347
Contact: STEVEN NGUYEN

SUPER FOCUS (Continued) **1000686514**

Telephone: 7145941213
Mailing Name: Not reported
Mailing Address: 1205 N GRAND AVE
Mailing City,St,Zip: WALNUT, CA 917890000
Gen County: Not reported
TSD EPA ID: CAD108040858
TSD County: Not reported
Waste Category: Photochemicals/photoprocessing waste
Disposal Method: Recycler
Tons: .2502
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Los Angeles

40
NNW
< 1/8
0.078 mi.
412 ft.

DISCOUNT TIRES & AUTO REPAIR
21050 STODDARD WELLS RD
WALNUT, CA 91789

EDR Hist Auto **1021032335**
N/A

Relative:
Higher

Actual:
898 ft.

EDR Hist Auto

Year:	Name:	Type:
2002	DISCOUNT TIRES & AUTO REPAIR	General Automotive Repair Shops
2003	DISCOUNT TIRES & AUTO REPAIR	General Automotive Repair Shops
2004	DISCOUNT TIRES & AUTO REPAIR	General Automotive Repair Shops
2005	DISCOUNT TIRES & AUTO REPAIR	General Automotive Repair Shops

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F41
WSW
< 1/8
0.116 mi.
610 ft.

RITZ CLEANERS
20747 5 AMAR RD
WALNUT, CA 91789
Site 1 of 2 in cluster F

RCRA-SQG **1000905530**
FINDS **CA0000839852**
ECHO
DRYCLEANERS

Relative:
Lower

Actual:
735 ft.

RCRA-SQG:
Date form received by agency: 09/28/1994
Facility name: RITZ CLEANERS
Facility address: 20747 5 AMAR RD
WALNUT, CA 91789
EPA ID: CA0000839852
Mailing address: 5 AMAR RD
WALNUT, CA 91789
Contact: ABHAY JAIN
Contact address: 20747 5 AMAR RD
WALNUT, CA 91789
Contact country: US
Contact telephone: 909-598-6221
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

RITZ CLEANERS (Continued) **1000905530**

Owner/Operator Summary:
Owner/operator name: JAIN ABHAY
Owner/operator address: 20747 5 AMAR RD
WALNUT, CA 91789
Owner/operator country: Not reported
Owner/operator telephone: 909-598-6221
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

FINDS:

Registry ID: 110002620209

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1000905530
Registry ID: 110002620209
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110002620209

DRYCLEANERS:
EPA Id: CA0000839852

RITZ CLEANERS (Continued) **1000905530**

NAICS Code:	81232
NAICS Description:	Drycleaning and Laundry Services (except Coin-Operated)
SIC Code:	7211
SIC Description:	Power Laundries, Family and Commercial
Create Date:	12/08/1995
Facility Active:	No
Inactive Date:	06/30/2004
Facility Addr2:	Not reported
Owner Name:	JAIN ABHAY
Owner Address:	20747 AMAR RD STE 5
Owner Address 2:	Not reported
Owner Telephone:	9095986221
Contact Name:	JAIN ABHAY
Contact Address:	20747 AMAR RD STE 5
Contact Address 2:	Not reported
Contact Telephone:	9095986221
Mailing Name:	Not reported
Mailing Address 1:	20747 AMAR RD STE 5
Mailing Address 2:	Not reported
Mailing City:	WALNUT
Mailing State:	CA
Mailing Zip:	917895043
Owner Fax:	Not reported
Region Code:	3

F42 **RITZ CLEANERS** **EDR Hist Cleaner** **1020075258**
WSW **20747 AMAR RD STE 5** **N/A**
< 1/8 **WALNUT, CA 91789**
0.116 mi.
610 ft. **Site 2 of 2 in cluster F**

Relative: EDR Hist Cleaner
Lower

Actual: **735 ft.**

Year:	Name:	Type:
1996	RITZ CLEANERS	Drycleaning Plants, Except Rugs
1997	RITZ CLEANERS	Drycleaning Plants, Except Rugs
1998	RITZ CLEANERS	Drycleaning Plants, Except Rugs
1999	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2000	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2001	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2002	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2003	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2004	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2005	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2006	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2007	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2008	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2009	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2010	RITZ CLEANERS	Drycleaning Plants, Except Rugs
2011	RITZ CLEANERS	Drycleaning Plants, Except Rugs

43
ESE
1/2-1
0.572 mi.
3022 ft.

Relative:
Lower

Actual:
653 ft.

SPADRA LDFL
4125 W VALLEY BLVD
WALNUT, CA 91789

Database(s): SEMS-ARCHIVE, RCRA-SQG, ENVIROSTOR, SWF/LF, WMUDS/SWAT, CHMIRS, US AIRS, Financial Assurance, WDS

EDR ID Number: 1000978065
EPA ID Number: CAD000607705

SEMS-ARCHIVE:
Site ID: 900916
EPA ID: CAD000607705
Federal Facility: N
NPL: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

Following information was gathered from the prior CERCLIS update completed in 10/2013:
Site ID: 0900916
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: NFRAP-Site does not qualify for the NPL based on existing information

CERCLIS-NFRAP Site Contact Details:
Contact Sequence ID: 13285228.00000
Person ID: 13003854.00000

Contact Sequence ID: 13290823.00000
Person ID: 13003858.00000

Contact Sequence ID: 13296681.00000
Person ID: 13004003.00000

CERCLIS-NFRAP Site Alias Name(s):
Alias Name: LOS ANGELES CO LDFL#2
Alias Address: SPADRA (5) VALLEY BLVD
PONOMA, CA 91789

CERCLIS-NFRAP Assessment History:
Action: DISCOVERY
Date Started: / /
Date Completed: 11/01/79
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: 01/01/84
Date Completed: 09/01/84
Priority Level: Low priority for further assessment

Action: SITE INSPECTION
Date Started: / /
Date Completed: 09/01/85
Priority Level: NFRAP-Site does not qualify for the NPL based on existing information

Action: ARCHIVE SITE
Date Started: / /
Date Completed: 09/01/85
Priority Level: Not reported

SPADRA LDFL (Continued) **1000978065**

RCRA-SQG:
Date form received by agency: 10/12/2000
Facility name: SPADRA LANDFILL
Facility address: 4125 W. VALLEY BLVD.
WALNUT, CA 91789
EPA ID: CAD000607705
Mailing address: P.O. BOX 4998
WHITTIER, CA 90607
Contact: MISCHELLE D. MISCHE
Contact address: Not reported
Not reported
Contact country: US
Contact telephone: 562-699-7411
Telephone ext.: 2488
Contact email: Not reported
EPA Region: 09
Classification: Small Small Quantity Generator
Description: Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 04/15/1999
Site name: SPADRA LANDFILL
Classification: Large Quantity Generator

Date form received by agency: 09/01/1996
Site name: SPADRA LANDFILL
Classification: Small Quantity Generator

Date form received by agency: 03/29/1996
Site name: SPADRA LANDFILL
Classification: Large Quantity Generator

Date form received by agency: 11/10/1994
Site name: SPADRA LANDFILL
Classification: Large Quantity Generator

SPADRA LDFL (Continued) **1000978065**

Date form received by agency: 03/29/1994
Site name: SPADRA LANDFILL
Classification: Large Quantity Generator

Violation Status: No violations found

ENVIROSTOR:
Facility ID: 19490004
Status: Refer: RWQCB
Status Date: 11/18/1980
Site Code: Not reported
Site Type: Historical
Site Type Detailed: * Historical
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Referred - Not Assigned
Division Branch: Cleanup Chatsworth
Assembly: Not reported
Senate: Not reported
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.03866
Longitude: -117.8237
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAD000607705
Alias Type: EPA Identification Number
Alias Name: 110018952347
Alias Type: EPA (FRS #)
Alias Name: 19490004
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Discovery
Completed Date: 10/28/1980
Comments: Facility identified. RWQCB & County Environmental Health records searched.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SPADRA LDFL (Continued) **1000978065**

SWF/LF (SWIS):

Region:	STATE
Facility ID:	19-AA-0015
Lat/Long:	34.04111 / -117.82444
Owner Name:	Calif Polytechnic University-Pomona
Owner Telephone:	7145956666
Owner Address:	Not reported
Owner Address2:	3801 West Temple Street
Owner City,St,Zip:	Pomona, CA 91768
Operational Status:	Closed
Operator:	County Of Los Angeles Sanitation Dist
Operator Phone:	5629084288
Operator Address:	Not reported
Operator Address2:	P.O. Box 4998
Operator City,St,Zip:	Whittier, CA 90607
Permit Date:	08/13/1997
Permit Status:	Permitted
Permitted Acreage:	$323.00
Activity:	Solid Waste Landfill
Regulation Status:	Permitted
Landuse Name:	Residential,Industrial,Agricultural
GIS Source:	Map
Category:	Disposal
Unit Number:	01
Inspection Frequency:	Quarterly
Accepted Waste:	Construction/demolition,Industrial,Inert,Mixed municipal
Closure Date:	01/01/1999
Closure Type:	Estimated
Disposal Acreage:	$172.00
SWIS Num:	19-AA-0015
Waste Discharge Requirement Num:	III
Program Type:	Financial Assurance Responsibilities
Permitted Throughput with Units:	3700
Actual Throughput with Units:	Tons/day
Permitted Capacity with Units:	27700000
Remaining Capacity:	Not reported
Remaining Capacity with Units:	Cubic Yards
Lat/Long:	34.04111 / -117.82444

LOS ANGELES CO. LF:

Site ID:	21
Alt. Address:	Not reported
Site Contact:	Not reported
Site Contact Phone:	Not reported
Site Email:	Not reported
Site Website:	http://www.lacsd.org/about/solid_waste_facilities/spadra/default.asp
Site Type:	Municipal Solid Waste Landfill
Site SWIS Number:	19-AA-0015
Beginning Operation Date:	Jul-57
Ending Operation Date:	Sep-00
Local Enforcement Agency:	Vacant
Maximun Depth Fill(Ft):	Not reported
Permitted Capacity:	Not reported
Present Use:	Open Space
Remaining Capacity(Million):	Not reported
Status:	Closed

SPADRA LDFL (Continued) **1000978065**

Waste Accepted: Not reported
Hours of Operation: Not reported
Disposal Area (Acre): Not reported

Detail As Of 01/2014:
Operator Name: County of Los Angeles Sanitation Districts
Operator Address: 1955 Workman Mill Road
Operator City/State/Zip: Whittier, CA 90601
Operator Contact: Willy Mejia
Operator Telephone: (562) 699-7411x6069
Operator Email: wmejia@lacsd.org
Owner Name: Unknown
Owner Address: Not reported
Owner City/State/Zip: Not reported
Owner Contact: Not reported
Owner Telephone: Not reported
Owner Email: Not reported

WMUDS/SWAT:
Edit Date: 19950126
Complexity: Category B - Any facility having a physical, chemical, or biological waste treatment system (except for septic systems with subsurface disposal), or any Class II or III disposal site, or facilities without treatment systems that are complex, such as marinas with petroleum products, solid wastes, and sewage pump out facilities.
Primary Waste: SLDWST
Primary Waste Type: Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Base Meridian: SB
NPID: Not reported
Tonnage: 3700
Regional Board ID: 57-91
Municipal Solid Waste: True
Superorder: True
Open To Public: False
Waste List: True
Agency Type: County
Agency Name: LOS ANGELES COUNTY SAN DIST
Agency Department: CHIEF ENGINEER AND GENERAL MAN
Agency Address: P.O.BOX 4998
Agency City,St,Zip: WHITTIER CA 906074998
Agency Contact: CHARLES CARRY
Agency Telephone: 5626997411
Land Owner Name: LOS ANGELES COUNTY
Land Owner Address: 500 W. TEMPLE ST
Land Owner City,St,Zip: LOS ANGELES, CA 90012
Land Owner Contact: Not reported
Land Owner Phone: 2139741234
Region: 4
Facility Type: Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Facility Description: Not reported
Facility Telephone: 5626997411

SPADRA LDFL (Continued) **1000978065**

SWAT Facility Name:	SPADRA SANITARY LANDFILL NO 2
Primary SIC:	4953
Secondary SIC:	Not reported
Comments:	RB RECORDS SAY 2,326 TONS/DAY.
Last Facility Editors:	JHMJHMJHM
Waste Discharge System:	True
Solid Waste Assessment Test Program:	True
Toxic Pits Cleanup Act Program:	False
Resource Conservation Recovery Act:	False
Department of Defence:	False
Solid Waste Assessment Test Program:	COUNTY SAN DISTRICTS OF LA COUNTY
Threat to Water Quality:	Major Threat to Water Quality. A violation could render unusable a ground water or surface water resource used as a significant drink water supply, require closure of an area used for contact recreation, result in long-term deleterious effects on shell fish spawning or growth areas of aquatic resources, or directly expose the public to toxic substances.
Sub Chapter 15:	True
Regional Board Project Officer:	Not reported
Number of WMUDS at Facility:	2
Section Range:	15 09W
RCRA Facility:	No
Waste Discharge Requirements:	A
Self-Monitoring Rept. Frequency:	Monthly Submittal
Waste Discharge System ID:	4B190322008
Solid Waste Information ID:	19-AA-0015

CHMIRS:

OES Incident Number:	3-0791
OES notification:	02/11/2003
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported

SPADRA LDFL (Continued) **1000978065**

Waterway Involved:	Yes
Waterway:	Storm Drain / San Jose Creek / San Gabriel River
Spill Site:	Not reported
Cleanup By:	Reporting Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	2003
Agency:	Los Angeles Co Sanitation Dist
Incident Date:	2/11/200312:00:00 AM
Admin Agency:	L. A. County Fire Prevention
Amount:	Not reported
Contained:	Yes
Site Type:	Other
E Date:	Not reported
Substance:	Sodium Hypochlorite
Gallons:	100
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Substance was released due to mechanical failure as the truck tried to delivery product.

US AIRS (AFS):

Envid:	1000978065
Region Code:	09
County Code:	CA037
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
D and B Number:	Not reported
Facility Site Name:	LA CO- SANITATION DIST SPADRA LANFDFILL
Primary SIC Code:	4953
NAICS Code:	562112
Default Air Classification Code:	MAJ
Facility Type of Ownership Code:	CNG
Air CMS Category Code:	TVM
HPV Status:	Not reported

US AIRS (AFS):

Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573

SPADRA LDFL (Continued) **1000978065**

Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Emergency Powers
Activity Date: 2013-11-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-11-20 00:00:00
Activity Status Date: 2014-11-06 11:59:47
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-02-28 00:00:00
Activity Status Date: 2014-11-06 11:45:39
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-07-31 00:00:00
Activity Status Date: 2014-11-06 11:42:32
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-10-16 00:00:00
Activity Status Date: 2014-11-07 14:12:08
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

SPADRA LDFL (Continued) **1000978065**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-06-26 00:00:00
Activity Status Date: 2015-09-09 19:36:03
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-06-26 00:00:00
Activity Status Date: 2015-09-09 19:43:52
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-09-01 00:00:00
Activity Status Date: 2016-09-23 20:07:35
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-09-13 00:00:00
Activity Status Date: 2016-09-23 20:08:24
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1997-08-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

SPADRA LDFL (Continued) **1000978065**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1998-12-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1999-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2002-01-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2002-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

SPADRA LDFL (Continued) **1000978065**

Activity Date: 2004-05-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2004-12-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-07-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-08-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-08-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716

SPADRA LDFL (Continued) **1000978065**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-06-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-02-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

SPADRA LDFL (Continued) **1000978065**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-06-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-09-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

SPADRA LDFL (Continued) **1000978065**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-10-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-10-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

SPADRA LDFL (Continued) **1000978065**

Activity Date: 2010-07-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-07-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-11-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716

SPADRA LDFL (Continued) **1000978065**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-11-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-07-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

SPADRA LDFL (Continued) **1000978065**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-07-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-11-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-11-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-07-31 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

SPADRA LDFL (Continued) **1000978065**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-08-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2013-11-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-11-20 00:00:00
Activity Status Date: 2014-11-06 11:59:47
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-02-28 00:00:00
Activity Status Date: 2014-11-06 11:45:39
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

SPADRA LDFL (Continued) **1000978065**

Activity Date:	2014-07-31 00:00:00
Activity Status Date:	2014-11-06 11:42:32
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Active
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2014-10-16 00:00:00
Activity Status Date:	2014-11-07 14:12:08
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Active
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2014-12-03 00:00:00
Activity Status Date:	2015-09-09 19:40:18
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Active
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2014-12-04 00:00:00
Activity Status Date:	2015-09-09 19:42:58
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Active
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2015-02-27 00:00:00
Activity Status Date:	2015-09-09 19:37:38
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Active
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716

SPADRA LDFL (Continued) **1000978065**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-06-26 00:00:00
Activity Status Date: 2015-09-09 19:36:03
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-06-26 00:00:00
Activity Status Date: 2015-09-09 19:43:52
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-11-24 00:00:00
Activity Status Date: 2016-09-23 20:06:44
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-09-01 00:00:00
Activity Status Date: 2016-09-23 20:07:35
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-09-13 00:00:00
Activity Status Date: 2016-09-23 20:08:24
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

SPADRA LDFL (Continued) **1000978065**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1998-12-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 1999-09-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2000-03-31 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-01-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2002-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

SPADRA LDFL (Continued) **1000978065**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-05-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2004-12-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-07-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-08-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

SPADRA LDFL (Continued) **1000978065**

Activity Date: 2006-08-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-06-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-11-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-02-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716

SPADRA LDFL (Continued) **1000978065**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-06-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-09-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-09-11 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

SPADRA LDFL (Continued) **1000978065**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-09-22 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-09-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-10-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-10-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

SPADRA LDFL (Continued) **1000978065**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-07-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-11-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

SPADRA LDFL (Continued) **1000978065**

Activity Date: 2011-06-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-11-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-11-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716

SPADRA LDFL (Continued) **1000978065**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-07-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-07-19 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-11-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-11-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0573
Facility Registry ID: 110000781716
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-02-28 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

SPADRA LDFL (Continued) **1000978065**

Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2013-07-31 00:00:00
Activity Status Date:	Not reported
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Not reported

Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2013-08-01 00:00:00
Activity Status Date:	Not reported
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Not reported

Region Code:	09
Programmatic ID:	AIR CASCA00006037C0573
Facility Registry ID:	110000781716
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2016-02-23 00:00:00
Activity Status Date:	Not reported
Activity Group:	Compliance Monitoring
Activity Type:	Inspection/Evaluation
Activity Status:	Not reported

CA Financial Assurance 2:

Region:	2
SWIS_NO:	19-AA-0015
Closure Approved:	Yes
Closure Inf Coverage Date:	Not reported
Closure Plan Coverage:	$0.00
Closure Plan Date:	06/01/2014
PostClose Approved:	Yes
PostClose Adequacy Date:	06/01/2014
PostClose Inf Coverage:	$32,591,089.00
PostClose Inf Coverage Date:	05/07/2014
CorActCoverage:	$610,500.00
CorActApproved:	Yes
CorAct Mec Adequacy Date:	Not reported
CorAct Inf Coverage:	$607,501.00
CorActPlanCoverage:	$607,501.00
CorAct Plan Date:	06/23/2014
Lia Coverage:	$0.00
Lia Approved:	Yes
Review:	01/07/2015

SPADRA LDFL (Continued) **1000978065**

Closure Mechanism A:	Not reported
Closure Mechanism B:	Not reported
Closure Coverage:	$0.00
Closure Adequacy:	Not reported
Closure Inflation Estimate:	$0.00
Post Closure Mechanism A:	PLEDGE OF REVENUE
Post Closure Established A:	09/11/2012
Post Closure Mechanism B:	Not reported
Post Closure Coverate:	$47,722,709.00
Post Closure Adequacy:	Not reported
Corrective Action Extablished A:	09/11/2012
Corrective Actiont Coverage:	$610,500.00
Corrective Action Approved:	Yes
Corrective Action Inflation Estimate:	$607,501.00
Corrective Action Inflationdate:	01/01/2015
Corrective Action Plan Estimate:	$607,501.00
Liability Mechanism A:	Not reported
Liability Established A:	Not reported
Liability Mechanism B:	Not reported
CostAnniversary:	12/31/2012
ClosureEstablishedA:	Not reported
ClosureEstablishedB:	Not reported
ClosureDisbursement:	0
PostClosureEstablishedB:	Not reported
PostClosureDisbursement:	0
CorrectiveActionMechanismA:	TRUST FUND
CorrectiveActionMechanismB:	Not reported
CorrectiveActionExtablishedB:	Not reported
CorrectiveActiontDisbursement:	0
LiabilityEstabllishedB:	Not reported
LiabilityAdequacy:	Not reported
Contact:	County Sanitation Districts of Los Angel

WDS:

Facility ID:	Los Angeles River 190322008
Facility Type:	Solid Waste Site-Class III - Landfills for non hazardous solid wastes.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	Not reported
Subregion:	4
Facility Telephone:	5626997411
Facility Contact:	Jeff Weiss
Agency Name:	LA CO SANITATION DISTRICTS
Agency Address:	1955 Workman Mill Rd.
Agency City,St,Zip:	Whittier 90607
Agency Contact:	James Stahl
Agency Telephone:	5626997411
Agency Type:	County
SIC Code:	4953
SIC Code 2:	Not reported
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Primary Waste:	SLDWST
Waste Type2:	Not reported

SPADRA LDFL (Continued) **1000978065**

Waste2:	Solid Wastes
Primary Waste Type:	Nonhazardous Solid Wastes/Influent or Solid Wastes that contain nonhazardous putrescible and non putrescible solid, semisolid, and liquid wastes (E.G., garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid waste).
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported
Design Flow:	0
Baseline Flow:	0
Reclamation:	No reclamation requirements associated with this facility.
POTW:	The facility is not a POTW.
Treat To Water:	Major Threat to Water Quality. A violation could render unusable a ground water or surface water resource used as a significant drink water supply, require closure of an area used for contact recreation, result in long-term deleterious effects on shell fish spawning or growth areas of aquatic resources, or directly expose the public to toxic substances.
Complexity:	Category B - Any facility having a physical, chemical, or biological waste treatment system (except for septic systems with subsurface disposal), or any Class II or III disposal site, or facilities without treatment systems that are complex, such as marinas with petroleum products, solid wastes, and sewage pump out facilities.

44
ESE
1/2-1
0.617 mi.
3257 ft.

TITECH
4000 WEST VALLEY BLVD.
POMONA, CA 91768

ENVIROSTOR **S105633049**
VCP **N/A**
DEED
CHMIRS

Relative:
Lower

Actual:
653 ft.

ENVIROSTOR:

Facility ID:	19340790
Status:	Certified O&M - Land Use Restrictions Only
Status Date:	08/04/2006
Site Code:	301225
Site Type:	Voluntary Cleanup
Site Type Detailed:	Voluntary Cleanup
Acres:	9
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Jessy Fierro
Supervisor:	Juli Propes
Division Branch:	Cleanup Chatsworth
Assembly:	52
Senate:	20
Special Program:	Voluntary Cleanup Program
Restricted Use:	YES
Site Mgmt Req:	NONE SPECIFIED
Funding:	Responsible Party
Latitude:	34.03809
Longitude:	-117.8233
APN:	8709-026-011, 8709-026-016
Past Use:	FOUNDRY
Potential COC:	Arsenic Tetrachloroethylene (PCE Trichloroethylene (TCE
Confirmed COC:	Arsenic Tetrachloroethylene (PCE Trichloroethylene (TCE
Potential Description:	OTH, SOIL, SV, IA
Alias Name:	8709-026-011

TITECH (Continued) **S105633049**

Alias Type: APN
Alias Name: 8709-026-016
Alias Type: APN
Alias Name: CAD982504417
Alias Type: CERCLIS ID
Alias Name: 110000478340
Alias Type: EPA (FRS #)
Alias Name: 301225
Alias Type: Project Code (Site Code)
Alias Name: 19340790
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 07/28/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 03/29/2012
Comments: LUC inspection conducted; Site continues to operate as commercial units.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 05/18/2004
Comments: The VCA for the former Titech Site has been signed. The scope of the VCA includes: review & comment of previous investigation provide oversight for any necessary field activities, and make determination on whether further action is necessary.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Amendment - Order/Agreement
Completed Date: 01/05/2006
Comments: VCA amended to include RAW.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 01/03/2005
Comments: Final RAW approval by DTSC includes excavation of contaminated soil and SVE, if necessary. Deed Restriction may be implemented if residential cleanup levels are not achieved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 08/03/2004
Comments: In the approved PEA, additional sampling was conducted to address the tetrachloroethylene, trichloroethylene & arsenic contamination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported

TITECH (Continued) **S105633049**

Completed Document Type:	Removal Action Completion Report
Completed Date:	05/19/2006
Comments:	DTSC has approved RA Completion Report summarizing excavation activities at Titech.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Fieldwork
Completed Date:	10/13/2005
Comments:	Based on data submitted by URS, DTSC conditionally approved excavation activities performed at the Site. Subsequently, the City of Pomona provided a grading permit.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Fieldwork
Completed Date:	04/06/2006
Comments:	Soil gas sampling at to locations was performed on 4/6/06.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Annual Oversight Cost Estimate
Completed Date:	10/31/2014
Comments:	Completed.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Land Use Restriction - Site Inspection/Visit
Completed Date:	03/29/2010
Comments:	Commercial building on site.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Land Use Restriction - Site Inspection/Visit
Completed Date:	07/08/2008
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	*Voluntary Cleanup Agreement Completion
Completed Date:	08/04/2006
Comments:	VCA was completed and an NFA was issued for the site soil. A Land Use Covenant is in place to restrict the property to commercial/industrial use.
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Certification
Completed Date:	08/04/2006
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	PROJECT WIDE
Schedule Sub Area Name:	Not reported

TITECH (Continued) **S105633049**

Schedule Document Type: 5 Year Review Reports
Schedule Due Date: 12/14/2016
Schedule Revised Date: Not reported

VCP:
Facility ID: 19340790
Site Type: Voluntary Cleanup
Site Type Detail: Voluntary Cleanup
Site Mgmt. Req.: NONE SPECIFIED
Acres: 9
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Jessy Fierro
Supervisor: Juli Propes
Division Branch: Cleanup Chatsworth
Site Code: 301225
Assembly: 52
Senate: 20
Special Programs Code: Voluntary Cleanup Program
Status: Certified O&M - Land Use Restrictions Only
Status Date: 08/04/2006
Restricted Use: YES
Funding: Responsible Party
Lat/Long: 34.03809 / -117.8233
APN: 8709-026-011, 8709-026-016
Past Use: FOUNDRY
Potential COC: 30001, 30022, 30027
Confirmed COC: 30001,30022,30027
Potential Description: OTH, SOIL, SV, IA
Alias Name: 8709-026-011
Alias Type: APN
Alias Name: 8709-026-016
Alias Type: APN
Alias Name: CAD982504417
Alias Type: CERCLIS ID
Alias Name: 110000478340
Alias Type: EPA (FRS #)
Alias Name: 301225
Alias Type: Project Code (Site Code)
Alias Name: 19340790
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction
Completed Date: 07/28/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 03/29/2012
Comments: LUC inspection conducted; Site continues to operate as commercial units.

TITECH (Continued) **S105633049**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Voluntary Cleanup Agreement
Completed Date: 05/18/2004
Comments: The VCA for the former Titech Site has been signed. The scope of the VCA includes: review & comment of previous investigation provide oversight for any necessary field activities, and make determination on whether further action is necessary.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Amendment - Order/Agreement
Completed Date: 01/05/2006
Comments: VCA amended to include RAW.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Workplan
Completed Date: 01/03/2005
Comments: Final RAW approval by DTSC includes excavation of contaminated soil and SVE, if necessary. Deed Restriction may be implemented if residential cleanup levels are not achieved.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 08/03/2004
Comments: In the approved PEA, additional sampling was conducted to address the tetrachloroethylene, trichloroethylene & arsenic contamination.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Removal Action Completion Report
Completed Date: 05/19/2006
Comments: DTSC has approved RA Completion Report summarizing excavation activities at Titech.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 10/13/2005
Comments: Based on data submitted by URS, DTSC conditionally approved excavation activities performed at the Site. Subsequently, the City of Pomona provided a grading permit.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Fieldwork
Completed Date: 04/06/2006
Comments: Soil gas sampling at to locations was performed on 4/6/06.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Annual Oversight Cost Estimate
Completed Date: 10/31/2014
Comments: Completed.

TITECH (Continued) **S105633049**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 03/29/2010
Comments: Commercial building on site.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Land Use Restriction - Site Inspection/Visit
Completed Date: 07/08/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: *Voluntary Cleanup Agreement Completion
Completed Date: 08/04/2006
Comments: VCA was completed and an NFA was issued for the site soil. A Land Use Covenant is in place to restrict the property to commercial/industrial use.

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Certification
Completed Date: 08/04/2006
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: 5 Year Review Reports
Schedule Due Date: 12/14/2016
Schedule Revised Date: Not reported

DEED:
Envirostor ID: 19340790
Area: PROJECT WIDE
Sub Area: Not reported
Site Type: VOLUNTARY CLEANUP
Status: CERTIFIED O&M - LAND USE RESTRICTIONS ONLY
Agency: Not reported
Covenant Uploaded: Not reported
Deed Date(s): 07/28/2006

CHMIRS:
OES Incident Number: 2-1828
OES notification: 04/02/2002
OES Date: Not reported
OES Time: Not reported
Date Completed: **Not reported**
Property Use: Not reported
Agency Id Number: Not reported
Agency Incident Number: Not reported
Time Notified: Not reported

TITECH (Continued) **S105633049**

Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	No
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Contractor
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	2002
Agency:	Los Angeles Co. DPW
Incident Date:	4/2/200212:00:00 AM
Admin Agency:	Pomona Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Merchant/Business
E Date:	Not reported
Substance:	Hydrofluoric Acid
Gallons:	0.000000
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	A titanium alloy production company has released

TITECH (Continued) **S105633049**

	the material, unknown cause. No company employees are currently on scene. Employees from surrounding businesses have complained of the smell, so the caller is investigating that report.
	Not reported
OES Incident Number:	112
OES notification:	Not reported
OES Date:	11/8/1994
OES Time:	03:57:28 PM
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	YES
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	imi/ county health
Containment:	Not reported
What Happened:	Not reported
Type:	CHEMICAL
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	1994
Agency:	imi titanium
Incident Date:	1445/08nov94
Admin Agency:	Not reported
Amount:	approx 100 gals
Contained:	NO
Site Type:	OTHER
E Date:	Not reported
Substance:	sodium hydroxide 25%
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported

TITECH (Continued) **S105633049**

Evacuations:	NO
Number of Injuries:	NO
Number of Fatalities:	NO
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	shell material built up in caustic tank causing pressure relief valve to open ,spill went to concrete pad

---

45
WSW
1/2-1
0.741 mi.
3913 ft.

WESTHOFF ELEMENTARY SCHOOL **ENVIROSTOR** **S107737607**
1323 COUNTRY HOLLOW DRIVE **SCH** **N/A**
WALNUT, CA 91789

Relative:
Higher

Actual:
779 ft.

ENVIROSTOR:

Facility ID:	19010024
Status:	Inactive - Withdrawn
Status Date:	08/24/2001
Site Code:	304331
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	0
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	55
Senate:	29
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	34.04038
Longitude:	-117.8603
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	WALNUT VALLEY UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	WALNUT VALLEY USD-WESTHOFF ELEM EXP
Alias Type:	Alternate Name
Alias Name:	WESTHOFF ELEMENTARY SCHOOL (EXPANSION)
Alias Type:	Alternate Name
Alias Name:	304331
Alias Type:	Project Code (Site Code)

WESTHOFF ELEMENTARY SCHOOL (Continued) **S107737607**

Alias Name: 19010024
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 10/31/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 19010024
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 0
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Javier Hinojosa
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 304331
Assembly: 55
Senate: 29
Special Program Status: Not reported
Status: Inactive - Withdrawn
Status Date: 08/24/2001
Restricted Use: NO
Funding: School District
Latitude: 34.04038
Longitude: -117.8603
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: WALNUT VALLEY UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: WALNUT VALLEY USD-WESTHOFF ELEM EXP
Alias Type: Alternate Name
Alias Name: WESTHOFF ELEMENTARY SCHOOL (EXPANSION)
Alias Type: Alternate Name
Alias Name: 304331
Alias Type: Project Code (Site Code)

WESTHOFF ELEMENTARY SCHOOL (Continued) **S107737607**

Alias Name: 19010024
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 10/31/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

46
SE
1/2-1
0.763 mi.
4028 ft.

Relative:
Lower

Actual:
636 ft.

CONSOLIDATED PRECISION PRODUCTS CORP **1000201834**
4200 W VALLEY BLVD **91766TLDYN4200W**
POMONA, CA 91766

ENVIROSTOR
TRIS
ICIS
US AIRS
EMI
LOS ANGELES CO. HMS
HWP
NPDES
WDS
WIP

ENVIROSTOR:
Facility ID: 80001677
Status: Inactive - Needs Evaluation
Status Date: 08/29/2014
Site Code: Not reported
Site Type: Corrective Action
Site Type Detailed: Corrective Action
Acres: 19
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: WM
Program Manager: Not reported
Supervisor: Eileen Mananian
Division Branch: Cleanup Cypress
Assembly: 52
Senate: 20
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.06152
Longitude: -117.7875
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Alias Name: CAD076243815
Alias Type: EPA Identification Number
Alias Name: 110000478313
Alias Type: EPA (FRS #)
Alias Name: 80001677
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/05/1991
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Other Instrument
Completed Date: 11/01/1990
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: RCRA Facility Assessment Report
Completed Date: 11/01/1990
Comments: RFA COmplete

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Assessment Report
Completed Date: 06/28/1990
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Facility ID: 71002577
Status: Refer: Other Agency
Status Date: 11/18/2014
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: 19
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Eileen Mananian
Division Branch: Cleanup Chatsworth
Assembly: 52
Senate: 20
Special Program: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.03665
Longitude: -117.8245
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED
Alias Name: CAD076243815
Alias Type: EPA Identification Number
Alias Name: 110000478313
Alias Type: EPA (FRS #)
Alias Name: 71002577
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Correspondence
Completed Date: 08/05/1991
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase I Verification
Completed Date: 05/07/1998
Comments: Inspection report sent on 5/7/1998

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase I Verification
Completed Date: 08/01/2000
Comments: Cypress Project

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

TRIS:

Click this hyperlink while viewing on your computer to access
3 additional US_TRIS: record(s) in the EDR Site Report.

ICIS:
Enforcement Action ID: CASCAA200129651
FRS ID: 110000478313
Action Name: NOV P63704 RULE 1147(c)(14)(A)
Facility Name: CAST PARTS, INC
Facility Address: 4200 W VALLEY BLVD
POMONA, CA 917660000

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Enforcement Action Type: Notice of Violation
Facility County: LOS ANGELES
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 3369
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.035306
Longitude in Decimal Degrees: -117.824917
Permit Type Desc: Not reported
Program System Acronym: CASCA00006037C0335
Facility NAICS Code: 331528
Tribal Land Code: Not reported

Enforcement Action ID: CASCAA000006037C033500053
FRS ID: 110000478313
Action Name: CONSOLIDATED FOUNDRIES-POMONA(TELEDYNE) 06037C033500053
Facility Name: CAST PARTS, INC
Facility Address: 4200 W VALLEY BLVD
POMONA, CA 917660000
Enforcement Action Type: Administrative Order
Facility County: LOS ANGELES
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Formal
EA Type Code: SCAAAO
Facility SIC Code: 3369
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.035306
Longitude in Decimal Degrees: -117.824917
Permit Type Desc: Not reported
Program System Acronym: CASCA00006037C0335
Facility NAICS Code: 331528
Tribal Land Code: Not reported

Enforcement Action ID: CASCAA000006037C033500052
FRS ID: 110000478313
Action Name: CONSOLIDATED FOUNDRIES-POMONA(TELEDYNE) 06037C033500052
Facility Name: CAST PARTS, INC
Facility Address: 4200 W VALLEY BLVD
POMONA, CA 917660000
Enforcement Action Type: Notice of Violation
Facility County: LOS ANGELES
Program System Acronym: AIR
Enforcement Action Forum Desc: Administrative - Informal
EA Type Code: NOV
Facility SIC Code: 3369
Federal Facility ID: Not reported
Latitude in Decimal Degrees: 34.035306
Longitude in Decimal Degrees: -117.824917
Permit Type Desc: Not reported
Program System Acronym: CASCA00006037C0335
Facility NAICS Code: 331528
Tribal Land Code: Not reported

Enforcement Action ID: CASCAA000006037C033500012
FRS ID: 110000478313
Action Name: CONSOLIDATED FOUNDRIES-POMONA(TELEDYNE) 06037C033500012

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Facility Name:	CAST PARTS, INC
Facility Address:	4200 W VALLEY BLVD POMONA, CA 917660000
Enforcement Action Type:	Administrative Order
Facility County:	LOS ANGELES
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Formal
EA Type Code:	SCAAAO
Facility SIC Code:	3369
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.035306
Longitude in Decimal Degrees:	-117.824917
Permit Type Desc:	Not reported
Program System Acronym:	CASCA00006037C0335
Facility NAICS Code:	331528
Tribal Land Code:	Not reported

Enforcement Action ID:	CASCAA000006037C033500011
FRS ID:	110000478313
Action Name:	CONSOLIDATED FOUNDRIES-POMONA(TELEDYNE) 06037C033500011
Facility Name:	CAST PARTS, INC
Facility Address:	4200 W VALLEY BLVD POMONA, CA 917660000
Enforcement Action Type:	Notice of Violation
Facility County:	LOS ANGELES
Program System Acronym:	AIR
Enforcement Action Forum Desc:	Administrative - Informal
EA Type Code:	NOV
Facility SIC Code:	3369
Federal Facility ID:	Not reported
Latitude in Decimal Degrees:	34.035306
Longitude in Decimal Degrees:	-117.824917
Permit Type Desc:	Not reported
Program System Acronym:	CASCA00006037C0335
Facility NAICS Code:	331528
Tribal Land Code:	Not reported

US AIRS (AFS):

Envid:	1000201834
Region Code:	09
County Code:	CA037
Programmatic ID:	AIR CASCA00006037C0335
Facility Registry ID:	110000478313
D and B Number:	Not reported
Facility Site Name:	CONSOLIDATED FOUNDRIES-POMONA(TELEDYNE)
Primary SIC Code:	3369
NAICS Code:	331528
Default Air Classification Code:	MAJ
Facility Type of Ownership Code:	POF
Air CMS Category Code:	TVM
HPV Status:	Not reported

US AIRS (AFS):

Region Code:	09
Programmatic ID:	AIR CASCA00006037C0335
Facility Registry ID:	110000478313

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: Not reported
Activity Status Date: 2006-03-29 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: Not reported
Activity Status Date: 2011-06-09 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-09-01 00:00:00
Activity Status Date: 2015-10-06 15:45:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-08-10 00:00:00
Activity Status Date: 2016-08-11 17:22:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-09-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-01-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-03-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-08-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-09-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-01-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-02-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2007-05-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2008-05-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Date: 2009-02-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-02-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2010-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-02-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-06-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-02-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-05-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-07-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-02-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-09-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2014-10-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-09-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2006-02-10 00:00:00
Activity Status Date: 2006-02-10 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2011-02-20 00:00:00
Activity Status Date: 2011-02-20 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2005-10-26 00:00:00
Activity Status Date: 2005-10-26 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Date: 2010-10-13 00:00:00
Activity Status Date: 2010-10-13 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Informal
Activity Status: Achieved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2015-10-07 13:58:38
Activity Group: Case File
Activity Type: Case File
Activity Status: Notified

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2006-03-29 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: Not reported
Activity Status Date: 2011-06-09 00:00:00
Activity Group: Case File
Activity Type: Case File
Activity Status: Resolved

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2013-04-27 00:00:00
Activity Status Date: 2015-10-06 15:47:45
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-02-19 00:00:00
Activity Status Date: 2015-10-06 15:46:01
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-09-01 00:00:00
Activity Status Date: 2015-10-06 15:45:04
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-08-10 00:00:00
Activity Status Date: 2016-08-11 17:22:11
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-09-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2005-09-08 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-01-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-03-06 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-08-16 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-09-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-01-18 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-02-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2007-05-14 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2008-05-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-02-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Date: 2009-03-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2009-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-02-23 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-29 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2010-09-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-02-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-20 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-06-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-02-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-05-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2012-07-03 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-02-27 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-09-24 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2014-10-02 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2015-09-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2016-02-25 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2006-02-10 00:00:00
Activity Status Date: 2006-02-10 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits
Activity Date: 2011-02-20 00:00:00
Activity Status Date: 2011-02-20 00:00:00
Activity Group: Enforcement Action
Activity Type: Administrative - Formal
Activity Status: Final Order Issued

Region Code: 09
Programmatic ID: AIR CASCA00006037C0335
Facility Registry ID: 110000478313
Air Operating Status Code: OPR
Default Air Classification Code: MAJ
Air Program: Title V Permits

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Activity Date:	2005-10-26 00:00:00
Activity Status Date:	2005-10-26 00:00:00
Activity Group:	Enforcement Action
Activity Type:	Administrative - Informal
Activity Status:	Achieved
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0335
Facility Registry ID:	110000478313
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	2010-10-13 00:00:00
Activity Status Date:	2010-10-13 00:00:00
Activity Group:	Enforcement Action
Activity Type:	Administrative - Informal
Activity Status:	Achieved
Region Code:	09
Programmatic ID:	AIR CASCA00006037C0335
Facility Registry ID:	110000478313
Air Operating Status Code:	OPR
Default Air Classification Code:	MAJ
Air Program:	Title V Permits
Activity Date:	Not reported
Activity Status Date:	2015-09-30 00:00:00
Activity Group:	Enforcement Action
Activity Type:	Administrative - Informal
Activity Status:	Achieved

EMI:

Year:	1987
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	35
Reactive Organic Gases Tons/Yr:	28
Carbon Monoxide Emissions Tons/Yr:	7
NOX - Oxides of Nitrogen Tons/Yr:	8
SOX - Oxides of Sulphur Tons/Yr:	4
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2
Year:	1990
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	27
Reactive Organic Gases Tons/Yr:	17
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	2
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1

Year:	1995
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	8
Reactive Organic Gases Tons/Yr:	7
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	3
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2

Year:	1996
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	26
Reactive Organic Gases Tons/Yr:	25
Carbon Monoxide Emissions Tons/Yr:	2
NOX - Oxides of Nitrogen Tons/Yr:	6
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	25
Part. Matter 10 Micrometers and Smllr Tons/Yr:	20

Year:	1997
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	29
Reactive Organic Gases Tons/Yr:	21
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8
Year:	1998
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	29
Reactive Organic Gases Tons/Yr:	21
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8
Year:	1999
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	29
Reactive Organic Gases Tons/Yr:	21
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8
Year:	2000
County Code:	19
Air Basin:	SC
Facility ID:	15842
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	29
Reactive Organic Gases Tons/Yr:	21
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	4
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	12
Part. Matter 10 Micrometers and Smllr Tons/Yr:	8
Year:	2002
County Code:	19
Air Basin:	SC

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	13
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	2003
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	13
Reactive Organic Gases Tons/Yr:	9
Carbon Monoxide Emissions Tons/Yr:	1
NOX - Oxides of Nitrogen Tons/Yr:	5
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	3
Part. Matter 10 Micrometers and Smllr Tons/Yr:	3

Year:	2004
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Y
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12.6469
Reactive Organic Gases Tons/Yr:	9.33
Carbon Monoxide Emissions Tons/Yr:	1.412
NOX - Oxides of Nitrogen Tons/Yr:	5.26
SOX - Oxides of Sulphur Tons/Yr:	0.03357
Particulate Matter Tons/Yr:	3.35440589
Part. Matter 10 Micrometers and Smllr Tons/Yr:	2.61

Year:	2005
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Total Organic Hydrocarbon Gases Tons/Yr:	6.745395
Reactive Organic Gases Tons/Yr:	5.095143479
Carbon Monoxide Emissions Tons/Yr:	.818745
NOX - Oxides of Nitrogen Tons/Yr:	3.04345
SOX - Oxides of Sulphur Tons/Yr:	.014035
Particulate Matter Tons/Yr:	.92224368
Part. Matter 10 Micrometers and Smllr Tons/Yr:	.7731423624

Year:	2006
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	10.19214485787327047
Reactive Organic Gases Tons/Yr:	7.329
Carbon Monoxide Emissions Tons/Yr:	.984
NOX - Oxides of Nitrogen Tons/Yr:	3.726
SOX - Oxides of Sulphur Tons/Yr:	.017
Particulate Matter Tons/Yr:	1.41
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.165204

Year:	2007
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	10.19214485787327047
Reactive Organic Gases Tons/Yr:	7.329
Carbon Monoxide Emissions Tons/Yr:	.984
NOX - Oxides of Nitrogen Tons/Yr:	3.726
SOX - Oxides of Sulphur Tons/Yr:	.017
Particulate Matter Tons/Yr:	1.41
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.165204

Year:	2008
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3365
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	12.75238708956720897
Reactive Organic Gases Tons/Yr:	8.33225
Carbon Monoxide Emissions Tons/Yr:	1.07
NOX - Oxides of Nitrogen Tons/Yr:	4.05
SOX - Oxides of Sulphur Tons/Yr:	.014662
Particulate Matter Tons/Yr:	1.597929112946

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Part. Matter 10 Micrometers and Smllr Tons/Yr:1.296924209487035

Year:	2012
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3365
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	25.236162784
Reactive Organic Gases Tons/Yr:	17.12845
Carbon Monoxide Emissions Tons/Yr:	1.11049
NOX - Oxides of Nitrogen Tons/Yr:	4.1978
SOX - Oxides of Sulphur Tons/Yr:	0.01897
Particulate Matter Tons/Yr:	1.48424
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.22274644

Year:	2013
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	23.102704882
Reactive Organic Gases Tons/Yr:	18.02635
Carbon Monoxide Emissions Tons/Yr:	1.16697
NOX - Oxides of Nitrogen Tons/Yr:	4.53384
SOX - Oxides of Sulphur Tons/Yr:	0.01994239
Particulate Matter Tons/Yr:	1.8398
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.52565224

Year:	2015
County Code:	19
Air Basin:	SC
Facility ID:	126536
Air District Name:	SC
SIC Code:	3369
Air District Name:	SOUTH COAST AQMD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	45.849704905
Reactive Organic Gases Tons/Yr:	33.610984925
Carbon Monoxide Emissions Tons/Yr:	1.0645535
NOX - Oxides of Nitrogen Tons/Yr:	4.491973
SOX - Oxides of Sulphur Tons/Yr:	0.01815606
Particulate Matter Tons/Yr:	1.551197265
Part. Matter 10 Micrometers and Smllr Tons/Yr:	1.3776041204

LOS ANGELES CO. HMS:

Region:	LA
Permit Category:	Not reported
Facility Id:	014834-015608

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Facility Type: Not reported
Facility Status: Removed
Area: 6K
Permit Number: Not reported
Permit Status: Not reported

HWP:
EPA Id: CAD076243815
Cleanup Status: NON-OPERATING
Latitude: 34.06152
Longitude: -117.7875
Facility Type: Historical - Non-Operating
Facility Size: Not reported
Team: Not reported
Supervisor: Not reported
Site Code: N/A
Assembly District: 52
Senate District: 20
Public Information Officer: Not reported
Public Information Officer: Not reported

Activities:
EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - APPLICATION PART B RECEIVED
Actual Date: 07/16/1990

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - CALL-IN LETTER ISSUED
Actual Date: 01/28/1983

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST RECEIVED
Actual Date: 07/15/1992

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - FINAL PERMIT - WITHDRAWAL REQUEST ACKNOWLEDGED
Actual Date: 01/26/1984

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: New Operating Permit - APPLICATION PART A RECEIVED
Actual Date: 11/19/1980

Closure:
EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - CLOSURE PLAN RECEIVED

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Actual Date: 07/15/1992

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - ISSUE CLOSURE VERIFICATION
Actual Date: 07/18/1994

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - RECEIVE CLOSURE CERTIFICATION
Actual Date: 07/18/1994

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - CLOSURE NOTICE RECEIVED
Actual Date: 11/17/1993

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - CLOSURE PLAN APPROVED
Actual Date: 01/21/1994

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Unit Names: Not reported
Event Description: Closure - CLOSURE PLAN REQUESTED
Actual Date: 11/23/1993

Alias:
EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Alias Type: FRS
Alias: 110000478313

EPA Id: CAD076243815
Facility Type: Historical - Non-Operating
Alias Type: Project Code (Site Code)
Alias: N/A

NPDES:
Npdes Number: Not reported
Facility Status: Not reported
Agency Id: Not reported
Region: 4
Regulatory Measure Id: 191122
Order No: Not reported
Regulatory Measure Type: Industrial
Place Id: Not reported
WDID: 4 19I016314
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	05/09/2008
PROCESSED DATE:	01/16/2001
STATUS CODE NAME:	Active
STATUS DATE:	01/16/2001
PLACE SIZE:	12.4
PLACE SIZE UNIT:	Acres
FACILITY CONTACT NAME:	Alfonso Vega
FACILITY CONTACT TITLE:	Environmental Technician
FACILITY CONTACT PHONE:	909-595-2252
FACILITY CONTACT PHONE EXT:	2203
FACILITY CONTACT EMAIL:	alfonso.vega@cppcorp.com
OPERATOR NAME:	Cast Parts Inc
OPERATOR ADDRESS:	PO Box 2348
OPERATOR CITY:	Pomona
OPERATOR STATE:	California
OPERATOR ZIP:	91769
OPERATOR CONTACT NAME:	Alfonso Vega
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	909-595-2252
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	alfonso.vega@cppcorp.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

RECEIVING WATER NAME:	San Jose Creek
CERTIFIER NAME:	Jesus Diaz
CERTIFIER TITLE:	Director of Facilities
CERTIFICATION DATE:	22-MAY-17
PRIMARY SIC:	3365-Aluminum Foundries
SECONDARY SIC:	3369-Nonferrous Foundries, Except Aluminum and Copper
TERTIARY SIC:	Not reported
Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	4
Regulatory Measure Id:	191122
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	4 19I016314
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	01/16/2001
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Cast Parts Inc
Discharge Address:	PO Box 2348
Discharge City:	Pomona
Discharge State:	California
Discharge Zip:	91769
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

WDS:

Facility ID:	4 19I016314
Facility Type:	Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status:	Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number:	CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion:	4
Facility Telephone:	9095952252
Facility Contact:	SOE AUNG
Agency Name:	CAST PARTS INC
Agency Address:	PO Box 2348
Agency City,St,Zip:	Pomona 917692348
Agency Contact:	STEVE CLODFELTER
Agency Telephone:	9095952252
Agency Type:	Private
SIC Code:	0
SIC Code 2:	Not reported
Primary Waste Type:	Not reported
Primary Waste:	Not reported
Waste Type2:	Not reported
Waste2:	Not reported
Primary Waste Type:	Not reported
Secondary Waste:	Not reported
Secondary Waste Type:	Not reported

CONSOLIDATED PRECISION PRODUCTS CORP (Continued) **1000201834**

Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.
Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

WIP:
Region: 4
File Number: 101.0350
File Status: Backlog
Staff: DIMAM
Facility Suite: Not reported

47
ESE
1/2-1
0.790 mi.
4172 ft.

IMI TITECH TITANIUM INC. **ENVIROSTOR** **S100946690**
4000 W. VALLEY BLVD. **SLIC** **N/A**
POMONA, CA 91769 **WIP**

Relative:
Lower

Actual:
670 ft.

ENVIROSTOR:
Facility ID: 71003095
Status: Refer: Other Agency
Status Date: Not reported
Site Code: Not reported
Site Type: Tiered Permit
Site Type Detailed: Tiered Permit
Acres: Not reported
NPL: NO
Regulatory Agencies: NONE SPECIFIED
Lead Agency: NONE SPECIFIED
Program Manager: Not reported
Supervisor: Not reported
Division Branch: Cleanup Chatsworth
Assembly: 52
Senate: 20
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: Not reported
Latitude: 34.03991
Longitude: -117.8211
APN: NONE SPECIFIED
Past Use: NONE SPECIFIED
Potential COC: NONE SPECIFIED
Confirmed COC: NONE SPECIFIED
Potential Description: NONE SPECIFIED

IMI TITECH TITANIUM INC. (Continued) **S100946690**

Alias Name: CAD982504417
Alias Type: EPA Identification Number
Alias Name: 71003095
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: Not reported
Completed Sub Area Name: Not reported
Completed Document Type: Not reported
Completed Date: Not reported
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 04/05/1999
Global Id: SL603798677
Lead Agency: LOS ANGELES RWQCB (REGION 4)
Lead Agency Case Number: Not reported
Latitude: 34.040804
Longitude: -117.819228
Case Type: Cleanup Program Site
Case Worker: GJH
Local Agency: Not reported
RB Case Number: 105.0351
File Location: Not reported
Potential Media Affected: Aquifer used for drinking water supply
Potential Contaminants of Concern: Not reported
Site History: No Further Requirements Letter was issued on April 5, 1999.

Click here to access the California GeoTracker records for this facility:

WIP:
Region: 4
File Number: 105.0351
File Status: **Active**
Staff: DORIOLA
Facility Suite: Not reported

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
INDUSTRY	S107530513		2001 WALNUT DR	91789	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/08/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 99

Source: EPA
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: EPA
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 10/06/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/21/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 77

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/20/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/28/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 70

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/20/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/10/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/18/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/14/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 35

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/07/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 70
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69
Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/26/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2016
Date Data Arrived at EDR: 01/27/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 98
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 05/02/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/13/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 78

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/01/2016
Date Data Arrived at EDR: 01/26/2017
Date Made Active in Reports: 05/05/2017
Number of Days to Update: 99

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/14/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 71

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/27/2017
Date Data Arrived at EDR: 06/28/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/20/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 9
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 05/31/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 76

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/20/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/29/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/01/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 14

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/13/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 30

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24
Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 65

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/09/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 57

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/26/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 65

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/12/2017
Date Data Arrived at EDR: 06/14/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/13/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 10

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/25/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 121

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/23/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 8
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2017
Date Data Arrived at EDR: 02/09/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 57
Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35
Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 10/03/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/28/2017
Next Scheduled EDR Contact: 11/08/2017
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2017
Date Data Arrived at EDR: 10/05/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 8
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/01/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 78

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/11/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 98

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 44

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/30/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/01/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/25/2017
Date Data Arrived at EDR: 09/26/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 24

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/23/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 9

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2016
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 133

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/20/2017
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/17/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 29

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/21/2017
Date Data Arrived at EDR: 09/21/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 22

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 05/01/2017
Date Data Arrived at EDR: 05/03/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 104

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 07/21/2017
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/16/2017
Date Data Arrived at EDR: 05/19/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 88

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 05/24/2017
Date Made Active in Reports: 08/18/2017
Number of Days to Update: 86
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/10/2017
Date Data Arrived at EDR: 10/10/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 7
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/12/2016
Date Data Arrived at EDR: 09/14/2016
Date Made Active in Reports: 10/14/2016
Number of Days to Update: 30
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/25/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 78
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/14/2017
Date Data Arrived at EDR: 08/17/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 61
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/17/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/11/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 10/18/2017
Number of Days to Update: 36
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 06/16/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 119
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 01/20/2017
Date Data Arrived at EDR: 03/14/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 50
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/13/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historic Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 09/22/2017
Date Data Arrived at EDR: 09/22/2017
Date Made Active in Reports: 10/10/2017
Number of Days to Update: 18

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 09/21/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/07/2017
Date Data Arrived at EDR: 07/11/2017
Date Made Active in Reports: 08/23/2017
Number of Days to Update: 43

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 06/20/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 49

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 10/23/2017
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 04/25/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 104

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/05/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/26/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 58

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 66

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 50

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/31/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 30

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 07/26/2017
Date Data Arrived at EDR: 07/28/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 77

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/03/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 07/21/2017
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 83

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 44

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 09/22/2017
Date Data Arrived at EDR: 09/22/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 24

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 08/03/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 74

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 07/24/2017
Date Data Arrived at EDR: 07/26/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 82

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 10/11/2017
Date Data Arrived at EDR: 10/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 5
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/17/2017
Date Data Arrived at EDR: 07/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 65
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/17/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 10/09/2017
Number of Days to Update: 171
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/17/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/14/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 69

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/10/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/02/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 63

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 07/03/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 15

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 10/02/2017
Date Data Arrived at EDR: 10/03/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 14

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/06/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 40

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/08/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/22/2017
Date Data Arrived at EDR: 06/23/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 47
Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 05/31/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 08/04/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69
Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/11/2017
Date Made Active in Reports: 10/11/2017
Number of Days to Update: 61
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/11/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 41
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/09/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 43

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/09/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 77

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 06/19/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 35

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/14/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 69

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/11/2017
Date Data Arrived at EDR: 07/14/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 69

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/18/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/02/2017
Date Data Arrived at EDR: 10/03/2017
Date Made Active in Reports: 10/06/2017
Number of Days to Update: 3

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/03/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 08/11/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 66

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/30/2017
Date Data Arrived at EDR: 06/01/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 85

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/07/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 69

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/06/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/03/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 109
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 10/03/2017
Date Data Arrived at EDR: 10/06/2017
Date Made Active in Reports: 10/10/2017
Number of Days to Update: 4
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 08/28/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/05/2017
Date Data Arrived at EDR: 06/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 54
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/15/2017
Date Data Arrived at EDR: 09/19/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 28
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/07/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 08/07/2017
Date Data Arrived at EDR: 08/10/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 67
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/07/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/24/2017
Next Scheduled EDR Contact: 12/11/2017
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/04/2017
Date Data Arrived at EDR: 05/08/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 80

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/20/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 63

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 08/29/2017
Number of Days to Update: 69

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 06/27/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 43

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/01/2018
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/05/2017
Date Data Arrived at EDR: 07/06/2017
Date Made Active in Reports: 08/22/2017
Number of Days to Update: 47

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/25/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 05/10/2017
Date Data Arrived at EDR: 05/16/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 85

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 06/02/2017
Date Data Arrived at EDR: 06/06/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 80

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 08/31/2017
Next Scheduled EDR Contact: 12/18/2017
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 07/19/2017
Date Data Arrived at EDR: 08/11/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 66

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 07/21/2017
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 83

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 09/27/2017
Date Data Arrived at EDR: 09/28/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 18

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 09/22/2017
Next Scheduled EDR Contact: 11/20/2017
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/27/2017
Date Data Arrived at EDR: 04/27/2017
Date Made Active in Reports: 08/10/2017
Number of Days to Update: 105

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 06/26/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 74

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/10/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 06/26/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 75

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/23/2017
Next Scheduled EDR Contact: 02/05/2018
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 08/28/2017
Date Data Arrived at EDR: 09/12/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 9
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/12/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/29/2017
Date Data Arrived at EDR: 07/05/2017
Date Made Active in Reports: 08/25/2017
Number of Days to Update: 51
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/27/2017
Next Scheduled EDR Contact: 01/15/2018
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 74
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/27/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 11/27/2017
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/05/2017
Next Scheduled EDR Contact: 01/22/2018
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 07/31/2017
Date Data Arrived at EDR: 08/03/2017
Date Made Active in Reports: 10/12/2017
Number of Days to Update: 70

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/03/2017
Next Scheduled EDR Contact: 11/13/2017
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/16/2017
Next Scheduled EDR Contact: 01/29/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/21/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/11/2017
Next Scheduled EDR Contact: 12/25/2017
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MT. SAN ANTONIO COLLEGE PARKING & CIRCULATION MP
1100 N. GRAND AVENUE
WALNUT, CA 91789

TARGET PROPERTY COORDINATES

Latitude (North):	34.045929 - 34° 2' 45.34''
Longitude (West):	117.841391 - 117° 50' 29.01''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	422338.4
UTM Y (Meters):	3767373.2
Elevation:	737 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619080 SAN DIMAS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

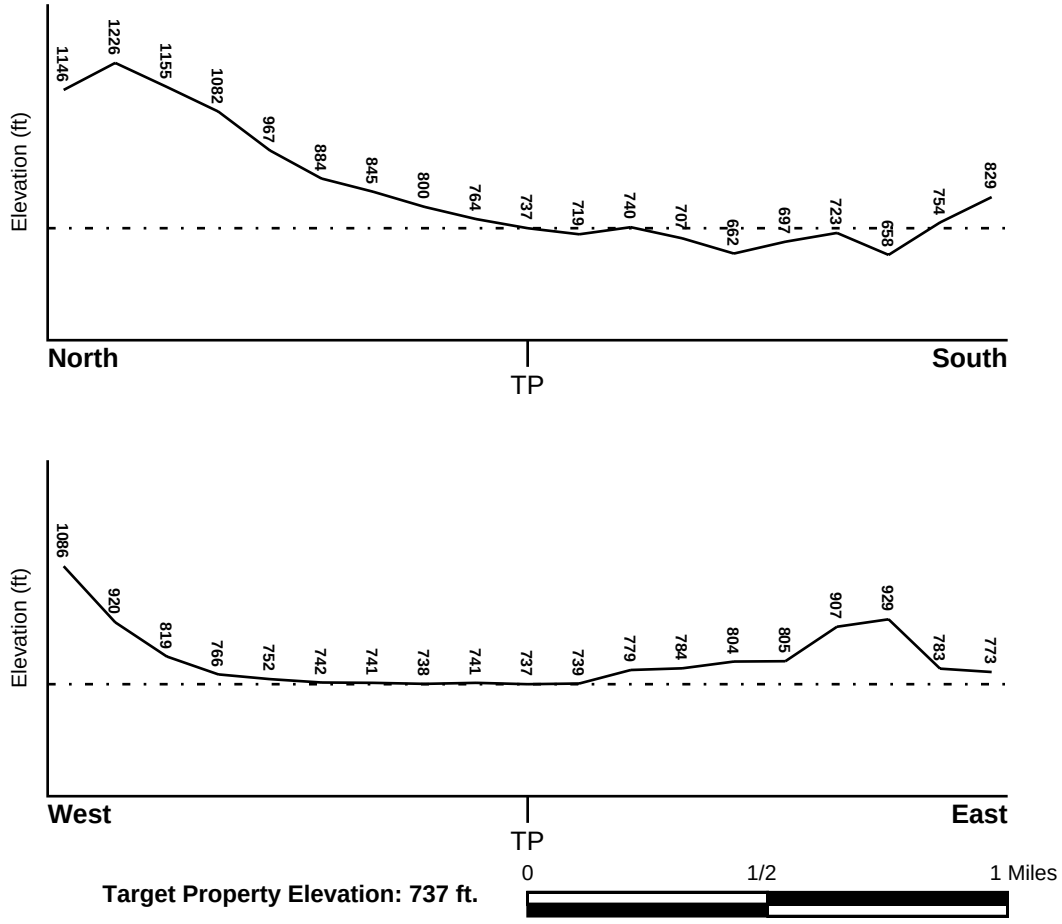
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 737 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06037C1725F	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SAN DIMAS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Location Relative to TP:	1 - 2 Miles ESE
Site Name:	SPADRA LDFL
Site EPA ID Number:	CAD000607705
Groundwater Flow Direction:	SE FROM THE SITE, THEN SW, CONSISTENT WITH THE FLOW OF THE SAN JOSE CREEK, AND NE ALONG WALNUT CREEK BOULEVARD.
Measured Depth to Water:	not available.
Hydraulic Connection:	The site is underlain by approximately 30 feet of alluvial deposits. These deposits are underlain by the Miocene Puenta marine bedrock formation.
Sole Source Aquifer:	No information about a sole source aquifer is available
Data Quality:	Information is inferred in the CERCLIS investigation report(s)

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site--specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Cenozoic
System:	Tertiary
Series:	Miocene volcanic rocks
Code:	Tmv *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Volcanic Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	CALLEGUAS
Soil Surface Texture:	clay loam
Hydrologic Group:	Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel:	HIGH
Depth to Bedrock Min:	> 8 inches
Depth to Bedrock Max:	> 20 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	16 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 2.00 Min: 0.60	Max: 8.40 Min: 7.90
2	16 inches	20 inches	weathered bedrock	Not reported	Not reported	Max: 0.00 Min: 0.00	Max: 0.00 Min: 0.00

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: gravelly - loam
clay
sandy loam
loam
cobbly - loam
unweathered bedrock

Surficial Soil Types: gravelly - loam
clay
sandy loam
loam
cobbly - loam
unweathered bedrock

Shallow Soil Types: clay loam
silty clay loam
fine sandy loam
gravelly - loam

Deeper Soil Types: loam
unweathered bedrock
stratified
gravelly - sandy loam

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

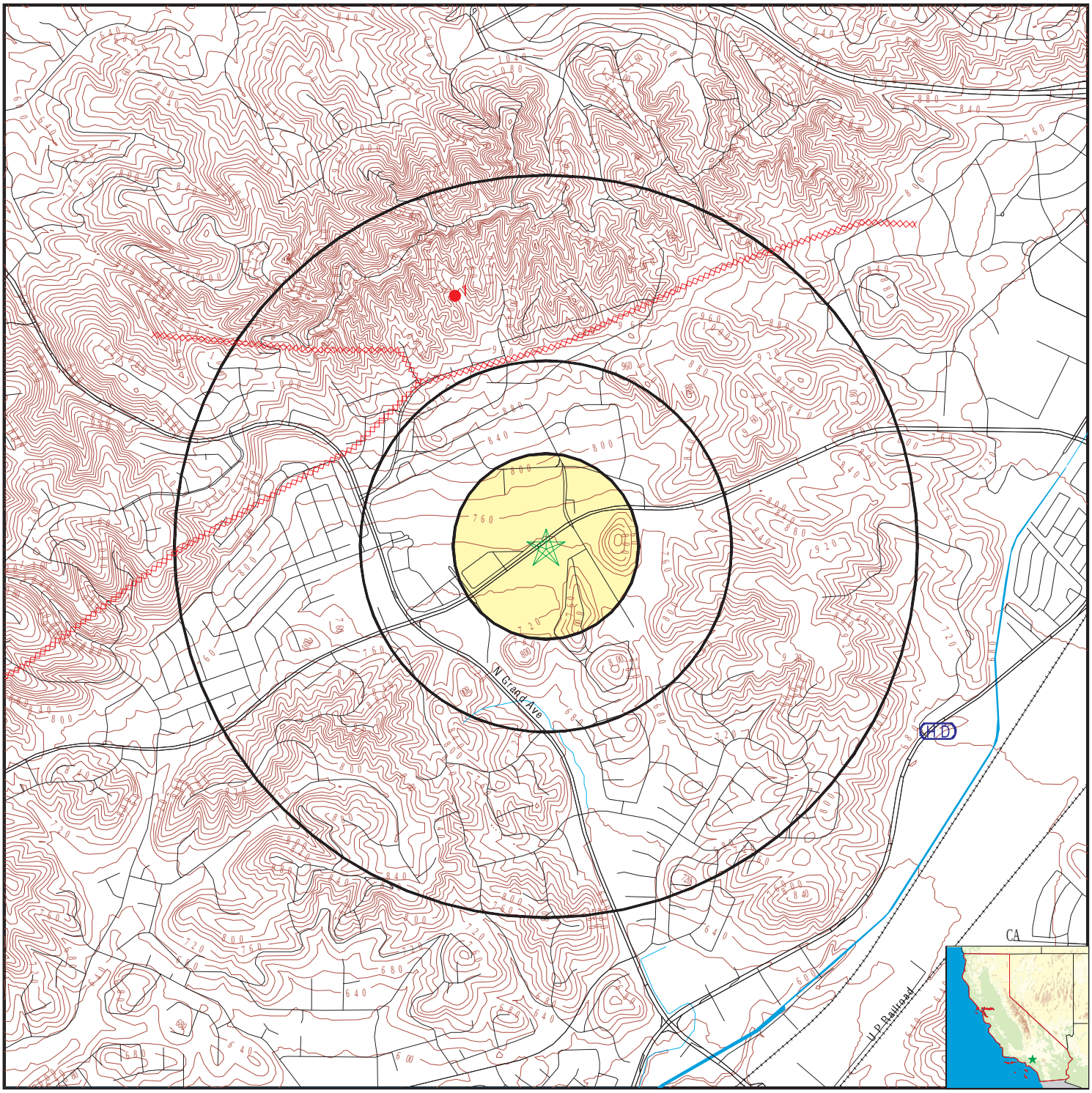
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG11000204588	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 5085390.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

SITE NAME:	Mt. San Antonio College Parking & Circulation MP	CLIENT:	Bonterra Psomas
ADDRESS:	1100 N. Grand Avenue Walnut CA 91789	CONTACT:	Ashley Mccoy
		INQUIRY #:	5085390.2s
LAT/LONG:	34.045929 / 117.841391	DATE:	October 24, 2017 3:50 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
NNW **OIL_GAS** **CAOG11000204588**
1/2 - 1 Mile

District nun:	1	Api number:	03705307
Blm well:	N	Redrill can:	Not Reported
Dryhole:	Y	Well status:	P
Operator name:	Conoco Inc.		
County name:	Los Angeles	Fieldname:	Any Field
Area name:	Any Area	Section:	29
Township:	01S	Range:	09W
Base meridian:	SB	Elevation:	Not Reported
Gissourcec:	hud		
Comments:	Not Reported		
Leasename:	Bayly	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	Not Reported
Welldeptha:	0		
Redrillfoo:	0		
Abandonedd:	Not Reported	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000204588		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
91789	20	0

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for LOS ANGELES COUNTY, CA

Number of sites tested: 63

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.711 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	0.933 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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DRAFT
Preliminary Low Impact Development Report (LID)

For

MT SAC PARKING STRUCTURE

PREPARED FOR:

Mt. SAC
Facilities Planning & Management
1100 N. Grand Ave
Walnut, CA 91789

PREPARED BY:

BKF Engineers
4675 MacArthur Court, Suite 400
Newport Beach, CA 92660

LID Report Prepared: September 14, 2



Bruce Kirby, PE
R.C.E. No. 42393
Expires: 03/31/20

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APPENDIX G – BMP OPERATIONS & MAINTENANCE MANUAL

APPENDIX H – COVENANT AND AGREEMENT

APPENDIX I – GEOTECHNICAL REPORT (FOR REFERENCE ONLY)

OWNER'S CERTIFICATION

This Low Impact Development Report (LID) for the Mt. SAC Parking Structure Project prepared for Mt. SAC by BKF Engineers. This LID Report is intended to comply with the requirements of the City of Walnut, County of Los Angeles, requiring the preparation of a project specific LID Report.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the County of Los Angeles Low Impact Development Standards Manual, and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this LID Report will be maintained at the project site/office.

This LID Report will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this LID Report. At least one copy of the approved and certified copy of this LID Report shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the LID Report.

	BKF Engineers
Owner/Engineer of Record's Signature	Company
	4675 MacArthur Court, Suite 400
Bruce Kirby, P.E.	Newport Beach, CA 92660
Printed Name/Title	Company Address
(949) 526-8460	
Telephone No.	Date

1.0 INTRODUCTION

This Low Impact Development Report (LID) summarizes storm water protection requirements for the Mt. SAC Parking Structure (herein referred to as "the project").

This LID Report describes the permanent storm water Best Management Practices (BMPs) that will be incorporated into the project in order to mitigate the impacts of pollutants in storm water runoff from the proposed project. For the purposes of post-construction storm water quality management, the project will follow the guidelines and requirements set forth in the County of Los Angeles "Low Impact Development Standards Manual" dated February 2014 (herein "LID Manual").

Project Applicant: Mt. SAC
1100 N. Grand Ave
Walnut, CA 91789

1.1 SITE AND PROJECT DESCRIPTION

The subject site is located in the City of Walnut, Los Angeles County, California. The proposed parking structure will be located at Parking Lot S within the campus of Mt. SAC and is bounded by Temple Avenue to the north, Bonita Avenue to the east, Stadium Way to the south and Ball Park to the west. The existing site is currently a surface level asphalt parking lot with 268 parking spaces and landscaped areas. The project will consist of:

- Removal of pavement, parking lot lighting, and trees
- Construction of a four level, 775 space parking structure
- Installation of stormwater treatment basin

The existing parking lot has an average slope of 2.2% draining from the north corner of the parking lot to the south corner. Drainage sheet flows along the existing ground contours and is discharged at the driveways entrances on Stadium Way.

Drainage for the proposed parking structure is designed so that the roof drains convey stormwater from the west side and outlet into the biofiltration basin on the west corner of the project site. The remaining treatment is provided by a stormwater planter on the north side of the parking structure.

2.0 DESIGNATED PROJECT REQUIREMENT

Requirements for permanent BMPs are determine based on the criteria set forth in the LID Manual. Projects are identified by four categories:

- Designated Project
- Non-Designated Project
- Small-Scale Non-Designated Project
- Large-Scale Non-Designated Project

2.1 DETERMINATION FOR PERMANENT BMP REQUIREMENT

The project is considered a **"Designated Project,"** based on the LID Manual. The project meets the following requirements to be a Designated Project:

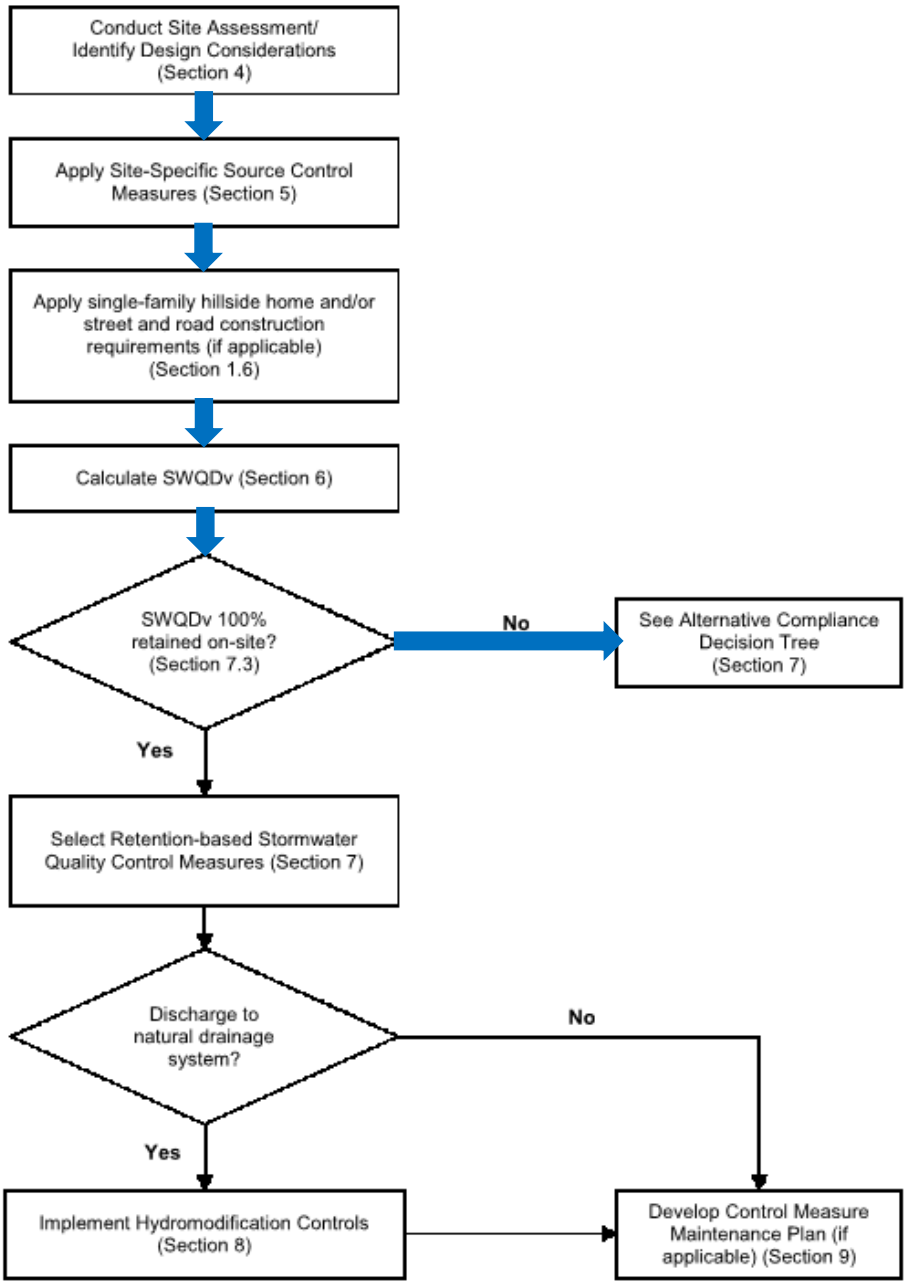
1. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces

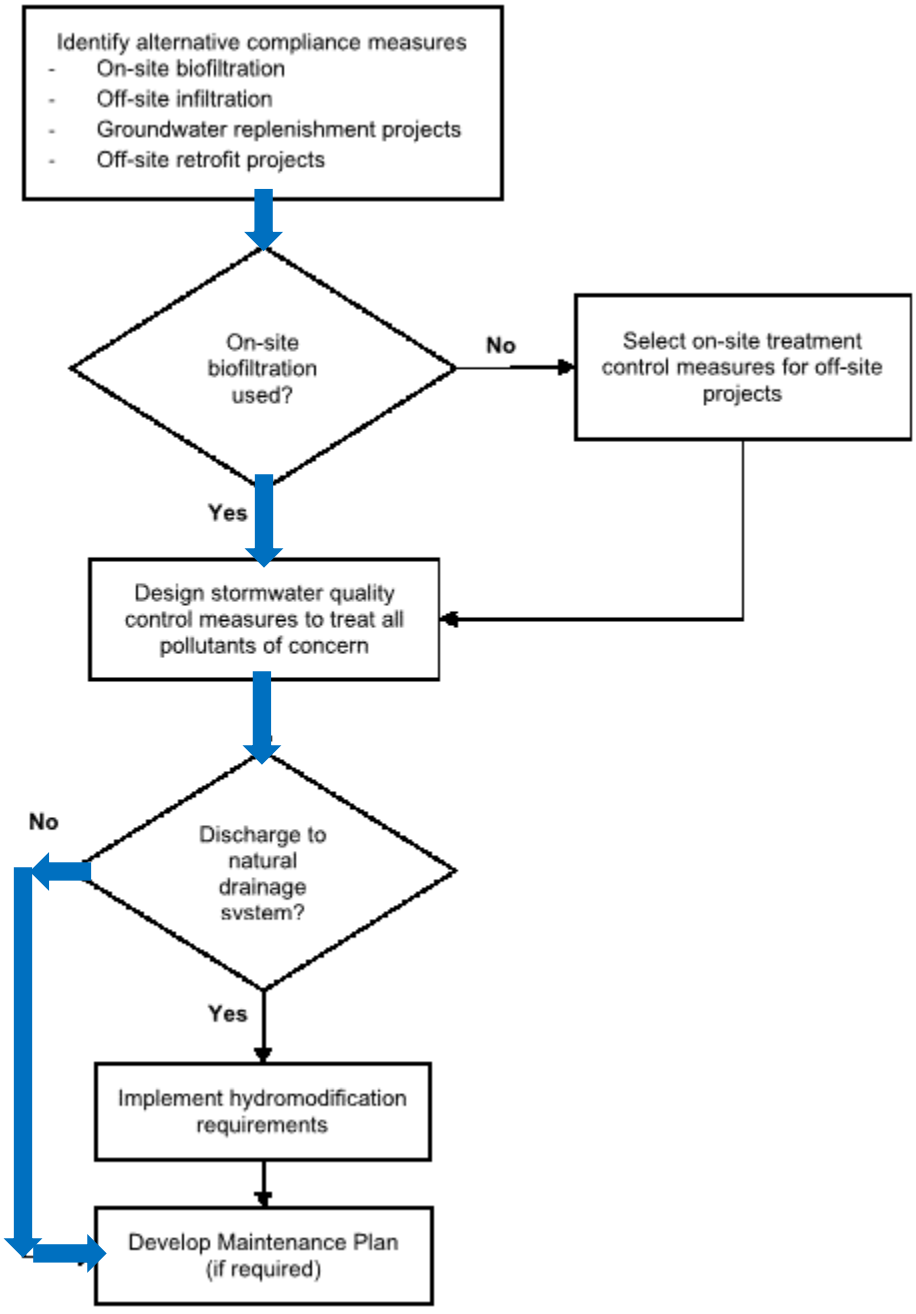
All "Designated Projects" must retain 100 percent of the Storm Water Quality Design Volume (SWQDv) on-site through infiltration, evapotranspiration, stormwater runoff harvest and use, or a combination thereof unless it is demonstrated that it is technical infeasible to do so.

Based on the percolation test performed by Converse Consultants on August 21, 2018 at the Parking Lot S Area of Mt. SAC, an infiltration rate of 0.13 in/hr and 0.2 in/hr was observed at the two test locations.

The project will provide treatment for the SWQDv as outlined in the Design Process Chart Breakdown in Section 2.2. For this project site, a biofiltration basin will be utilized to treat 1.5 times the SWQDv using biofiltration. See Section 5.0, Section 6.0 and **Appendix E** for more information and calculations.

2.2 DESIGN PROCESS CHART BREAKDOWN

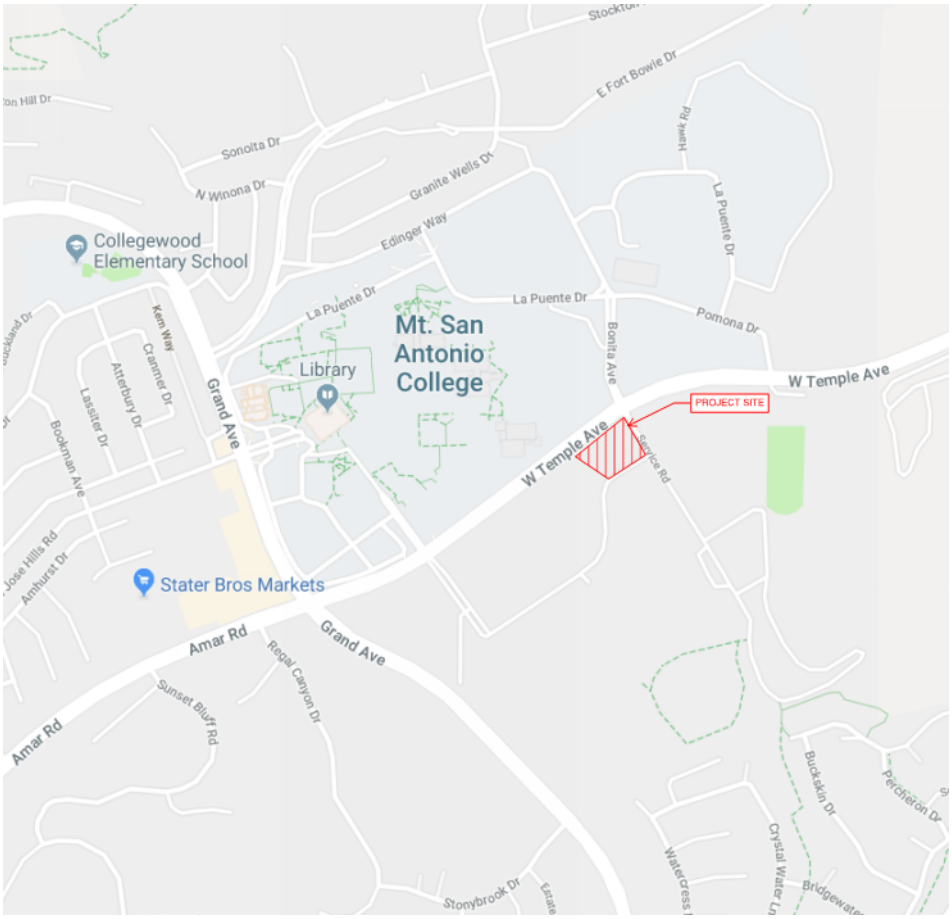



Identify alternative compliance measures
- On-site biofiltration
- Off-site infiltration
- Groundwater replenishment projects
- Off-site retrofit projects
On-site biofiltration used?
No
Select on-site treatment control measures for off-site projects
Yes
Design stormwater quality control measures to treat all pollutants of concern
Discharge to natural drainage system?
No
Yes
Implement hydromodification requirements
Develop Maintenance Plan (if required)

3.0 SITE ASSESSMENT AND DESIGN CONSIDERATIONS

This section discusses the steps taken for assessing the project site conditions and identifying design considerations to determine appropriate stormwater quality control measures for the project.

3.1 VICINITY MAP



3.2 PROJECT SUMMARY INFORMATION

Pre-Project

The existing land use for the project is currently a fully developed parking lot covered in asphalt pavement. There are no offsite drainage areas that discharge storm water onto the project site in the pre-project condition.

The existing parking lot has an average slope of 2.2% draining from the north corner of the parking lot to the south corner. Drainage sheet flows along the existing ground contours and is discharged at the driveways entrances on Stadium Way.

Post-Project

In post-project conditions, the project site consists of a new parking structure in place of the existing parking lot. Storm water runoff at the roof level of the new parking structure will drain towards a series of inlet grates which convey the captured stormwater through internal storm drain pipes within the parking structure and discharges into underground storm drain pipe on the west side of the parking structure.

The runoff is then routed into the biofiltration basin to the west where the SWQDv will be treated and released through an underdrain into the proposed storm drain that discharges via parkway culvert on Stadium Way.

Summary of Impervious Area

Condition	Impervious Area (Acres)	Pervious Area (Acres)	Total Area (Acres)	Percent Impervious (%)
Pre-Project	2.59	1.27	3.86	67%
Post-Project	3.12	0.74	3.86	80.8%

Percent Area Impervious Created or Replaced

(Post Project Impervious Area/ Pre Project Impervious Area) * 100 = (3.12 acres / 2.59 acres) *100 = 120%

The "Percent Area Impervious Created or Replaced" found was 120%. Since the impervious area created or replaced for the new development is greater than 50% of the impervious area of the previously existing development, the proposed development is required to retain 100% the SWQDv or provide biofiltration for 150% of the SWQDv for the entire site.

3.3 WATERSHED

The proposed development is located within the San Gabriel Watershed and is part of the San Gabriel River Watershed Management Area (SGRWMA). Surface flow from the project enters the municipal storm drain system which outlets into the San Gabriel River and ultimately discharges into the Pacific Ocean.

Region: Los Angeles Regional Water Quality Control Board (LARWQCB)

Receiving Water:	San Gabriel River
Watershed:	San Jose Creek
303(d) Listing:	Ammonia, Coliform Bacteria, pH, Total Dissolved Solids, Toxicity

3.4 GEOTECHNICAL CONDITIONS

Geotechnical information outlined below was taken from the Geotechnical Report prepared by Converse Consultants dated October 23, 2017.

Topography: The project site surface drainage sheet flows across an existing parking lot in the southerly direction at an average slope of 2.2%.

Geologic Setting: Based on the geotechnical investigation, the earth materials encountered consisted of existing fill soils placed during previous site grading operations, natural alluvial soils and sedimentary bedrock of the Puente Formation. The project site area is covered by a layer of fill soils underlain by the alluvial soils and interbedded layers of sandstone, pebble conglomerate, siltstone, and claystone sedimentary bedrock of the Puente Formation. These earth materials consist primarily of silty sands, clayey sands, sands, silts and clays.

Groundwater: Local zones of groundwater seepage were encountered during subsurface exploration in the alluvium and bedrock at depths ranging from approximately 23 feet bgs in boring BH-3 to approximately 36.8 feet bgs in BH-7. Groundwater and groundwater seepage should be anticipated during deep excavations.

3.5 GEOTECHNICAL HAZARDS

Geotechnical information outlined below was taken from the Geotechnical Report prepared by Converse Consultants on October 23, 2017.

The site is located within a mapped Seismic Hazard Zone for liquefaction. Liquefaction analyses were performed for the upper 50 feet below ground surface. Based on the results of liquefaction analyses indicate the project is susceptible to liquefaction.

3.6 SITE DESIGN PRINCIPLES

Site design can protect sensitive environmental features. The intention of site design principles is to reduce stormwater peak flows and volumes and other impacts associated with land development. The following text discusses the low impact development BMPs outlined in the LID Manual with respect to the project. Italicized text is taken directly from the LID Manual and reproduced for this report. Portions of the italicized text are condensed from the LID Manual. Immediately following and written in regular text, will be the response as it applies to the project.

Site Planning

- *Project applicants must implement a holistic approach to site design in order to develop a more hydraulically-functional site, help to maximize the effectiveness of on-site retention, and integrate stormwater management throughout the project site. Early project site planning can identify physical site constraints, reduce costs of downstream stormwater quality control measures, and prevent potential project site re-design.*

  Response:
  The project site layout conforms to natural landforms.

Protect and Restore Natural Areas

- *Conservation of natural areas, soils, and vegetation helps to retain numerous functions of pre-development hydrology, including rainfall interception, infiltration, and evapotranspiration. Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Sensitive areas, such as streams and their buffers, floodplains, wetlands, steep slopes, and highly-permeable soils, should be protected and/or restored. Slopes can be a major source of sediment and should be properly protected and stabilized. Locating development in less sensitive areas of a project site and conserving naturally vegetated areas can minimize environmental impacts from stormwater runoff.*

  Response:
  The site is currently developed and mostly paved, and therefore there is no opportunity to preserve existing trees or vegetation. The proposed site will include new landscaping and new trees.

Minimize Impervious Area

- *The potential for discharge of pollutants in stormwater runoff from a project site increases as the percentage of impervious area within the project site increases because impervious areas increase the volume and rate of stormwater runoff. Pollutants deposited on impervious areas are easily mobilized and transported by stormwater runoff. Minimizing impervious area through site design is an important method to reducing the pollutant load in stormwater runoff. In addition to the environmental and aesthetic benefits, a highly pervious site may allow reduction of potential downstream conveyance and stormwater quality control measures, yielding savings in development costs. Minimizing impervious area will also reduce the stormwater runoff coefficient, which is directly proportional to the volume of stormwater runoff that must be retained on-site.*

  Response:
  The project incorporates landscaping/vegetated areas onsite to minimize the impervious footprint.

4.0 SOURCE CONTROL MEASURES

Source control measures are designed to prevent pollutants from contacting stormwater runoff or prevent discharge of contaminated stormwater runoff to the storm drain system and/or receiving water. This section describes structural type, source control measures that will be considered for implementation in conjunction with appropriate non-structural source control measures. The following text discusses the source control measures BMPs from the LID Manual with respect to the project. Italicized text is taken directly from the LID Manual, and reproduced for this report. Portions of the italicized text are condensed from the LID Manual. Immediately following and written in regular text, will be the response as it applies to the project. For more information regarding the Source Control Measures outlined below, see Appendix D from the LID Manual.

S-1: Storm Drain Message and Signage

- *Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points along channels and streams within the project area. Consult with Los Angeles County Department of Public Works (LACDPW) staff to determine specific signage requirements for channels and streams.*

- *Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., "No Dumping – Drains to the Ocean") are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side (see Figure D-1 and Figure D-2). LACDPW staff should be contacted to determine specific requirements for types of signs and methods of application. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations must be identified on the project site map.*

  Response:
  All catch basins with open grates within the project site will be stenciled.

S-2: Outdoor Material Storage

- *Design specifications for material storage areas are regulated by local building and fire codes, ordinances, and zoning requirements. Source control measures presented in the LID Manual are intended to enhance and be consistent with local code and ordinance requirements while addressing stormwater runoff concerns. The design specifications, presented in Table D-2 in the LID Manual, must be incorporated into the design of outdoor material storage areas when stored materials could contribute pollutants to the storm drain system. The level of controls required varies relative to the risk category of the material stored.*

  Response:
  The project does not propose any outdoor material storage areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-3: Outdoor Trash Storage and Waste Handling Area

- *Wastes from commercial and industrial sites are typically hauled away for disposal by either public or commercial carriers that may have design or access requirements for waste storage areas. Design specifications for waste handling areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications, listed below in Table D-3, are recommendations and are not intended to conflict with requirements established by the waste hauler. The design specifications are intended to enhance local codes and ordinances while addressing stormwater runoff concerns. The waste hauler should be contacted prior to the design of trash storage and collection areas to determine established and accepted guidelines for designing trash collection areas. All hazardous waste must be handled in accordance with the legal requirements established in Title 22 of the California Code of Regulations. Conflicts or issues should be discussed with LACDPW staff.*

  Response:
  The project site does propose storage areas for trash storage areas. Therefore, the outdoor trash storage area will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-4: Outdoor Loading/Unloading Dock Area

- *Design specifications for outdoor loading/unloading dock areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. Additionally, individual businesses may have their own design or access requirements for loading docks. Design specifications presented in this fact sheet are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns. The design specifications presented in Table D-4 are not intended to conflict with requirements established by individual businesses, but should be followed to the maximum extent practicable.*

  Response:
  The project does not propose any outdoor loading and unloading dock areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-5: Outdoor Vehicle/Equipment Repair/Maintenance Area

- *Design specifications for vehicle and equipment repair/maintenance areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications presented in this fact sheet are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns. The design specifications required for vehicle and equipment repair/maintenance areas are presented in Table D-5. All wash water and hazardous and toxic wastes must be prevented from entering the storm drain system.*

  Response:
  The project does not propose any outdoor vehicle equipment repair areas, or outdoor vehicle maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-6: Outdoor Vehicle/Equipment/Accessory Washing Area

- *Design specifications for vehicle/equipment/accessory washing areas are regulated by local building and fire codes and current County ordinances and zoning requirements. The design specifications presented in Table D-6 are intended to enhance and be consistent with these requirements while addressing stormwater runoff concerns. All wash water and hazardous and toxic wastes must be prevented from entering the storm drain system.*

  Response:
  The project does not propose any outdoor vehicle equipment areas or outdoor vehicle accessory washing areas. If these conditions change, it is the responsibility of the project

site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-7: Fuel and Maintenance Area

- *Design specifications for fuel and maintenance areas are regulated by local building and fire codes and current County ordinances and zoning requirements. The design specifications presented in Table D-7 are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns.*

  Response:
  The project does not propose any fuel and maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-8: Landscape Irrigation Practices

- *Choose plants that minimize the need for fertilizer and pesticides.*
- *Group plants with similar water requirements and water accordingly.*
- *Use mulch to minimize evaporation and erosion.*
- *Include a vegetative boundary around project site to act as a filter.*
- *Design the irrigation system to only water areas that need it.*
- *Install an approved subsurface drip, pop-up, or other irrigation system. The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.*
- *Install rain sensors to shut off the irrigation system during and after storm events.*
- *Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.*
- *If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).*
- *For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.*
- *Implement Integrated Pest Management practices*
- *For additional guidelines and requirements, refer to the Los Angeles County Department of Health Services.*

  Response:
  Irrigation practices and systems for the project will be designed pursuant to the guidelines shown above and in the LID Manual.

S-9: Building Material Selection

Lumber

- *Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.*

Roofs, Fencing, and Metals

- *Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:*
    - *Metal roofs*
    - *Chain-link fencing and siding*
    - *Metal downspouts, vents, flashing, and trim on roofs.*

Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic. Green roofs may be an option. Green roofs use vegetation such as grasses and other plants as an exterior surface. The plants reduce the velocity of stormwater runoff and absorb water to reduce the volume of stormwater runoff. One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered. See the Green Roof Fact Sheet (RET- 7) in Appendix E of the LID Manual.

Response:

Building material selection will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-10: Animal Care and Handling Facilities

- *Site barns, corrals, and pastures on property that drains away from the storm drain system and receiving waters.*
- *Locate animal washing areas, pastures, horse riding areas, stalls, or cages at least 50 feet away from storm drains, domestic wells, septic tank or leach field sites, and receiving waters.*
- *Design berms, gutters, or grassed ditches to divert stormwater runoff away from animal area, storm drain system, and receiving waters.*
- *Cover animal enclosures (i.e., stables) to protect them from precipitation.*
- *Prevent animals from entering sensitive environmental areas.*
- *Regularly sweep or shovel animal holding areas.*

Response:
The project does not propose any animal care or handling facilities. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-11: Outdoor Horticulture Areas

- *Do not allow wash water from the horticulture area to drain directly to the storm drain system or receiving waters*

Response:
The project does not propose outdoor horticulture areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

5.0 STORMWATER QUALITY DESIGN VOLUME CALCULATIONS

Current water quality requirements are based on treating a specific volume of stormwater runoff from the project site (stormwater quality design volume [SWQDv]). By treating the SWQDv, it is expected that pollutant loads, which are typically higher during the beginning of storm events, will be reduced or prevented from reaching the receiving waters.

5.1 DESIGN STORM EVENT

The design storm, for which the SWQDv is calculated, is defined as the greater of:

- *The 0.75-inch, 24-hour rain-event; or*
- *The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map.*

It was determined that the 85th percentile, 24-hour rain event will be the design storm for which the SWQDv will be calculated for this project site as shown below.

The 85th percentile, 24-hour rain = 1.0-inch > 0.75-inches **[Use the 85th percentile]**

Note:
The 85th percentile, 24-hour rain event precipitation was found using the Los Angeles County Hydrology Map GIS Viewer, see **Appendix C**.

5.2 STORMWATER QUALITY DESIGN VOLUME (SWQDV)

The project site was determined to be a Designated Project, therefore the project site is required to retain 100% of the SWQDv on-site or provide biotreatment for 1.5 times the SWQDv. The SWQDv for the site was calculated using the HydroCalc software developed by Los Angeles County Department of Public Works (LACDPW). The software completes the full MODRAT calculation process and produces the peak stormwater runoff flow rates and volumes for single subareas. HydroCalc is limited to watersheds and project areas up to 40 acres.

The SWQDv required to be treated is summarized below.

HydroCalc Analysis – 85TH Percentile Storm

Input Parameters	
Project Name	MT SAC Parking
Subarea ID	DMA A
Area (ac)	3.86
Flow Path Length (ft)	410.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.808
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results	
Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2974
Undeveloped Runoff Coefficient (Cu)	0.4286
Developed Runoff Coefficient (Cd)	0.8095
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.9291
Burned Peak Flow Rate (cfs)	0.9291
24-Hr Clear Runoff Volume (ac-ft)	0.2402
24-Hr Clear Runoff Volume (cu-ft)	10465.1586

6.0 STORMWATER QUALITY CONTROL MEASURES

Stormwater quality control measures are required to augment site design principles and source control measures to reduce the volume of stormwater runoff and potential pollution loads in stormwater runoff to the maximum extent practicable. Stormwater quality control measures are designed to handle the frequent, smaller storm events, or the initial volume of stormwater runoff from larger storm events (typically referred to as first flush events). The first flush of larger storm events is the initial period of the storm where stormwater runoff typically carries the highest concentration and loads of pollutants. Small, frequent storm events represent most of the total annual average precipitation in the County. The LID Ordinance requires that all Designated Projects retain the SWQDv on-site using retention-based stormwater quality control measures (infiltration and/or stormwater runoff harvest and use) or biofiltrate 1.5 times the SWQDv if infiltration is not feasible.

All the stormwater quality control measures outlined in the LID Manual were evaluated. It was determined that the most practicable treatment BMP for the project will be the following:

- (1) Biofiltration Basin
- (1) Stormwater Planter

6.1 BIOFILTRATION BASIN SIZING

Stormwater runoff is intercepted by a series of inlet drains centered at the upper most level of the parking structure, conveyed via interior storm drain pipes, and discharged into out the west side of the parking structure into a biofiltration basin and stormwater planter to the north. The biofiltration basin and stormwater planter are designed to treat 1.5 times the SWQDv for the project site. Overflow for excess stormwater will be conveyed through the overflow riser in the basin into underground storm drain pipe and discharged through a parkway culvert on Stadium Way. Calculations for the biofiltration basin are available in **Appendix E**.

7.0 HYDROMODIFICATION

All Designated projects located within natural drainage systems that have not been improved or drainage systems that are tributary to a natural drainage system are required to implement hydromodification controls.

Projects may be exempt from implementation of hydromodification control measures where assessments of downstream channel conditions and proposed discharge hydrology indicate adverse hydromodification effects to beneficial uses of natural drainage systems are unlikely.

The proposed project has been determined to be **EXEMPT** from hydromodification requirements since it is discharges to concrete-lined channels. Therefore the site does not have any adverse hydromodification impacts to natural drainage systems.

8.0 STORMWATER QUALITY CONTROL MEASURE MAINTENANCE

Continued effectiveness of stormwater quality control measures specified in the LID Standards Manual depends on on-going inspection and maintenance. All publicly maintained stormwater quality control measures must have easements for access and maintenance or be in lots dedicated to the County in fee title. To ensure that such maintenance is provided, LACDPW may require the submittal of a Maintenance Plan and execution of a Maintenance Agreement with the owner/operator of stormwater quality control measures. The property owner or his/her designee is responsible for complying with the Maintenance Agreement outlined in the LID Manual. A copy of the Maintenance Agreement is provided in **Appendix H.**

8.1 MAINTENANCE RESPONSIBILITY

The Owner of the project site is the site operator and will be the party responsible to ensure implementation and funding of maintenance of permanent BMPs.

It is anticipated that the owner of the project will manage multiple separate maintenance contracts for different types of maintenance (e.g., landscape maintenance vs. maintenance of the BMPs). Throughout this section, the owner of the project is the "party responsible to ensure implementation and funding of maintenance of permanent BMPs." The party who actually performs the activities is the "inspector," "maintenance contractor," or "maintenance operator."

8.2 INSPECTION AND MAINTENANCE FOR SOURCE CONTROL MEASURES

The following source control measures for the project requires permanent maintenance:

- Storm Drain Message and Signage
- Outdoor Trash Storage and Waste Handling
- Landscape Irrigation Practices

The discussions below provide inspection criteria, maintenance indicators, and maintenance activities for the above listed source control measures that require permanent maintenance.

S-1 Storm Drain Message and Signage

Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaces as necessary). If required by the City, the owner/operator or homeowner's association shall enter into a maintenance agreement with the agency or record deed restriction upon the property title to maintain the legibility of placards and signs.

S-3 Outdoor Trash Storage and Waste Handling Area

The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor trash storage and waste handling areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Maintenance agreements between the City and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

S-8 Landscape Irrigation Practices

Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Failure to properly maintain building and property may subject the property owner to citation.

8.3 INSPECTION AND MAINTENANCE FOR STORM QUALITY MEASURES

The following storm quality measure for the project requires permanent maintenance:

- (1) Biofiltration Basin
- (1) Stormwater Planter

The discussions below provide inspection criteria, maintenance indicators, and maintenance activities for the above listed storm quality measure that require permanent maintenance according to manufacturer recommendations. These proprietary systems shall be inspected and maintained per manufacturer specifications and recommendations. See **Appendix G** for the Operations and Maintenance of each BMP listed above.

8.4 INSPECTION AND MAINTENANCE FREQUENCY

The Table below lists the BMPs to be inspected and maintained and the minimum frequency of inspection and maintenance activities.

BMP	Inspection Frequency	Maintenance Frequency
Storm Drain Message and Signage	Monthly	Routine maintenance of marker and sign legibility and visibility. See Section 8.2.
Outdoor Trash Storage and Waste Handling	Monthly	Routine maintenance of structure and waste water within the trash area. See Section 8.2.
Landscape Irrigation Practices	Monthly	Routine trimming and trash removal; monthly non-routine maintenance as-needed based on maintenance indicators in Section 8.2.
Biofiltration Basin	Annual and after major storm events	Routine maintenance to clean the biofiltration basin of sediments, trash, and debris. As-needed maintenance based on maintenance indicators as outlined in **Appendix G**.
Stormwater Planter	Annual and after major storm events	Routine maintenance to clean the stormwater planter of sediments, trash, and debris. As-needed maintenance based on maintenance indicators as outlined in **Appendix G**.

The frequencies given in the Summary Table of Inspection and Maintenance Frequency are minimum recommended frequencies for inspection and maintenance activities for the project. Typically, the frequency of maintenance required for permanent BMPs is site and drainage area specific. If it is determined during the regularly scheduled inspection and/or routine maintenance that a BMP requires more frequent maintenance (e.g., to remove accumulated trash) it may be necessary to increase the frequency of inspection and/or routine maintenance. If it is determined during the regularly scheduled inspection that the maintenance thresholds are consistently met or exceeded, it may be necessary to increase the frequency of inspection and routine maintenance.

8.5 RECORD KEEPING REQUIREMENTS

The party responsible to ensure implementation and funding of maintenance of permanent BMPs shall maintain records documenting the inspection and maintenance activities. The records must be kept a minimum of 5 years and shall be made available to the City of Walnut for inspection upon request at any time.

9.0 SUMMARY

This Low Impact Development Report (LID) summarizes the permanent storm water management features proposed for the project site that will collectively meet the requirements set forth in the LID Manual. The project meets the hydromodification exemption criteria and is not required to implement hydromodification management facilities as discussed in Section 7.0 of this report.

The project is a "Designated Project," based on the LID Manual as discussed in Section 2.1.

Based on the "anticipated" pollutants of concern that may be generated on-site and identification of receiving waters that are listed as impaired on the 2010 CWA Section 303(d) List of Water Quality Limited Segments, the following are the project pollutants of concern: Ammonia, Coliform Bacteria, pH, Total Dissolved Solids, and Toxicity as outlined in Section 3.3 of this report.

In addition to treatment control BMPs, the project will incorporate source control BMPs which are described in Section 4.0 and Section 6.0.

The project includes a proposed network of storm water management features that will utilize source control measures to meet the requirements for stormwater quality design measure. The following list provides a summary of stormwater quality design measures selected for the project site:

- (1) Biofiltration Basin
- (1) Stormwater Planter

The above stormwater quality design measure was selected for the project and provide "High" removal efficiency for the targeted pollutants of concern as discussed in Section 3.3 and Section 6.1.

The stormwater quality design measure maintenance in Section 8.0 of this report provides inspection criteria, maintenance indicators, and maintenance activities for the above-listed BMPs that require permanent maintenance.

This report accompanies a set of construction drawings and specifications which detail the construction, operation, and maintenance of the proposed Low Impact Development (LID) design elements for this site.

APPENDIX A

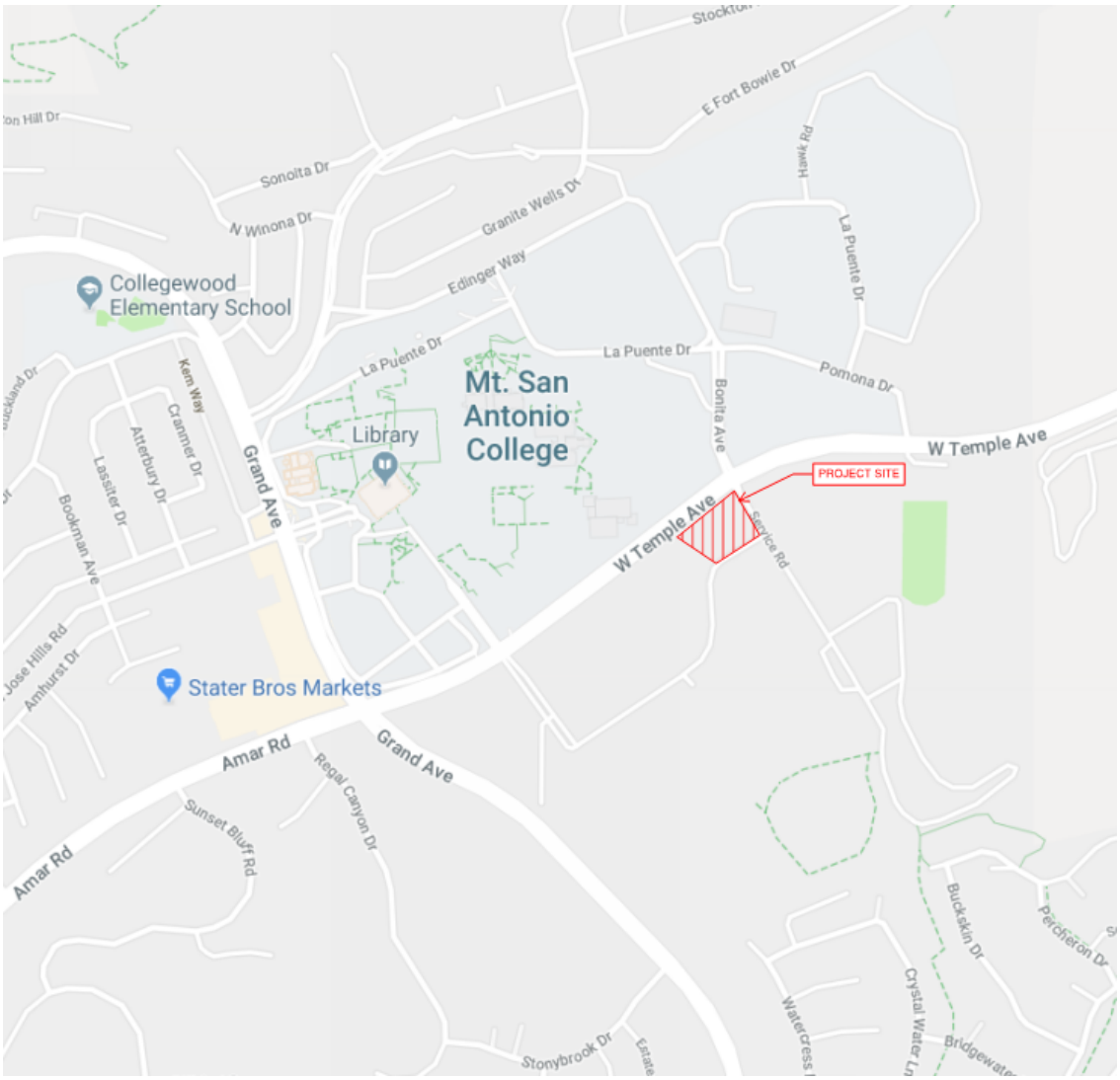
VICINITY MAP

Vicinity Map

For

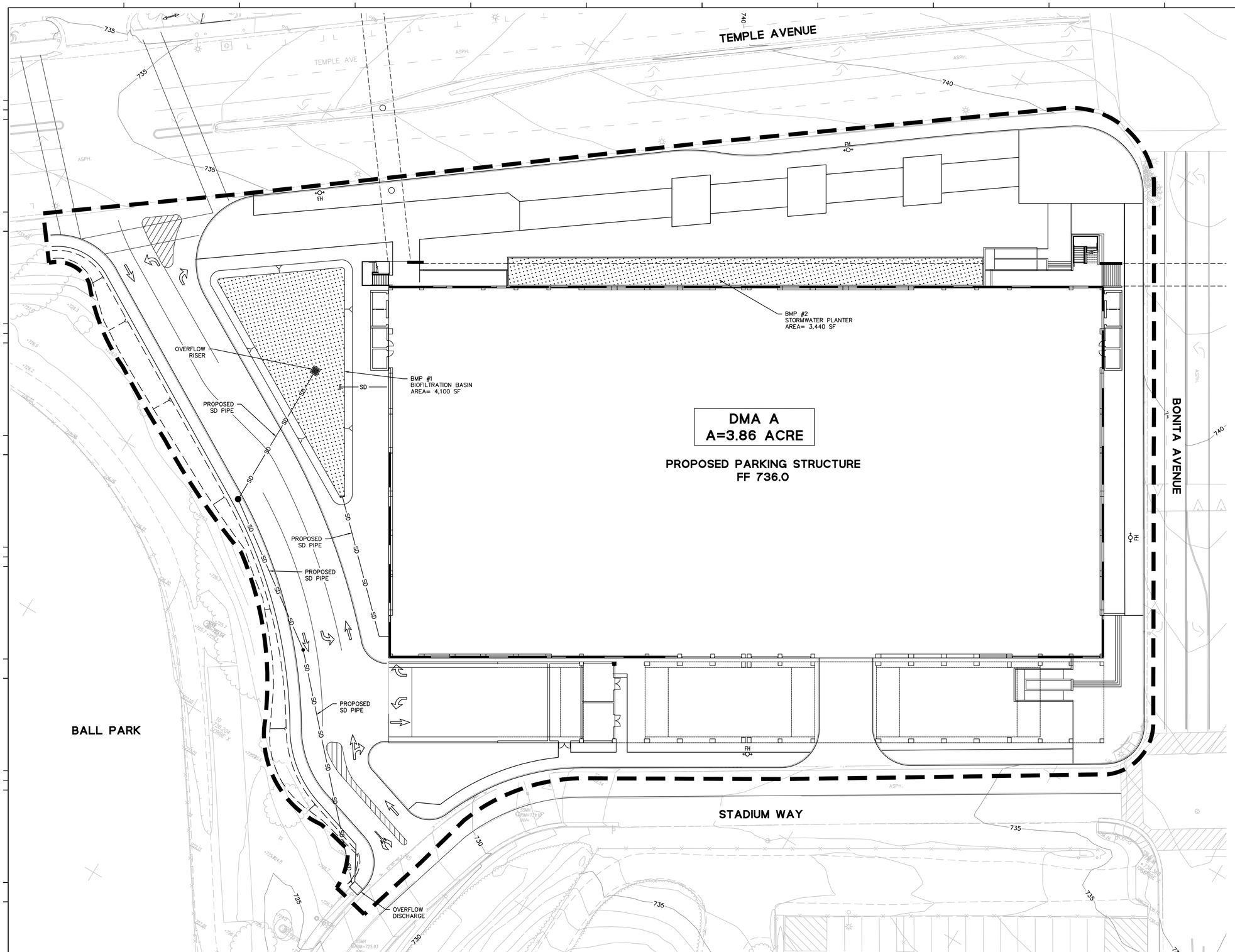
Mt SAC Parking Structure

N. Grand Ave
Walnut, CA 91789



APPENDIX B

BMP SITE PLAN



TREATMENT SUMMARY

DRAINAGE MANAGEMENT AREA	AREA (ACRES)	LID BMP USED	V_M (CU-FT)	MIN BMP AREA (SQ-FT)	BMP AREA PROVIDED (SQ-FT)
DMA A-1	2.12	BIORETENTION BASIN (BMP#1)	8,634	4,063	4,100
DMA A-2	1.74	STORMWATER PLANTER (BMP#2)	7,065	3,325	3,440
	3.86		15,699	7,388	7,540

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

HPI architecture

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Newport Beach, CA 92663

o: 949. 675. 6442

CONSULTANTS

BkF

ENGINEERS / SURVEYORS / PLANNERS

REGISTERED PROFESSIONAL ENGINEER
BRUCE W. KIRBY
No. C 42393
CIVIL
STATE OF CALIFORNIA

SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE:
A# 0 3 -

AC _____ FLS _____ SS _____

DATE _____

PROJECT TITLE

PARKING STRUCTURE LOT S

MT. SAC
Mt. San Antonio College

1100 N. GRAND AVENUE
WALNUT, CA 91789

SUBMITTALS

#	DATE	DESCRIPTION
	07/23/2018	DD SUBMITTAL

PROJECT IDENTIFICATION

THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2015

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY -

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SHEET TITLE

BM□ SITE □LAN

SHEET NUMBER

A□□ENDI□ B

APPENDIX C

COUNTY OF LOS ANGELES HYDROLOGY MAPS

Department of Public Works
dpw.lacounty.gov

search our site..

Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [ ] Soils 2004
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

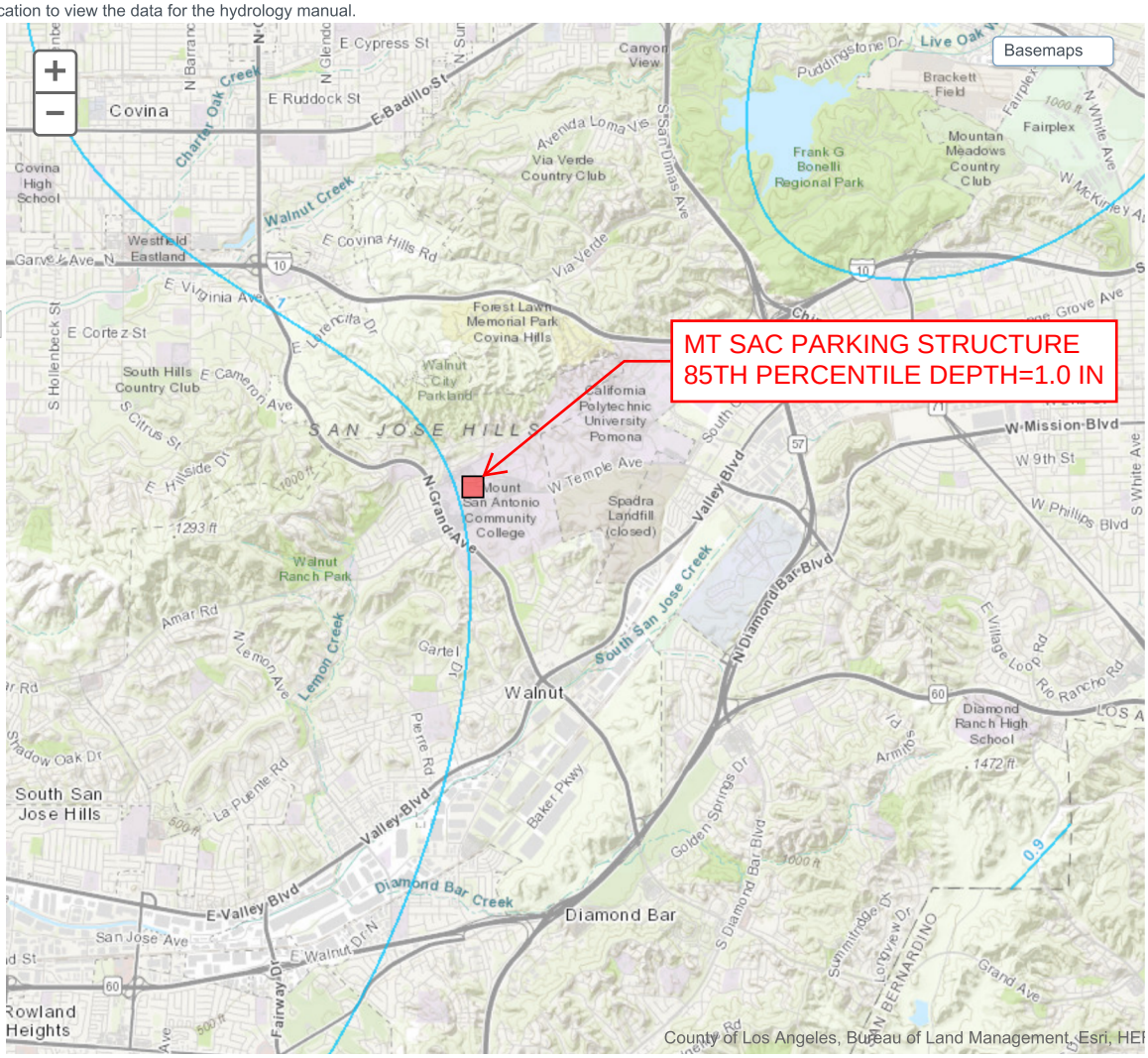
Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

mt sac

Search

Address Search Results:

mt sac



Map Tips

Department of Public Works
dpw.lacounty.gov

search our site..

Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [x] Soils 2004
- [ ] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

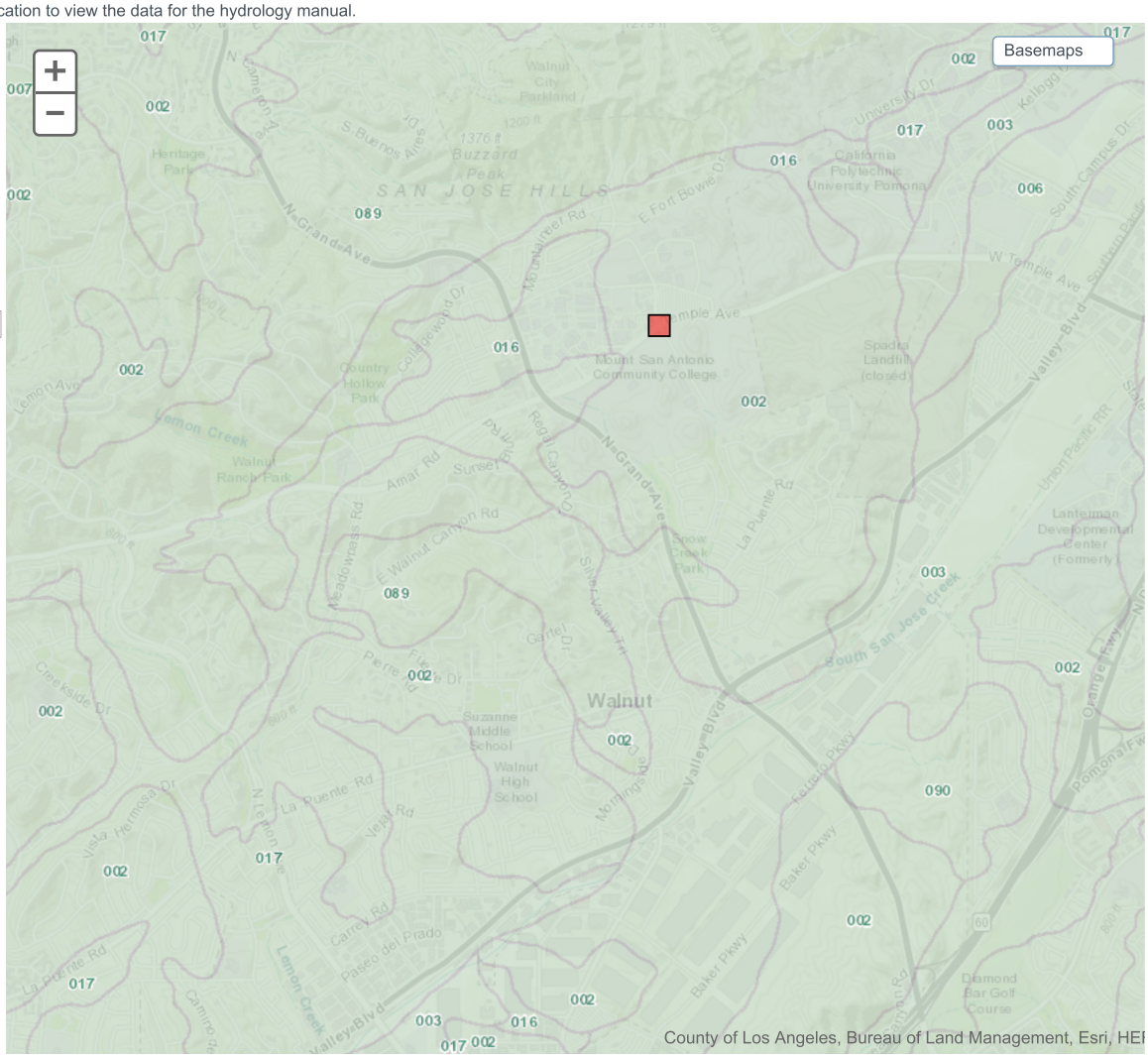
Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

w temple ave and service rd, walnut

Search

Address Search Results:

w temple ave and service rd walnut



Map Tips

APPENDIX D

HYDROCALC OUTPUT - 85TH PERCENTILE STORM

Peak Flow Hydrologic Analysis

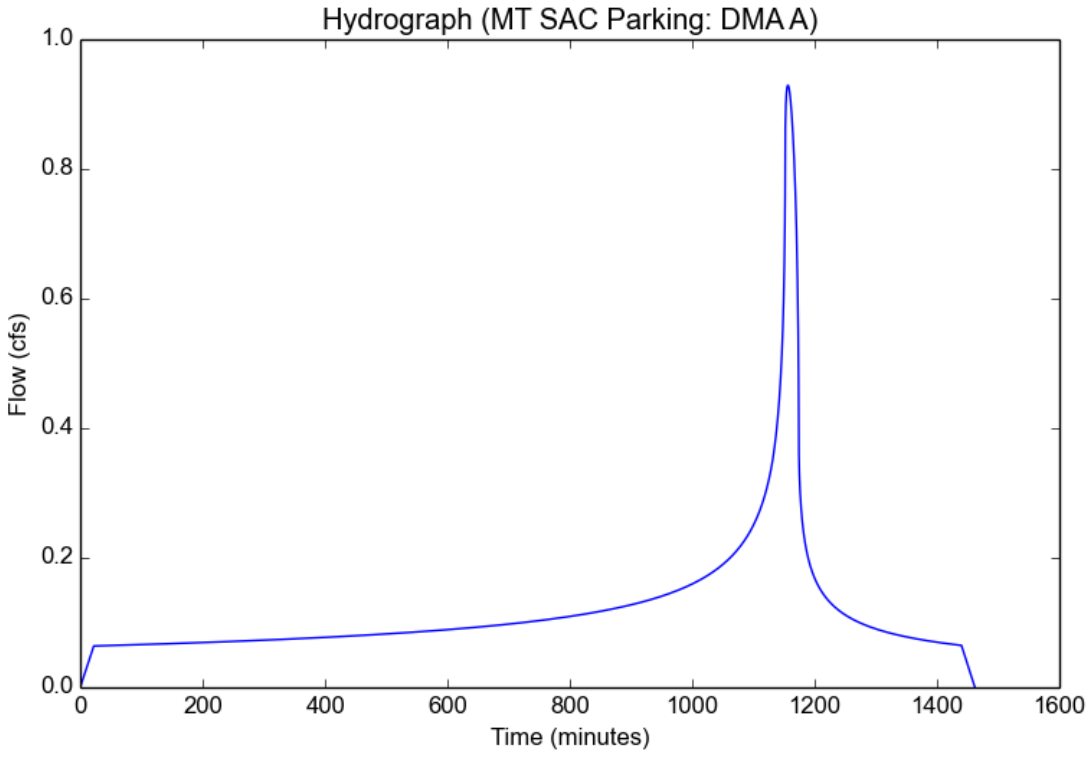
File location: C:/Users/chas/Desktop/MT SAC Parking - DMA A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MT SAC Parking
Subarea ID	DMA A
Area (ac)	3.86
Flow Path Length (ft)	410.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.808
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2974
Undeveloped Runoff Coefficient (Cu)	0.4286
Developed Runoff Coefficient (Cd)	0.8095
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.9291
Burned Peak Flow Rate (cfs)	0.9291
24-Hr Clear Runoff Volume (ac-ft)	0.2402
24-Hr Clear Runoff Volume (cu-ft)	10465.1586



APPENDIX E

STORMWATER QUALITY DESIGN MEASURE CALCULATIONS

Stormwater Quality Design Measure Calculations

BkF ENGINEERS SURVEYORS PLANNERS 100+ YEARS

Date: 9/27/2018
Job No.: 172138
Project: Mt SAC Parking Structure

Description and Assumptions:

** Based on County of Los Angeles Low Impact Development Standard Manual*

Design Frequency = 85th Percentile, 24-Hour Rain Event

STORMWATER QUALITY DESIGN CALCS FOR BMP#1 & 2

Area Summary

Surface Type	Area (sf)	Area (acres)
Impervious	135,739	3.12
Pervious	32,254	0.74
TOTAL	**167,993**	**3.86**

Stormwater Quality Design Volume (SWQDv)

85th Percentile SWQDv per HydroCalc Output in Appendix D= 10,466 ft^3

HydroCalc Design Volume (SWQDv) output is an accepted value per section 6.3 in the LA County Low Impact Development Standards Manual

** Section 7.4 of the County of Los Angeles Low Impact Development Standard Manual*

Givens:

SWQDv = 10,466 ft^3

1. Calculate the design volume (V_{design})

Since a Biofiltration system will be utilized downstream, the SWQDv found needs to be multiplied by 1.5.

Vdesign= 1.5 x SWQDv

V_m = 15,699 cu-ft *(See Appendix D for Hydrocalc Analysis)*

1. Determine $K_{sat,design}$

$K_{sat,design}$ = (5 in/hr)/2

$K_{sat,design}$ = 2.5 in/hr

BKF Engineers
4675 MacArthur Court, Suite 400
Newport Beach, California 92660

Step 3: Determine ponding depth, d_p

$d_p = (K_{sat,design} \times T)/12$

Where:

d_p = Ponding depth (ft)

$K_{sat,design}$ = Design infiltration rate of filter media (in/hr)

T = Required surface drain time (hrs)

d= 10 ft

Use max ponding depth of 1.5 ft

Step 4: Calculate the BMP Surface Area

$A_{min} = V_{design}/[(T_{fill}K_{sat,design}/12)+d_p]$

Where

A_{min} = Design infiltrating area [ft^2]

T_{fill} = Time to fill to maximum ponding depth with water [hrs], Assume a max of 3 hours

T= 3 hrs

dp = Ponding depth [ft]

d_p = 1.5 ft

A_{min} = 7388 sq-ft

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Newport Beach, California 92660

APPENDIX F

BMP FACT SHEETS

BIO-1: Biofiltration



Definition

A biofiltration area is a vegetated shallow depression that is designed to receive and treat stormwater runoff from downspouts, piped inlets, or sheet flow from adjoining paved areas. A shallow ponding zone is provided above the vegetated surface for temporary storage of stormwater runoff. During storm events, stormwater runoff accumulates in the ponding zone and gradually infiltrates the surface and filters through the biofiltration soil media before being collected by an underdrain system.

Stormwater runoff treatment occurs through a variety of natural mechanisms as stormwater runoff filters through the vegetation root zone. In biofiltration areas, microbes and organic material in the biofiltration soil media help promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants utilize soil moisture and promote the drying of the soil through transpiration. Biofiltration areas are typically planted with native, drought-tolerant plant species that do not require fertilization and can withstand wet soils for at least 96 hours.

A schematic of a typical biofiltration area is presented in Figure E-7.

LID Ordinance Requirements

Biofiltration can be used as an alternative compliance measure.

Pollutant of Concern	Treated by Biofiltration?
Suspended solids	No
Total phosphorus	No
Total nitrogen	Yes
Total Kjeldahl nitrogen	Yes
Cadmium, total	No
Chromium, total	Yes
Copper, total	No
Lead, total	Yes
Zinc, total	No

Source: Treatment Best Management Practices Performance, Los Angeles Regional Water Quality Control Board, December 9, 2013.

Advantages

- Has a low cost for installation
- Enhances site aesthetics
- Requires little maintenance

Disadvantages

- May require individual owner/tenants to perform maintenance

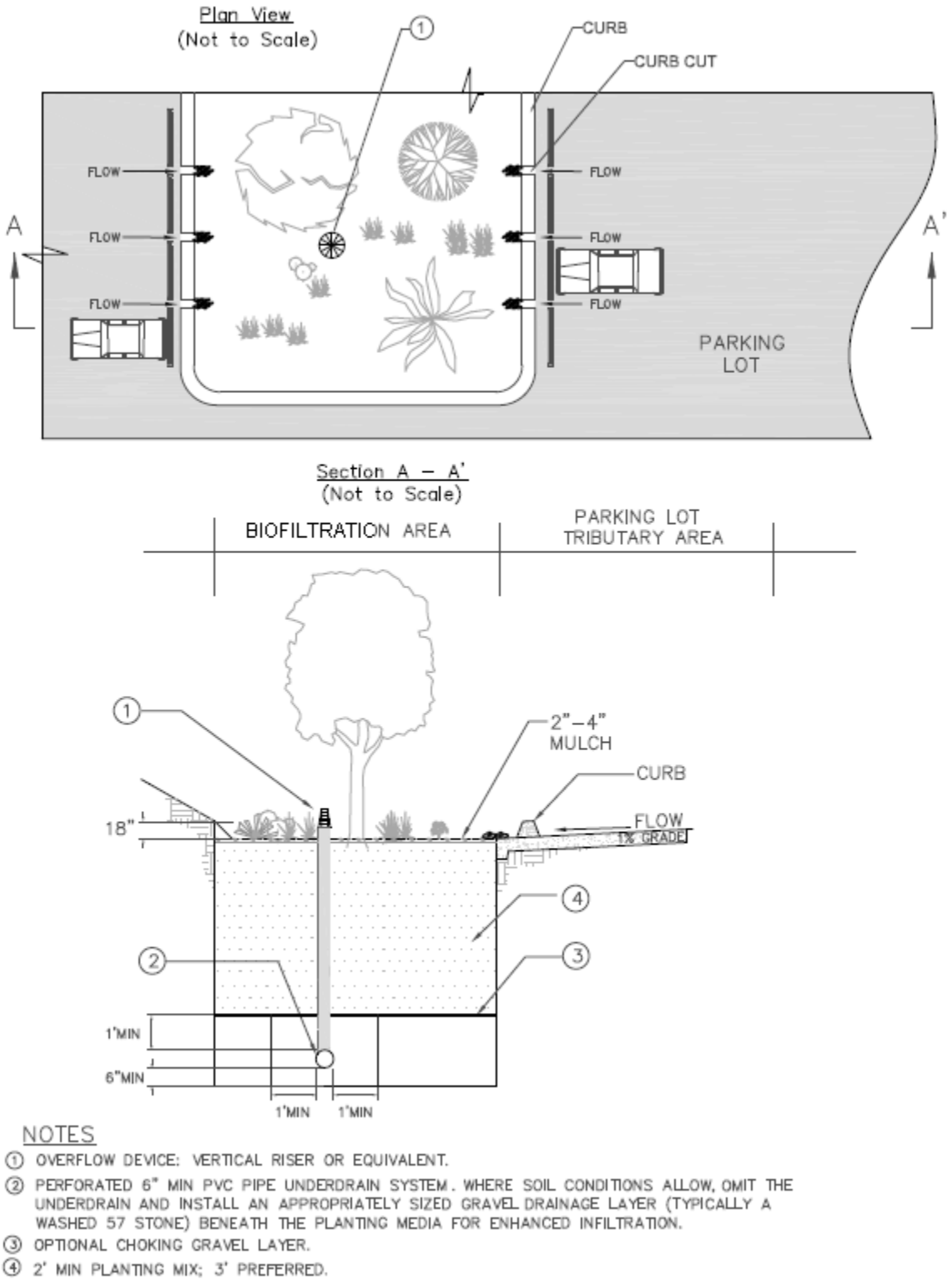


Figure E-7. Biofiltration Area Schematic

General Constraints and Implementation Considerations

- Biofiltration areas can be applied in various settings including, but not limited to:
  - Individual lots for rooftop, driveway, and other on-site impervious surface
  - Shared facilities located in common areas for individual lots
  - Areas within loop roads or cul-de-sacs
  - Landscaped parking lot islands
  - Within right-of-ways along roads
  - Common landscaped areas in apartment complexes or other multi-family housing designs
  - Parks and along open space perimeter
- If tire curbs are provided and parking stalls are shortened, cars are allowed to overhang the biofiltration area.
- Biofiltration areas must be located sufficiently far from structure foundations to avoid damage to structures (as determined by a certified structural or geotechnical engineer).
- Any parking areas bordering the biofiltration area must be monolithically poured concrete or deepended curb concrete to provide structural stability to the adjacent parking section.
- Geomembrane liners must be used in areas subject to spills or pollutant hot spots.
- During construction activities should avoid compaction of native soils below planting media layer or gravel zone.
- Stormwater runoff must be diverted around the biofiltration area during the period of vegetation establishment. If diversion is not feasible, the graded and seeded areas must be protected with suitable sediment controls (i.e., silt fences).All damaged areas should be repaired, seeded, or re-planted immediately.
- The general landscape irrigation system should incorporate the biofiltration area, as applicable.

Design Specifications

The following sections describe the design specifications for biofiltration areas.

Geotechnical

Due to the potential to contaminate groundwater, cause slope instability, impact surrounding structures, and potential for insufficient infiltration capacity, an extensive geotechnical site investigation must be conducted during the site planning process to verify site suitability for biofiltration. All geotechnical investigations must be performed according to the most recent GMED Policy GS 200.1. Soil infiltration rates and the

groundwater table depth must be evaluated to ensure that conditions are satisfactory for proper operation of a biofiltration area. The project applicant must demonstrate through infiltration testing, soil logs, and the written opinion of a licensed civil engineer that sufficiently permeable soils exist on-site to allow the construction of a properly functioning biofiltration system.

Biofiltration areas are appropriate for soils with a minimum corrected in-situ infiltration rate of 0.3 in/hr. The geotechnical report must determine if the proposed project site is suitable for a biofiltration area and must recommend a design infiltration rate (see "Design Infiltration Rate" under the "Sizing" section). The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move through the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Pretreatment

Pretreatment refers to design features that provide settling of large particles before stormwater runoff enters a stormwater quality control measure in order to reduce the long-term maintenance burden. Pretreatment should be provided to reduce the sediment load entering a biofiltration area in order to maintain the infiltration rate of the biofiltration area. To ensure that biofiltration areas are effective, the project applicant must incorporate pretreatment devices that provide sediment removal (e.g., vegetated swales, vegetated filter strips, sedimentation manholes, and proprietary devices). The use of at least two pretreatment devices is highly recommended for biofiltration areas.

Geometry

- Biofiltration areas must be sized to capture and treat 1.5 times the SWQDv that is not reliably retained on the project site with an 18-inch maximum ponding depth.
- The planting soil depth must be a minimum of two feet, although three feet is preferred. The planting soil depth should provide a beneficial root zone for the chosen vegetation and adequate water storage for the stormwater runoff. A deeper planting soil depth will also provide a smaller surface area footprint.
- A gravel storage layer below the biofiltration area soil media is required to provide adequate temporary storage to retain 1.5 times the SWQDv that is not reliably retained on the project site and to promote infiltration.

Sizing

Biofiltration areas are sized using a simple sizing method where 1.5 times the SWQDv that is not reliably retained on the project site must be completely filtered within 96 hours. If the incoming stormwater runoff flow rate is lower than the long term filtration rate, above ground storage does not need to be provided. If the incoming stormwater runoff flow rate is higher than the long term filtration rate, above ground storage shall be provided (see steps below).

Step 1: Calculate the design volume

Biofiltration areas should be sized to capture and treat 1.5 times the portion of the SWQDv (see Section 6 for SWQDv calculation procedures) that is not reliability retained on the project site, as calculated by the equation below:

$$V_B = 1.5 \times (SWQDv - V_R)$$

Where:

V_B = Biofiltration volume [ft^3];
SWQDv = Stormwater quality design volume [ft^3]; and
V_R = Volume of stormwater runoff reliably retained on-site [ft^3].

Step 2: Calculate the design infiltration rate

Determine the corrected in-situ infiltration rate (f_{design}) of the native soil using the procedures described in the most recent GMED Policy GS 200.1.

Step 3: Calculate the surface area

Select a surface ponding depth (d) that satisfies the geometric criteria and meets the site constraints. Selecting a deeper ponding depth (up to 1.5 ft) generally yields a smaller footprint, however, it will require greater consideration for public safety, energy dissipation, and plant selection.

Calculate the time for the selected ponding depth to filter through the planting media using the following equation:

$$\mathrm{d} = t_p \times \frac{\mathrm{f_{design}}}{12}$$

Where:

d = Ponding depth (max 1.5 ft) [ft];
t_p = Required detention time for surface ponding (max 96 hr) [hr]; and
f_{design} = Design infiltration rate [in/hr].

If t_p exceeds 96 hours, reduce surface ponding depth (d). In nearly all cases, t_p should not approach 96 hours unless f_{design} is low.

Calculate the required infiltrating surface (filter bottom area) using the following equation:

$$A = \frac{V_B}{d}$$

Where:

A = Bottom surface area of biofiltration area [ft^2];
V_B = Biofiltration design volume [ft^3]; and
d = Ponding depth (max 1.5 ft) [ft].

Flow Entrance and Energy Dissipation

Maintain a minimum slope of 1 percent for pervious surfaces and 0.5 percent for impervious surfaces to the biofiltration area inlet. The following types of flow entrance can be used for biofiltration cells:

- Level spreaders (i.e., slotted curbs) can be used to facilitate sheet flow.
- Dispersed, low velocity flow across a landscape area. Dispersed flow may not be possible given space limitations or if the biofiltration area is controlling roadway or parking lot flows where curbs are mandatory.
- Dispersed flow across pavement or gravel and past wheel stops for parking areas.
- Flow spreading trench around perimeter of biofiltration area. May be filled with pea gravel or vegetated with 3:1 side slopes similar to a swale. A vertical-walled open trench may also be used at the discretion of LACDPW.
- Curb cuts for roadside or parking lot areas, if approved by LACDPW: curb cuts should include rock or other erosion controls in the channel entrance to dissipate energy. Flow entrance should drop two to three inches from curb line and provide an area for settling and periodic removal of sediment and coarse material before flow dissipates to the remainder of the biofiltration area.
- Piped entrances, such as roof downspouts, should include rock, splash blocks, or other erosion controls at the entrance to dissipate energy and disperse flows.
- Woody plants (trees, shrubs, etc.) can restrict or concentrate flows and can be damaged by erosion around the root ball and must not be placed directly in the entrance flow path.

Drainage

Biofiltration areas must be designed to drain below the planting soil in less than 96 hours. Soils must be allowed to dry out periodically in order to restore hydraulic capacity to receive stormwater runoff from subsequent storm events, maintain infiltration rates, maintain adequate soil oxygen levels for healthy soil biota and vegetation, and provide proper soil conditions for biodegradation and retention of pollutants.

Underdrain

Biofiltration areas require an underdrain to collect and discharge stormwater runoff that has been filtered through the soil media, but not infiltrated, to another stormwater quality control measure, storm drain system, or receiving water. The underdrain must have a mainline diameter of eight inches using slotted PVC SDR 26 or PVC C9000. Slotted PVC allows for pressure water cleaning and root cutting, if necessary. The slotted pipe

should have two to four rows of slots cut perpendicular to the axis of the pipe or at right angles to the pitch of corrugations. Slots should be 0.04 to 0.1 inches wide with a length of 1 to 1.25 inches. Slots should be longitudinally-spaced such that the pipe has a minimum of one square inch opening per lineal foot and should face down.

The underdrain should be placed in a gravel envelope (Class 2 Permeable Material per Caltrans Spec. 68-1.025) that measures three feet wide and six inches deep. The underdrain is elevated from the bottom of the biofiltration area by six inches within the gravel envelope to create a fluctuating anaerobic/aerobic zone below the underdrain to facilitate denitrification within the anaerobic/anoxic zone and reduce nutrient concentrations. The top and sides of the underdrain pipe should be covered with gravel to a minimum depth of 12 inches. The underdrain and gravel envelope should be covered with a geomembrane liner to prevent clogging. The following aggregate should be used for the gravel envelope:

Particle Size (ASTM D422)	% Passing by Weight
¾ inch	100%
¼ inch	30-60%
#8	20-50%
#50	3-12%
#200	0-1%

Underdrains should be sloped at a minimum of 0.5 percent and must drain freely to an approved discharge point.

Rigid non-perforated observation pipes with a diameter equal to the underdrain diameter should be connected to the underdrain to provide a clean-out port as well as an observation well to monitor drainage rates. The wells/clean-outs should be connected to the perforated underdrain with the appropriate manufactured connections. The wells/clean-outs should extend six inches above the top elevation of the biofiltration area mulch, and should be capped with a lockable screw cap. The ends of underdrain pipes not terminating in an observation well/clean-out should also be capped.

Hydraulic Restriction Layer

Lateral infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent waterproofing, may be placed along the vertical walls to reduce lateral flows. This geomembrane liner must have a minimum thickness of 30 mils and meet the requirements of Table E-12. Generally, waterproof barriers should not be placed on the bottom of the biofiltration unit, as this would prevent incidental infiltration which is important to meeting the required pollutant load reduction.

Table E-12. Geomembrane Liner Specifications for Biofiltration Areas

Parameter	Test Method	Specifications
Material		Nonwoven geomembrane liner
Unit weight		8 oz/yd^3 (minimum)
Filtration rate		0.08 in/sec (minimum)
Puncture strength	ASTM D-751 (Modified)	125 lbs (minimum)
Mullen burst strength	ASTM D-751	400 lb/in^2 (minimum)
Tensile strength	AST D-1682	300 lbs (minimum)
Equiv. opening size	US Standard Sieve	No. 80 (minimum)

Planting/Storage Media

- The planting media placed in the biofiltration area should achieve a long-term, in-place infiltration rate of at least 5 in/hr. Higher infiltration rates of up to 12 in/hr are permissible. The biofiltration soil media must retain sufficient moisture to support vigorous plant growth.
- The planting media mix must consist of 60 to 80 percent sand and 20 to 40 percent compost.
- Sand should be free of wood, waste, coatings such as clay, stone dust, carbonate, or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for biofiltration should be analyzed by an accredited laboratory using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D422 or as approved by the local permitting authority) and meet the following gradations (Note: all sand complying with ASTM C33 for fine aggregate comply with the gradation requirements listed below):

Particle Size (ASTM D422)	% Passing by Weight
3/8 inch	100%
#4	90-100%
#8	70-100%
#16	40-95%
#30	15-70%
#40	5-55%
#110	0-15%
#200	0-5%

Note: The gradation of the sand component of the biofiltration soil media is believed to be a major factor in the infiltration rate of the media mix. If the desired hydraulic conductivity of the biofiltration soil media cannot be achieved within the specified proportions of sand and compost (#2), then it may be necessary to utilize sand at the coarser end of the range specified minimum percent passing.

- Compost should be a well-decomposed, stable, weed-free organic matter source derived from waste materials including yard debris, wood wastes, or other organic material not including manure or biosolids meeting standards developed by the USCC. The product shall be certified through the USCC STA Program (a compost testing and information disclosure program). Compost quality shall be verified via a laboratory analysis to be:
    - Feedstock materials must be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
    - pH between 6.5 and 8.0 (may vary with plant palette)
    - Organic Matter: 35 to 75 percent dry weight basis
    - Carbon and Nitrogen Ratio: 15:1 < C:N < 25:1
    - Maturity/Stability: Compost must have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120°F) upon delivery or rewetting is not acceptable.
    - Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
        - NH_4:NH_3 < 3
        - Ammonium < 500 ppm, dry weight basis
        - Seed germination > 80 percent of control
        - Plant trials > 80 percent of control
        - Solvita® > 5 index value
    - Nutrient content:
        - Total Nitrogen content ≥ 0.9 percent preferred
        - Total Boron should be < 80 ppm; soluble boron < 2.5 ppm
    - Salinity: < 6.0 mmhos/cm
    - Compost for biofiltration area should be analyzed by an accredited laboratory using #200, ¼-inch, ½-inch, and 1-inch sieves (ASTM D422) and meet the gradation requirements in the table below:

Particle Size (ASTM D422)	% Passing by Weight
1 inch	99-100
½ inch	90-100
¼ inch	40-90
#200	2-10

Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested.

The gradation of compost used in biofiltration soil media is believed to play an important role in the saturated infiltration rate of the media. To achieve a higher saturated infiltration rate, it may be necessary to utilize compost at the coarser end of the range (minimum percent passing). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity.

In addition, coarser compost mix provides more heterogeneity of the biofiltration soil media, which is believed to be advantageous for more rapid development of soil structure needed to support healthy biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

- Biofiltration soil media not meeting the above criteria should be evaluated on a case-by-case basis. Alternative biofiltration soil media must meet the following specifications:

  "Soils for biofiltration facilities must be sufficiently permeable to infiltrate stormwater runoff at a minimum of rate of 5 in/hr during the life of the facility, and provide sufficient retention of moisture and nutrients to support healthy vegetation." The following steps shall be followed by LACDPW to verify that alternative biofiltration soil media mixes meet the specification:

  - Submittals – The applicant must submit to LACDPW for approval:
    - A sample of mixed biofiltration soil media.
    - Certification from the soil supplier or an accredited laboratory that the biofiltration soil media meets the requirements of this specification.
    - Certification from an accredited geotechnical testing laboratory that the biofiltration soil media has an infiltration rate between 5 and 12 in/hr.
    - Organic content test results of the biofiltration soil media. Organic content test shall be performed in accordance with the Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, "Loss-On-Ignition Organic Matter Method".
    - Organic grain size analysis results of mixed biofiltration soil media performed in accordance with ASTM D422, Standard Test Method for Particle Size Analysis of Soils.
    - A description of the equipment and methods used to mix the sand and compost to produce the biofiltration soil media.
  - The name of the testing laboratory(ies) and the following information:

- Contact person(s)
- Address(es)
- Phone contact(s)
- E-mail address(es)
- Qualifications of laboratory(ies) and personnel including date of current certification by STA, ASTM, or approved equal.

o Biofiltration soils shall be analyzed by an accredited laboratory using #200 and ½-inch sieves (ASTM D422 or as approved by LACDPW), and meet the gradation described in the table below:

Particle Size (ASTM D422)	% Passing by Weight
½ inch	97-100
#200	2-5

- Biofiltration soil media shall be analyzed by an accredited geotechnical laboratory for the following tests:
  - o Moisture – density relationships (compaction tests) must be conducted on biofiltration soil media. Biofiltration soil media for the permeability test shall be compacted to 85 to 90 percent of the maximum dry density (ASTM D1557).
  - o Constant head permeability testing in accordance with ASTM D2434 shall be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.
- Mulch is recommended for the purpose of retaining moisture, preventing erosion, and minimizing weed growth. Projects subject to the California Model Water Efficiency Landscaping Ordinance (or comparable local ordinance) will be required to provide at least 2 inches of mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist, and replenishes soil nutrients. Biofiltration areas must be covered with two to four inches (average three inches) of mulch at the start and an annual placement (preferably in June after weeding) of one to two inches of mulch beneath plants.
- The planting media design height must be marked appropriately, such as a collar on the overflow device or with a stake inserted two feet into the planting media and notched, to show biofiltration surface level and ponding level.

Vegetation

Prior to installation, a licensed landscape architect must certify that all plants, unless otherwise specifically permitted, conform to the standards of the current edition of American Standard for Nursery Stock as approved by the American Standards Institute, Inc. All plant grades shall be those established in the current edition of American Standards for Nursery Stock.

- Shade trees must have a single main trunk. Trunks must be free of branches below the following heights:

CALIPER (in)	Height (ft)
1½-2½	5
3	6

- Plants must be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 96 hours.
- It is recommended that a minimum of three types of tree, shrubs, and/or herbaceous groundcover species be incorporated to protect against facility failure due to disease and insect infestations of a single species.
- Native plant species and/or hardy cultivars that are not invasive and do not require chemical inputs must be used to the maximum extent practicable.

The biofiltration area should be vegetated to resemble a terrestrial forest community ecosystem, which is dominated by understory trees, a shrub layer, and herbaceous ground cover. Select vegetation that:

- Is suited to well-drained soil;
- Will be dense and strong enough to stay upright, even in flowing water;
- Has minimum need for fertilizers;
- Is not prone to pests and is consistent with Integrated Pest Management practices; and
- Is consistent with local water conservation ordinance requirements.

Irrigation System

Provide an irrigation system to maintain viability of vegetation, if applicable. The irrigation system must be designed to local code or ordinance specifications.

Restricted Construction Materials

The use of pressure-treated wood or galvanized metal at or around a biofiltration area is prohibited.

Overflow Device

An overflow device is required at the 18-inch ponding depth. The following, or equivalent, should be provided:

- A vertical PVC pipe (SDR 26) to act as an overflow riser.
- The overflow riser(s) should be eight inches or greater in diameter, so it can be cleaned without damage to the pipe.

- The inlet to the riser should be at the ponding depth (18 inches for fenced biofiltration areas and 6 inches for areas that are not fenced), and be capped with a spider cap to exclude floating mulch and debris. Spider caps should be screwed in or glued (e.g., not removable). The overflow device should convey stormwater runoff in excess of 1.5 times the SWQDv that is not reliably retained on the project site to an approved discharge location (another stormwater quality control measure, storm drain system, or receiving water).

Maintenance Requirements

Maintenance and regular inspections are important for proper function of biofiltration areas. Biofiltration areas require annual plant, soil, and mulch layer maintenance to ensure optimal infiltration, storage, and pollutant removal capabilities. In general, biofiltration maintenance requirements are typical landscape care procedures and include:

- Irrigate plants as needed during prolonged dry periods. In general, plants should be selected to be drought-tolerant and not require irrigation after establishment (two to three years).
- Inspect flow entrances, ponding area, and surface overflow areas periodically, and replace soil, plant material, and/or mulch layer in areas if erosion has occurred. Properly-designed facilities with appropriate flow velocities should not cause erosion except potentially during in extreme events. If erosion occurs, the flow velocities and gradients within the biofiltration area and flow dissipation and erosion protection strategies in the pretreatment area and flow entrance should be reassessed. If sediment is deposited in the biofiltration area, identify the source of the sediment within the tributary area, stabilize the source, and remove excess surface deposits.
- Prune and remove dead plant material as needed. Replace all dead plants, and if specific plants have a high mortality rate, assess the cause and, if necessary, replace with more appropriate species.
- Remove weeds as needed until plants are established. Weed removal should become less frequent if the appropriate plant species are used and planting density is attained.
- Select the proper soil mix and plants for optimal fertility, plant establishment, and growth to preclude the use of nutrient and pesticide supplements. By design, biofiltration facilities are located in areas where phosphorous and nitrogen levels are often elevated such that these should not be limiting nutrients. Addition of nutrients and pesticides may contribute pollutant loads to receiving waters.
- In areas where heavy metals deposition is likely (i.e., tributary areas to industrial, vehicle dealerships/repair, parking lots, roads), replace mulch annually. In areas where metals deposition is less likely (i.e., residential lots), replace or add mulch as needed to maintain a two to three inch depth at least once every two years.

- Analyze soil for fertility and pollutant levels if necessary. Biofiltration soil media are designed to maintain long-term fertility and pollutant processing capability.
- Eliminate standing water to prevent vector breeding.
- Inspect overflow devices for obstructions or debris, which should be removed immediately. Repair or replace damaged pipes upon discovery.
- Inspect, and clean if necessary, the underdrain.

A summary of potential problems that need to be addressed by maintenance activities is presented in Table E-13.

The County requires execution of a maintenance agreement to be recorded by the property owner for the on-going maintenance of any privately-maintained stormwater quality control measures. The property owner is responsible for compliance with the maintenance agreement. A sample maintenance agreement is presented in Appendix H.

Table E-13. Biofiltration Troubleshooting Summary

Problem	Conditions When Maintenance Is Needed	Maintenance Required
Vegetation	Overgrown vegetation	Mow and prune vegetation as appropriate.
	Presence of invasive, poisonous, nuisance, or noxious vegetation or weeds	Remove this vegetation and plant native species as needed.
Trash and Debris	Trash, plant litter, and dead leaves present	Remove and properly dispose of trash and debris.
Irrigation (if applicable)	Not functioning correctly	Check irrigation system for clogs or broken lines and repair as needed.
Inlet/Overflow	Inlet/overflow areas clogged with sediment and/or debris	Remove material.
	Overflow pipe blocked or broken	Repair as needed.
Erosion/Sediment Accumulation	Splash pads or spreader incorrectly placed Presence of erosion or sediment accumulation	Check inlet structure to ensure proper function. Repair, or replace if necessary, the inlet device. Repair eroded areas with gravel as needed. Re-grade the biofiltration area as needed.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants, or other pollutants	Remove any evidence of visual contamination from floatables such as oil and grease.
Standing water	Standing water observed more than 96 hours after storm event	Inspect, and clean as needed, the underdrain to ensure proper function. Clear clogs as needed. Remove and replace planter media (sand, gravel, topsoil, mulch) and vegetation.

APPENDIX G

BMP OPERATIONS & MAINTENANCE MANUAL

APPENDIX H

COVENANT AND AGREEMENT

RECORDING REQUESTED BY
AND MAIL TO:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
900 S. FREMONT AVENUE, 3RD FLOOR
ALHAMBRA, CA 91803-1331

Space above this line is for Recorder's use

COVENANT AND AGREEMENT
REGARDING THE MAINTENANCE OF LOW IMPACT DEVELOPMENT (LID) & NATIONAL POLLUTANTS DISCHARGE ELIMINATION SYSTEM (NPDES) BMPs

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the County of Los Angeles, State of California:

LEGAL DESCRIPTION

ASSESSOR'S ID #_____TRACT NO._____LOT NO._____

ADDRESS: _____

_____

Owner is aware of the requirements of the County of Los Angeles' Green Building Standards Code, Title 31, Section 4.106.4 (LID), and National Pollutant Discharge Elimination System (NPDES) permit. The following post-construction BMP features have been installed on the Subject Property:

- □ Porous pavement
- □ Cistern/rain barrel
- □ Infiltration trench/pit
- □ Bioretention or biofiltration
- □ Rain garden/planter box
- □ Disconnect impervious surfaces
- □ Dry Well
- □ Storage containers
- □ Landscaping and landscape irrigation
- □ Green roof
- □ Other _____

_____

The location, including GPS x-y coordinates, and type of each post-construction BMP feature installed on the Subject Property is identified on the site diagram attached hereto as Exhibit 1.

Owner hereby covenants and agrees to maintain the above-described post-construction BMP features in a good and operable condition at all times, and in accordance with the LID/NPDES Maintenance Guidelines, attached hereto as Exhibit 2.

Owner further covenants and agrees that the above-described post-construction BMP features shall not be removed from the Subject Property unless and until they have been replaced with other post-construction BMP features in accordance with County of Los Angeles' Green Building Standards Code, Title 31 and NPDES permit.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the post-construction BMP features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the County of Los Angeles, in its sole discretion.

Owner(s):

By:_____ Date:_____

By:_____ Date:_____

(PLEASE ATTACH NOTARY)

REFERENCE

PLAN CHECK NO.: _____ DISTRICT OFFICE NO.:_____

ATTACHMENTS

RECORDING REQUEST BY AND MAIL TO:

County of Los Angeles
Department of Public Works

Building and Safety – Drainage and Grading Section
Land Development – Drainage and Grading Section

P.O. Box 1460
Alhambra, California 91802-1460

Space above this line is for Recorder's use

COVENANT FOR MAINTENANCE OF WATER QUALITY (WQ) DEVICES

I (we) _____, hereby certify that I (we) am (are) the legal owner(s) of Tract # _____, and as such owners for the mutual benefit of future purchasers, their heirs, successors, and assigns, do hereby fix the following protective conditions to which their property, or portions thereof, shall be held, sold and/or conveyed.

That owner(s) shall maintain the WQ system shown on attached Exhibit A map and on Grading Plan GPC # _____, on file in the office of the Director of Public Works, in a good and functional condition at least once a year and retain proof of the inspection. The owner(s) shall perform this responsibility, unless the County discharges this obligation through a subsequently recorded written instrument.

The undersigned also covenants and agrees for himself, his heirs, successors, and assigns, to indemnify, defend, and save harmless the County, its agents, officers and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages of any nature whatsoever, including, but not limited to, bodily injury, death, personal injury, or property damage arising from or connected with the construction or maintenance of said work.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

APPENDIX I

GEOTECHNICAL REPORT (FOR REFERENCE ONLY)

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Parking Structure at Parking Lot S
Mt. San Antonio College
Walnut, California

Converse Project No. 17-31-247-01

Prepared For:

Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Prepared By:

Converse Consultants
717 South Myrtle Avenue
Monrovia, California 91016

October 23, 2017

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

October 23, 2017

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed Parking Structure at Parking Lot S
Mt. San Antonio College
Walnut, Los Angeles County, California
Converse Project No. 17-31-247-01

Dear Mr. Gidcumb:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geologic and geotechnical study for the Proposed Parking Structure Project located at Student Parking Lot S at Mt. San Antonio College (Mt. SAC) in Walnut, California. In accordance with California Education Code, Sections 17212 and 81033, this report was prepared consistent with the current edition of California Building Code, Title 24, Chapter 16A and Chapter 18A; California Administrative Code, Part 1, Title 24, CCR, Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings, for design and for the Division of the State Architect (DSA) submittal purposes. Converse evaluated the nature and engineering properties of the subsurface soils and sedimentary bedrock to provide recommendations for site earthwork, foundation design, grading, and construction for the proposed development. Our services were performed in accordance with our proposal dated August 10, 2017.

We appreciate the opportunity to be of continued service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

Sincerely,

CONVERSE CONSULTANTS

Sivathasan

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

Dist: 5Addressee

PROFESSIONAL CERTIFICATION

This report for the Proposed Parking Structure Project at Student Parking Lot S located within the campus of Mt. San Antonio College in the City of Walnut, Los Angeles County, California, has been prepared by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed, and the recommendations of this report are modified or verified in writing.

Parameswaran Ariram, EIT
Senior Staff Engineer



Mark B. Schluter, PG, CEG, CHG
Senior Engineering Geologist

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical investigation, conclusions and recommendations, as presented in the body of this report, please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed project consists of a 3-story parking structure to be constructed on existing Student Parking Lot S. The parking structure footprint measures approximately 380 feet long and 220 to 260 feet wide and is approximately 89,820 square feet. The parking structure consists of three (3) above-ground parking levels and will be founded on shallow spread foundations.

- Eight (8) exploratory borings (BH-1 through BH-8) were drilled within the project site from August 16 to August 24, 2017. The borings were advanced using a truck-mounted drill rig with an 8-inch diameter hollow-stem auger to depths ranging from 20.5 to 51.5 feet below the existing ground surface (bgs). Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and refusal to drilling penetration in hard sedimentary bedrock along the southern side of the proposed structure.

- Ten (10) exploratory Cone Penetration Tests (CPT-1 through CPT-10) were advanced to depths of 8 to 42 feet below the existing ground surface within the project site on September 6, 7 and 8, 2017. CPT Nos. CPT-1, CPT-2, CPT-3, CPT-5, CPT-6, CPT-7, CPT-8, CPT-9, and CPT-10 encountered very dense/stiff soil and sedimentary bedrock conditions, and were stopped short of their planned depths.

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is located within a mapped Seismic Hazard Zone for liquefaction. The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction-induced settlement ranges from 0.91 to 2.88 inches with potential differential settlement ranging from 0.46 to 1.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

- Local zones of groundwater seepage were encountered during subsurface exploration in the alluvium and bedrock at depths ranging from approximately 23

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feet bgs in boring BH-3 to approximately 36.8 feet bgs in BH-7. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Variable thicknesses of undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for slab or foundation support.

- Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and sedimentary bedrock is recommended for site grading to provide a minimum 5-foot-thick compacted fill blanket beneath the building foundations and floor slab. The over-excavation and re-compaction is recommended to extend approximately 7 feet to 10 feet below ground surface and 10 feet beyond the edge of the parking structure foundations. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock areas.

- The upper undocumented fill soils and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slab to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays.

- Shallow spread and continuous footings founded on compacted fill are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans and specifications, and are followed during site construction.

- Based on the proposed plan, over-excavation and re-compaction of the undocumented fills and upper alluvial soils is required for the building pad to achieve the planned finished grades.

- Different earth materials should be anticipated at excavation bottoms for the planned floor levels. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction below the bottom of foundations and slab-on-grades is recommended. We recommend the shallow foundations should be supported on a minimum 5-foot-thick layer of compacted fill benched into undisturbed native soil and bedrock materials for the building pad.

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

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- In general, the soluble sulfate concentration, pH and chloride content are not in the corrosive range. However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers (pebble conglomerates, sandstone layers, siliceous layers, etc.) may be encountered during excavation and grading and should be anticipated. Bedrock hardness will increase with depth within the sandstone (Tpss) and pebble conglomerate (Tpcg) layers. Earthwork and grading should be performed with suitable grading equipment for hard, cemented and gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project

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1.0 INTRODUCTION

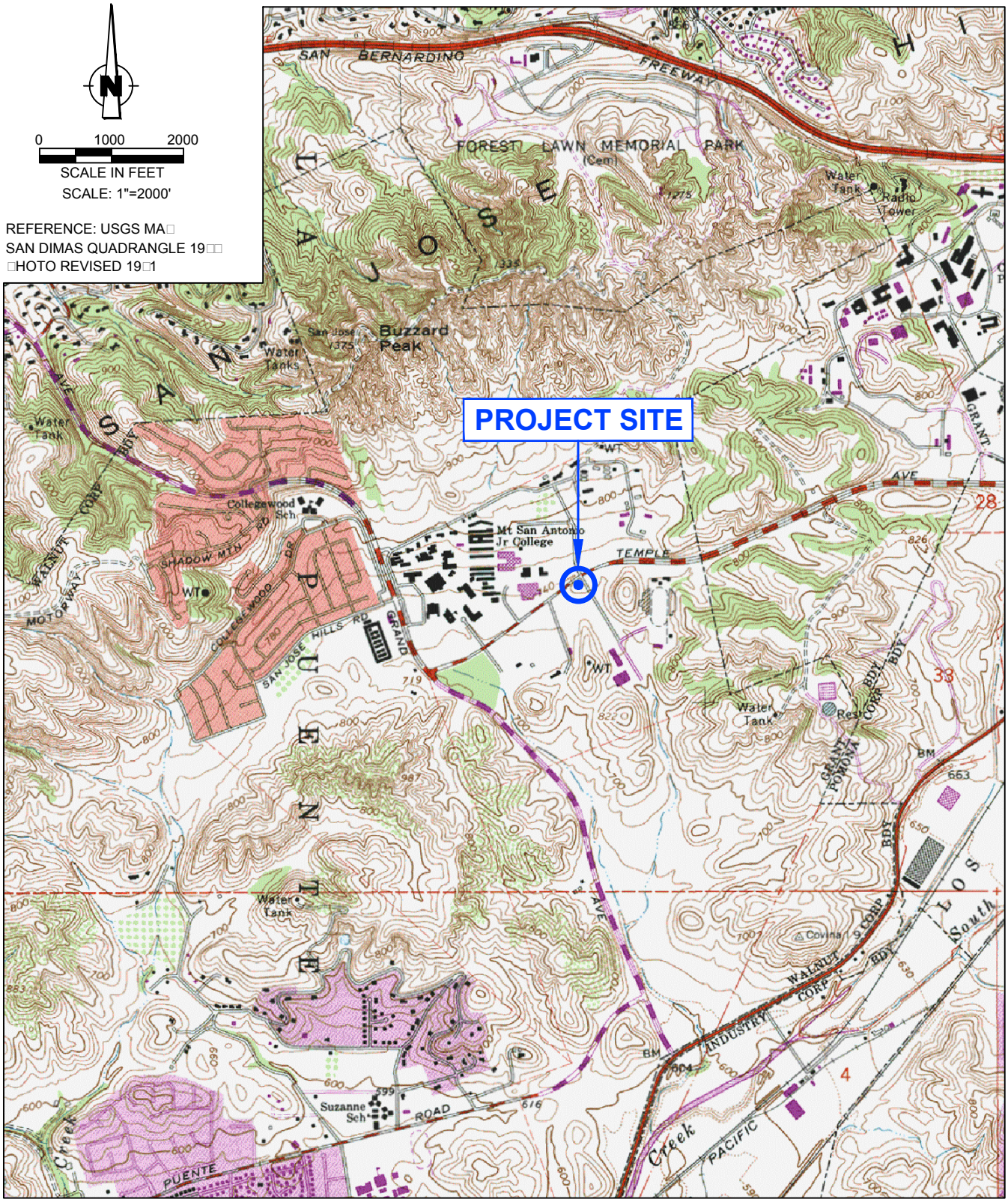
This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed Parking Structure at Parking Lot S located within the campus of Mt. San Antonio College, in the City of Walnut, Los Angeles County, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of the investigation was to generate a report for design and the Department of State Architect (DSA) submittal purposes, consistent with current edition of California Education Code, Sections 17212 and 81033, California Building Code, Title 24 CCR, Sections 4-317, 1803 and 1804 and CGS Note 48-Checklist for the review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

We have used a site plan provided to us by your office as a reference for this project. The site plan is included in this report as Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

This report is written for the project described herein and is intended for use solely by Mt. San Antonio College and its design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

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SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No.

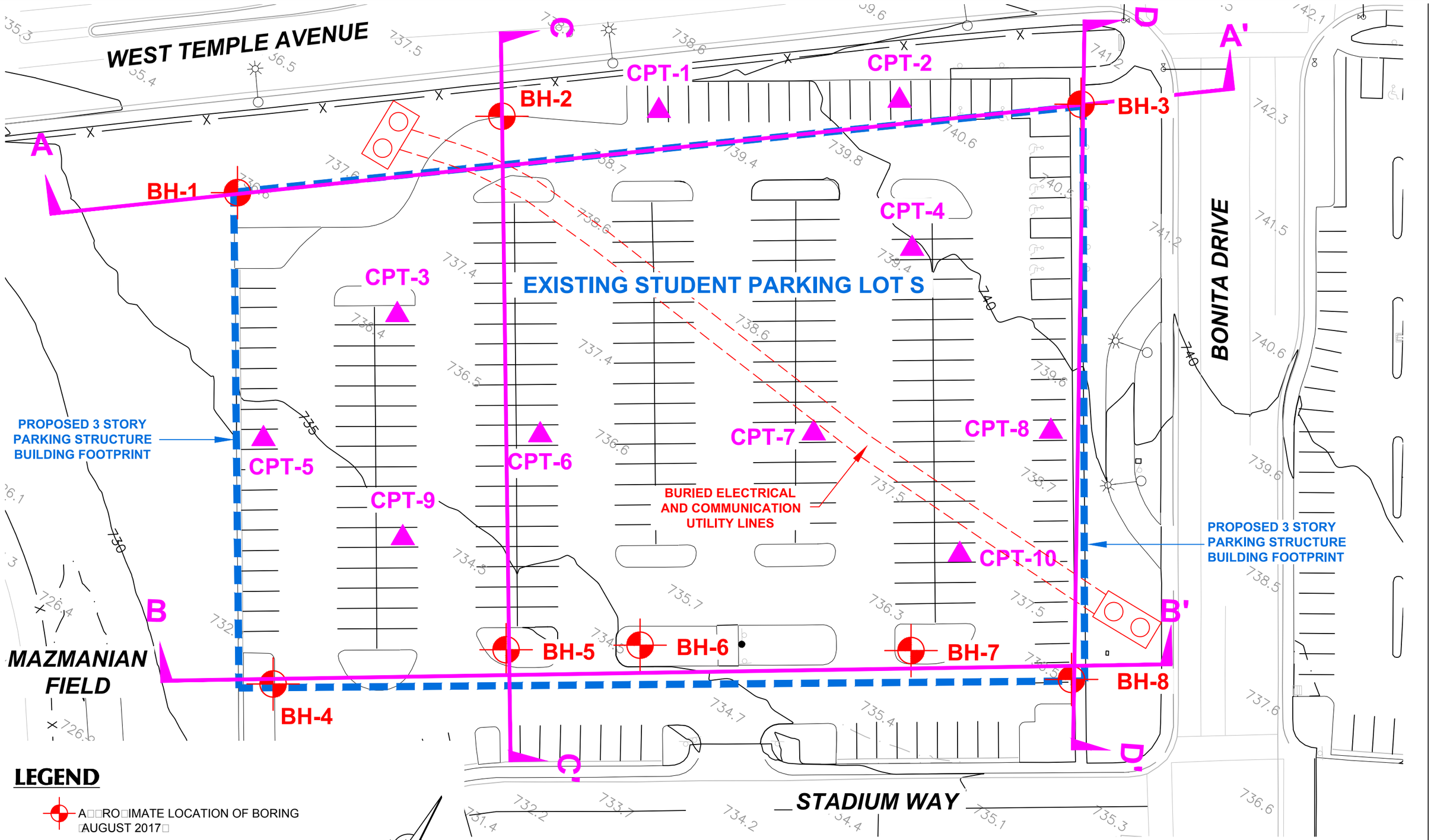
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Drawing No.

1

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LEGEND

- A□□RO□IMATE LOCATION OF BORING □AUGUST 2017□
- A□□RO□IMATE LOCATION OF C□T □SE□TEMBER 2017□
- GEOLOGIC CROSS SECTION A-A', B-B', C-C', AND D-D'

0 40 80

APPROXIMATE SCALE IN FEET

SITE PLAN AND APPROXIMATE LOCATION OF CPTs AND BORINGS

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MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

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17-31-247-01	2

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed parking structure project is located at the current Student Parking Lot S located on at the southwest corner of the intersection of West Temple Avenue and Bonita Drive in Mt. San Antonio College. The existing parking lot dimensions are approximately 380 feet east-west by 310 feet north-south. The Student Parking Lot S is currently asphalt paved with concrete curbs and gutters and provides the campus with parking facilities. The site is bordered by West Temple Avenue to the north, Bonita Drive to the east, Stadium Way with hardscape to the south and the Mt. SAC Mazmanian baseball field to the west.

The subject site for the proposed parking structure has surface elevations ranging from approximately 730 to 741 feet relative to mean-sea-level (MSL) respectively, with surface gradients flowing down gradient toward the southwest. The site coordinates are: North latitude: 34.04599 degrees, West longitude: 117.84056 degrees.

The site coordinates were centered on the subject sites and used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

2.2 Project Description

The proposed Parking Structure at Parking Lot S consists of one new three-level parking structure building. The parking structure footprint measures approximately 380 feet long and 220 to 260 feet wide and is approximately 89,820 square feet. The structural loads are not known at this time, but are anticipated to be moderate. The structure is planned to be founded on shallow spread foundations or concrete mat foundations. The project site is shown on Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*.

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3.0 SCOPE OF WORK

The scope of our work included a site reconnaissance, subsurface exploration with soil sampling, laboratory testing, engineering analysis, and preparation of this report.

3.1 Site Reconnaissance

During the site reconnaissance from August 14 to August 15, 2017, the surface conditions were noted and the locations of the borings were determined so that drill rig and Cone Penetration Test (CPT) rig access to all the locations was available. The borings and CPT soundings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used. The proposed boring and CPT test sites were scanned by a private utility locator using electrical and ground penetrating radar systems to screen each site for buried utility lines. Underground Service Alert (USA) of Southern California was then notified of our proposed drilling and CPT test locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration

Eight (8) exploratory borings (BH-1 through BH-8) were drilled within the project site from August 16 to August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8- inch diameter hollow stem auger to depths ranging from 20.5 to 51.5 feet below the existing ground surface (bgs). It should be noted that borings were hand augered to depths of 5 feet below ground surface to locate and avoid underground utilities in the area. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. California Modified Sampler (Ring samples), Standard Penetration Test (SPT) samples, and bulk soil samples were obtained for laboratory testing.

Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The SPT sampler was driven into the ground with successive drops of a 140-pound hammer falling 30 inches by means of a mechanically driven drop hammer. The number of successive drops of the driving weight (“blows”) required for every 6-inches of penetration of the sampler are shown on the Logs of Borings in the “blows column. The bore holes were then backfilled and compacted with soil cuttings by reverse spinning of the auger following the completion of drilling and patched with asphalt patch where necessary to match existing conditions.

Ten (10) Cone Penetration Test soundings (CPT-1 through CPT-10) were advanced to depths of 8 feet to 42 feet below ground surface within project site on September 6, 7 and 8, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The cone penetration testing consisted of pushing an instrumented cone-tipped probe into the

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ground while simultaneously recording the resistance to penetration at the cone tip and along the friction sleeve. The test holes were stopped at plan depths or when the cone tip encountered refusal to penetration. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then patched with asphalt patch to match the existing pavement surface.

The approximate locations of the exploratory borings and CPT test soundings are shown in Drawing No. 2, *Site Plan and Approximate Location of CPTs and Borings*. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In Situ Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Fines Content/Passing No. 200 Sieve (ASTM D1140)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- R-value (ASTM Standard D2844)
- Soil Corrosivity Tests (Caltrans 643, 422, 417, and 532)

For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*. For *in-situ* moisture and density data, see the Logs of Borings in Appendix A, *Field Exploration*.

3.4 Engineering Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

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4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California along the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low angle reverse or reverse-oblique faults bounding the south margin of the Transverse Ranges. Faults in group one include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Group two faults include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

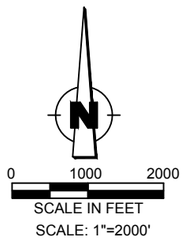
The Pomona Valley basin is bounded to the north by the San Jose fault and to the southwest by the Chino-Central Avenue fault. These two fault systems do not exhibit significant evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age faults, having exhibited displacement and movement within the past approximately 130,000 years.

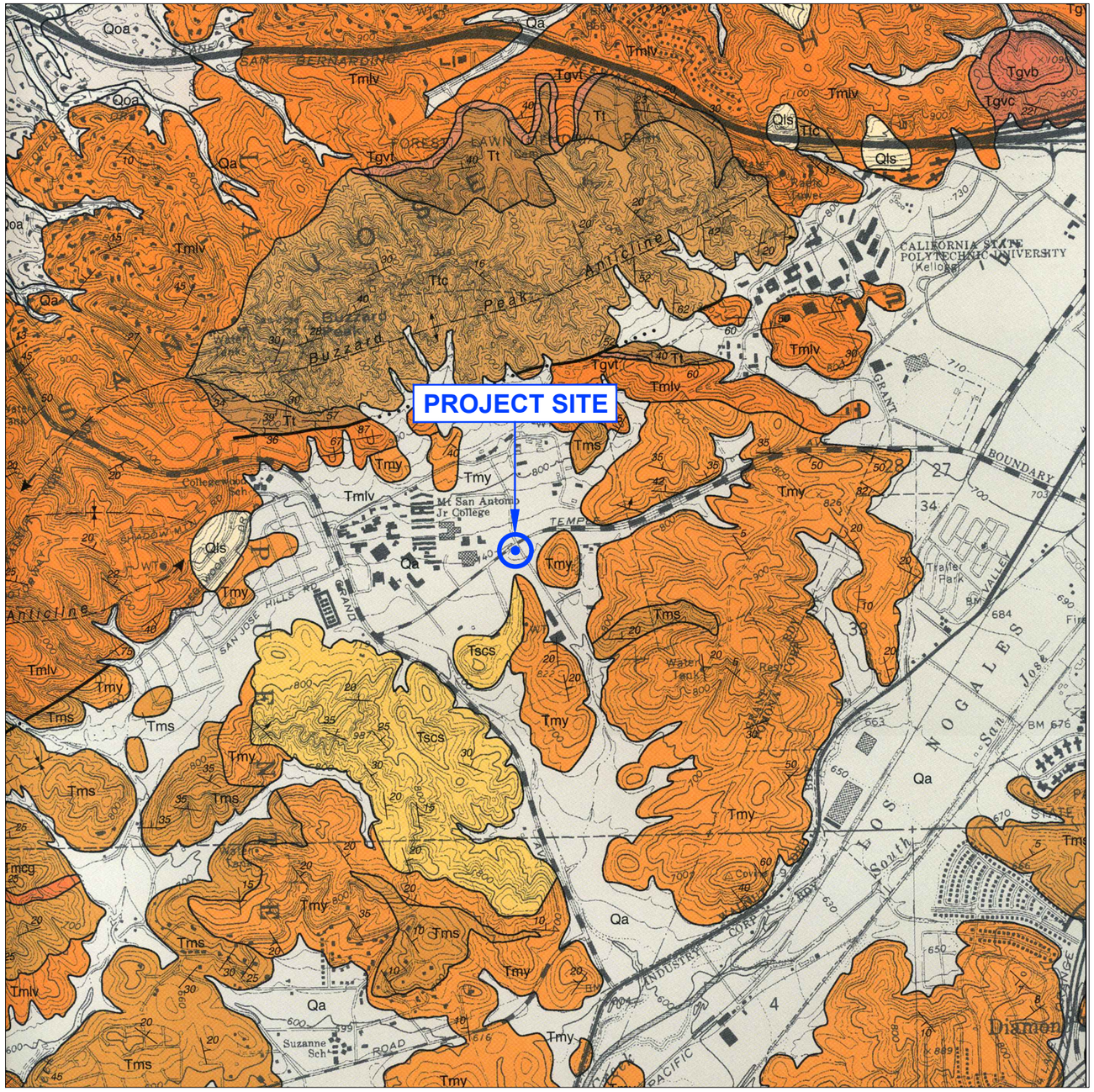
The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. Low lying sedimentary bedrock hillsides are depicted south and east of the subject site and have been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and minor sandstone and (Tscs) Sycamore Canyon Formation consisting of light gray sandstone that includes conglomerate and siltstone. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map.*

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our investigation consist of existing fill soils placed during previous site grading operations, natural alluvial soils and sedimentary bedrock of the Puente Formation. The project site area is covered by a layer of fill soils underlain by the alluvial soils and interbedded layers of sandstone, pebble conglomerate, siltstone, and claystone sedimentary bedrock of the Puente Formation. These earth materials consist primarily of silty sands, clayey sands, sands, silts and clays. Each of these earth materials is described in more detail below.

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SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

af Qa Qg

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

Qls

LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

Qoa Qog

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

Tscg Tscs

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic; latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg****, and siltstone.*

Tm Tmy Tmcg Tms Tmlv

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964: Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

Tt Ttc

TOPANGA FORMATION

(of Shelton, 1955; Tan. 1998; marine clastic; middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late ? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

Tgv Tgvc Tgvb Tgvp Tgvt Tgva Tgvr Tgve

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999) extrusive volcanic rocks; middle Miocene age locally intertongued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

— UNCONFORMITY —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

Tmda

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

qd qdb

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite: plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.*

Holocene — Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC

REFERENCE: THOMAS W. DIBBLE, □r. □DF-91□
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE □2002□

REGIONAL GEOLOGIC MAP

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MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No. 17-31-247-01

Drawing No. 3

Fill Soils

An undocumented fill layer of variable thickness was encountered in all of the soil borings drilled between August 16 to August 24, 2017, within the subject site. The depth of the fill ranges from approximately three (3) to eight (8) feet in thickness. Deeper fill soils may be encountered at the project site. The observed fill soils consist primarily of silty sand, clayey sand and clayey silt. Most of the fill soils appear to have been locally derived from the general site area. Documentation concerning the placement and degree of compaction of the fill soils was not available.

Alluvium

Alluvial deposits were encountered underlying the fill material at the project site. The native soil encountered in the borings consists of clayey sands, sandy clays, sandy silts, silty clays, silts and clays with occasional gravels and cobbles. The deepest alluvium was located on the east side of the project site along Bonita Drive. Sampling blow-counts correlate from loose and medium stiff to dense and very stiff. Dark brown, fine-grained silts and clays were encountered above the alluvium / bedrock contact. These natural soil materials are potentially expansive and not recommended for use as fill directly below footings and slabs. The soils also include occasional fragments of weathered bedrock. We expect that some cobbles and rocks are larger in size than the largest observed, (approximately four (4) inches in the maximum dimension) and were broken down in the hollow stem auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may be buried in the alluvial sediments below the site.

Sandstone, Pebble Conglomerate, Siltstone and Claystone Bedrock (Tmy and Tscs)

The project site on Parking Lot S is partially underlain by shallow sedimentary bedrock of Puente Formation (Tmy and Tscs) consisting of interbedded sandstone, pebble conglomerate, siltstone, and claystone layers. A hillside bedrock ridge descends northward beneath the southern side of the project site. The bedrock layers range from generally thinly bedded to thick and massive, and display varying degrees of cementation and hardness. The bedrock is weathered near the alluvium/bedrock contact and becomes less weathered and medium hard to hard with depth.

Sandstone and Pebble Conglomerate Bedrock (Tscs)

Hard sandstone and conglomerate bedrock layers consisting of gravel and cobble-sized rocks in a cemented sandstone matrix (Tscs) were encountered at shallow depths along the south side of the project site. The sandstone and conglomerate layers can be thick and massive and may contain boulder sized hard rock materials. Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and refusal to drilling

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penetration in the hard and cemented sedimentary bedrock layers along the southern side of the proposed parking structure. Cone Penetration Tests (CPT-3, CPT-5, CPT-6, CPT-7, CPT-8, CPT-9 and CPT-10 encountered very dense/stiff soil and sedimentary bedrock conditions and were stopped short of their planned depths. The sandstone and conglomerate bedrock materials were observed to be hard and will be more difficult to excavate during grading and construction.

Drawing No.4, *Geologic Cross Section A-A'*, Drawing No.5, *Geologic Cross Section B-B'*, Drawing No.6, *Geologic Cross Section C-C'* and Drawing No.7, *Geologic Cross Section D-D'*, have been drawn across the subject site to illustrate the subsurface conditions beneath the project site. For additional information on the subsurface conditions, see the Logs of Boring Data in Appendix A, *Field Exploration*.

4.3 Groundwater

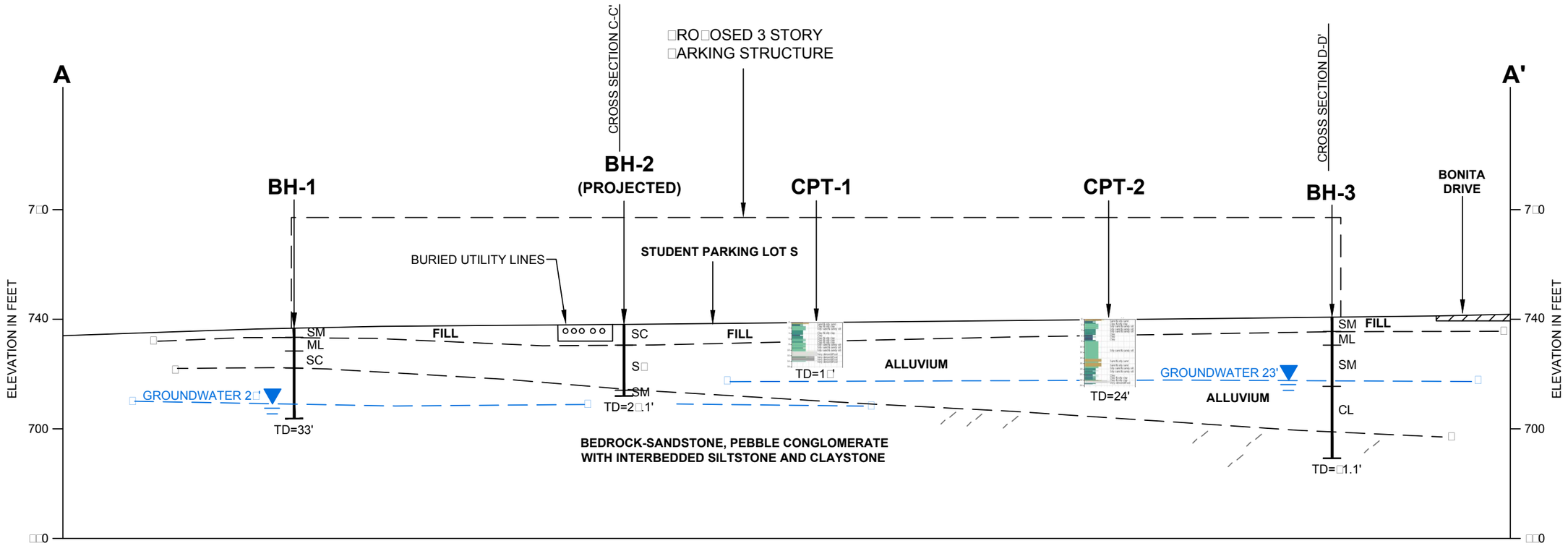
Local zones of groundwater seepage and groundwater were encountered during subsurface exploration in the alluvium and bedrock at depths ranging from approximately 23 feet below ground surface in boring BH-3 to approximately 36.8 feet in boring BH-7. The regional groundwater table is not expected to be encountered during the planned grading and construction. However, the possibility of groundwater being encountered during future grading and deeper excavations cannot be completely precluded.

Wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers from upslope infiltration of rainfall, surface flow, runoff and storm water recharge and should be anticipated during grading and construction. Local zones of perched groundwater may be present within the near-surface deposits due to buried alluvial channel features, channel remnants, alluvium/bedrock contacts, local recharge conditions or during the rainy season. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, storm water recharge and groundwater pumping, among other factors.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

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□ROFILE:
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VERTICAL: 1"=40'

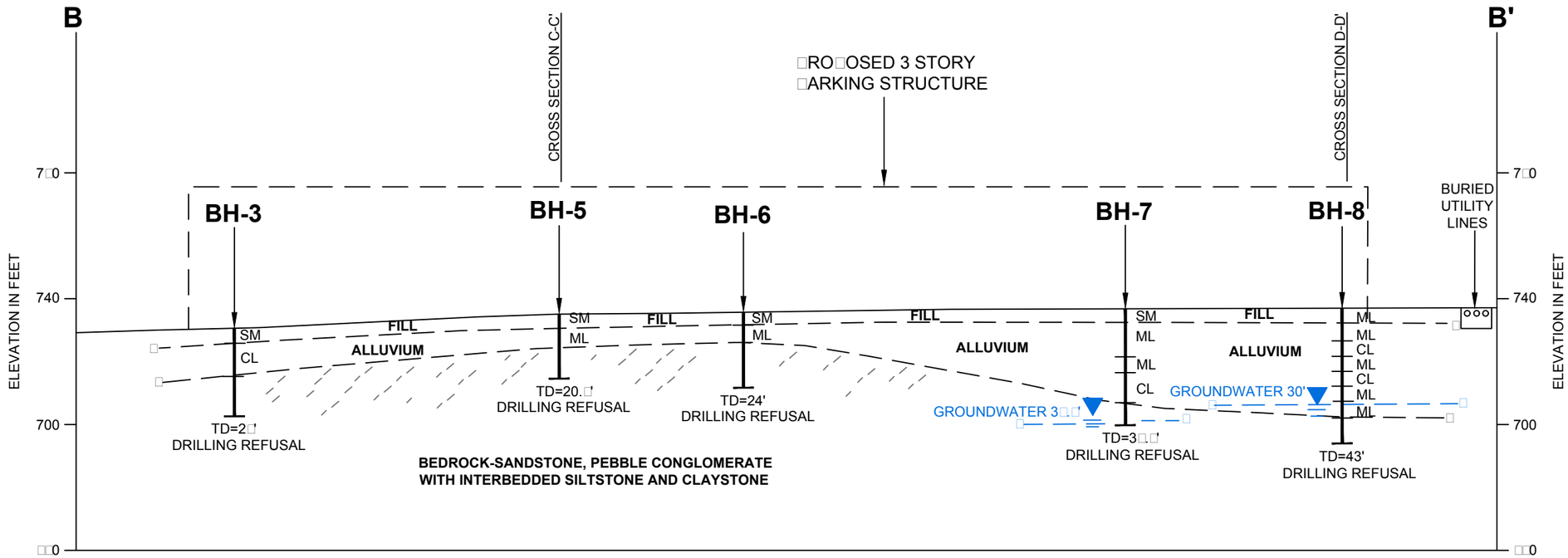
GEOLOGIC CROSS SECTION A-A'

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Drawing No. 4



□ROFILE:
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VERTICAL: 1"=40'

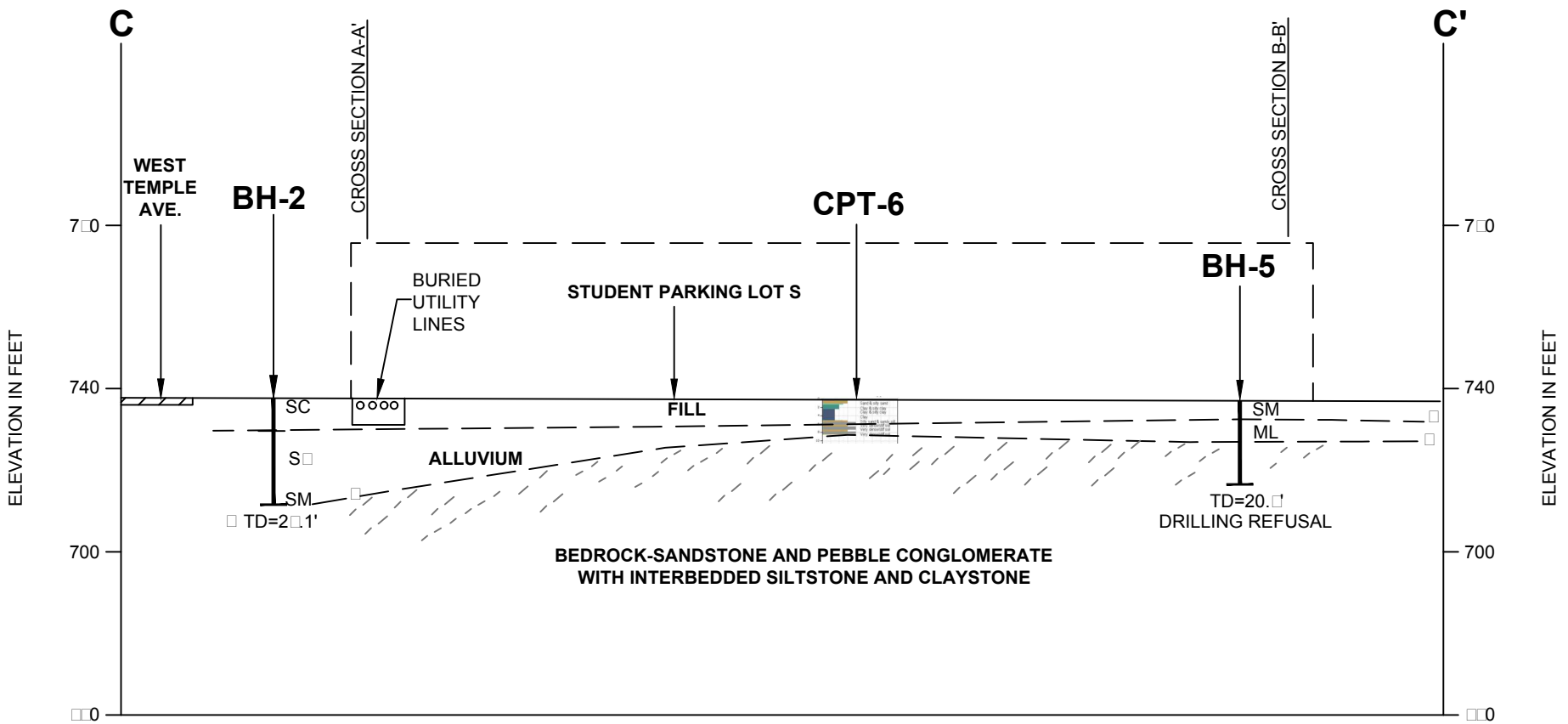
GEOLOGIC CROSS SECTION B-B'

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Project No. 17-31-247-01

Drawing No. 5



□ROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

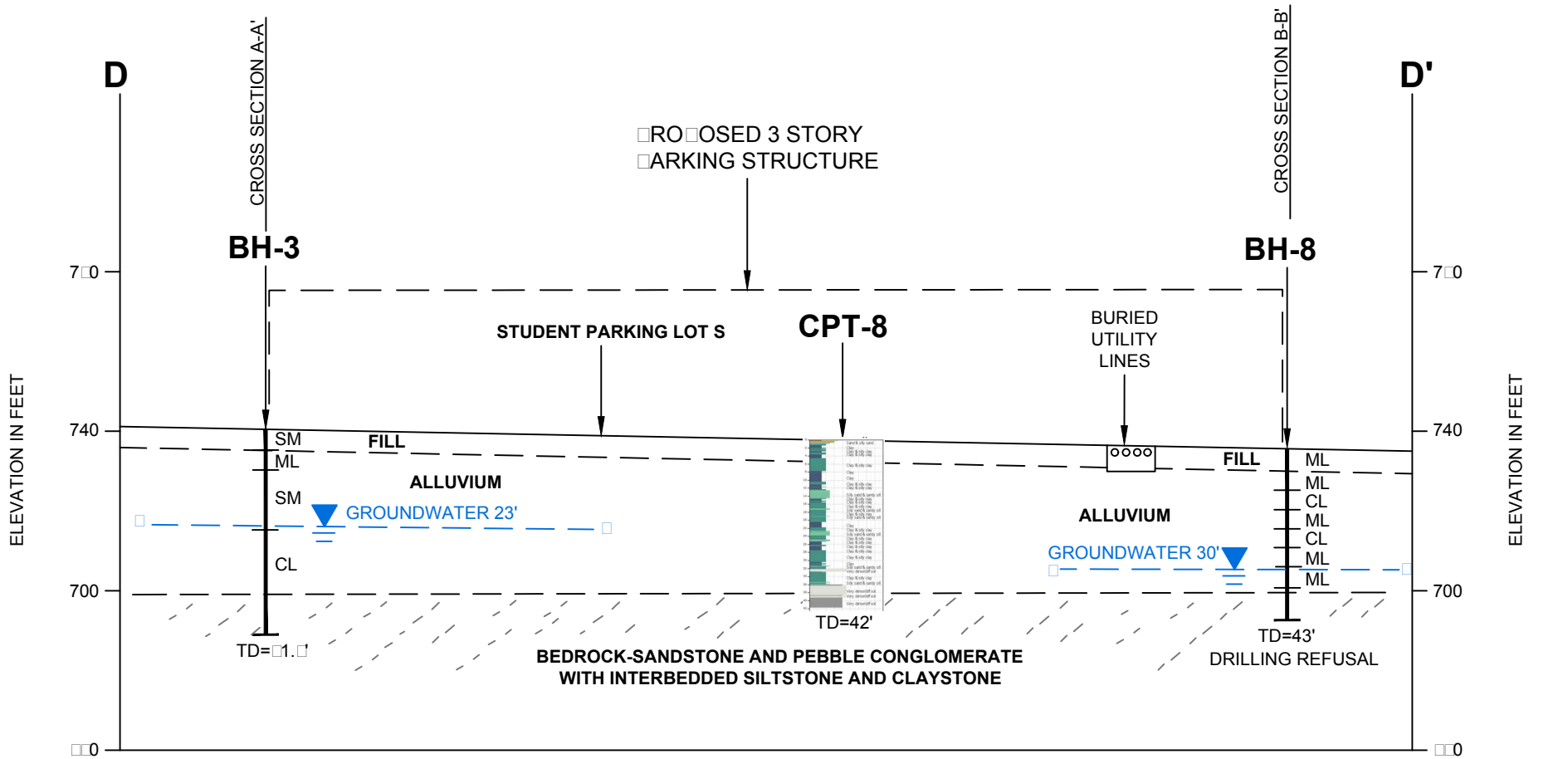
GEOLOGIC CROSS SECTION C-C'

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Project No.
17-31-247-01

Drawing No.
6



□ROFILE:
HORIZONTAL: 1"=40'
VERTICAL: 1"=40'

GEOLOGIC CROSS SECTION D-D'

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17-31-247-01

Drawing No.
7

5.0 FAULTING AND SEISMIC HAZARDS

Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (0.8 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults were included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown on Drawing No. 3, *Regional Geological Map* and Drawing No. 8, *Southern California Regional Fault Map*.

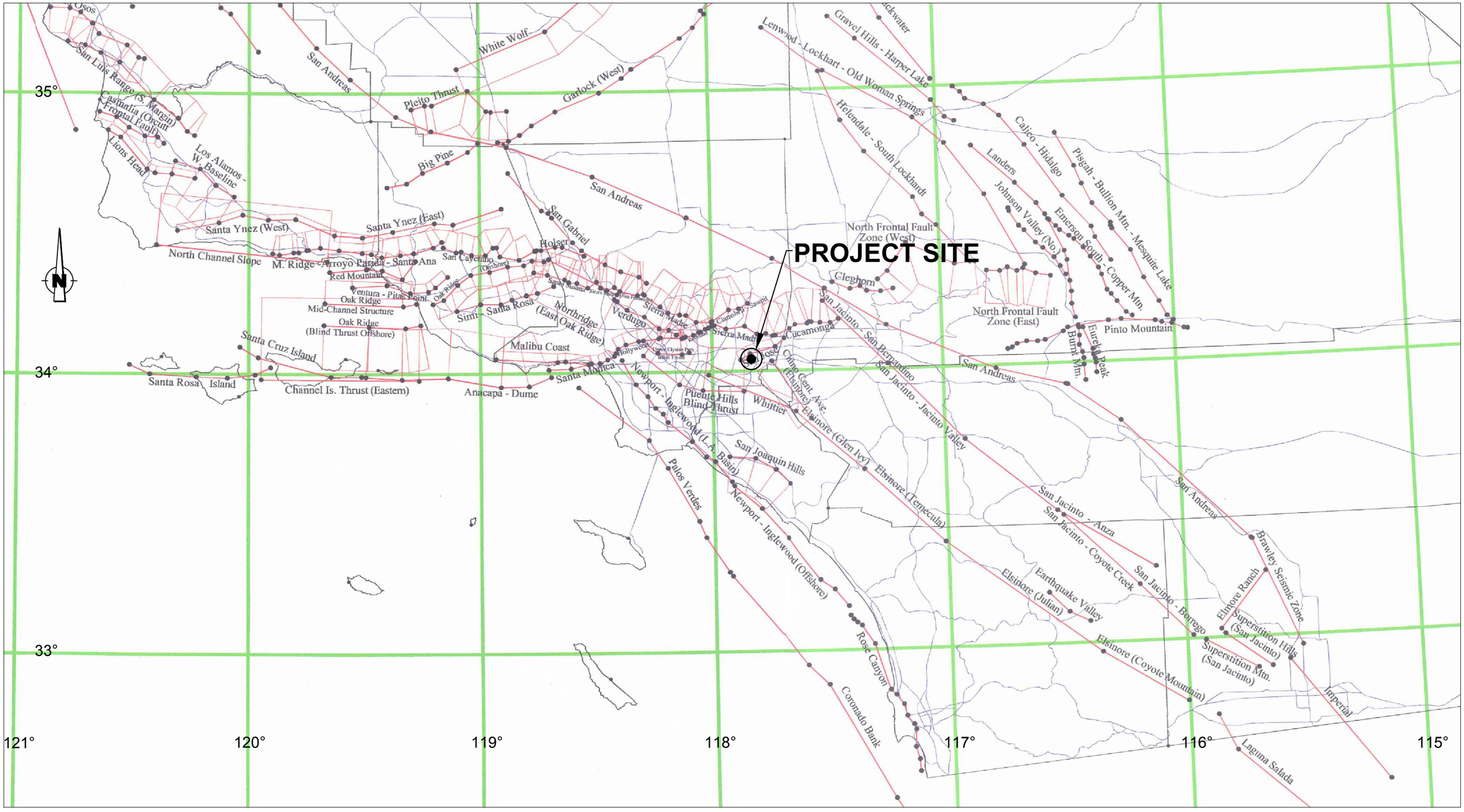
The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 738,000 years.

<u>San Jose Fault</u>

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 0.8 kilometer north of the project site.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating

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REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

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Drawing No. 8

of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault ties along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits. The Chino and Central Avenue faults converge southward into the much larger Elsinore fault system.

The July 29, 2008 Chino Hills earthquake was a magnitude 5.5 earthquake event that caused moderate ground shaking and some minor damage to the Mt. San Antonio College campus buildings. The earthquake epicenter was located approximately 15 miles southeast of the campus beneath the Chino Hills and at a depth of approximately 9.1 miles (14.6 km) below ground surface.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 1, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.8	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00
Clamshell-Sawpit	19.5	6.5	0.50

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Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

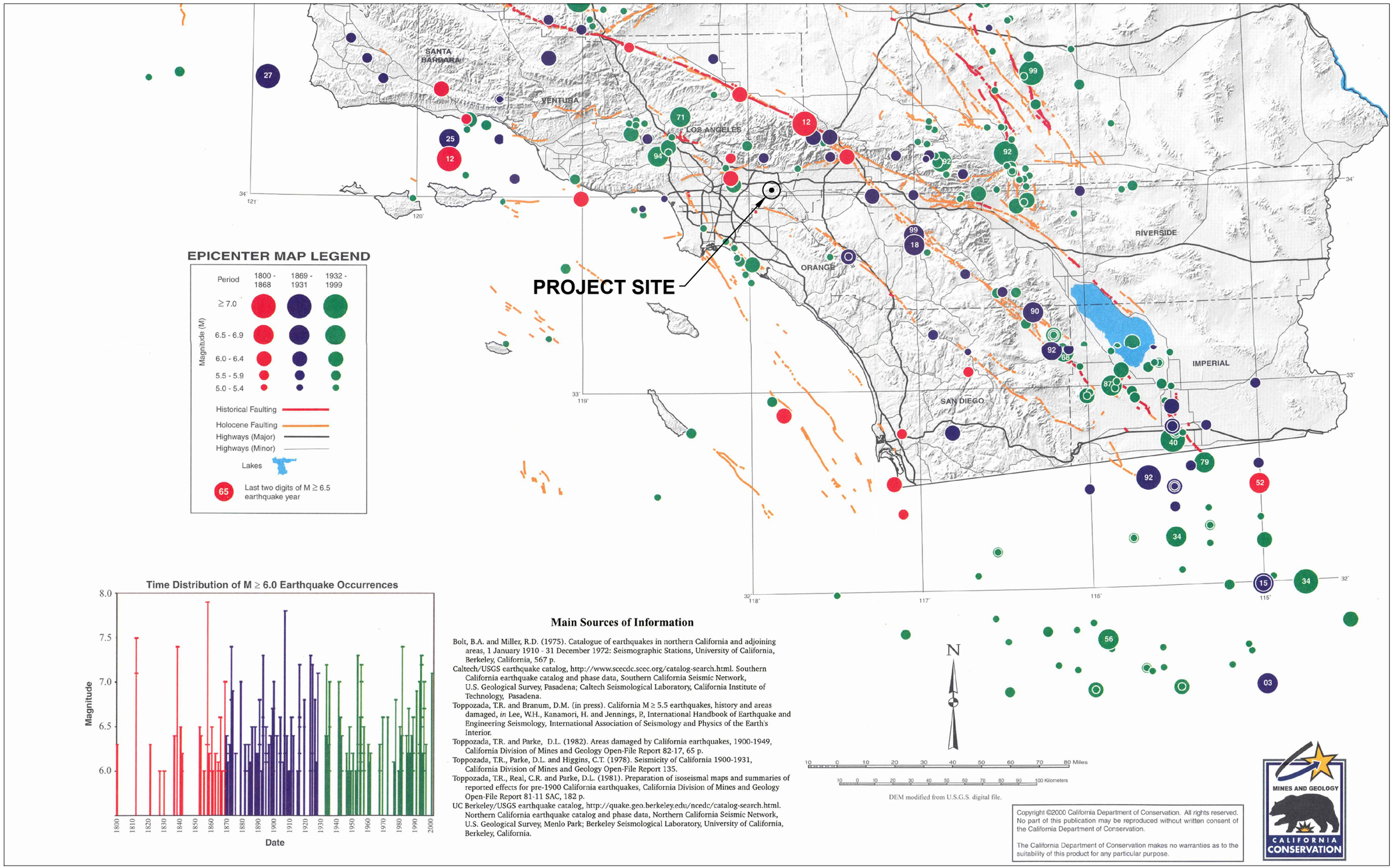
5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre and 1994 Northridge earthquakes. The epicenters for these earthquakes are shown on Drawing No. 9, *Epicenters Map of Southern California Earthquakes (1800-1999).*

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EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

DEM modified from U.S.G.S. digital file.

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MINES AND GEOLOGY
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REFERENCE: □ORTION OF E□ICENTERS AND AREAS DAMAGED BY M□□ CALIFORNIA EARTHQUAKES, 1□00-1999 CALIFORNIA DE□ARTMENT OF CONSERVATION, MA□ SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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Project No. 17-31-247-01

Drawing No. 9

5.3 Surface Fault Rupture

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. An “active fault” has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

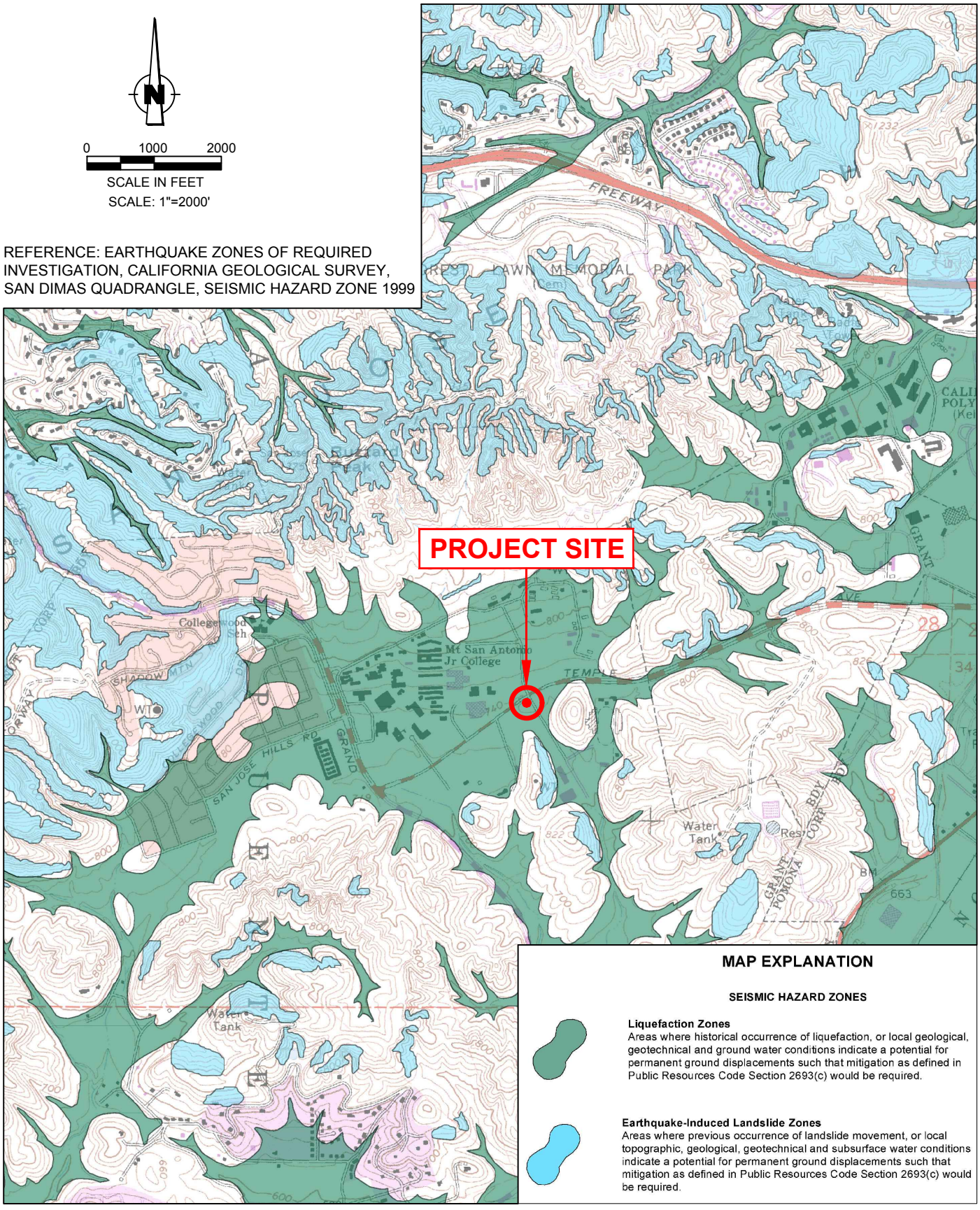
The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 10, *Seismic Hazard Zones Map*. Liquefaction analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software for the upper 50 feet below ground surface utilizing Boring BH-3 and CPT No. 8. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement ranges from 0.91 to 2.88 inches with potential differential settlement ranging from 0.46 to 1.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the

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SEISMIC HAZARD ZONES MAP

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Drawing No.
10

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project site and in the immediate vicinity of the site is gently sloping to the southwest, with no significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is also not shown with any earthquake-induced landslide areas due to the gently, southwest sloping ground condition of the site topography. In the absence of significant ground slopes, the potential for seismically induced landslides to affect the proposed site is considered to be very low.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Map Number 0637C1725F, Panel 1725 of 2350, dated September 26, 2008, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote. The potential of earthquake induced flooding of the subject site is considered to be remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

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6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.04599 degrees North Latitude, 117.84056 degrees West Longitude). The seismic parameters are presented below.

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2016 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.185 g
Mapped 1-second Spectral Response Acceleration, S_1	0.780 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.3
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.185 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.014 g
Design Spectral Response Acceleration for short period, S_{DS}	1.457 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.676 g
Seismic Design Category	D

6.2 Site-Specific Response Spectra

A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years). The controlling source was determined to be the USGS 2008 California Gridded Source, with an MCE of Mw 7.0 and a deterministic peak ground acceleration (PGA) of 1.01g.

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

The 2016 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S.*

Seismic Design Maps website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2016 CBC Mapped Acceleration Parameters

Site Class	C	Seismic Design Category	IV
S_S	2.185	C_{RS}	1.012
S_1	0.780	C_{R1}	1.023
F_a	1	**0.08 F_V/F_a**	0.104
F_v	1.3	**0.4 F_V/F_a**	0.520
S_{MS}	2.185	T_0	0.093
S_{M1}	1.014	T_S	0.464
S_{DS}	1.457	T_L	8
S_{D1}	0.676		

A Site-Specific response analysis, using faults within 200 kilometers of the sites, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 390 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

The probabilistic response spectrum results and peak ground acceleration for each attenuation relationship are presented in the following table.

Table No. 4, Probabilistic Response Spectrum Data

Attenuation Relationship	Probabilistic Mean	Boore-Atkinson (2008)	Campbell-Bozorgnia (2008)	Chiou-Youngs (2007)
Peak Ground Acceleration (g)	0.966	0.909	0.910	1.056

Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.03	1.040	0.987	0.979	1.138
0.05	1.187	1.095	1.130	1.318
0.10	1.712	1.570	1.637	1.908
0.20	2.144	1.998	2.077	2.337
0.30	2.036	1.936	1.918	2.210

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Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.40	1.894	1.854	1.785	2.027
0.50	1.764	1.737	1.702	1.851
0.75	1.406	1.418	1.357	1.442
1.00	1.149	1.136	1.119	1.193
2.00	0.570	0.601	0.569	0.535
3.00	0.369	0.398	0.371	0.330
4.00	0.270	0.286	0.283	0.234

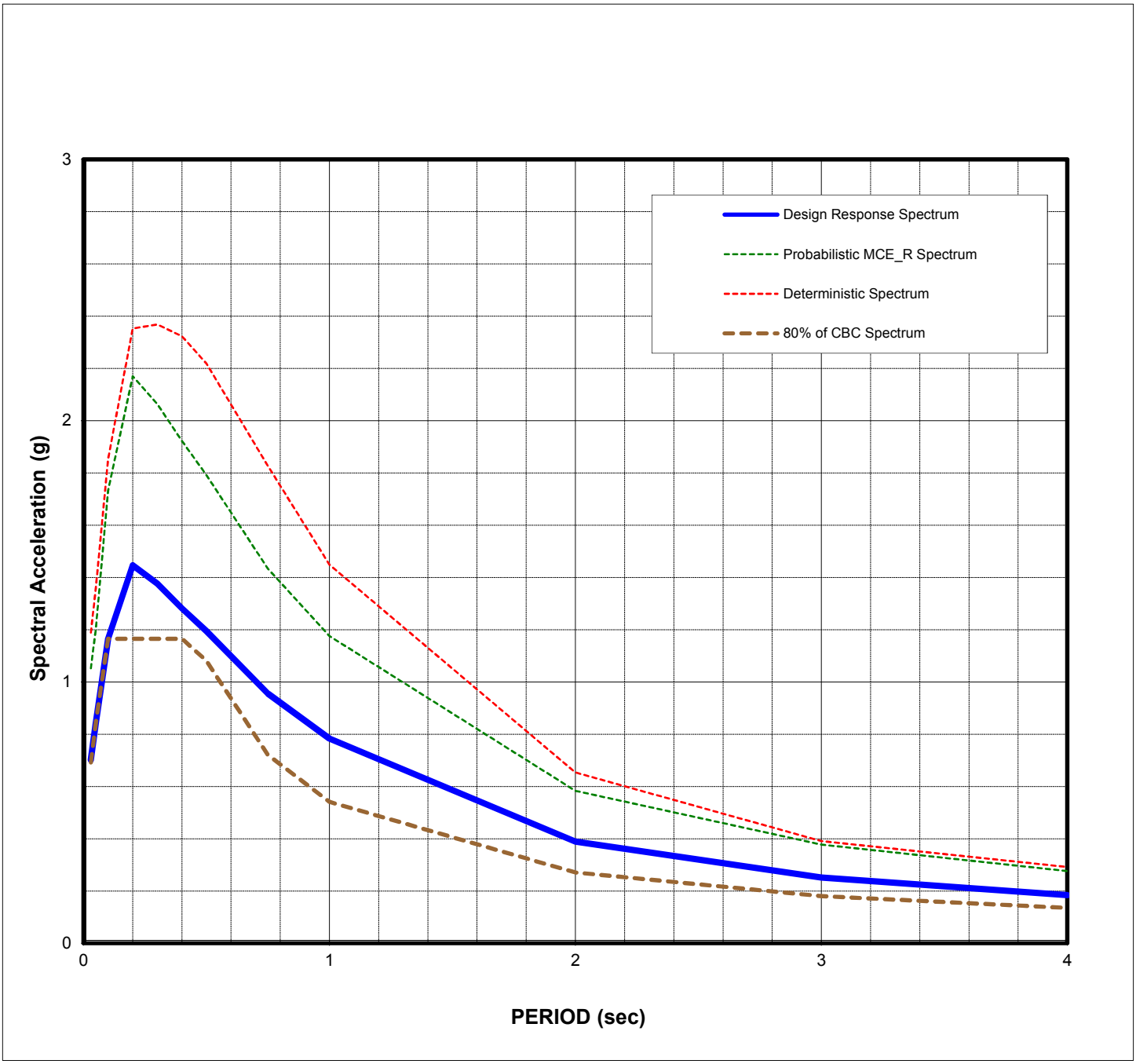
Applicable response spectra data are presented in the table below and on Drawing No. 11, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.

Table No. 5, Site Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.040	1.012	1.052	1.189	0.260	1.052	0.692	**0.70**
0.05	1.187	1.012	1.201	1.358	0.433	1.201	0.843	**0.84**
0.10	1.712	1.012	1.733	1.854	0.865	1.733	1.165	**1.17**
0.20	2.144	1.012	2.170	2.353	1.500	2.170	1.165	**1.45**
0.30	2.036	1.013	2.063	2.368	1.500	2.063	1.165	**1.38**
0.40	1.894	1.015	1.922	2.323	1.500	1.922	1.165	**1.28**
0.50	1.764	1.016	1.792	2.219	1.500	1.792	1.082	**1.19**
0.75	1.406	1.020	1.434	1.827	1.040	1.434	0.721	**0.96**
1.00	1.149	1.023	1.175	1.449	0.780	1.175	0.541	**0.78**
2.00	0.570	1.023	0.583	0.653	0.390	0.583	0.270	**0.39**
3.00	0.369	1.023	0.377	0.391	0.260	0.377	0.180	**0.25**
4.00	0.270	1.023	0.276	0.292	0.195	0.276	0.135	**0.18**

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

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Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE-SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Transit Center Parking Lot S

1100 N. Grand Avenue, Walnut, CA 91789

For : Mt. San Antonio College

Project Number:

17-31-247-01

Converse Consultants

Drawing No.

11

Table No. 6, Site-Specific Seismic Design Parameters

Parameter	Value (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-Second Period Spectral Response Acceleration, S_{MS}	2.170	1.748
Site-Specific 1-Second Period Spectral Response Acceleration, S_{M1}	1.175	0.811
Site-Specific Design Spectral Response Acceleration for Short Period, S_{DS}	1.446	1.165
Site-Specific Design Spectral Response Acceleration for 1-Second Period, S_{D1}	0.784	0.541

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7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site re-development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is located within a mapped Seismic Hazard Zone for liquefaction. Liquefaction analyses were performed for the upper 50 feet below ground surface utilizing BH-3 and CPT-8. Based on the results of liquefaction analyses indicate the project site is susceptible to liquefaction. The estimated potential liquefaction induced settlement is on the order of 2.88 inches with potential differential settlement of 1.44 inches.

- Local zones of groundwater seepage and groundwater were encountered during subsurface exploration at depths ranging from approximately 23 feet bgs in boring BH-3 to approximately 36.8 feet bgs in BH-7. Groundwater and groundwater seepage should be anticipated during deep excavations.

- Shallow spread and continuous footings are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans, specifications, and are followed during site construction.

- Variable thickness undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for any slab or foundation support.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- Over-excavation and re-compaction of the undocumented fill soils and upper alluvium is recommended for site grading to provide a compacted fill blanket beneath the building foundations and floor slab. The over-excavation and re-compaction is recommended to extend from approximately 7-feet to 10-feet below ground surface and 10-feet beyond the edge of the parking structure foundations. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot over-

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excavation to reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock areas.

- Different earth materials should be anticipated at the bottom of excavations. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of existing alluvium and bedrock below the bottom of foundations and slab-on-grades are recommended. We recommend the spread foundations and slab-on-grades be supported on a minimum 5-foot thick layer of compacted fill that is be benched into native earth materials.

- The undocumented fills and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slab to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays.

- On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general, the pH value, chloride content, and saturated resistivity of the site soils are in the non-corrosive range. However, the saturated resistivity of samples taken at BH-4 indicates a “Corrosive” potential to ferrous metals.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Localized areas of harder, cemented and resistant bedrock units and layers may be encountered in the excavation and should be anticipated. Earthwork should be performed with suitable equipment for gravelly materials and for hard, cemented, bedrock materials.

- The planned structure might have different structure heights and foundation elevations. Differential vertical and lateral deflections between structures should be anticipated. We recommend cold joints on slabs and walls at the transition between structures or where needed determined by the structural engineer should be constructed.

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8.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

8.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading is required to prepare the site for support of the proposed parking structure. The subject site has slight slope to the southwest. It is anticipated that the site preparation will include over-excavation and re-compaction of the upper earth materials. To reduce potential differential settlements, variations in the soil types, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform. A geofabric reinforcement layer is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce differential between the underlying alluvium and shallow sedimentary bedrock areas.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation.

Site preparation will require removal of existing pavements, structures, footings, slabs, sidewalks, curbs, trees and other improvements with their foundations and existing underground structures, vaults and utility lines. Buried electrical and communication main lines cross the parking lot to provide service to the south end of the campus and will have to be properly relocated. Top soils containing organic rich materials are not acceptable for reuse as compacted fill soils beneath the parking structure footings and floor slab.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing. The upper undocumented fill soils and natural granular soils consisting of silty sands should be segregated, stockpiled and saved during excavation for later reuse beneath the footings and floor slabs to prevent mixing with the underlying fine-grained, potentially expansive, silts and clays. Rocks larger than three (3) inches in the largest dimension should not be placed as fill. Rocks larger than one (1) inch should not be placed within the upper 12 inches of subgrade soils.

On-site clay and silt soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observations made during grading.

8.2 Over-Excavation/Removal

Over-excavation and re-compaction of the undocumented fill soils, upper alluvium and sedimentary bedrock is recommended for site grading to provide a minimum 5-foot thick

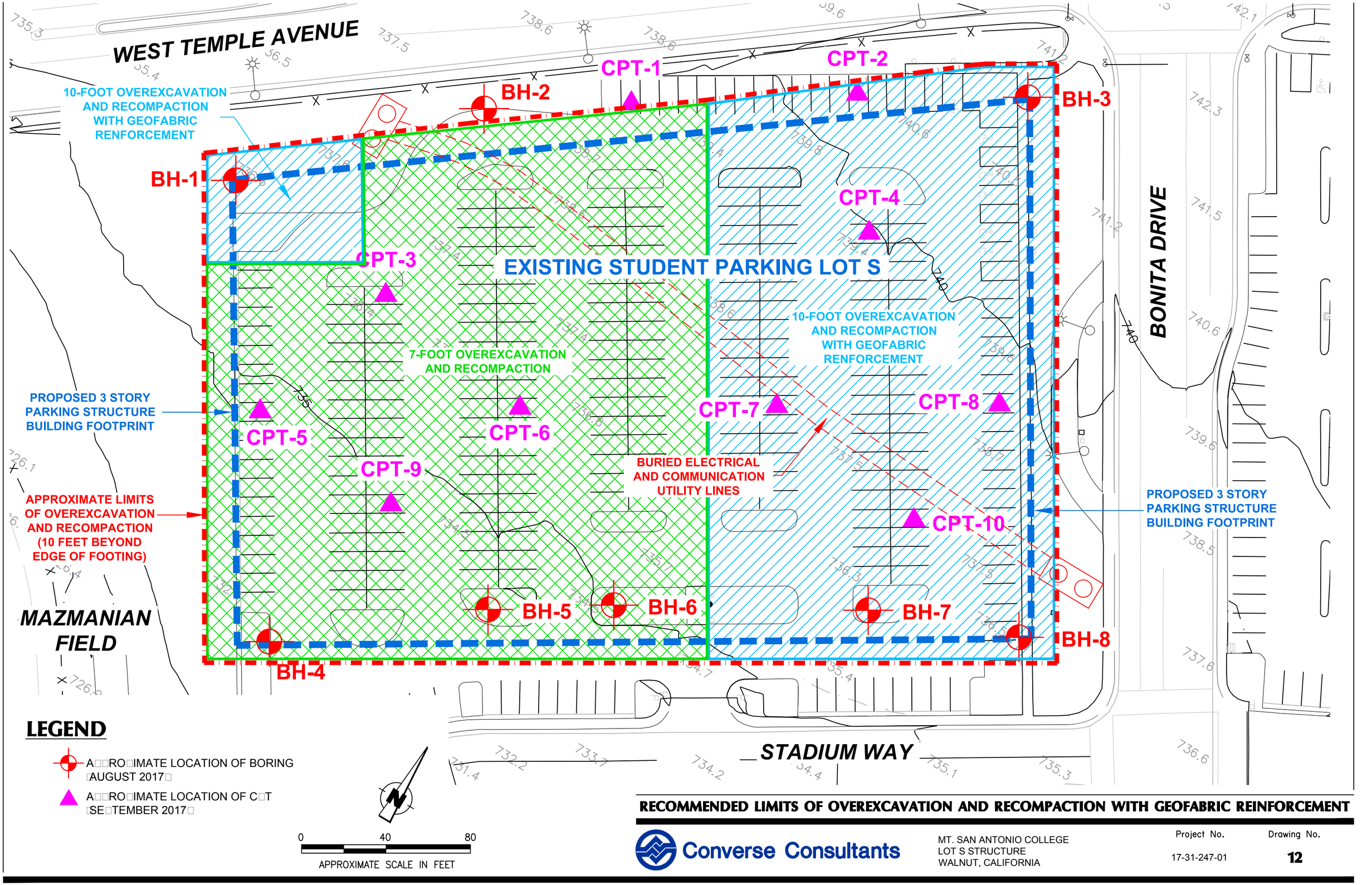
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layer of compacted fill beneath the bottom of the building foundations and floor slabs. Different earth materials will be encountered at the bottom of the excavations. In order to provide a relative uniform bearing material below parking structure foundations and floor slabs, and reduce differential settlements between the underlying alluvium and shallow sedimentary bedrock earth materials, over-excavation and re-compaction below the foundations and slab-on-grades is recommended. The over-excavation and re-compaction should extend approximately 7-feet to 10-feet below ground surface and 10-feet beyond the edge of the parking structure foundations. Drawing No.12, *Recommended Limits of Over-excavation and Re-compaction with Geofabric Reinforcement*, shows the approximate limits and depths of over-excavation and re-compaction for the proposed parking structure. A geofabric reinforcement layer (Mirafi HP 570 or equivalent) is recommended at the bottom of the deeper 10-foot depths of over-excavation to reduce potential differential settlements between the underlying alluvium and shallow bedrock areas.

The bottom and edges of the excavations shall be cleaned, squared-off and leveled. If loose, soft, disturbed or otherwise unsuitable soil materials are encountered at the bottom of excavations, deeper removals will be required until firm and unyielding native soils are encountered. The final bottom surfaces and limits of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing compacted fill. The bottoms should be proof rolled with a loaded, heavy, rubber tired piece of grading equipment to identify any remaining loose or soft bottom areas. The bottom of excavation shall be observed, evaluated and approved during grading to determine that suitable firm and unyielding soils have been encountered. The exposed bottom shall then be scarified 6-8 inches in depth, mixed, moisture conditioned or dried back as necessary, and compacted to 90% relative maximum dry density compaction prior to smoothing and leveling for placement of the bottom geosynthetic reinforcement layer.

A geofabric reinforcement layer consisting of Mirafi HP 570 or equivalent, shall be placed across the prepared bottom of the deeper 10-foot depths of over-excavation as shown on Drawing No.12, *Recommended Limits of Over-Excavation and Re-compaction with Geofabric Reinforcement*. The bottom layer of Mirafi HP 570 geotextile reinforcement, or equivalent, shall be laid across the prepared soil subgrade in accordance with the manufacture's recommendations and project specifications. A minimum 1-foot side-to-side overlap should be provided for each fabric layer in accordance with project and manufacturer's specifications. An approximately 2-inch thick layer of moisture conditioned fill should be placed between the overlapping geotextile fabric layers to increase friction resistance between the overlapping sections of geotextile fabric. The installation should be observed and documented by the geotechnical engineer or his designated representative prior to backfill grading. Once placement of the geotextile reinforcement layers have been observed and documented by the geotechnical engineer or his designated representative, moisture conditioned backfill soils can be carefully placed, spread smoothed and level over the geotextile reinforcement layer without disturbing the geotextile layers or their positions. The remaining fill soils should then be placed, mixed, moisture conditioned and compacted to 90% relative compaction in 6-inch to 8-inch lifts

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0 40 80

APPROXIMATE SCALE IN FEET

RECOMMENDED LIMITS OF OVEREXCAVATION AND RECOMPACTION WITH GEOFABRIC REINFORCEMENT

Converse Consultants

MT. SAN ANTONIO COLLEGE
LOT S STRUCTURE
WALNUT, CALIFORNIA

Project No.	Drawing No.
17-31-247-01	12

and compacted in accordance with project specifications to bring the fill soils up to plan grades.

We recommend a minimum 5 feet of onsite soils and bedrock below the bottom of foundations and floor slabs should be removed, moisture-conditioned if necessary and replaced as compacted fill for parking structure. All undocumented fill should be removed and replaced with compacted fill.

The excavations to remove undocumented fills, alluvium and bedrock to proposed subgrade levels should be extended to ten (10) feet laterally beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. Thickness of compacted fill underneath the buildings should not vary significantly. After the required removals have been made, the exposed native earth materials shall be excavated to provide a minimum 5-foot thick zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork.

For retaining walls, we recommend over-excavation be at least 5 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Mirafi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading by the project geotechnical engineer or his designated representative. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

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Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

8.3 Structural Fill

The approved bottom of the excavations should be scarified to a depth of at least six (6) inches. The scarified soils should be moisture conditioned and mixed to within three (3) percent of optimum moisture content for granular soils and to approximately three (3) percent above the optimum content to near-optimum moisture content for the fine-grained soils. Scarified soil shall be compacted to a minimum 90 percent of the laboratory maximum dry density as determined by the ASTM Standard D1557 test method to produce a firm and unyielding surface.

All structural fill should be placed on competent, scarified and compacted native materials as determined by a geotechnical engineer or his designated representative and in accordance with the specifications presented in this section.

Excavated site soils, free of deleterious materials and rock fragments larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any import fill should be tested and approved by Converse. The import fill should have an expansion potential less than 20.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within three (3) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory dry density in accordance with the ASTM Standard D1557 test method. The amount of processing required for proper moisture conditioning and mixing at the site will depend on the seasonal variations in the in-situ moisture conditions, the depth of cut, the equipment, weather and the processing method.

Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be keyed and benched into competent materials. The height and width of the benches shall be at least two (2) feet.

8.4 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The onsite materials contain about 5 to 30 percent gravels up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. The sandstone pebble conglomerate bedrock materials are cemented and moderately hard to hard. The excavation and rippability of these hard bedrock materials will be more difficult and should

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be anticipated during grading. Many of the soil borings drilled for the project site encountered difficult drilling and/or refusal in the sandstone and conglomerate bedrock materials along the south half of the project site. Standard Penetration Tests (SPT) blow counts in the sandstone and conglomerate bedrock materials were high and often times met refusal to sampler penetrations. Boring Nos. BH-4, BH-5, BH-6, BH-7 and BH-8 encountered refusal to sampler penetration and drilling penetration in hard sedimentary bedrock materials at shallow depths along the southern side of the project site. Localized areas of very hard bedrock requiring single shank ripping or hydraulic breakers should be anticipated. Directional ripping and downsizing breakers may be required in cemented sandstone and conglomerate beds. Earthwork should be performed with suitable equipment for gravelly materials and for hard and cemented bedrock materials.

8.5 Expansive Soil

Based on our laboratory testing results, the on-site fine-grained silt and clay earth materials are considered to have a low to moderate expansion potential. Medium to high expansion potential in fine-grained silt and clay materials may be anticipated. The on-site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading as slabs, foundations and pavement placed directly on expansive subgrade soil will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations, floor slabs or for retaining wall backfill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Removing about two (2) feet of the underlying soils throughout the site, and replacing with imported non-expansive sandy soil materials.
- Reinforce footings and place thicker concrete slabs with moisture barriers.
- Lime treat the upper two (2) feet of the subgrade soils.

8.6 Shrinkage and Subsidence

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

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- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.

- Subsidence would depend on the construction methods including type of equipment utilized. For estimation purposes, ground subsidence may be taken as 0.20 feet.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

8.7 Subgrade Preparation

Final subgrade soils for structures and streets should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 0.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

The various design recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. The proposed buildings may be supported by shallow continuous and isolated square footings.

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9.0 DESIGN RECOMMENDATIONS

9.1 Shallow Foundations

9.1.1 Vertical Capacity

Continuous and square footings should be founded at least 24 inches below lowest adjacent final grade on the recommended earth materials. A minimum footing width of 24 inches is recommended for continuous and square footings. The net allowable dead plus live load bearing value for isolated square and continuous footings is 2,500 psf. The net allowable bearing pressure can be increased by 400 psf for each additional foot of excavation depth and width up to a maximum value of 4,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

9.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 250 psf per foot of depth up to a maximum of 2,500 psf may be used for footings poured against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

9.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

9.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

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9.2 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

9.3 Lateral Earth Pressure

The proposed retaining walls are anticipated to be up to 25 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Wall Type	Equivalent Fluid Pressure (pcf)
	Level Backfill
Cantilever Wall (Active pressure)	30 (Triangular Distribution)
Restrained Wall (At-rest pressure)	50 (Triangular Distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by free draining, uniformly graded, ¾ -inch washed, permeable aggregate material, and wrapped in filter fabric such as Mirafi 140N or equivalent, and should extend to about 2 feet below the finished grade. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, Schedule 40 PVC or rigid ABS (SDR-35), or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to surface drain or sump pump.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Cantilever retaining walls greater than 12 feet, as measured from the surface, should be designed to resist additional earth pressure caused by seismic ground shaking. A dynamic earth pressure of 18H (psf), based on an inverted triangular distribution, can be used for design of wall.

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9.4 Slabs-on-Grade

Slabs-on-grade should have a minimum thickness of five inches for support of nominal ground-floor live loads without hydrostatic uplift pressures. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer.

Slabs should be designed and constructed as promulgated by the American Concrete Institute (ACI) and the Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted. Care should be taken during concrete placement to avoid slab curling.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a 10-mil-thick moisture barrier between the slab and compacted subgrade that meets the performance criteria of ASTM E 1745 Class A material. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

9.5 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test one (1) selected soil sample taken in the general area of the proposed structures. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized on the following table:

Table No. 8, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-4	10	8.17	115	0.006	2,100

Based on our review of soil corrosivity test results (see Appendix B), the soluble sulfate concentration, pH, and chloride content are not in the corrosive range to concrete in accordance with the Caltrans Corrosive Guidelines (2012). However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated. Type I or II Portland Cement may be used for the construction of the foundations and slabs.

The test results presented herein are considered preliminary. Additional testing and evaluation of the as-graded soils is recommended. A corrosion engineer may be

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consulted for appropriate mitigation procedures and construction design, if needed. Conventional corrosion mitigation measures may include the following:

- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed. Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

9.6 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 9, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
46	4	3.0	4.5	5.0
	5	4.0	4.5	5.0
	6	5.0	4.5	6.5
	7	6.0	4.5	8.0
	8	7.0	4.5	8.0
	9	8.0	4.5	9.5

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be

placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.7 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 10, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
46	5.0	6.50
	6.0	6.50
	7.0	7.00
	8.0	7.00
	9.0	7.25

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard. Recommended maximum and minimum values of slump for pavement concrete are three (3) inches and one (1) inch, respectively.

Transverse contraction joints should not be spaced more than 15 feet and should be cut to a depth of ¼ the thickness of the slab. Longitudinal joints should not be spaced more than 12 feet apart. A longitudinal joint is not necessary in the pavement adjacent to the curb and gutter section.

All outside edges should conform to Section 201 of the Standard Specifications for Public Works Construction (SSPWC, latest edition), and should be constructed in accordance with Section 302-6 of the SSPWC. Pavement subgrade should be prepared in accordance with Section 9.7 of this report.

The PCCP materials should conform to Section 201 of the Specifications for Public Works Construction and should be constructed in accordance with Section 302-6 of the SSPWC.

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Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

9.8 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building per 2016 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils. Gutters and downspouts should be installed on the roof, and runoff should be directed to the storm drain through non-erosive devices. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

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10.0 CONSTRUCTION RECOMMENDATIONS

10.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 11.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required. For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

10.2 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in Table No. 11, *Slope Ratios for Temporary Excavation*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 11, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 5	vertical
5 – 10	1:1
10 +	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

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If the excavation occurs near existing structures, special construction considerations would be required during excavation to protect these existing structures during construction. The proposed excavation should not cause loss of bearing and/or lateral supports of the existing structures.

10.3 Shoring Design

Temporary shoring will be required for the recommended excavation due to space limitations and property line boundaries and because of nearby existing structures or facilities and traffic loading. Temporary shoring may consist of the use of a trench box (where feasible), or conventional soldier piles and lagging. Shoring should ultimately be designed by a qualified structural engineer considering the recommendations below in their final design and others which are applicable.

Drilled excavations for soldier piles, which are recommended to create the proposed 40-foot-high excavation, may require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation. Casing may be needed if granular earth material is located behind the existing retaining wall.

10.3.1 Cantilevered Shoring

Cantilevered shoring systems may include soldier piles with lagging to maintain temporary support of vertical wall excavations. Shoring design must consider the support of adjacent underground utilities and/or structures, and should consider the effects of shoring deflection on supported improvements. Due to sandy nature of on-site soils, some caving during the drilling of soldier-pile borings should be anticipated. A soldier pile system will require continuous lagging to control caving and sloughing in the excavation between soldier piles.

Temporary cantilevered shoring should be designed to resist a lateral earth pressure equivalent to a fluid density of 32 pounds per cubic foot (pcf) for non-surcharged condition. This pressure is valid only for shoring retaining level ground. This equivalent fluid pressure is valid only for shoring supporting level ground.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. Surcharge pressures from the existing structures should be added to the above earth pressures for surcharges within a horizontal distance less than or equal to the wall height. Surcharge coefficients of 50% of any uniform vertical surcharge should be added as a horizontal earth pressure for shoring design. All shoring should be designed and installed in accordance with state and federal safety regulations.

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The minimum embedment depth for piles is ten (10) feet from the lowest adjacent grade into firm alluvium, below the bottom of the excavation. Vertical skin friction against soldier piles for may be taken as 350 psf. Fixity may be assumed at two (2) feet below the excavation into firm native alluvium or bedrock. For the design of soldier piles spaced at least 3.0 diameters on-center, the passive resistance of the soils adjacent to the piles may be assumed to be 300 psf per foot of embedment depth. Soldier pile members placed in drilled holes should be properly backfilled with a sand/cement slurry or lean concrete in order to develop the required passive resistance.

Caving soils should be anticipated between the piles. To limit local sloughing, caving soils can be supported by continuous lagging or guniting. The lagging between the soldier piles may consist of pressure-treated wood members or solid steel sheets. In our opinion, steel sheeting is expected to be more expedient than wood lagging to install. Although soldier piles and any bracing used should be designed for the full-anticipated earth pressures and surcharge pressures, the pressures on the lagging are less because of the effect of arching between the soldier piles. Accordingly, the lagging between the piles may be designed for a nominal pressure of up to a maximum of 350 psf. All lumber to be left in the ground should be treated in accordance with Section 204-2 of the "Standard Specifications for Public Works Construction" (Latest Edition).

10.3.2 Tie-Back Shoring

A tie-back soldier-pile shoring system may be used to maintain temporary support of deep vertical walled excavations. Braced or tied-back shoring, retaining a level ground surface, should be designed for a uniform pressure of 20H psf, where H is the height of the retained cut in feet.

Surcharge pressures should be added to this earth pressure for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 50 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for braced shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation.

Tie-Backs

For design of tie-back shoring, it should be assumed that the potential wedge of failure is determined by a plane at 30 degrees from the vertical, through the bottom of the excavation. Tie-back anchors may be installed at angles of 15 to 40 degrees below a horizontal plane. Tie-back installation and testing guidelines and procedures are presented in Appendix E, *"Guide Specifications for Installation and Acceptance of Tie-back Anchors".* Soil friction values, for estimating the allowable capacity of drilled friction anchors, may be computed using the following equation:

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$q = 40H$; $q \leq$ *500 pounds-per-square-foot (psf)*

where:
H = average depth of anchor below ground surface, shown on Figure No. 12, *Schematic Tie-Back Design*
q = anchor surface area resistance, in psf (excluding tip),

Only the frictional resistance developed beyond the assumed failure plane should be included in the tie-back design for resisting lateral loads. After shoring/tie-back is no longer needed to support the excavation, stress should be carefully released and shoring system including tieback may be able to be left in place.

All shoring and tie-back should be designed by experienced California licensed Civil Engineer and installed by experienced contractors. Shoring/tie-back design should also be reviewed by a geotechnical consultant to verify the soil parameters used in the design are in conformance with geotechnical report.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by a competent person employed by the contractor. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

It is recommended that Converse review plans and specifications for proposed shoring and that a Converse representative observes the installation of shoring. A licensed surveyor should be retained to establish monuments on shoring and the surrounding ground prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) Engineer and Converse for review and evaluation. Adjacent building elements should be photo-documented prior to construction.

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11.0 PLAN REVIEW AND CONSTRUCTION INSPECTION SERVICES

This report has been prepared to aid in evaluation of the site, to prepare site-grading recommendations, and to assist the civil/structural engineer in the design of the proposed developments. It is recommended that this office be provided the opportunity to provide final site grading and design recommendations once the final grading plan is available.

All site grading and earthwork should be completed under the observation and testing of a qualified geotechnical consultant to verify compliance with the recommendations set forth in this report. All ground surfaces should be examined and approved by the project geotechnical consultant prior to placing any fill and/or structure. All footing excavations should be observed prior to placement of steel and concrete to see that footings are founded on satisfactory compacted soils and that excavations are free of loose, disturbed or deleterious materials.

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12.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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Appendix A

Field Exploration
and
Cone Penetration Test Data

APPENDIX A: FIELD EXPLORATION

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings and performing Cone Penetration Test (CPT) soundings. During the site reconnaissance on August 14, 2017, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Eight (8) borings (BH-1 through BH-8) were drilled from August 16 to August 24, 2017, extending between depths of approximately 20.5 to 51.5 feet below the existing ground surface (bgs). The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger for soil sampling. Soils and bedrock were logged by a Converse engineer and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. A-2a through A-18b, *Log of Borings*.

The cone penetration testing (CPT) conducted for this project consisted of pushing an instrumented Vertek cone-tipped probe into the ground while simultaneously recording

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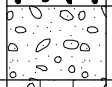
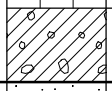
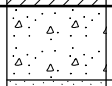
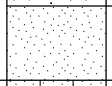
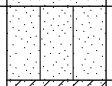
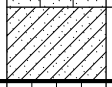
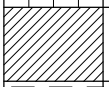
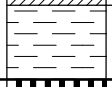
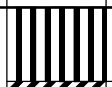
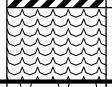
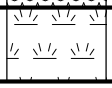
the resistance to penetration at the cone tip and along the friction sleeve. The cone penetration testing described in this report was conducted in general accordance with the current ASTM specifications (ASTM D5778-95 and D3441-94) using an electronic cone penetrometer.

Ten (10) Cone Penetration Test soundings (CPT-1 through CPT-10) were advanced to depths of 8 to 42 feet below ground surface within the project site on September 6, 7, and 8th, 2017 by Kehoe Testing and Engineering using a 30-ton (4 axle) CPT rig. The test holes were stopped at plan depths or when the cone tip encountered refusal to penetration. CPT Nos. CPT-1, CPT-2, CPT-3, CPT-5, CPT-6, CPT-7, CPT-9 and CPT-10 encountered very dense / stiff soil and hard sedimentary bedrock conditions and were stopped short of their planned depths. The test holes were then backfilled with bentonite crumbles, periodically hydrated with clean water and tamped. The top portion of the test hole was then patched with asphalt patch and tamped to match existing pavement surfaces.

The Cone Penetration Test (CPT) test logs are presented at the end of Appendix A.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GRAB SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-1**

Log of Boring No. BH-1

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 28

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** gravel, brown.						ma
		ALLUVIUM (Qal):						
5		**SANDY SILT (ML):** with gravel, brown.	■		5/6/7	9	121	
		CLAYEY SAND (SC): fine to medium-grained, fine trace gravels, dark brown.	■		4/6/5	9	107	
10								ds
		BEDROCK-PUENTE FORMATION:						
15		**SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, some siltstone and claystone, weathered to intact, medium hard to hard, cemented, yellowish white	■		21/13/50(4")	10	114	
20			⊠		26/15/18			
25		-no recovery	■		50(4")			sampler refusal
		-groundwater at 28 feet.						
30			⊠		50(5")			spt refusal
		End of boring at 33 feet. Groundwater encountered at 28 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-17-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-2**

Log of Boring No. BH-2

Dates Drilled: 8/24/2017 Logged by: DA Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 738 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, some gravel, brown.						c
5			■		6/11/17	5	110	
		ALLUVIUM (Qal): **GRAVELLY SAND (SP):** medium to coarse-grained, gravels, possible cobbles, black.						
10			■		15/50(3")			
15		-increasing amount of gravel, gravel lenses, gravels hard, subrounded	■		50(3")			
20			■		50(4")			
25		**SILTY SAND (SM):** fine-grained, reddish brown.	■		46/38/50(1")			
		End of boring at 26.1 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-24-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-3**

Log of Boring No. BH-3

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 23.4

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** clay silt with sand and gravel, brown.						max.wa
5		**ALLUVIUM (Qal):** **SILT (ML):** with gravel, dark brown.	■		4/6/5	11	114	
10		**SILTY SAND (SM):** fine trace gravels, moist, brown.	■		3/4/3	9	118	
15			■		3/5/7			wa
20			⊠		9/16/9			
		-groundwater						
25			■		8/13/16	7	115	wa
		SILTY CLAY (CL): wet, with gravels, dark brown.						
30			⊠		6/9/12			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4a**

Log of Boring No. BH-3

Dates Drilled: 8/17/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 23.4

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SANDY CLAY (CL): with gravels, brown.	■		11/20/30			wa
40			⊠		50(5")			spt refusal
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, some siltstone and claystone, weathered to intact, medium hard to hard, cemented						
45			■		50(4")	9	107	sampler refusal
50			■		50(6")			sampler refusal
		End of boring at 51.5 feet. Groundwater encountered at 23.4 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-17-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-4b**

Log of Boring No. BH-4

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, with clay and gravels, brown.						
5		**ALLUVIUM (Qal):** **SILTY CLAY (CL):** with gravel, dark brown.	■		7/6/6	9	118	
10			■		30/50(4")			
15		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, weathered to intact, medium hard to hard, cemented, yellowish white	■		33/50(4")			
20			⊠		22/35/50			
25		bedrock, yellowish white, hard, cemented -hard drilling; refusal	■		50/60	6	134	
		End of boring at 28 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-5**

Log of Boring No. BH-5

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** with sand and clay, gravels and rocks, light brown.						r
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** brown.			20/50(6")	17	110	ds
10		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium to hard to hard, cemented, yellowish brown			50(4")	4	112	
15					20/50(6")			
20		-hard drilling: refusal			50(6")			spt refusal
		End of boring at 20.5 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-6**

Log of Boring No. BH-6

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 735 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** gravels, light brown.						c,wa
5		**ALLUVIUM (Qal):** **SILT (ML):** small fine trace gravels, dark brown.			10/24/30	7	122	
10		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium hard to hard, cemented, yellowish white			27/50(6")			
15					50(3")			se sampler refusal
20					50(6")			spt refusal
		-hard drilling: refusal			50(5")			sampler refusal
		End of boring at 24 feet due to drilling refusal. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-7**

Log of Boring No. BH-7

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 736 Depth to Water (ft): 36.8

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** fine gravel, brown.		■				ma
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** with gravel, brown.	■		9/10/13			
10			■		8/12/18			
15		**SILT (ML):** fine trace gravel, brown.	■		5/6/17	12	118	
20		**CLAY (CL):** with fine trace gravel, dark brown.	⊠		4/5/7	12	110	
25			■		50(6")	6	127	
30		**BEDROCK-PUENTE FORMATION:** **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained with gravel and cobble size rocks, rocks hard, subrounded, weathered to intact, medium hard to hard, cemented, yellowish light brown	⊠		53/39/50			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-8a**

Log of Boring No. BH-7

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 736 Depth to Water (ft): 36.8

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** medium hard to hard -hard drilling: refusal	■		50(5")	5	134	
		End of boring at 39 feet due to drilling refusal. Groundwater encountered at 36.8 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-8b**

Log of Boring No. BH-8

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 30

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SILT (ML):**.						
5		**ALLUVIUM (Qal):** **CLAYEY SILT (ML):** dark brown.	■		3/6/9	10	107	ds
10		**SANDY CLAY (CL):** coarse sand and gravel, brown to dark brown.	■		6/7/6	11	119	
15		**SILT (ML):** with gravel, brown.	■		5/6/8	13	117	
20		**SILTY CLAY (CL):** with gravel, brown.	⊠		3/2/3			
25		**SANDY SILT (ML):** brown.	■		5/5/5	15	112	
		groundwater seepage						
30		**SILT (ML):** brown.	⊠		4/8/12			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-9a**

Log of Boring No. BH-8

Dates Drilled: 8/16/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 737 Depth to Water (ft): 30

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK-PUENTE FORMATION: **SANDSTONE AND PEBBLE CONGLOMERATE** sand, fine to coarse-grained, with gravels and cobble size rocks, rocks hard, subrounded, some siltstone and claystone, weathered to intact, medium to hard to hard, cemented, yellowish brown	■		10/21/50			
40		-hard drilling: refusal	☒		30/50(5")			spt refusal
		End of boring at 43 feet due to drilling refusal. Groundwater encountered at 30 feet. Borehole backfilled with soil cuttings, patched and tamped on 8-16-17.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No. **17-31-247-01**

Figure No. **A-9b**

Cone Penetration Test Data

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Mount San Antonio College (Lot S)
1100 N. Grand Avenue
Walnut, CA
September 6-8, 2017

Prepared for:

Mr. Ram Ariram
Converse Consultants
717 S. Myrtle Avenue
Monrovia, CA 91016
Office (626) 930-1200 / Fax (626) 930-1212

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

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1. **INTRODUCTION**
2. **SUMMARY OF FIELD WORK**
3. **FIELD EQUIPMENT & PROCEDURES**
4. **CONE PENETRATION TEST DATA & INTERPRETATION**

APPENDIX

- CPT Plots
- CPT Classification/Soil Behavior Chart
- Interpretation Output (CPeT-IT)
- CPeT-IT Calculation Formulas

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Mount San Antonio College (Lot S) project located at 1100 N. Grand Avenue in Walnut, California. The work was performed by Kehoe Testing & Engineering (KTE) on September 6-8, 2017. The scope of work was performed as directed by Converse Consultants personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at ten locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	14	Refusal, hole open to 14.0 ft (dry)
CPT-2	23	Refusal, hole open to 23.0 ft (dry)
CPT-3	11	Refusal, hole open to 10.6 ft (dry)
CPT-4	27	Refusal, hole open to 27.0 ft (dry)
CPT-5	16	Refusal, hole open to 15.9 ft (dry)
CPT-6	8	Refusal, hole open to 9.0 ft (dry)
CPT-7	24	Refusal, hole open to 24.0 ft (dry)
CPT-8	42	Refusal, groundwater @ 23.5 ft
CPT-9	11	Refusal, hole open to 10.0 ft (dry)
CPT-10	42	Refusal, groundwater @ 25.0 ft

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed

The above parameters were recorded and viewed in real time using a laptop computer. Data is stored at the KTE office for up to 2 years for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. These plots were generated using the CPeT-IT program. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the attached CPT Classification Chart (Robertson) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used along with cone resistance to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Tables of basic CPT output from the interpretation program CPeT-IT are provided for CPT data averaged over one foot intervals in the Appendix. We recommend a geotechnical engineer review the assumed input parameters and the calculated output from the CPeT-IT program. A summary of the equations used for the tabulated parameters is provided in the Appendix.

It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgement and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Richard W. Koester, Jr.
General Manager

09/13/17-kk-8632-2

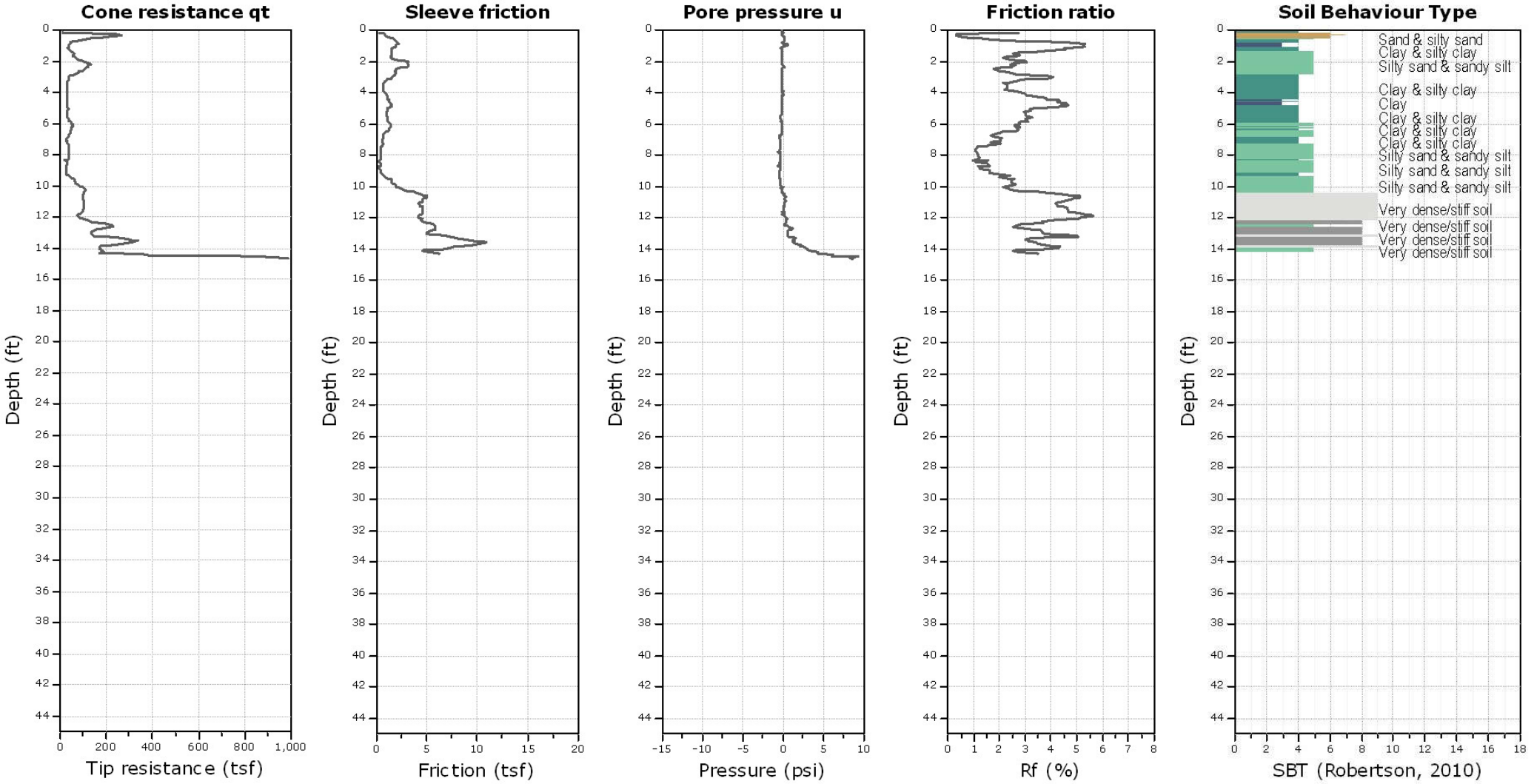
APPENDIX

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT-1

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 14.63 ft, Date: 9/6/2017
Cone Type: Vertek

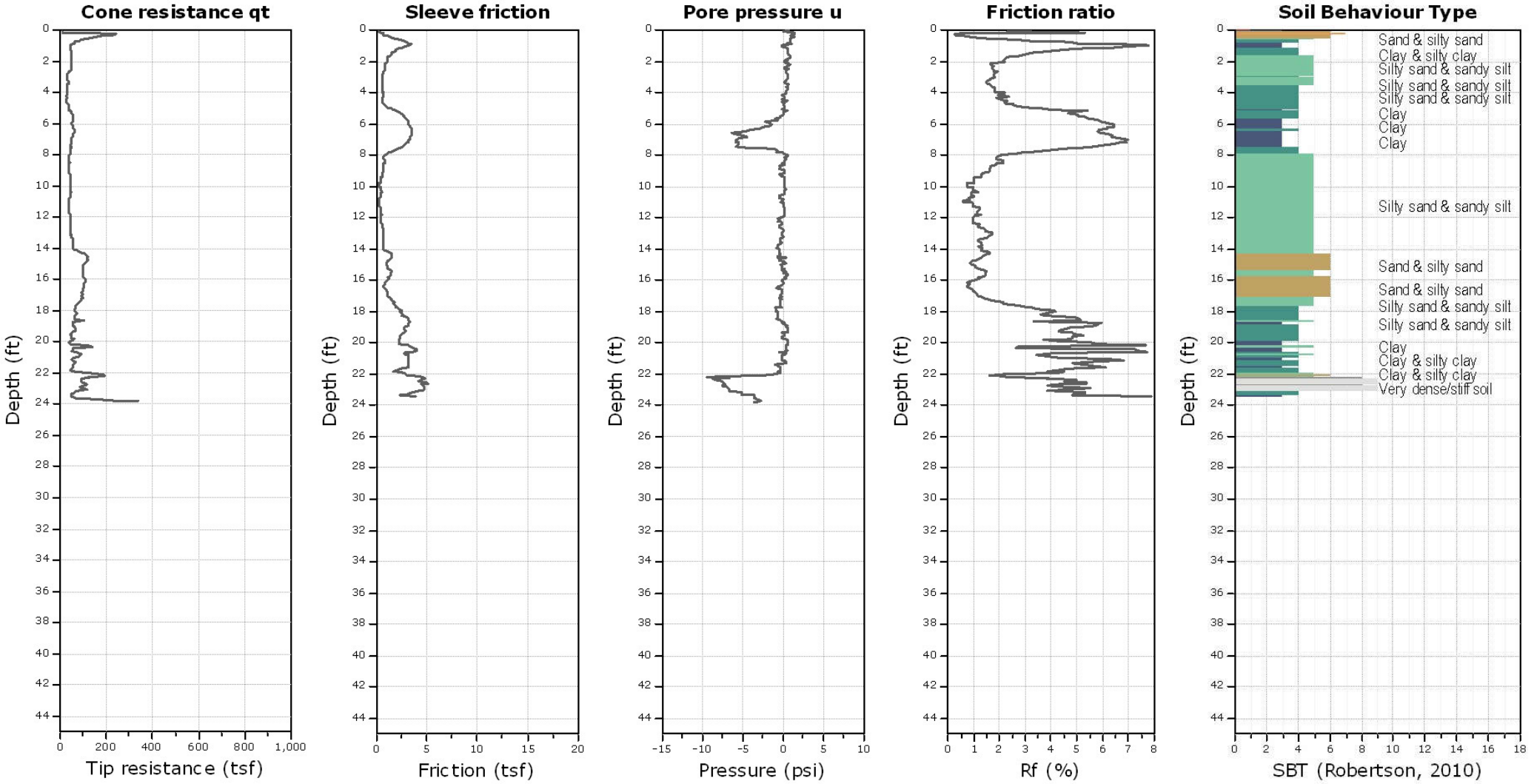


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CPT-2

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 23.82 ft, Date: 9/6/2017
Cone Type: Vertek

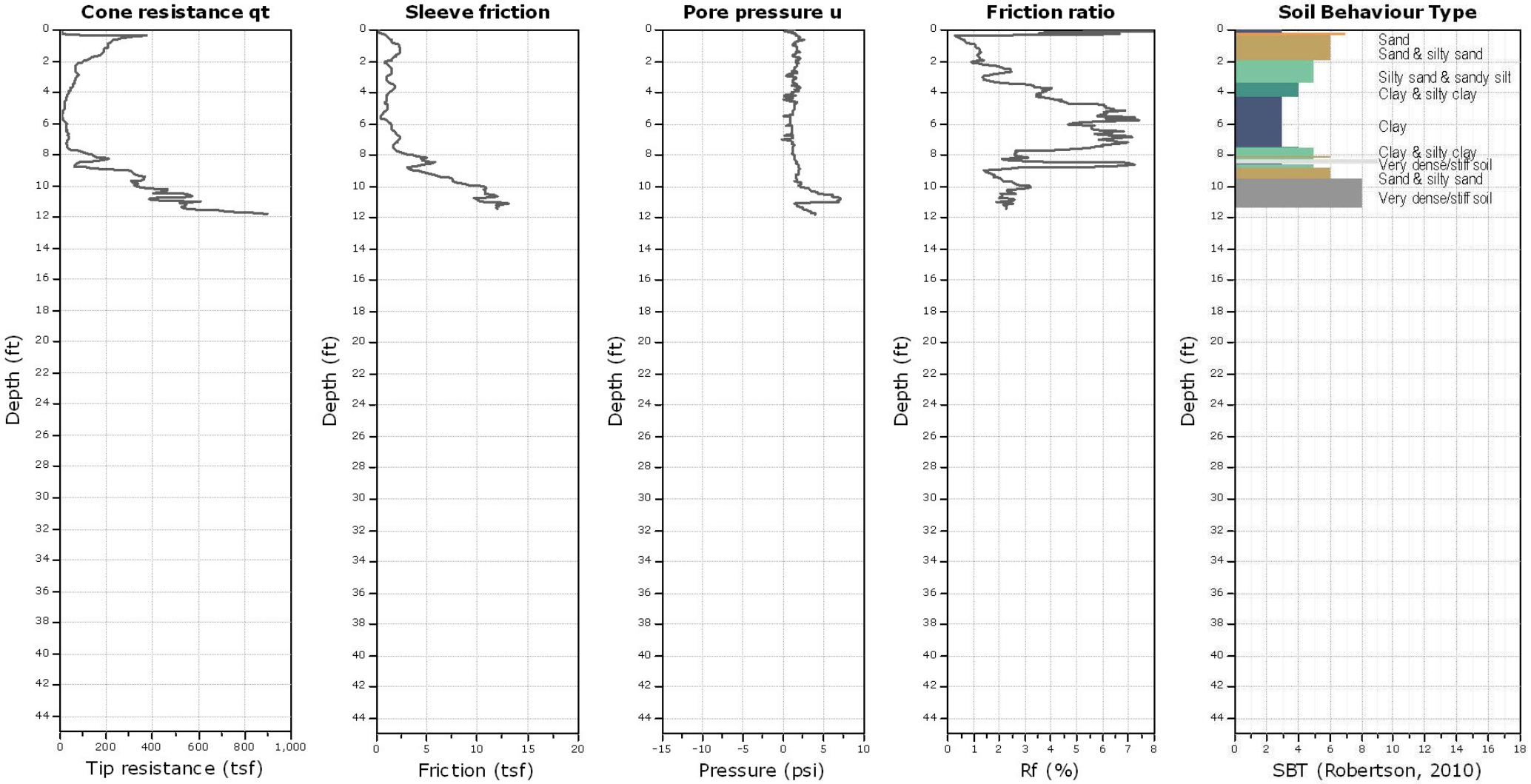


Kehoe Testing and Engineering
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CPT-3

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 11.82 ft, Date: 9/8/2017
Cone Type: Vertek

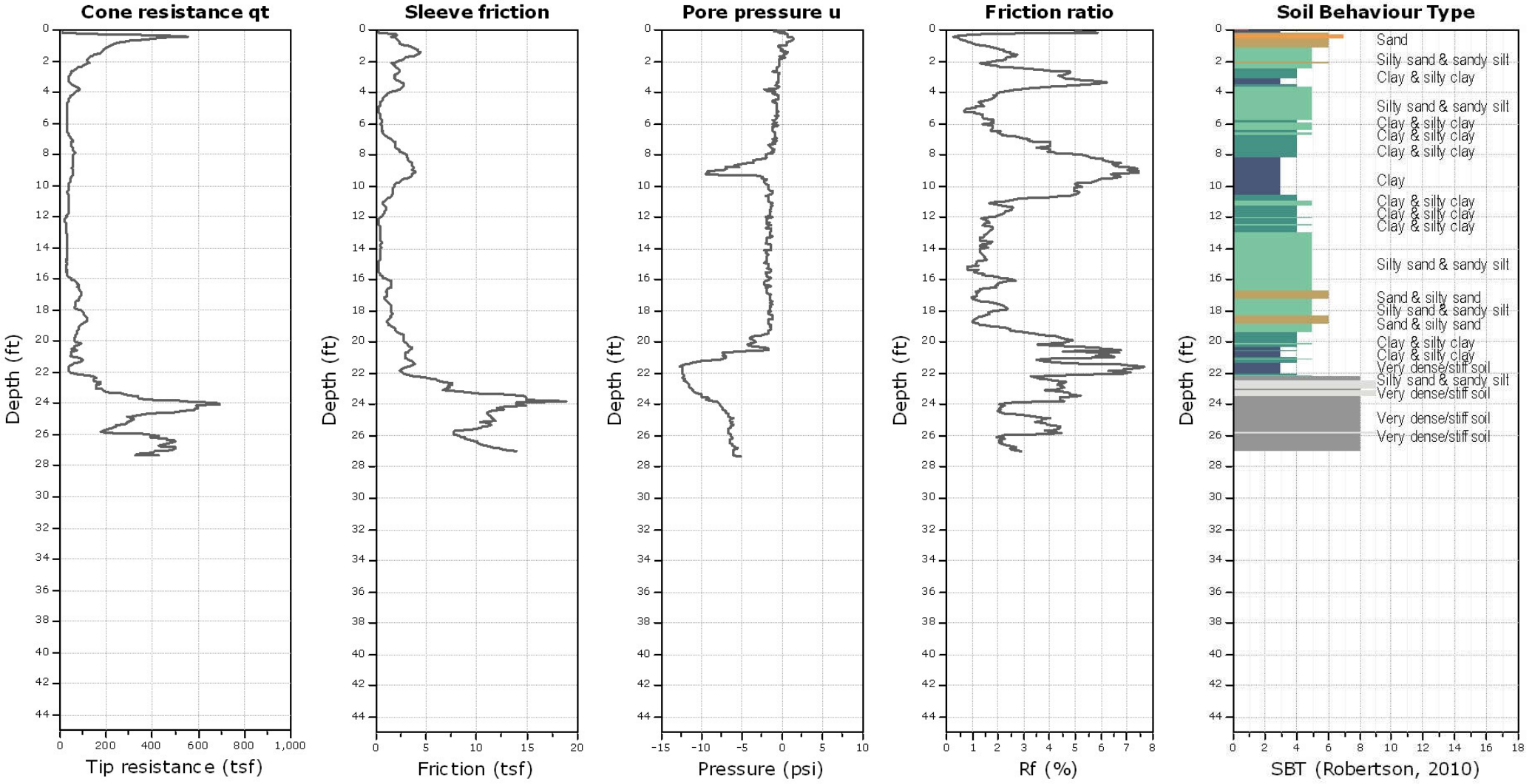


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CPT-4

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 27.37 ft, Date: 9/7/2017
Cone Type: Vertek

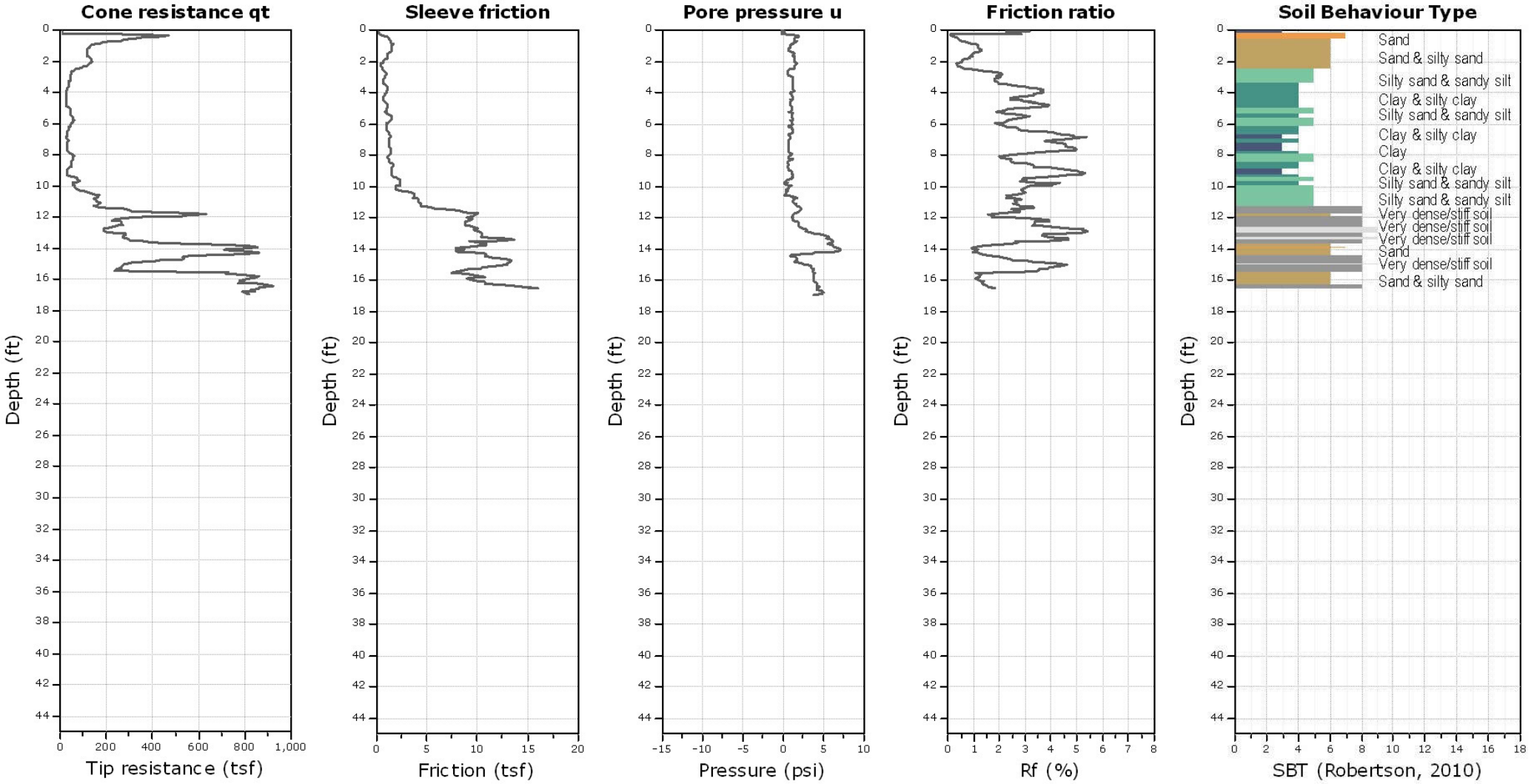


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CPT-5

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 16.94 ft, Date: 9/6/2017
Cone Type: Vertek

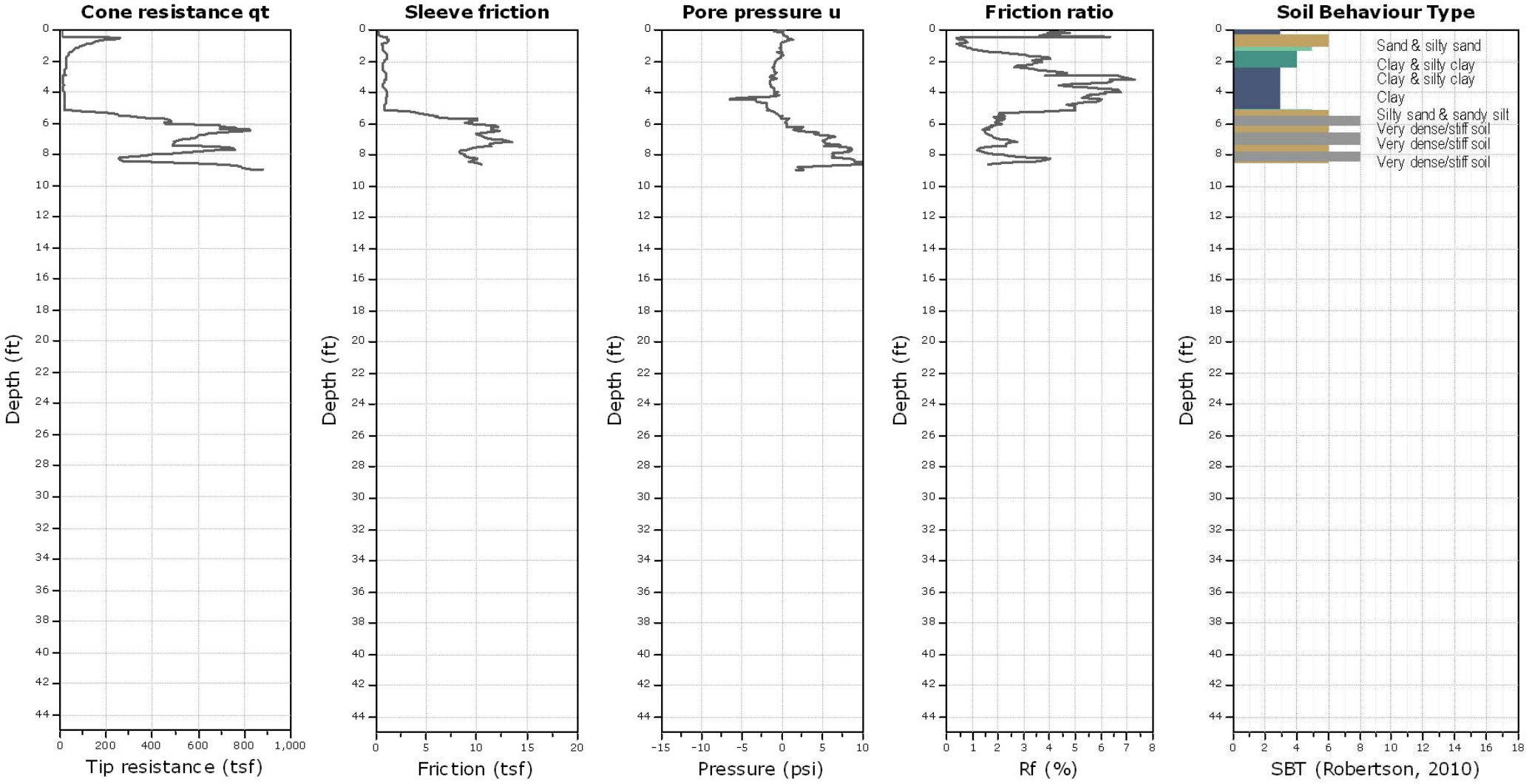


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CPT-6

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 8.99 ft, Date: 9/8/2017
Cone Type: Vertek

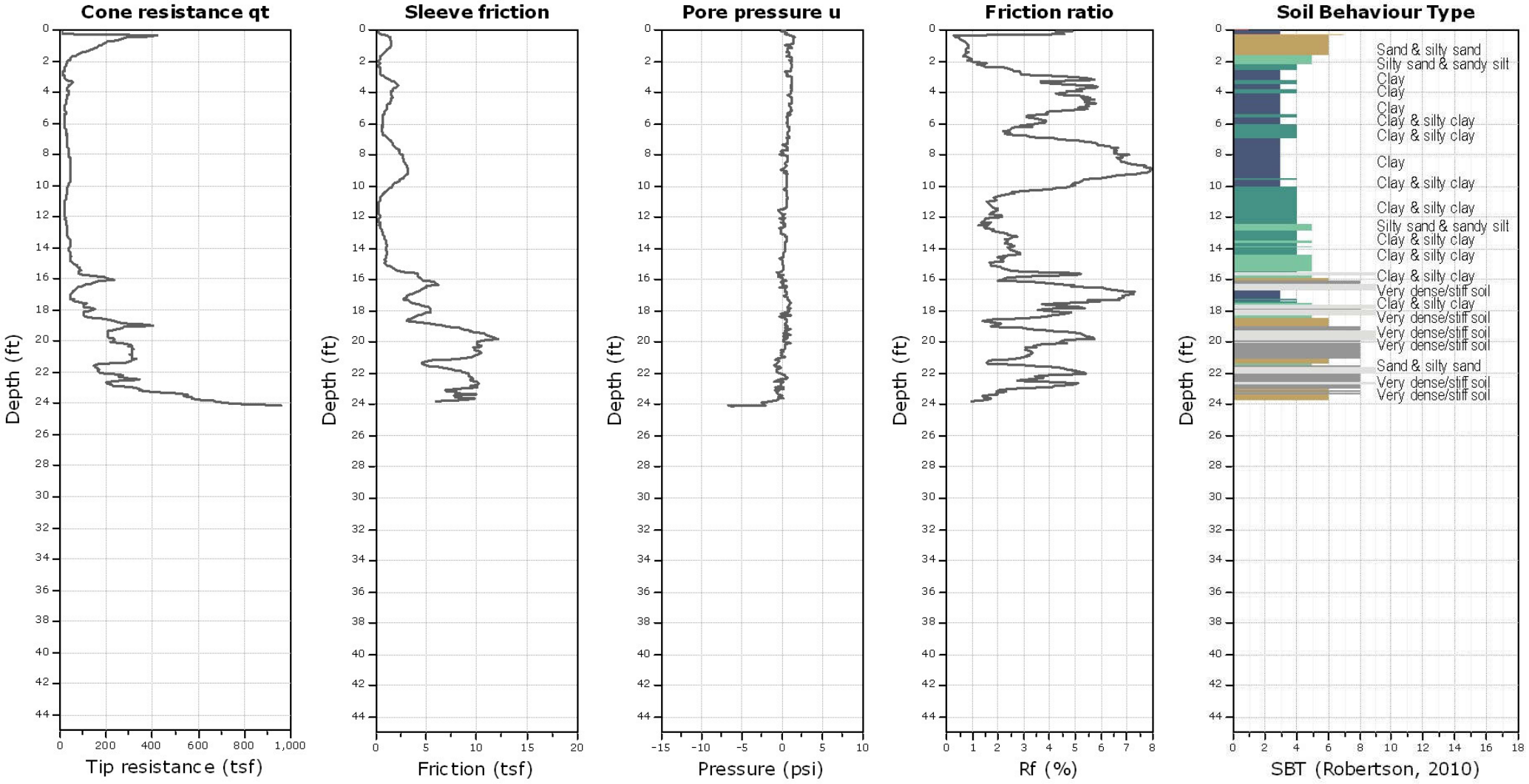


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CPT-7

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 24.15 ft, Date: 9/7/2017
Cone Type: Vertek

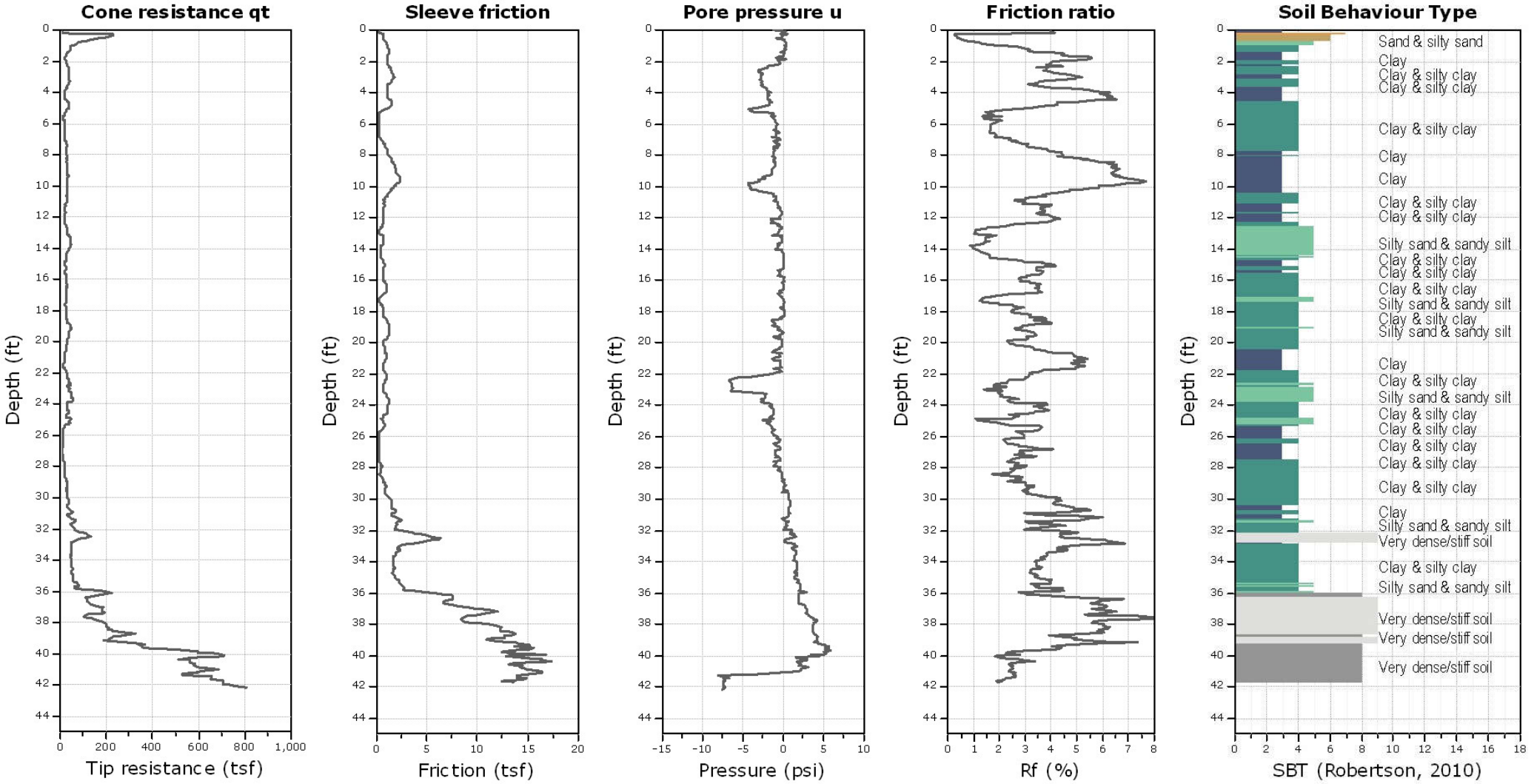


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CPT-8

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 42.13 ft, Date: 9/7/2017
Cone Type: Vertek

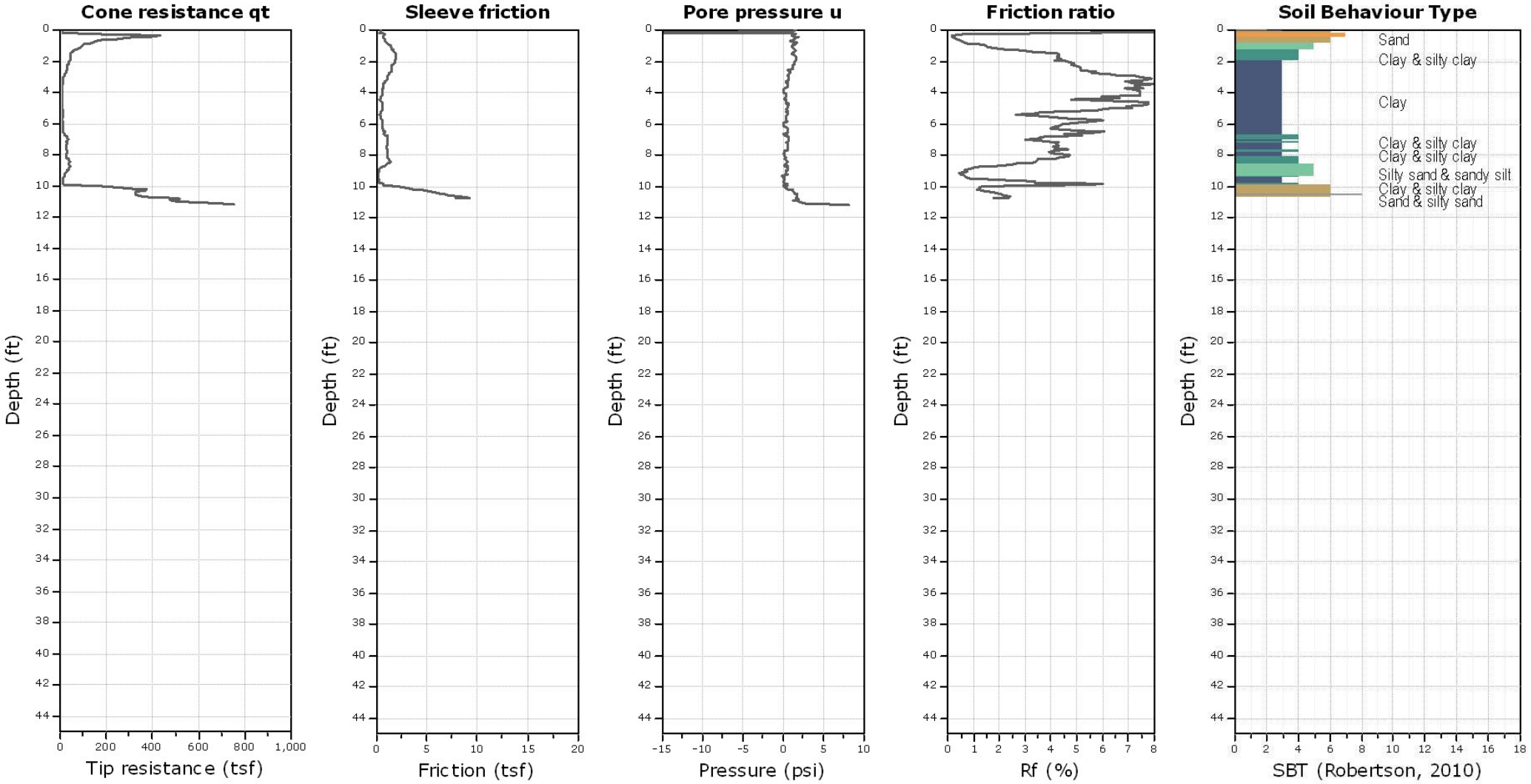


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CPT-9

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 11.16 ft, Date: 9/8/2017
Cone Type: Vertek

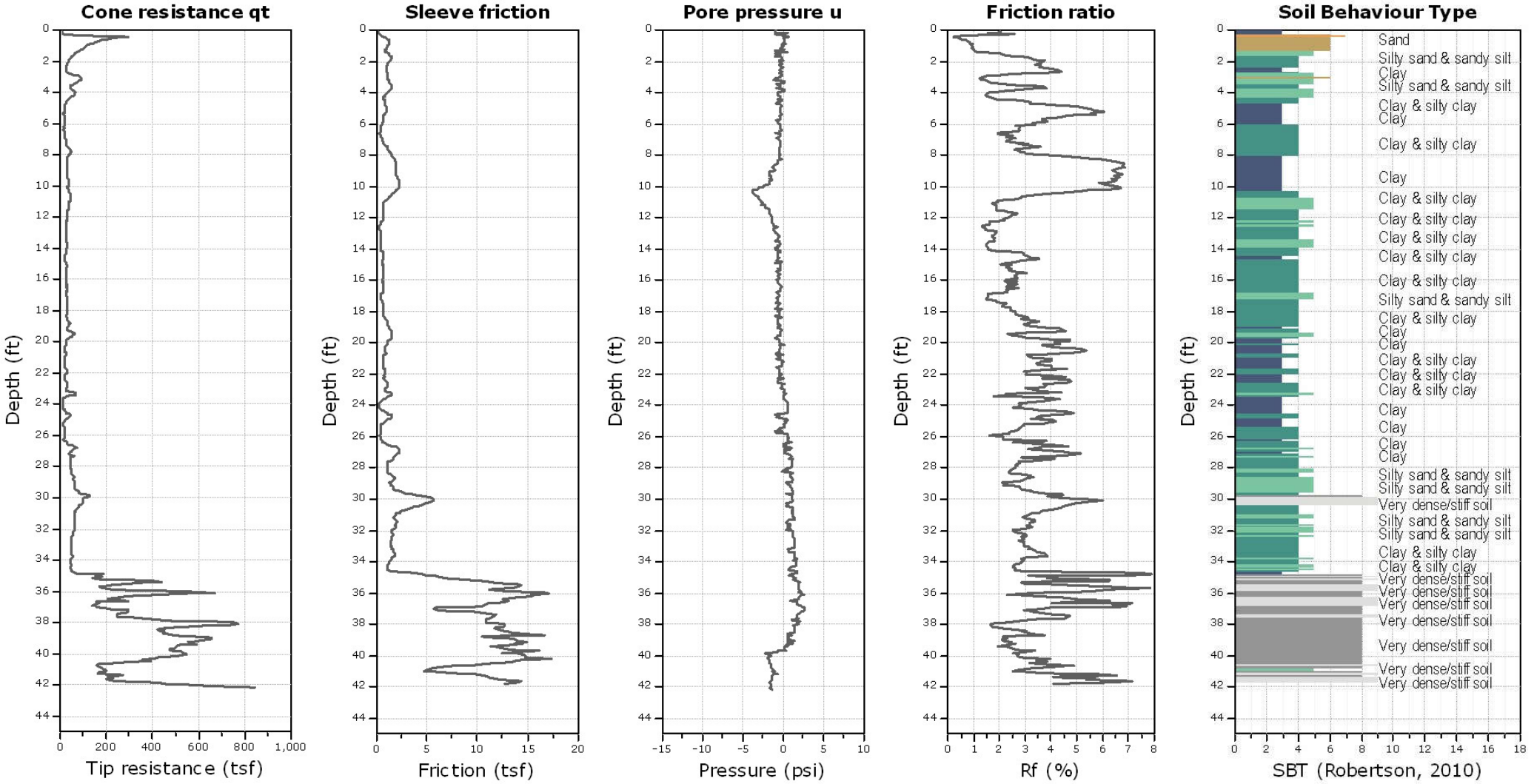


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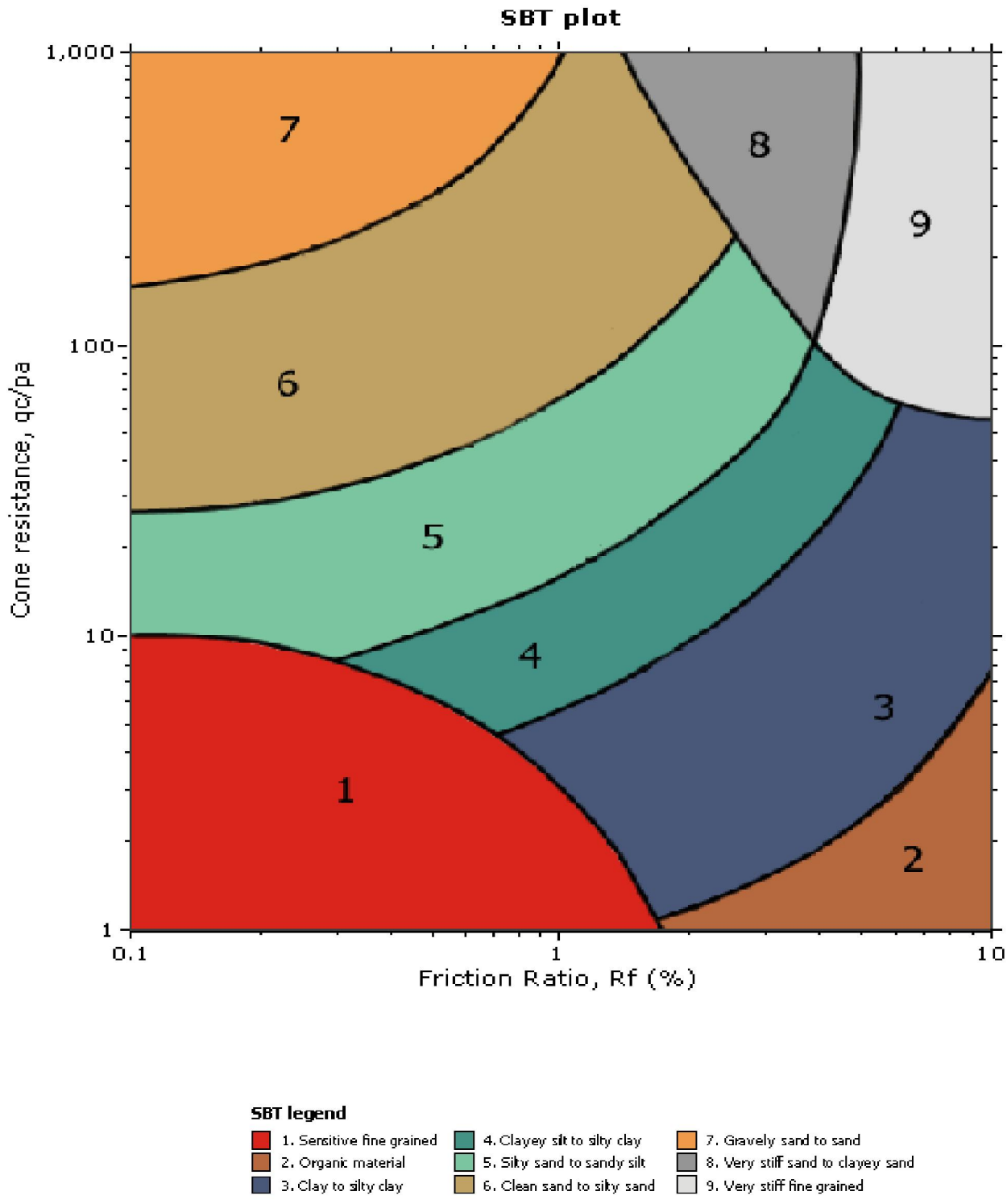
CPT-10

Project: **Converse Consultants/Mount San Antonio College (Lot S)**
Location: **1100 N. Grand Ave Walnut, CA**

Total depth: 42.13 ft, Date: 9/7/2017
Cone Type: Vertek



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	CPT-1	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	37.59	1.78	0.51	-0.19	37.6	4.72	4	2.7	123.32	0.06	0	0.06	608.41	4.73	0	9	0.68	6.99	2.18	247.88	0.6	20.76	3
2	94.3	1.67	-0.19	0.03	94.3	1.77	5	2.11	125.12	0.12	0	0.12	757.62	1.77	0	6	0.54	3.17	1.79	281.74	-0.11	51.19	7
3	41.25	1.46	-0.1	0.48	41.25	3.54	4	2.58	122.12	0.19	0	0.19	221.72	3.56	0	8	0.71	3.42	2.23	132.6	-0.04	26.3	5
4	29.03	0.84	-0.06	0.55	29.03	2.88	4	2.64	117.17	0.24	0	0.24	118.06	2.9	0	5	0.74	2.95	2.3	80.14	-0.02	29.79	5
5	33	1.25	-0.1	0.63	33	3.8	4	2.67	120.45	0.3	0	0.3	107.51	3.83	0	4	0.77	2.62	2.39	80.98	-0.02	23.92	5
6	48.66	0.94	-0.19	0.65	48.66	1.93	5	2.35	119.29	0.36	0	0.36	132.77	1.95	0	5	0.68	2.06	2.13	93.98	-0.04	41.12	7
7	25.69	0.63	-0.39	0.43	25.68	2.44	4	2.63	114.77	0.42	0	0.42	59.98	2.48	0	5	0.78	2.06	2.4	49.19	-0.07	30.83	5
8	35.71	0.42	-0.39	0.22	35.71	1.17	5	2.33	112.6	0.48	0	0.48	73.81	1.19	0	5	0.69	1.73	2.14	57.62	-0.06	48.89	7
9	26	0.73	-0.47	0.33	26	2.81	4	2.67	115.92	0.54	0	0.54	47.56	2.87	0	4	0.83	1.75	2.49	42.22	-0.06	27.31	5
10	85	2.72	-0.2	0.5	85	3.19	5	2.33	128.42	0.6	0	0.6	140.76	3.22	0	5	0.72	1.51	2.22	120.27	-0.02	28.51	5
11	102.97	4.8	0.1	0.5	102.97	4.67	9	2.4	133.06	0.67	0	0.67	153.56	4.7	0	9	0.76	1.42	2.31	137.6	0.01	20.61	3
12	83.23	4.91	0.41	0.37	83.23	5.9	9	2.54	132.7	0.73	0	0.73	112.62	5.95	0	9	0.82	1.35	2.46	105.55	0.04	16.56	3
13	131.37	7.41	0.48	0.22	131.38	5.64	9	2.4	136.83	0.8	0	0.8	163.06	5.68	0	9	0.79	1.24	2.35	153.58	0.04	17.36	3
14	175.75	7.31	3.14	0.71	175.79	4.16	8	2.22	137.28	0.87	0	0.87	201.18	4.18	0	8	0.73	1.15	2.19	190.65	0.26	23.15	5
15	100.46	0	-2.06	-0.28	100.43	0	0	0	87.36	0.91	0	0.91	108.98	0	0	0	1	1.16	4.06	108.98	-0.16	169.97	0

	CPT-2	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	40.2	2.19	-0.18	0.47	40.2	5.45	3	2.72	125.03	0.06	0	0.06	641.68	5.46	0	9	0.7	7.18	2.21	272.55	-0.2	18.12	3
2	48.35	1.15	0.38	0.47	48.35	2.38	5	2.41	120.75	0.12	0	0.12	392.23	2.38	0	5	0.62	3.83	2.01	174.68	0.22	38	7
3	29.14	0.63	0.58	0.41	29.14	2.15	4	2.56	115.08	0.18	0	0.18	160.58	2.16	0	5	0.68	3.36	2.17	91.84	0.23	37.9	7
4	28.82	0.52	0.39	0.47	28.83	1.81	4	2.51	113.71	0.24	0	0.24	120.5	1.83	0	5	0.69	2.8	2.17	75.78	0.12	41.16	7
5	38.12	1.36	0.19	0.43	38.12	3.56	4	2.61	121.39	0.3	0	0.3	126.92	3.59	0	5	0.75	2.59	2.33	92.44	0.05	25.49	5
6	50.33	3.03	-1.54	0.47	50.32	6.02	3	2.69	127.94	0.36	0	0.36	138	6.06	0	9	0.8	2.37	2.46	111.67	-0.31	16.29	3
7	47.72	2.92	-5.7	0.27	47.65	6.14	3	2.71	127.55	0.43	0	0.43	110.91	6.19	-0.01	9	0.82	2.12	2.51	94.56	-0.96	15.95	3
8	40.1	1.46	0.47	0.37	40.11	3.65	4	2.6	122.05	0.49	0	0.49	81.41	3.69	0	4	0.79	1.85	2.42	69.38	0.07	24.35	5
9	38.95	0.63	0.19	0.21	38.95	1.61	5	2.38	115.78	0.54	0	0.54	70.53	1.63	0	5	0.72	1.62	2.22	58.68	0.03	41.44	7
10	42.29	0.42	0.19	0.36	42.3	0.99	5	2.23	113.02	0.6	0	0.6	69.36	1	0	5	0.68	1.47	2.1	57.82	0.02	53.01	7
11	34.88	0.42	-0.15	0.3	34.88	1.2	5	2.34	112.55	0.66	0	0.66	52.05	1.22	0	5	0.73	1.42	2.23	45.8	-0.02	44.32	7
12	42.82	0.52	-0.23	0.41	42.81	1.22	5	2.28	114.68	0.71	0	0.71	58.89	1.24	0	5	0.72	1.32	2.19	52.7	-0.02	46.32	7
13	42.29	0.63	-0.19	0.19	42.29	1.48	5	2.33	115.98	0.77	0	0.77	53.73	1.51	0	5	0.75	1.26	2.26	49.63	-0.02	41.15	7
14	56.7	1.04	-0.58	0.18	56.7	1.84	5	2.29	120.44	0.83	0	0.83	67.07	1.87	0	5	0.74	1.19	2.24	63.07	-0.05	38.89	7
15	100.98	1.46	-0.36	0.35	100.98	1.45	5	2.03	124.31	0.9	0	0.9	111.81	1.46	0	6	0.66	1.12	2	105.54	-0.03	51.54	7
16	107.04	1.25	-0.1	0.38	107.04	1.17	6	1.95	123.32	0.96	0	0.96	110.87	1.18	0	6	0.63	1.07	1.94	106.85	-0.01	59.55	7
17	91.06	1.25	-0.21	0.38	91.06	1.38	5	2.05	122.93	1.02	0	1.02	88.42	1.39	0	5	0.68	1.03	2.05	87.34	-0.01	50.81	7
18	60.05	2.4	-0.87	0.14	60.04	4	4	2.5	126.67	1.08	0	1.08	54.51	4.07	0	4	0.86	0.98	2.52	54.68	-0.06	22.09	5
19	56.5	3.03	0.4	0.48	56.5	5.36	4	2.61	128.22	1.15	0	1.15	48.32	5.47	0	4	0.91	0.93	2.65	48.65	0.03	17.45	3
20	38.95	2.51	0.48	0.49	38.96	6.43	3	2.78	125.93	1.21	0	1.21	31.23	6.64	0	3	0.99	0.88	2.84	31.28	0.03	14.87	3
21	58.37	2.82	-0.16	0.12	58.37	4.83	4	2.57	127.77	1.27	0	1.27	44.87	4.94	0	4	0.91	0.84	2.63	45.59	-0.01	18.84	3
22	146.09	3.45	-1.57	0.21	146.07	2.36	5	2.08	131.48	1.34	0	1.34	108.14	2.38	0	5	0.72	0.84	2.13	115.38	-0.08	36.37	7
23	106.72	1.98	-6.66	-0.04	106.64	1.86	5	2.09	126.67	1.4	0	1.4	75.09	1.89	0	5	0.74	0.81	2.16	80.77	-0.34	40.84	7

	CPT-3	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	203.63	1.57	1.18	0.9	203.65	0.77	6	1.62	126.52	0.06	0	0.06	3216.1	0.77	0	6	0.36	2.78	1.33	534.11	1.34	113.13	7
2	101.92	1.78	1.87	1.05	101.94	1.74	5	2.08	125.75	0.13	0	0.13	806.68	1.74	0	6	0.53	3.09	1.77	297.38	1.06	52.23	7
3	72.37	1.67	1.05	1.02	72.38	2.31	5	2.28	124.47	0.19	0	0.19	383.41	2.31	0	6	0.61	2.87	1.97	196.04	0.4	39.34	7
4	34.57	1.46	1.15	1.03	34.58	4.23	4	2.69	121.69	0.25	0	0.25	137.77	4.26	0	9	0.76	3.02	2.37	97.83	0.33	22.16	5
5	17.02	0.73	1.33	1.12	17.04	4.29	3	2.92	114.89	0.31	0	0.31	54.56	4.37	0.01	4	0.85	2.88	2.6	45.5	0.31	20.65	3
6	27.26	1.04	0.87	1.24	27.27	3.83	4	2.74	118.65	0.37	0	0.37	73.49	3.88	0	4	0.81	2.36	2.48	60.1	0.17	23.11	5
7	37.18	1.98	0.03	1.26	37.18	5.34	3	2.74	124.1	0.43	0	0.43	85.84	5.4	0	9	0.83	2.12	2.53	73.75	0.01	17.89	3
8	133.88	2.72	1.45	1.19	133.89	2.03	5	2.05	129.52	0.49	0	0.49	270.75	2.04	0	6	0.61	1.59	1.92	200.36	0.21	44.03	7
9	279.45	5.43	1.83	0.71	279.47	1.94	6	1.84	136.39	0.56	0	0.56	497.21	1.95	0	6	0.55	1.41	1.76	372.68	0.24	48.1	7
10	322.16	9.09	2.1	0.5	322.18	2.82	8	1.94	137.28	0.63	0	0.63	510.7	2.83	0	8	0.59	1.36	1.88	413.78	0.24	34.2	7
11	593.88	9.29	5.57	0.55	593.95	1.56	6	1.59	137.28	0.7	0	0.7	849.53	1.57	0	6	0.47	1.22	1.55	682.73	0.57	60.79	7
12	84.9	0	3.89	0.05	84.95	0	0	0	87.36	0.74	0	0.74	113.48	0	0	0	1	1.43	4.06	113.48	0.38	176.4	0

	CPT-4	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	219.61	2.72	-0.4	1.49	219.61	1.24	6	1.75	130.73	0.07	0	0.07	3356.5	1.24	0	6	0.41	3.15	1.47	653.98	-0.44	75.56	7
2	116.65	3.34	-0.29	1.58	116.64	2.86	5	2.2	130.71	0.13	0	0.13	890.73	2.87	0	8	0.58	3.37	1.9	371.58	-0.16	33.6	7
3	40	2.4	-0.46	1.61	39.99	6.01	3	2.75	125.68	0.19	0	0.19	205.69	6.04	0	9	0.77	3.72	2.4	139.73	-0.17	16.39	3
4	69.13	1.78	-0.9	1.64	69.12	2.57	5	2.32	124.8	0.26	0	0.26	269.08	2.58	0	5	0.65	2.5	2.06	162.79	-0.25	35.29	7
5	28.3	0.42	-0.77	1.72	28.29	1.48	5	2.47	112.04	0.31	0	0.31	89.68	1.49	0	5	0.69	2.34	2.18	61.79	-0.18	44.25	7
6	29.14	0.52	-0.84	1.8	29.12	1.79	4	2.51	113.74	0.37	0	0.37	77.95	1.82	0	5	0.73	2.15	2.26	58.42	-0.16	38.86	7
7	45.22	1.25	-1.15	1.9	45.2	2.77	4	2.48	121.22	0.43	0	0.43	104.24	2.8	0	5	0.74	1.95	2.28	82.34	-0.19	30.73	5
8	59.63	2.72	-1.87	1.98	59.61	4.56	4	2.55	127.55	0.49	0	0.49	119.87	4.59	0	9	0.78	1.82	2.38	101.46	-0.27	20.79	3
9	52	3.24	-9.05	2.01	51.89	6.24	3	2.69	128.5	0.56	0	0.56	92.09	6.31	-0.01	9	0.85	1.72	2.55	83.44	-1.17	15.67	3
10	34.15	2.19	-1.64	2.07	34.13	6.43	3	2.82	124.63	0.62	0	0.62	54.06	6.54	0	3	0.9	1.62	2.69	51.38	-0.19	15.11	3
11	37.8	1.25	-1.64	2.11	37.78	3.32	4	2.59	120.78	0.68	0	0.68	54.55	3.38	0	4	0.83	1.44	2.49	50.59	-0.17	25.15	5
12	25.38	0.63	-1.39	1.96	25.36	2.47	4	2.64	114.74	0.74	0	0.74	33.38	2.54	0	4	0.86	1.36	2.55	31.71	-0.14	27.68	5
13	26.84	0.42	-1.54	1.76	26.82	1.56	5	2.5	111.91	0.79	0	0.79	32.8	1.6	0	5	0.82	1.26	2.44	31.11	-0.14	34.28	7
14	32.69	0.52	-1.35	1.9	32.67	1.6	5	2.44	114.02	0.85	0	0.85	37.41	1.64	0	5	0.8	1.19	2.39	35.83	-0.11	35.58	7
15	28.09	0.42	-1.71	1.96	28.07	1.49	5	2.48	112.02	0.91	0	0.91	29.96	1.54	0	5	0.83	1.14	2.45	29.17	-0.14	34.1	7
16	47.31	0.63	-1.69	2.05	47.28	1.33	5	2.26	116.26	0.96	0	0.96	48.02	1.35	0	5	0.75	1.07	2.25	46.93	-0.13	42.65	7
17	87.61	1.15	-1.54	2.13	87.6	1.31	5	2.05	122.19	1.03	0	1.03	84.39	1.33	0	5	0.68	1.02	2.05	83.56	-0.11	51.73	7
18	78.74	1.36	-1.63	2.15	78.72	1.72	5	2.16	123.16	1.09	0	1.09	71.4	1.75	0	5	0.73	0.98	2.18	71.93	-0.11	41.85	7
19	86.05	1.78	-1.48	2.21	86.03	2.06	5	2.19	125.34	1.15	0	1.15	73.81	2.09	0	5	0.75	0.94	2.22	75.37	-0.09	37.5	7
20	64.43	2.92	-3.5	2.13	64.39	4.54	4	2.52	128.28	1.21	0	1.21	52.03	4.63	0	4	0.89	0.89	2.57	52.85	-0.21	19.98	3
21	52.84	3.03	-7.14	2.23	52.75	5.74	3	2.66	128.05	1.28	0	1.28	40.27	5.88	-0.01	3	0.95	0.84	2.72	40.67	-0.4	16.38	3
22	41.88	4.59	-12.35	2.19	41.72	11.01	3	2.94	130.53	1.34	0	1.34	30.06	11.38	-0.02	3	1	0.79	3.02	30.06	-0.66	9.72	2
23	159.15	10.13	-11.28	2.09	159.01	6.37	9	2.4	137.28	1.41	0	1.41	111.62	6.43	-0.01	9	0.86	0.78	2.47	116.33	-0.58	15.45	3
24	686.19	13.58	-7.73	2.43	686.1	1.98	8	1.65	137.28	1.48	0	1.48	462.37	1.98	0	8	0.56	0.83	1.69	535.44	-0.38	48.19	7
25	317.04	9.92	-6.46	2.63	316.96	3.13	8	1.98	137.28	1.55	0	1.55	203.58	3.15	0	8	0.7	0.76	2.05	227.98	-0.3	30.24	5
26	383.98	8.98	-6.37	2.43	383.9	2.34	8	1.83	137.28	1.62	0	1.62	236.27	2.35	0	6	0.65	0.76	1.9	274.25	-0.28	39.8	7
27	470.03	0	-5.98	2.69	469.95	0	0	0	87.36	1.66	0	1.66	281.81	0	0	0	1	0.64	4.06	281.81	-0.26	416.87	0

	CPT-5	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	137.01	1.25	0.92	-0.44	137.02	0.91	6	1.8	123.92	0.06	0	0.06	2208.9	0.91	0	6	0.41	3.18	1.46	411.72	1.07	94.41	7
2	134.29	1.04	1.45	-0.28	134.31	0.78	6	1.76	122.54	0.12	0	0.12	1088.2	0.78	0	6	0.42	2.47	1.48	313.2	0.85	103.02	7
3	41.35	0.84	0.97	-0.22	41.37	2.02	5	2.42	118.03	0.18	0	0.18	226.06	2.03	0	5	0.65	3.11	2.06	121.1	0.39	41.53	7
4	25.27	0.94	0.9	-0.37	25.28	3.72	4	2.75	117.7	0.24	0	0.24	103.88	3.75	0	4	0.78	3.15	2.4	74.54	0.27	24.17	5
5	35.92	1.04	0.97	-0.34	35.93	2.91	4	2.57	119.32	0.3	0	0.3	118.48	2.93	0	5	0.73	2.52	2.29	84.79	0.23	29.76	5
6	49.71	1.46	1.03	-0.4	49.72	2.94	4	2.47	122.58	0.36	0	0.36	136.31	2.96	0	5	0.72	2.16	2.24	100.9	0.2	30.07	5
7	28.93	1.36	0.68	-0.41	28.93	4.69	3	2.78	120.72	0.42	0	0.42	67.49	4.76	0	4	0.84	2.17	2.55	58.35	0.12	19.65	3
8	54.72	1.46	0.85	-0.34	54.73	2.67	5	2.41	122.81	0.48	0	0.48	112.14	2.7	0	5	0.73	1.76	2.24	90.49	0.13	32.02	5
9	31.22	1.88	0.9	-0.3	31.23	6.02	3	2.83	123.28	0.55	0	0.55	56.27	6.12	0	3	0.89	1.81	2.66	52.35	0.12	15.96	3
10	59.84	2.92	0.96	-0.08	59.85	4.89	4	2.57	128.1	0.61	0	0.61	97.19	4.94	0	9	0.81	1.56	2.45	87.6	0.11	19.43	3
11	161.86	5.43	1.29	-0.98	161.88	3.35	8	2.17	135.06	0.68	0	0.68	238.08	3.37	0	8	0.68	1.35	2.09	206.4	0.14	28.28	5
12	396.41	9.09	1.09	-0.2	396.42	2.29	8	1.82	137.28	0.75	0	0.75	530.56	2.3	0	8	0.56	1.22	1.78	455.24	0.11	41.71	7
13	241.85	10.23	3.86	0.26	241.9	4.23	8	2.15	137.28	0.81	0	0.81	296.09	4.24	0	8	0.7	1.2	2.12	273.37	0.34	23.03	5
14	769.52	11.38	7.08	0.95	769.61	1.48	6	1.52	137.28	0.88	0	0.88	870.67	1.48	0	6	0.46	1.09	1.5	790.26	0.58	64.53	7
15	283.94	11.59	2.74	1.34	283.97	4.08	8	2.11	137.28	0.95	0	0.95	297.42	4.1	0	8	0.69	1.08	2.09	287.86	0.21	23.85	5
16	793.12	6.37	3.77	1.42	793.17	0.8	7	1.27	137.28	1.02	0	1.02	776.4	0.8	0	7	0.38	1.01	1.27	759.14	0.27	113.03	7
17	86.67	0	-1.97	0.69	86.65	0	0	0	87.36	1.06	0	1.06	80.44	0	0	0	1	0.99	4.06	80.44	-0.13	129.2	0

	CPT-6	In situ data							Basic output data													
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	99.83	1.15	-0.19	0.49	99.83	1.15	6	1.97	122.51	0.06	0	0.06	1627.6	1.15	0	6	0.46	3.66	1.58	345.28	-0.22	75.99	7
2	24.02	0.94	-0.76	0.49	24.01	3.91	3	2.78	117.57	0.12	0	0.12	198.87	3.93	0	8	0.73	4.95	2.31	111.7	-0.46	23.89	5
3	13.89	0.84	-1.42	0.7	13.87	6.02	3	3.09	115.37	0.18	0	0.18	77.08	6.1	-0.01	3	0.86	4.62	2.62	59.76	-0.58	16.05	3
4	17.02	0.84	-0.6	0.53	17.01	4.91	3	2.96	115.87	0.24	0	0.24	71.21	4.98	0	4	0.84	3.54	2.58	56.15	-0.18	18.92	3
5	16.81	3.24	-1.82	0.85	16.79	19.28	3	3.38	125.75	0.3	0	0.3	55.24	19.63	-0.01	3	1	3.54	3.05	55.24	-0.44	5.65	2
6	453.95	8.25	0.53	1.13	453.95	1.82	6	1.7	137.28	0.37	0	0.37	1235.2	1.82	0	8	0.48	1.66	1.6	711.07	0.1	52.89	7
7	544.48	9.71	5.57	1.16	544.55	1.78	8	1.66	137.28	0.44	0	0.44	1248.2	1.78	0	8	0.47	1.52	1.58	782.04	0.92	54.03	7
8	416.77	6.47	6.37	1.63	416.85	1.55	6	1.66	137.28	0.5	0	0.5	825.47	1.56	0	6	0.48	1.42	1.59	560.61	0.91	60.59	7
9	34.36	0	1.38	0.08	34.37	0	0	0	87.36	0.55	0	0.55	61.72	0	0	0	1	1.93	4.06	61.72	0.18	102.45	0

	CPT-7	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	173.14	1.04	0.83	1.06	173.15	0.6	6	1.61	123.16	0.06	0	0.06	2809	0.6	0	7	0.35	2.68	1.3	438.22	0.97	134.04	7
2	34.04	0.42	0.99	0.87	34.06	1.23	5	2.36	112.49	0.12	0	0.12	287.85	1.23	0	6	0.59	3.64	1.92	116.86	0.6	59.33	7
3	16.08	1.04	0.8	0.91	16.09	6.49	3	3.06	117.36	0.18	0	0.18	90.21	6.56	0	9	0.85	4.6	2.61	69.12	0.33	15.11	3
4	33.63	1.88	1.07	1.01	33.64	5.59	3	2.78	123.46	0.24	0	0.24	140.22	5.63	0	9	0.79	3.27	2.45	103.15	0.32	17.39	3
5	20.36	1.15	1.06	1.08	20.38	5.64	3	2.94	118.64	0.3	0	0.3	67.48	5.72	0	4	0.86	2.98	2.62	56.6	0.26	16.91	3
6	17.65	0.63	0.77	1.11	17.66	3.55	3	2.86	113.85	0.35	0	0.35	48.81	3.62	0	4	0.85	2.52	2.57	41.22	0.16	23.36	5
7	28.4	1.15	0.66	1.25	28.41	4.04	4	2.74	119.45	0.41	0	0.41	67.58	4.1	0	4	0.82	2.17	2.51	57.35	0.11	22.06	5
8	36.97	2.4	-0.09	1.36	36.97	6.5	3	2.8	125.49	0.48	0	0.48	76.52	6.58	0	9	0.87	2	2.61	68.84	-0.01	15.07	3
9	39.79	2.72	0.35	1.37	39.79	6.82	3	2.79	126.56	0.54	0	0.54	72.66	6.92	0	9	0.88	1.81	2.64	67.04	0.05	14.43	3
10	33.1	1.67	0.49	1.44	33.11	5.05	3	2.76	122.56	0.6	0	0.6	54.04	5.14	0	4	0.88	1.64	2.62	50.4	0.06	18.36	3
11	21.09	0.42	0.58	1.6	21.1	1.98	4	2.65	111.32	0.66	0	0.66	31.11	2.04	0	4	0.84	1.49	2.53	28.87	0.06	30.14	5
12	20.47	0.31	0.21	1.61	20.47	1.53	4	2.6	109.14	0.71	0	0.71	27.76	1.59	0	5	0.84	1.39	2.5	26.01	0.02	32.37	7
13	30.7	0.63	-0.19	1.66	30.7	2.04	4	2.52	115.2	0.77	0	0.77	38.91	2.09	0	5	0.82	1.3	2.45	36.74	-0.02	31.81	5
14	38.12	0.94	0.39	1.87	38.12	2.47	4	2.5	118.7	0.83	0	0.83	45	2.52	0	5	0.82	1.22	2.45	43.09	0.03	29.73	5
15	56.6	1.98	0.06	2.19	56.6	3.51	4	2.48	125.13	0.89	0	0.89	62.51	3.56	0	4	0.82	1.15	2.45	60.65	0	24.7	5
16	220.97	4.18	0.32	1.63	220.97	1.89	6	1.89	133.9	0.96	0	0.96	229.6	1.9	0	6	0.61	1.06	1.87	220.88	0.02	47.18	7
17	46.89	4.49	0.56	0.87	46.89	9.58	3	2.86	130.65	1.02	0	1.02	44.81	9.79	0	3	0.99	1.03	2.86	44.8	0.04	10.78	3
18	136.9	3.97	0.82	1	136.91	2.9	5	2.16	132.35	1.09	0	1.09	124.65	2.92	0	5	0.73	0.98	2.17	125.65	0.05	31.03	5
19	393.69	5.85	0.66	0.61	393.7	1.49	6	1.66	137.28	1.16	0	1.16	338.89	1.49	0	6	0.54	0.95	1.67	353.25	0.04	60.92	7
20	224.21	11.07	0.75	1.02	224.21	4.94	9	2.23	137.28	1.23	0	1.23	181.74	4.96	0	9	0.77	0.89	2.26	188.07	0.04	19.74	3
21	312.76	9.19	-0.4	0.8	312.75	2.94	8	1.96	137.28	1.3	0	1.3	240.38	2.95	0	8	0.67	0.87	1.99	256.93	-0.02	32.24	7
22	171.37	7.83	-0.18	0.59	171.36	4.57	9	2.26	137.28	1.36	0	1.36	124.6	4.61	0	9	0.8	0.82	2.32	131.17	-0.01	20.94	3
23	329.05	10.13	0.04	1.02	329.05	3.08	8	1.97	137.28	1.43	0	1.43	228.65	3.09	0	8	0.69	0.81	2.02	251.45	0	30.85	5
24	769	0	-2.17	0.99	768.98	0	0	0	87.36	1.48	0	1.48	519.8	0	0	0	1	0.72	4.06	519.8	-0.11	756.86	0

	CPT-8	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	50.75	0.94	0.21	0.02	50.75	1.85	5	2.33	119.4	0.06	0	0.06	848.63	1.85	0	6	0.56	4.94	1.85	236.87	0.25	48.49	7
2	23.81	1.25	-0.56	0.24	23.8	5.26	3	2.87	119.65	0.12	0	0.12	198.01	5.29	0	9	0.77	5.33	2.39	119.24	-0.34	18.44	3
3	34.04	1.36	-2.8	0.22	34.01	3.99	4	2.68	121.11	0.18	0	0.18	187.94	4.01	-0.01	9	0.73	3.66	2.3	117.12	-1.12	23.54	5
4	18.59	1.25	-1.72	0.23	18.57	6.75	3	3.03	119.05	0.24	0	0.24	76.5	6.84	-0.01	9	0.87	3.64	2.65	63.04	-0.52	14.58	3
5	35.61	1.15	-4	0.26	35.56	3.23	4	2.6	120	0.3	0	0.3	117.69	3.26	-0.01	5	0.75	2.56	2.32	85.45	-0.96	27.4	5
6	18.07	0.21	-0.83	0.24	18.06	1.16	4	2.58	105.87	0.35	0	0.35	50.21	1.18	0	5	0.74	2.25	2.29	37.69	-0.17	41.66	7
7	18.38	0.52	-0.63	0.37	18.37	2.84	4	2.79	112.62	0.41	0	0.41	43.93	2.91	0	4	0.83	2.21	2.54	37.55	-0.11	26.54	5
8	27.05	1.25	-1.26	0.37	27.03	4.64	3	2.8	119.96	0.47	0	0.47	56.67	4.72	0	4	0.86	2.01	2.59	50.51	-0.19	19.63	3
9	29.03	1.98	-1.45	0.39	29.01	6.84	3	2.89	123.5	0.53	0	0.53	53.69	6.97	0	3	0.91	1.87	2.72	50.47	-0.2	14.34	3
10	29.97	1.78	-4.08	0.33	29.92	5.93	3	2.84	122.76	0.59	0	0.59	49.55	6.05	-0.01	3	0.9	1.69	2.69	46.86	-0.5	16.08	3
11	27.78	0.84	-0.97	0.35	27.77	3.01	4	2.66	117.06	0.65	0	0.65	41.68	3.08	0	4	0.85	1.51	2.54	38.74	-0.11	25.74	5
12	17.23	0.63	-0.43	0.32	17.23	3.64	3	2.88	113.79	0.71	0	0.71	23.35	3.79	0	4	0.94	1.46	2.77	22.8	-0.04	20.96	3
13	30.81	0.52	-0.77	0.29	30.8	1.7	5	2.47	113.88	0.76	0	0.76	39.3	1.74	0	5	0.8	1.3	2.4	36.83	-0.07	34.94	7
14	39.37	0.63	-1.02	0.3	39.36	1.59	5	2.37	115.81	0.82	0	0.82	46.87	1.63	0	5	0.77	1.22	2.32	44.25	-0.09	38.22	7
15	20.05	0.63	0	0.3	20.05	3.13	4	2.78	114.16	0.88	0	0.88	21.8	3.27	0	4	0.94	1.19	2.75	21.56	0	22.47	5
16	25.9	0.84	0.06	0.34	25.9	3.23	4	2.71	116.89	0.94	0	0.94	26.62	3.35	0	4	0.92	1.12	2.69	26.36	0	22.98	5
17	25.17	0.84	-0.43	0.36	25.16	3.32	4	2.72	116.82	1	0	1	24.26	3.46	0	4	0.94	1.06	2.73	24.16	-0.03	22.25	5
18	25.38	0.73	0.1	0.29	25.38	2.88	4	2.68	115.87	1.05	0	1.05	23.08	3.01	0	4	0.93	1	2.71	23.07	0.01	23.73	5
19	43.44	1.04	-0.63	0.4	43.43	2.4	5	2.45	119.79	1.11	0	1.11	37.99	2.47	0	4	0.85	0.96	2.48	38.29	-0.04	29.36	5
20	30.81	1.04	-0.1	0.34	30.8	3.39	4	2.66	118.95	1.17	0	1.17	25.25	3.52	0	4	0.94	0.91	2.72	25.41	-0.01	22.19	5
21	17.65	0.84	-1.25	0.36	17.63	4.74	3	2.94	115.95	1.23	0	1.23	13.32	5.09	-0.01	3	1	0.86	3.04	13.32	-0.07	16.92	3
22	28.61	0.73	-1.34	0.41	28.6	2.56	4	2.61	116.16	1.29	0	1.29	21.17	2.68	0	4	0.94	0.83	2.7	21.43	-0.07	24.68	5
23	42.5	0.94	-6.4	0.33	42.42	2.22	5	2.44	118.96	1.35	0	1.35	30.45	2.29	-0.01	4	0.88	0.81	2.53	31.37	-0.34	29.18	5
24	30.08	1.04	-1.45	0.31	30.06	3.47	4	2.68	118.89	1.41	0	1.41	20.34	3.65	0	3	0.98	0.75	2.8	20.44	-0.07	21.06	3
25	42.5	0.63	-1.64	0.27	42.48	1.47	5	2.33	115.99	1.47	0	1.47	27.97	1.53	0	5	0.85	0.76	2.45	29.36	-0.08	34.27	7
26	10.55	0.31	-0.83	0.33	10.54	2.97	3	3	107.52	1.52	0	1.52	5.93	3.47	-0.01	3	1	0.7	3.22	5.93	-0.04	17.58	2
27	7.41	0.31	-1.06	0.34	7.4	4.23	3	3.21	106.66	1.57	0	1.57	3.7	5.38	-0.01	3	1	0.67	3.5	3.7	-0.05	15.24	2
28	17.44	0.42	-0.48	0.35	17.43	2.4	4	2.76	110.86	1.63	0	1.63	9.7	2.64	0	3	1	0.65	2.98	9.7	-0.02	20.6	2
29	27.57	0.63	0.19	0.37	27.57	2.27	4	2.59	114.94	1.69	0	1.69	15.35	2.42	0	4	0.99	0.63	2.79	15.4	0.01	23.68	4
30	32.79	1.15	0.78	0.41	32.8	3.5	4	2.65	119.8	1.75	0	1.75	17.78	3.7	0	3	1	0.61	2.85	17.78	0.03	20.46	3
31	43.76	1.78	0.77	0.46	43.76	4.06	4	2.6	123.69	1.81	0	1.81	23.2	4.23	0	3	1	0.59	2.8	23.2	0.03	19.74	3
32	59.73	3.24	1.02	0.46	59.74	5.42	4	2.6	128.84	1.87	0	1.87	30.9	5.59	0	3	1	0.57	2.79	30.9	0.04	16.84	3
33	48.87	4.18	1.54	0.5	48.89	8.54	3	2.81	130.22	1.94	0	1.94	24.23	8.9	0	3	1	0.55	3.01	24.23	0.06	11.99	3
34	49.08	1.67	1.56	0.47	49.1	3.4	4	2.51	123.52	2	0	2	23.56	3.55	0	4	0.99	0.53	2.74	23.7	0.06	21.87	3
35	52.63	1.98	1.45	0.4	52.65	3.77	4	2.52	124.95	2.06	0	2.06	24.53	3.92	0	4	1	0.51	2.76	24.55	0.05	20.78	3
36	188.07	4.07	2.41	0.53	188.1	2.17	6	1.98	133.32	2.13	0	2.13	87.37	2.19	0	5	0.76	0.59	2.13	103.03	0.08	38.23	7
37	182.75	7.31	3	0.01	182.78	4	8	2.2	137.28	2.2	0	2.2	82.19	4.05	0	4	0.86	0.53	2.37	91.24	0.1	23.04	5
38	183.27	10.34	3.77	-0.33	183.32	5.64	9	2.32	137.28	2.27	0	2.27	79.91	5.71	0	9	0.91	0.5	2.5	85.45	0.12	17.11	3
39	219.4	13.47	4.13	0.02	219.45	6.14	9	2.32	137.28	2.33	0	2.33	93.01	6.2	0	9	0.91	0.49	2.49	99.82	0.13	15.93	3
40	674.39	13.68	3.93	0.9	674.44	2.03	8	1.67	137.28	2.4	0	2.4	279.65	2.04	0	6	0.64	0.59	1.77	376.18	0.12	46.21	7
41	672.3	13.89	1.97	1.03	672.33	2.07	8	1.67	137.28	2.47	0	2.47	270.99	2.07	0	6	0.65	0.58	1.78	365.7	0.06	45.36	7
42	732.77	0	-7.26	0.75	732.68	0	0	0	87.36	2.52	0	2.52	290.26	0	0	0	1	0.42	4.06	290.26	-0.21	428.94	0

	CPT-9	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	93.67	1.15	1.14	-0.99	93.69	1.23	6	2.01	122.36	0.06	0	0.06	1529.3	1.23	0	6	0.47	3.79	1.61	334.98	1.34	71.72	7
2	38.74	1.67	1.46	-0.8	38.76	4.31	4	2.66	122.95	0.12	0	0.12	314.81	4.32	0	9	0.71	4.59	2.23	167.77	0.85	22.35	5
3	14.83	1.15	0.68	-0.6	14.84	7.74	3	3.14	117.86	0.18	0	0.18	80.74	7.84	0	9	0.88	4.72	2.68	65.41	0.27	12.94	3
4	7	0.63	0	-0.51	7	8.96	3	3.43	111.6	0.24	0	0.24	28.48	9.27	0	3	0.99	4.42	2.98	28.24	0	11.53	3
5	7.94	0.42	0.58	-0.52	7.94	5.26	3	3.24	108.94	0.29	0	0.29	26.22	5.46	0.01	3	0.95	3.41	2.85	24.67	0.14	16.94	3
6	11.07	0.52	0	-0.61	11.07	4.72	3	3.1	111.38	0.35	0	0.35	30.85	4.87	0	3	0.92	2.8	2.78	28.35	0	18.43	3
7	37.28	0.94	0.68	-0.56	37.29	2.52	4	2.52	118.64	0.41	0	0.41	90.63	2.55	0	5	0.74	2.03	2.29	70.91	0.12	32.27	7
8	24.75	1.04	0.08	-0.45	24.75	4.22	3	2.8	118.41	0.47	0	0.47	52.11	4.3	0	4	0.86	2.02	2.59	46.36	0.01	20.92	3
9	30.18	0.63	0.31	-0.42	30.18	2.08	4	2.53	115.16	0.52	0	0.52	56.64	2.11	0	5	0.77	1.72	2.36	48.33	0.04	33.89	7
10	83.02	3.13	0.34	-0.49	83.02	3.77	4	2.39	129.41	0.59	0	0.59	140.11	3.8	0	8	0.74	1.55	2.27	120.56	0.04	24.72	5
11	492.9	0	1.95	-0.71	492.92	0	0	0	87.36	0.63	0	0.63	778.86	0	0	0	1	1.67	4.06	778.86	0.22	1126.94	0

	CPT-10	In situ data						Basic output data														
Depth (ft)	qc (tsf)	fs (tsf)	u (psi)	Other	qt (tsf)	Rf(%)	SBT	Ic SBT	ã (pcf)	ó,v (tsf)	u0 (tsf)	ó',vo (tsf)	Qt1	Fr (%)	Bq	SBTn	n	Cn	Ic	Qtn	U2	I(B)	Mod. SBTn
1	117.06	1.25	-0.05	0.94	117.06	1.07	6	1.9	123.54	0.06	0	0.06	1892.9	1.07	0	6	0.44	3.48	1.53	384.78	-0.06	81.88	7
2	35.61	1.25	-0.14	1.07	35.61	3.52	4	2.63	120.64	0.12	0	0.12	290.47	3.53	0	8	0.69	4.45	2.19	149.28	-0.08	26.67	5
3	79.26	1.15	-0.33	1.09	79.26	1.45	5	2.11	121.95	0.18	0	0.18	432.14	1.45	0	6	0.55	2.63	1.82	196.48	-0.13	58.09	7
4	64.01	1.36	-0.68	1.11	64.01	2.12	5	2.29	122.65	0.24	0	0.24	260.94	2.13	0	5	0.63	2.51	2.02	151.25	-0.2	41.13	7
5	17.23	0.73	-0.29	1.2	17.23	4.24	3	2.92	114.92	0.3	0	0.3	56.07	4.32	0	4	0.85	2.9	2.59	46.43	-0.07	20.86	3
6	15.87	0.52	-0.64	1.19	15.87	3.29	3	2.88	112.26	0.36	0	0.36	43.31	3.37	0	4	0.85	2.51	2.58	36.85	-0.13	24.14	5
7	21.3	0.63	-0.55	1.26	21.3	2.94	4	2.75	114.31	0.42	0	0.42	50.29	3	0	4	0.82	2.16	2.5	42.62	-0.1	26.59	5
8	39.26	1.46	-0.37	1.34	39.26	3.72	4	2.61	122	0.48	0	0.48	81.47	3.77	0	4	0.8	1.89	2.43	69.24	-0.06	23.94	5
9	29.03	1.98	-1.41	1.48	29.01	6.84	3	2.89	123.5	0.54	0	0.54	52.94	6.97	0	3	0.91	1.85	2.72	49.89	-0.19	14.34	3
10	33.31	1.88	-2.44	1.52	33.28	5.65	3	2.79	123.44	0.6	0	0.6	54.51	5.75	-0.01	3	0.89	1.66	2.65	51.16	-0.29	16.79	3
11	39.37	1.04	-2.79	1.48	39.33	2.65	4	2.51	119.54	0.66	0	0.66	58.65	2.7	-0.01	5	0.8	1.46	2.4	53.26	-0.3	29.59	5
12	29.97	0.52	-1.45	1.56	29.95	1.74	5	2.49	113.81	0.72	0	0.72	40.81	1.79	0	5	0.8	1.36	2.4	37.71	-0.15	34.74	7
13	22.66	0.31	-0.78	1.58	22.65	1.38	5	2.54	109.39	0.77	0	0.77	28.38	1.43	0	5	0.82	1.3	2.46	26.85	-0.07	33.98	6
14	26.84	0.42	-0.79	1.64	26.83	1.56	5	2.5	111.91	0.83	0	0.83	31.44	1.61	0	5	0.82	1.22	2.45	30.1	-0.07	33.88	7
15	25.38	0.63	-0.36	1.6	25.37	2.47	4	2.64	114.74	0.88	0	0.88	27.69	2.56	0	4	0.89	1.17	2.61	27.13	-0.03	26.63	5
16	23.39	0.63	-0.78	1.7	23.38	2.68	4	2.69	114.54	0.94	0	0.94	23.83	2.79	0	4	0.91	1.11	2.68	23.6	-0.06	24.72	5
17	26.84	0.63	-0.48	1.6	26.83	2.34	4	2.61	114.87	1	0	1	25.86	2.43	0	4	0.89	1.05	2.61	25.7	-0.03	26.98	5
18	29.03	0.84	-0.77	1.59	29.02	2.88	4	2.64	117.17	1.06	0	1.06	26.44	2.99	0	4	0.91	1	2.66	26.44	-0.05	24.46	5
19	34.15	1.15	-0.68	1.76	34.14	3.36	4	2.63	119.9	1.12	0	1.12	29.55	3.48	0	4	0.92	0.95	2.66	29.68	-0.04	22.9	5
20	24.75	1.25	-0.46	1.9	24.74	5.06	3	2.85	119.75	1.18	0	1.18	20.02	5.32	0	3	1	0.9	2.91	20.02	-0.03	17.01	3
21	15.87	0.84	-0.83	2.09	15.86	5.27	3	3.01	115.7	1.24	0	1.24	11.84	5.71	0	3	1	0.86	3.11	11.84	-0.05	15.87	3
22	26.42	0.84	-0.24	2.17	26.42	3.16	4	2.69	116.94	1.29	0	1.29	19.42	3.33	0	4	0.97	0.82	2.79	19.52	-0.01	21.88	3
23	25.38	0.94	0.09	2.31	25.38	3.7	4	2.75	117.7	1.35	0	1.35	17.76	3.91	0	3	1	0.78	2.87	17.76	0	19.9	3
24	11.17	1.04	0.48	2.61	11.18	9.34	3	3.28	116.48	1.41	0	1.41	6.92	10.69	0	2	1	0.75	3.46	6.92	0.02	11.75	1
25	20.05	1.15	0.22	2.86	20.05	5.73	3	2.95	118.6	1.47	0	1.47	12.64	6.18	0	3	1	0.72	3.11	12.64	0.01	15.28	3
26	19.53	0.94	0.62	3.05	19.54	4.81	3	2.91	117.07	1.53	0	1.53	11.78	5.22	0	3	1	0.69	3.08	11.78	0.03	16.56	3
27	46.89	1.57	0.17	3.27	46.89	3.34	4	2.52	122.94	1.59	0	1.59	28.49	3.46	0	4	0.94	0.68	2.67	29.17	0.01	22.92	5
28	40.41	1.36	0.69	3.29	40.42	3.36	4	2.57	121.53	1.65	0	1.65	23.49	3.5	0	4	0.97	0.65	2.74	23.79	0.03	22.04	5
29	59.21	2.19	0.45	3.31	59.22	3.7	4	2.48	125.97	1.71	0	1.71	33.55	3.81	0	4	0.94	0.64	2.64	34.58	0.02	22.08	5
30	104.43	3.03	1.06	3.35	104.44	2.9	5	2.24	129.72	1.78	0	1.78	57.72	2.95	0	5	0.84	0.65	2.38	62.7	0.04	28.51	5
31	59.31	2.61	1.16	3.53	59.33	4.4	4	2.54	127.25	1.84	0	1.84	31.2	4.54	0	4	0.97	0.58	2.72	31.66	0.05	19.49	3
32	57.96	1.67	0.74	3.67	57.97	2.88	5	2.41	123.93	1.9	0	1.9	29.44	2.98	0	4	0.93	0.58	2.61	30.59	0.03	25.19	5
33	46.57	1.46	1.38	3.65	46.59	3.14	4	2.51	122.42	1.97	0	1.97	22.71	3.28	0	4	0.98	0.54	2.73	22.94	0.05	22.69	5
34	43.76	1.67	1.55	3.65	43.77	3.82	4	2.58	123.24	2.03	0	2.03	20.59	4	0	3	1	0.52	2.82	20.59	0.05	20.07	3
35	151.94	5.74	1.16	3.55	151.96	3.78	8	2.23	135.31	2.09	0	2.09	71.54	3.83	0	4	0.86	0.56	2.39	78.62	0.04	23.87	5
36	526.1	12.74	2.28	4.01	526.13	2.42	8	1.78	137.28	2.16	0	2.16	242.19	2.43	0	8	0.67	0.62	1.88	306.72	0.08	38.82	7
37	153.3	11.28	2.51	4.23	153.33	7.36	9	2.46	137.28	2.23	0	2.23	67.69	7.46	0	9	0.97	0.49	2.65	69.43	0.08	13.5	3
38	753.44	12.64	1.91	4.31	753.47	1.68	8	1.57	137.28	2.3	0	2.3	326.5	1.68	0	6	0.59	0.63	1.66	448.3	0.06	55.61	7
39	656.01	15.35	0.66	4.72	656.02	2.34	8	1.73	137.28	2.37	0	2.37	275.88	2.35	0	8	0.66	0.59	1.83	362.76	0.02	40.43	7
40	540.93	12.43	-1.64	5.06	540.91	2.3	8	1.75	137.28	2.44	0	2.44	220.87	2.31	0	6	0.68	0.57	1.88	288.28	-0.05	40.57	7
41	190.79	10.86	-1.23	5.44	190.77	5.69	9	2.32	137.28	2.51	0	2.51	75.11	5.77	0	9	0.93	0.45	2.53	79.66	-0.04	16.93	3
42	544.59	0	-1.54	5.52	544.57	0	0	0	87.36	2.55	0	2.55	212.52	0	0	0	1	0.41	4.06	212.52	-0.04	317.89	0

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236 \right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a} \right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

:: Young's Modulus, Es (MPa) ::

$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 \cdot I_c + 1.68}$

(applicable only to $I_c < I_{c_cutoff}$)

:: Relative Density, Dr (%) ::

$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$ (applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c_cutoff}$)

:: State Parameter, ψ ::

$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$

:: Peak drained friction angle, φ (°) ::

$\varphi = 17.60 + 11 \cdot \log(Q_{tn})$

(applicable only to SBT_n: 5, 6, 7 and 8)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$

$\alpha = 14$ for $Q_{tn} > 14$

$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$

$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \leq 2.20$

$M_{CPT} = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Small strain shear Modulus, Go (MPa) ::

$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho} \right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))} \right]^{1.25}$$ or user defined

$OCR = k_{OCR} \cdot Q_{tn}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: In situ Stress Ratio, Ko ::

$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c_cutoff}$)

:: Effective Stress Friction Angle, φ' (°) ::

$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$

(applicable for $0.10 < B_q < 1.00$)

References

- Robertson, P.K., Cabal K.L., Guide to Cone Penetration Testing for Geotechnical Engineering, Gregg Drilling & Testing, Inc., 5th Edition, November 2012
- Robertson, P.K., Interpretation of Cone Penetration Tests - a unified approach., Can. Geotech. J. 46(11): 1337–1355 (2009)

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

B.1 Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

B.2 Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses were performed on Two (2) selected samples. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

B.3 Percent Finer than Sieve No. 200

The percent finer than sieve No. 200 tests were performed on six (6) representative soil samples to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM Standard D1140 test method. Test results are presented in the Logs of Borings in Appendix A, *Field Exploration*.

Table No. B-1, Percent Passing Sieve # 200 Results

Boring No.	Depth (feet)	Soil Classification	Percent Passing Sieve No. 200
BH-3	0-5	Silty Sand (SM)	43%
BH-3	15	Silty Sand (SM) with trace gravels	34%
BH-3	25	Silty Sand (SM) with trace gravels	45%
BH-3	35	Sandy Clay (CL)	55%
BH-4	5	Silty Sand (SM)	38%
BH-6	5	Silty Sand (SM) with trace silt	29 %

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B.4 Maximum Dry Density Test

One (1) laboratory maximum dry density-moisture content relationship test was performed on one representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented on Drawing No. B-2, *Moisture-Density Relationship Results*.

B.5 Direct Shear

Direct shear tests were performed on three (3) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-3 through B-5, *Direct Shear Test Results,* and in the following table:

Table No. B-2, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-1	10	Clayey Sand (SC)	34	110
BH-5	5	Sandy Silt (ML)	25	240
BH - 8	5	Clayey Silt (ML)	27	360

B.6 Consolidation Test

Consolidation tests were performed on two (2) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-6 through B-7, *Consolidation Test Results*.

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B.7 R-Value Test

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with ASTM D2844 Standard. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-3, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-5	1-5	Silty Sand (SM)	46

B.8 Soil Corrosivity

One (1) representative soil sample was tested to determine minimum electrical resistivity, pH, and chemical content, including chloride concentrations, and soluble sulfate. The purpose of these tests is to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by EGL in Arcadia, California. The test results received from EGL are included in the following table:

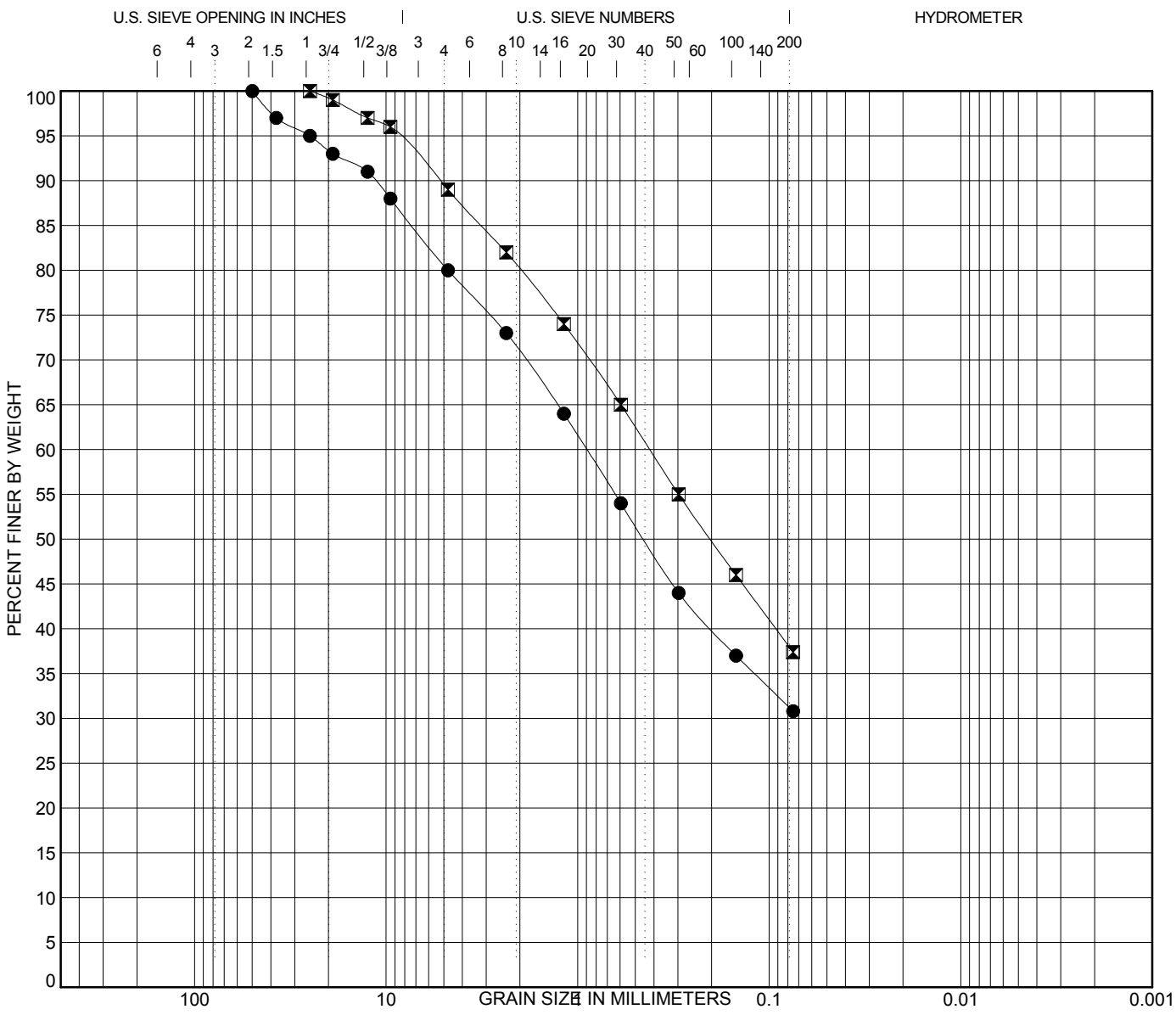
Table No. B-4, Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (%)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-4	10	8.17	115	0.006	2,100

B.9 Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-1**	**0-5**	**SANDY SILT (ML)**					
⧓	**BH-7**	**0-5**	**SILTY SAND (SM)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-1**	**0-5**	**50**	**0.897**			**20.0**	**49.2**	**30.8**	
⧓	**BH-7**	**0-5**	**25**	**0.42**			**11.0**	**51.6**	**37.4**	

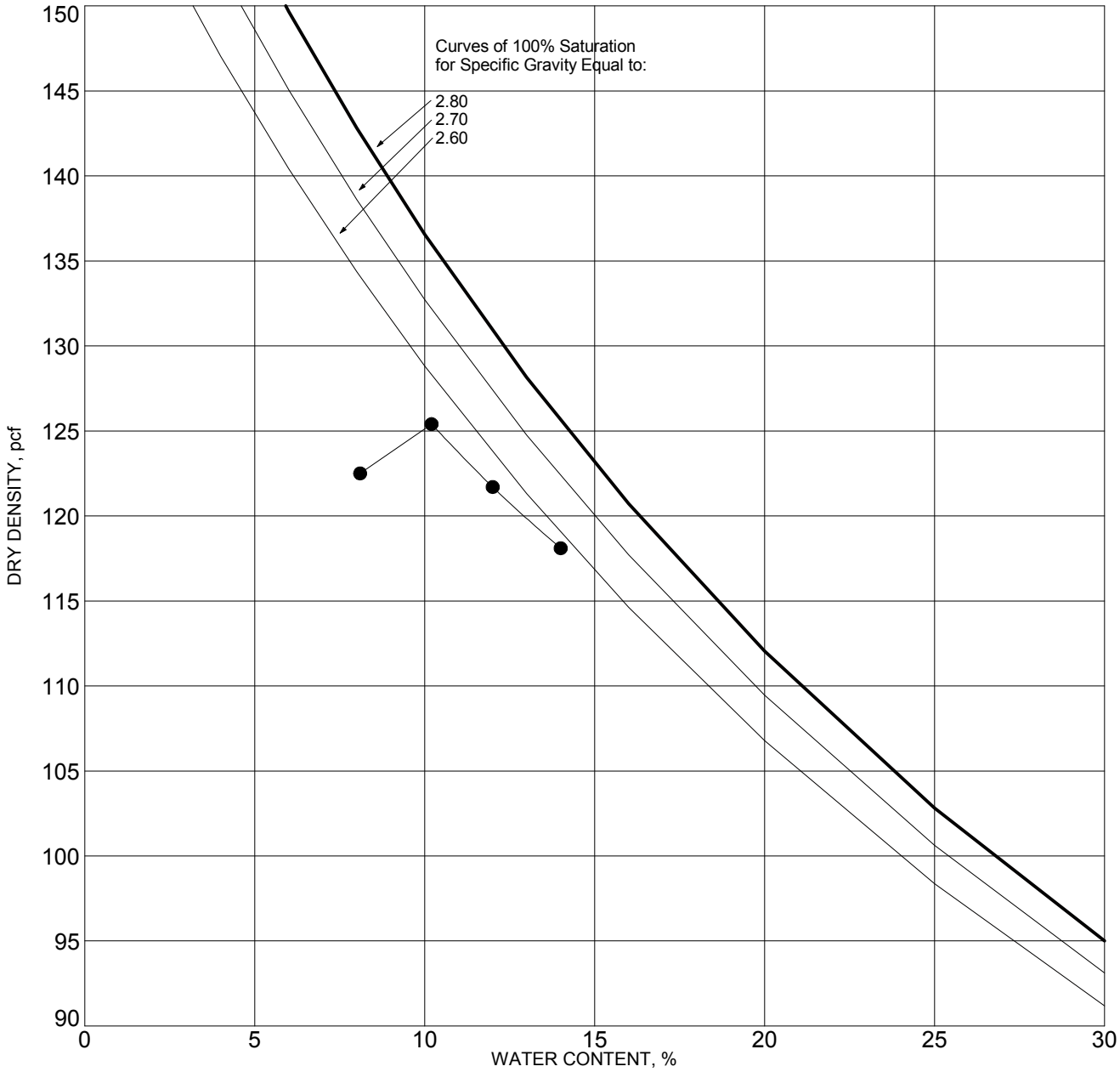
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
PARKING LOT S
WALNUT, CALIFORNIA

Project No.
17-31-247-01

Figure No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-3	0-5	SILTY SAND (SM)	D1557 Method B	10.2	125.4

NOTE:

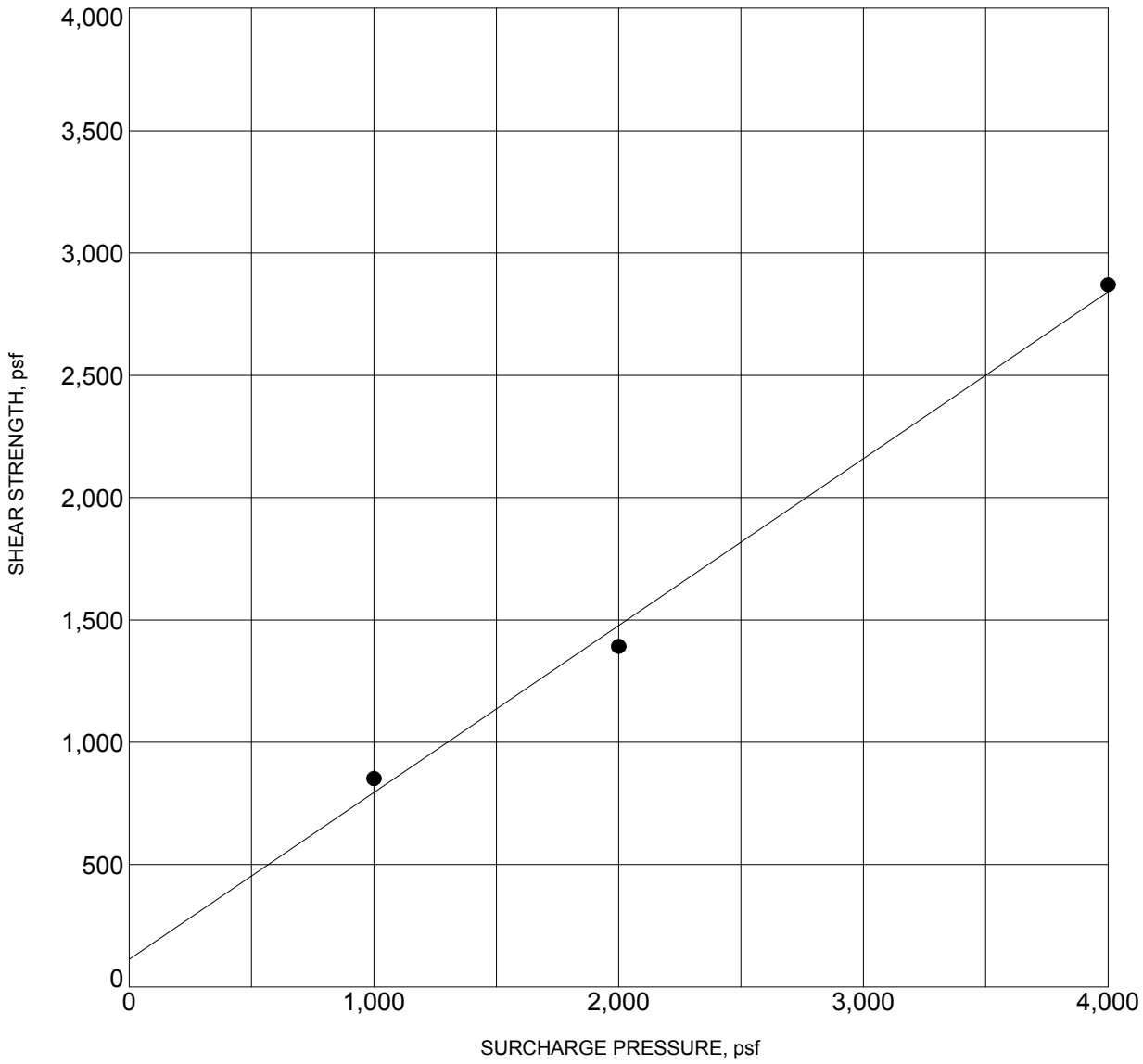
MOISTURE-DENSITY RELATIONSHIP RESULTS

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Figure No.
B-2



BORING NO.	:	**BH-1**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**110**	FRICTION ANGLE (degrees):		**34**
MOISTURE CONTENT (%)	:	**9.0**	DRY DENSITY (pcf)	:	**107.0**

NOTE: Ultimate Strength.

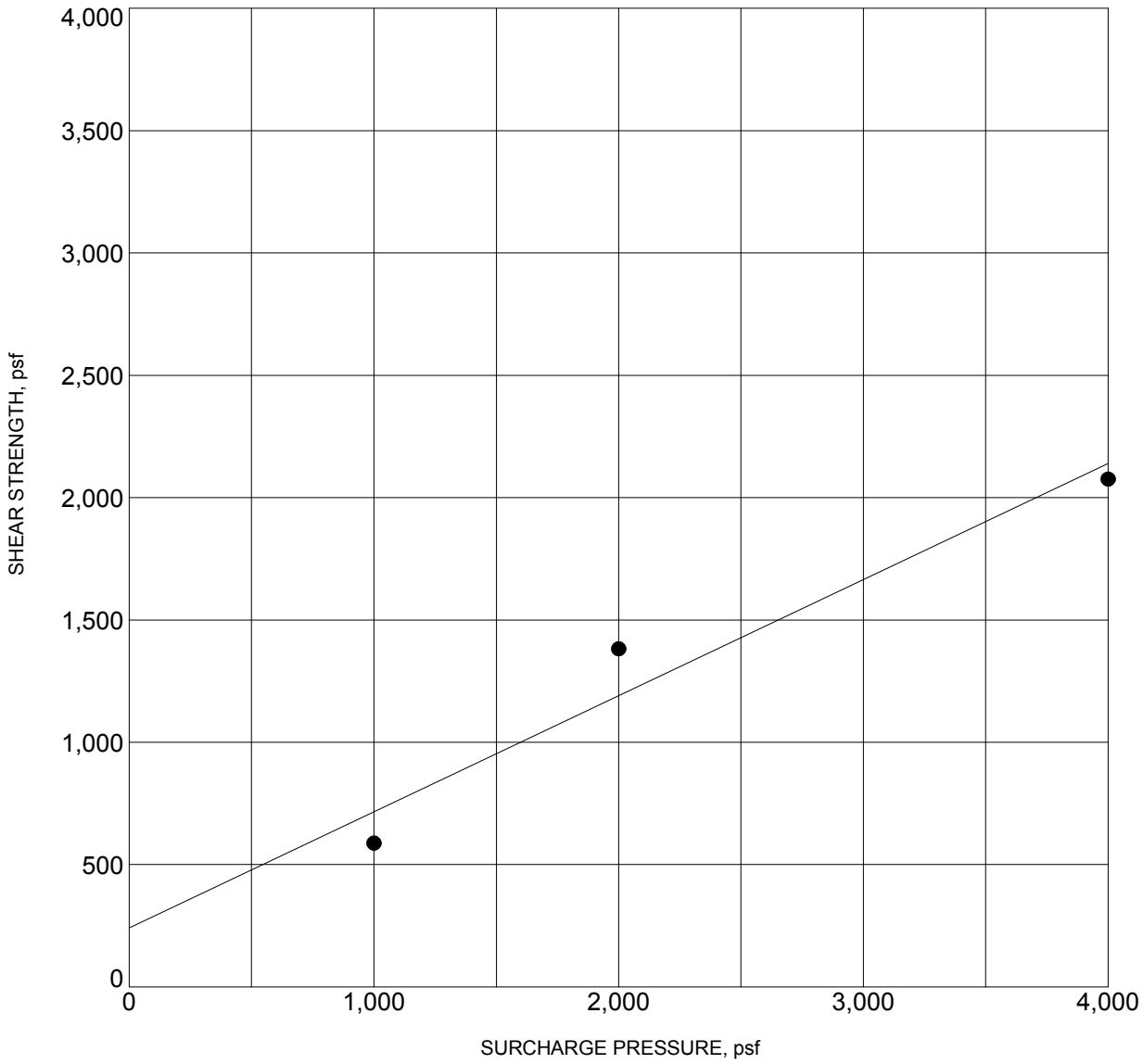
DIRECT SHEAR TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-3**



BORING NO.	:	**BH-5**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**SANDY SILT (ML)**			
COHESION (psf)	:	**240**	FRICTION ANGLE (degrees):		**25**
MOISTURE CONTENT (%)	:	**17.0**	DRY DENSITY (pcf)	:	**110.0**

NOTE: Ultimate Strength.

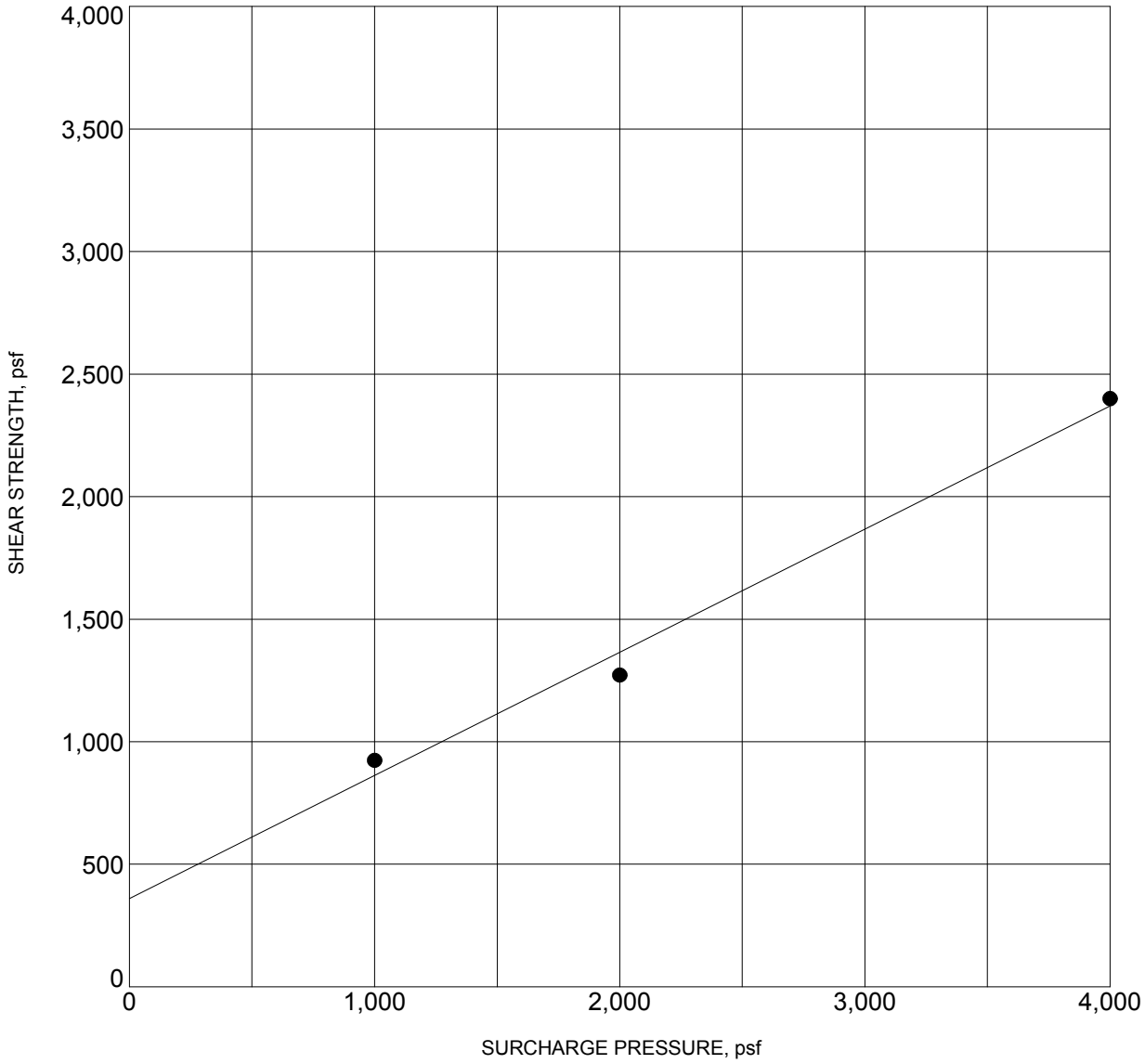
DIRECT SHEAR TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-4**



BORING NO.	:	**BH-8**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**CLAYEY SILT (ML)**			
COHESION (psf)	:	**360**	FRICTION ANGLE (degrees):		**27**
MOISTURE CONTENT (%)	:	**9.5**	DRY DENSITY (pcf)	:	**107.0**

NOTE: Ultimate Strength.

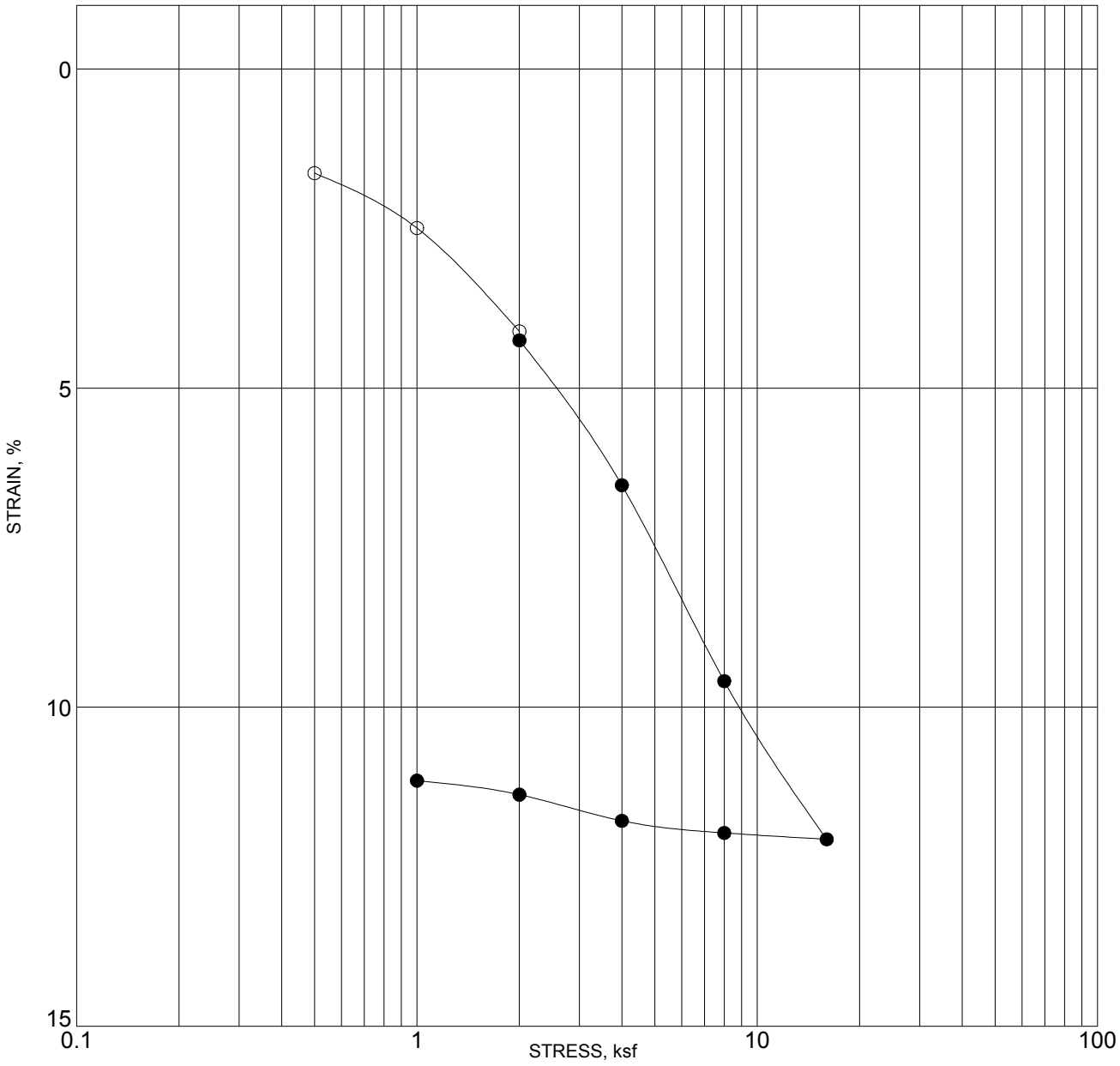
DIRECT SHEAR TEST RESULTS

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Project No.
17-31-247-01

Figure No.
B-5



BORING NO. :	**BH-2**	DEPTH (ft) :	**5**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**5**	**110**	**27**	**0.475**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

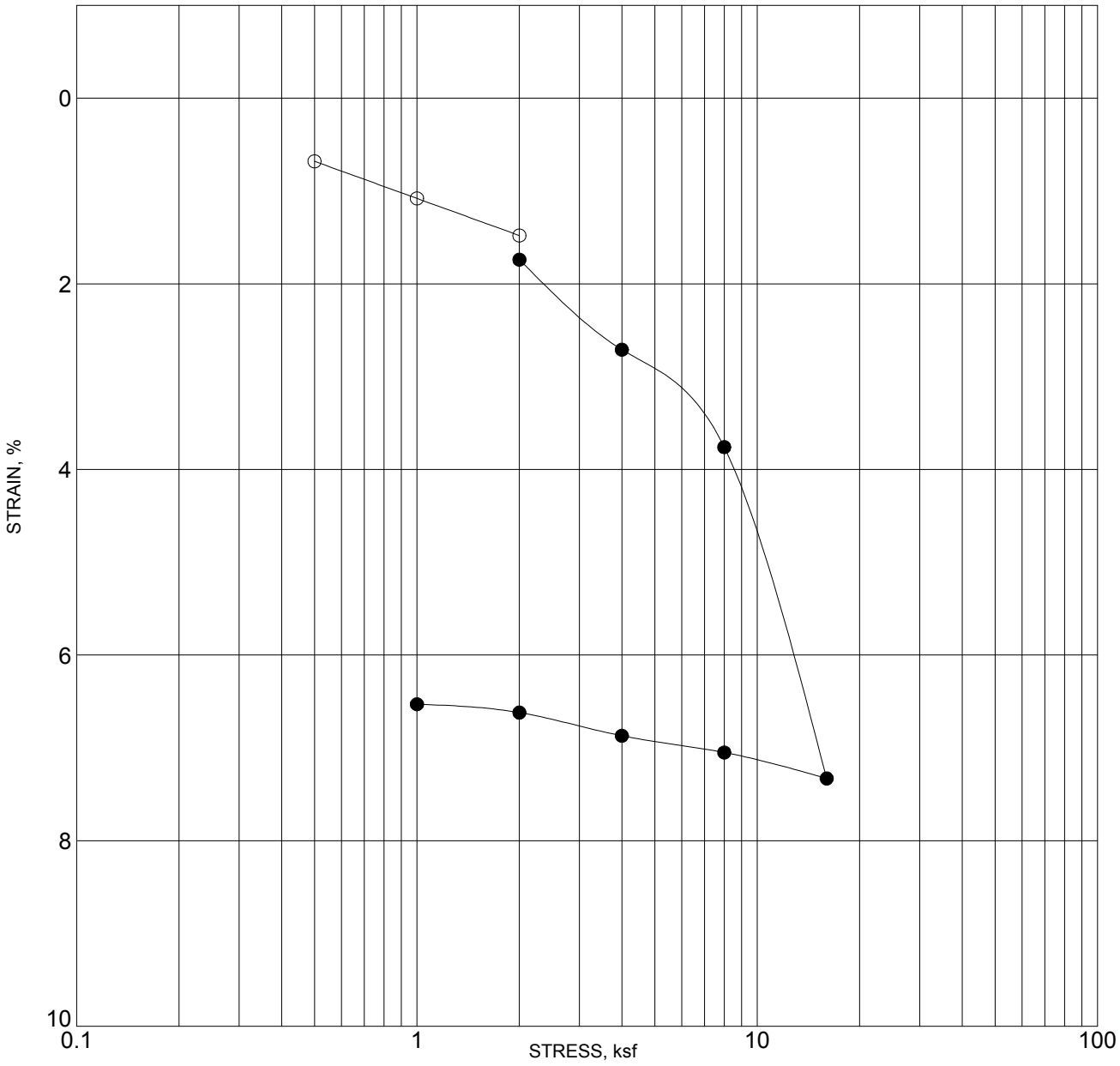
CONSOLIDATION TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-6**



BORING NO. :	BH-6	DEPTH (ft) :	5
DESCRIPTION :	**BEDROCK-PUENTE FORMATION:** SANDSTONE		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	7	122	53	0.340
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

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Project No. **17-31-247-01**

Figure No. **B-7**

Appendix C

Liquefaction/Seismic Settlement Analysis

APPENDIX C: LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from borings BH-3 and CPT-8 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8d, 2009, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** (Mw)	Peak Ground Acceleration*** (g)
23	6.51	0.777

* Based on research of Los Angeles County Groundwater Wells No. 3145, No. 3155 and No. 3155A
** Based on the 2008 NSHMP PSHA Interactive Deaggregation web site for a return period of 2475 years
***Based on S_{DS}/2.5 per CBC 2013

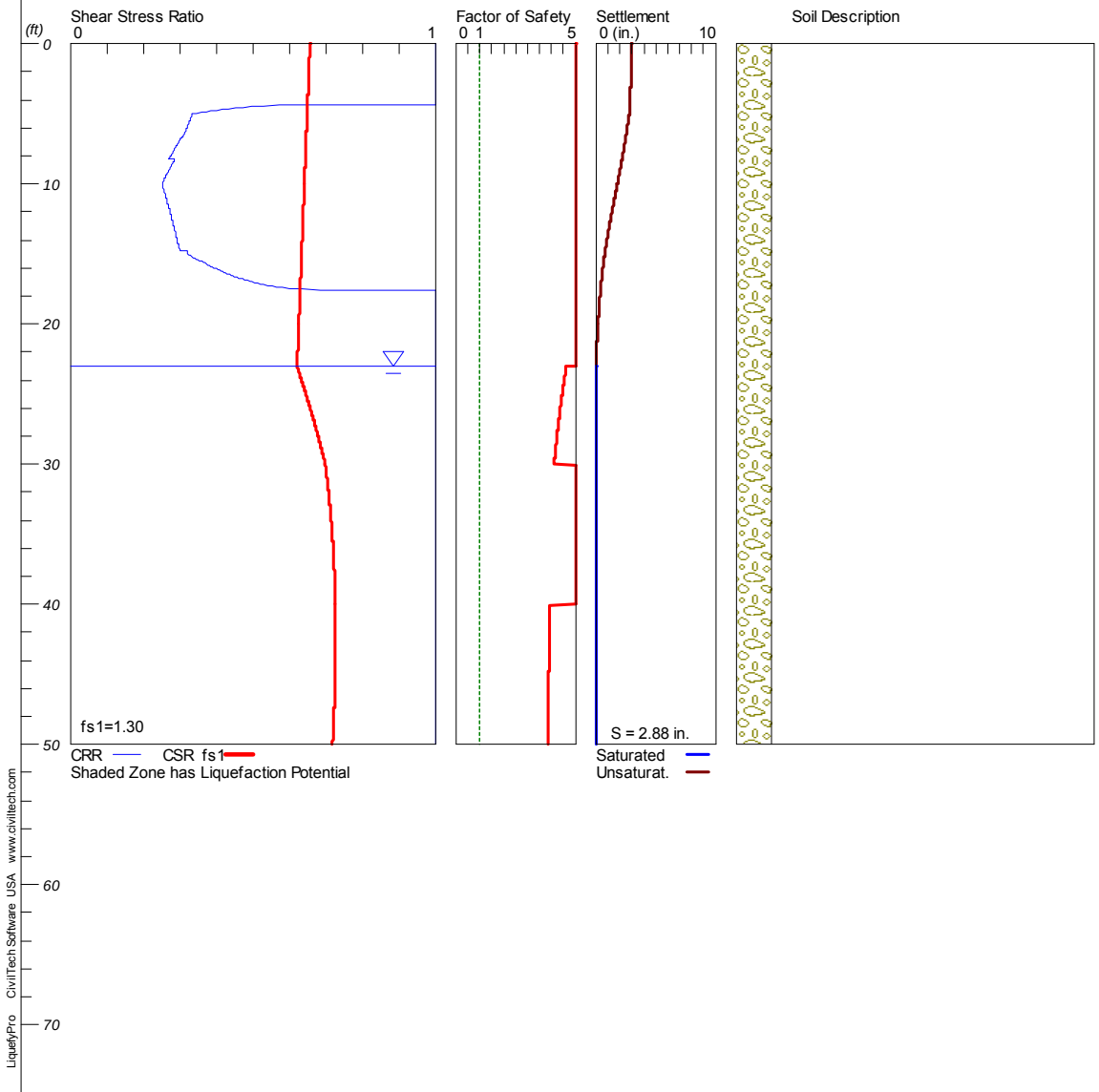
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LIQUEFACTION ANALYSIS

Parking Lot S MT Sac

Hole No.=BH 3 Water Depth=23 ft

Magnitude=6.51
Acceleration=0.777g



****

LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot S\BH3 rev.liq
Title: Parking Lot S MT Sac
Subtitle: 17-31-247-01

Surface Elev.=
Hole No.=3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 23.00 ft
Water Table during In-Situ Testing= 23.40 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.51

Input Data:
Surface Elev.=
Hole No.=3
Depth of Hole=50.00 ft
Water Table during Earthquake= 23.00 ft
Water Table during In-Situ Testing= 23.40 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.51
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	114.00	43.00
5.00	7.70	114.00	43.00
10.00	4.90	118.00	43.00
15.00	8.40	115.00	45.00
20.00	25.00	115.00	45.00
25.00	20.30	115.00	45.00
30.00	21.00	110.00	NoLiq
35.00	35.00	110.00	NoLiq
40.00	50.00	110.00	NoLiq
45.00	50.00	107.00	55.00
50.00	50.00	107.00	55.00

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=2.88 in.
Total Settlement of Saturated and Unsaturated Sands=2.88 in.
Differential Settlement=1.442 to 1.904 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	BH3 rev.sum in.
0.00	2.87	0.66	5.00	0.00	2.88	2.88
0.05	2.87	0.66	5.00	0.00	2.88	2.88
0.10	2.87	0.66	5.00	0.00	2.88	2.88
0.15	2.87	0.66	5.00	0.00	2.88	2.88
0.20	2.87	0.66	5.00	0.00	2.88	2.88
0.25	2.87	0.66	5.00	0.00	2.88	2.88
0.30	2.87	0.66	5.00	0.00	2.88	2.88
0.35	2.87	0.66	5.00	0.00	2.88	2.88
0.40	2.87	0.66	5.00	0.00	2.88	2.88
0.45	2.87	0.66	5.00	0.00	2.88	2.88
0.50	2.87	0.66	5.00	0.00	2.88	2.88
0.55	2.87	0.66	5.00	0.00	2.88	2.88
0.60	2.87	0.66	5.00	0.00	2.88	2.88
0.65	2.87	0.66	5.00	0.00	2.88	2.88
0.70	2.87	0.66	5.00	0.00	2.88	2.88
0.75	2.87	0.66	5.00	0.00	2.88	2.88
0.80	2.87	0.66	5.00	0.00	2.88	2.88
0.85	2.87	0.66	5.00	0.00	2.88	2.88
0.90	2.87	0.66	5.00	0.00	2.88	2.88
0.95	2.87	0.66	5.00	0.00	2.88	2.88
1.00	2.87	0.66	5.00	0.00	2.88	2.88
1.05	2.87	0.65	5.00	0.00	2.88	2.88
1.10	2.87	0.65	5.00	0.00	2.88	2.88
1.15	2.87	0.65	5.00	0.00	2.88	2.88
1.20	2.87	0.65	5.00	0.00	2.88	2.88
1.25	2.87	0.65	5.00	0.00	2.88	2.88
1.30	2.87	0.65	5.00	0.00	2.88	2.88
1.35	2.87	0.65	5.00	0.00	2.88	2.88
1.40	2.87	0.65	5.00	0.00	2.88	2.88
1.45	2.87	0.65	5.00	0.00	2.88	2.88
1.50	2.87	0.65	5.00	0.00	2.88	2.88
1.55	2.87	0.65	5.00	0.00	2.88	2.88
1.60	2.87	0.65	5.00	0.00	2.88	2.88
1.65	2.87	0.65	5.00	0.00	2.88	2.88
1.70	2.87	0.65	5.00	0.00	2.88	2.88
1.75	2.87	0.65	5.00	0.00	2.88	2.88
1.80	2.87	0.65	5.00	0.00	2.88	2.88
1.85	2.87	0.65	5.00	0.00	2.88	2.88
1.90	2.87	0.65	5.00	0.00	2.88	2.88
1.95	2.87	0.65	5.00	0.00	2.88	2.88
2.00	2.87	0.65	5.00	0.00	2.88	2.88
2.05	2.87	0.65	5.00	0.00	2.88	2.88
2.10	2.87	0.65	5.00	0.00	2.88	2.88
2.15	2.87	0.65	5.00	0.00	2.88	2.88
2.20	2.87	0.65	5.00	0.00	2.88	2.88
2.25	2.87	0.65	5.00	0.00	2.88	2.88
2.30	2.87	0.65	5.00	0.00	2.88	2.88
2.35	2.87	0.65	5.00	0.00	2.88	2.88
2.40	2.87	0.65	5.00	0.00	2.88	2.88
2.45	2.87	0.65	5.00	0.00	2.88	2.88
2.50	2.87	0.65	5.00	0.00	2.88	2.88
2.55	2.87	0.65	5.00	0.00	2.88	2.88
2.60	2.87	0.65	5.00	0.00	2.88	2.88
2.65	2.87	0.65	5.00	0.00	2.88	2.88
2.70	2.87	0.65	5.00	0.00	2.88	2.88
2.75	2.87	0.65	5.00	0.00	2.88	2.88
2.80	2.87	0.65	5.00	0.00	2.88	2.88
2.85	2.87	0.65	5.00	0.00	2.88	2.88
2.90	2.87	0.65	5.00	0.00	2.88	2.88
2.95	2.87	0.65	5.00	0.00	2.88	2.88
3.00	2.87	0.65	5.00	0.00	2.88	2.88
3.05	2.87	0.65	5.00	0.00	2.88	2.88
3.10	2.87	0.65	5.00	0.00	2.88	2.88
3.15	2.87	0.65	5.00	0.00	2.88	2.88
3.20	2.87	0.65	5.00	0.00	2.88	2.88

3.25	2.87	0.65	5.00	0.00	2.88	2.88
3.30	2.87	0.65	5.00	0.00	2.88	2.88
3.35	2.87	0.65	5.00	0.00	2.88	2.88
3.40	2.87	0.65	5.00	0.00	2.88	2.88
3.45	2.87	0.65	5.00	0.00	2.88	2.88
3.50	2.87	0.65	5.00	0.00	2.88	2.88
3.55	2.87	0.65	5.00	0.00	2.87	2.87
3.60	2.87	0.65	5.00	0.00	2.87	2.87
3.65	2.87	0.65	5.00	0.00	2.87	2.87
3.70	2.87	0.65	5.00	0.00	2.87	2.87
3.75	2.87	0.65	5.00	0.00	2.87	2.87
3.80	2.87	0.65	5.00	0.00	2.86	2.86
3.85	2.87	0.65	5.00	0.00	2.86	2.86
3.90	2.87	0.65	5.00	0.00	2.85	2.85
3.95	2.87	0.65	5.00	0.00	2.85	2.85
4.00	2.87	0.65	5.00	0.00	2.85	2.85
4.05	2.87	0.65	5.00	0.00	2.84	2.84
4.10	2.87	0.65	5.00	0.00	2.84	2.84
4.15	2.87	0.65	5.00	0.00	2.83	2.83
4.20	2.87	0.65	5.00	0.00	2.83	2.83
4.25	2.87	0.65	5.00	0.00	2.83	2.83
4.30	2.87	0.65	5.00	0.00	2.82	2.82
4.35	2.87	0.65	5.00	0.00	2.82	2.82
4.40	0.57	0.65	5.00	0.00	2.82	2.82
4.45	0.53	0.65	5.00	0.00	2.82	2.82
4.50	0.50	0.65	5.00	0.00	2.82	2.82
4.55	0.47	0.65	5.00	0.00	2.81	2.81
4.60	0.45	0.65	5.00	0.00	2.81	2.81
4.65	0.43	0.65	5.00	0.00	2.81	2.81
4.70	0.42	0.65	5.00	0.00	2.81	2.81
4.75	0.40	0.65	5.00	0.00	2.80	2.80
4.80	0.39	0.65	5.00	0.00	2.80	2.80
4.85	0.37	0.65	5.00	0.00	2.79	2.79
4.90	0.36	0.65	5.00	0.00	2.79	2.79
4.95	0.35	0.65	5.00	0.00	2.78	2.78
5.00	0.33	0.65	5.00	0.00	2.77	2.77
5.05	0.33	0.65	5.00	0.00	2.76	2.76
5.10	0.33	0.65	5.00	0.00	2.75	2.75
5.15	0.33	0.65	5.00	0.00	2.75	2.75
5.20	0.33	0.65	5.00	0.00	2.74	2.74
5.25	0.33	0.65	5.00	0.00	2.73	2.73
5.30	0.33	0.65	5.00	0.00	2.72	2.72
5.35	0.33	0.65	5.00	0.00	2.71	2.71
5.40	0.33	0.65	5.00	0.00	2.70	2.70
5.45	0.33	0.65	5.00	0.00	2.69	2.69
5.50	0.33	0.65	5.00	0.00	2.69	2.69
5.55	0.33	0.65	5.00	0.00	2.68	2.68
5.60	0.32	0.65	5.00	0.00	2.67	2.67
5.65	0.32	0.65	5.00	0.00	2.66	2.66
5.70	0.32	0.65	5.00	0.00	2.65	2.65
5.75	0.32	0.65	5.00	0.00	2.64	2.64
5.80	0.32	0.65	5.00	0.00	2.63	2.63
5.85	0.32	0.65	5.00	0.00	2.63	2.63
5.90	0.32	0.65	5.00	0.00	2.62	2.62
5.95	0.32	0.65	5.00	0.00	2.61	2.61
6.00	0.32	0.65	5.00	0.00	2.60	2.60
6.05	0.32	0.65	5.00	0.00	2.59	2.59
6.10	0.32	0.65	5.00	0.00	2.58	2.58
6.15	0.32	0.65	5.00	0.00	2.57	2.57
6.20	0.32	0.65	5.00	0.00	2.56	2.56
6.25	0.32	0.65	5.00	0.00	2.55	2.55
6.30	0.31	0.65	5.00	0.00	2.55	2.55
6.35	0.31	0.65	5.00	0.00	2.54	2.54
6.40	0.31	0.65	5.00	0.00	2.53	2.53
6.45	0.31	0.65	5.00	0.00	2.52	2.52
6.50	0.31	0.65	5.00	0.00	2.51	2.51
6.55	0.31	0.65	5.00	0.00	2.50	2.50

6.60	0.31	0.65	5.00	0.00	2.49	2.49
6.65	0.31	0.65	5.00	0.00	2.48	2.48
6.70	0.30	0.65	5.00	0.00	2.47	2.47
6.75	0.30	0.65	5.00	0.00	2.46	2.46
6.80	0.30	0.65	5.00	0.00	2.45	2.45
6.85	0.30	0.65	5.00	0.00	2.44	2.44
6.90	0.30	0.65	5.00	0.00	2.43	2.43
6.95	0.30	0.65	5.00	0.00	2.42	2.42
7.00	0.30	0.65	5.00	0.00	2.41	2.41
7.05	0.30	0.65	5.00	0.00	2.41	2.41
7.10	0.29	0.65	5.00	0.00	2.40	2.40
7.15	0.29	0.65	5.00	0.00	2.39	2.39
7.20	0.29	0.65	5.00	0.00	2.38	2.38
7.25	0.29	0.65	5.00	0.00	2.37	2.37
7.30	0.29	0.65	5.00	0.00	2.36	2.36
7.35	0.29	0.65	5.00	0.00	2.35	2.35
7.40	0.29	0.65	5.00	0.00	2.34	2.34
7.45	0.29	0.65	5.00	0.00	2.33	2.33
7.50	0.29	0.65	5.00	0.00	2.32	2.32
7.55	0.28	0.65	5.00	0.00	2.31	2.31
7.60	0.28	0.64	5.00	0.00	2.30	2.30
7.65	0.28	0.64	5.00	0.00	2.28	2.28
7.70	0.28	0.64	5.00	0.00	2.27	2.27
7.75	0.28	0.64	5.00	0.00	2.26	2.26
7.80	0.28	0.64	5.00	0.00	2.25	2.25
7.85	0.28	0.64	5.00	0.00	2.24	2.24
7.90	0.28	0.64	5.00	0.00	2.23	2.23
7.95	0.28	0.64	5.00	0.00	2.22	2.22
8.00	0.27	0.64	5.00	0.00	2.21	2.21
8.05	0.27	0.64	5.00	0.00	2.20	2.20
8.10	0.27	0.64	5.00	0.00	2.19	2.19
8.15	0.27	0.64	5.00	0.00	2.18	2.18
8.20	0.27	0.64	5.00	0.00	2.17	2.17
8.25	0.29	0.64	5.00	0.00	2.16	2.16
8.30	0.29	0.64	5.00	0.00	2.15	2.15
8.35	0.28	0.64	5.00	0.00	2.14	2.14
8.40	0.28	0.64	5.00	0.00	2.13	2.13
8.45	0.28	0.64	5.00	0.00	2.12	2.12
8.50	0.28	0.64	5.00	0.00	2.11	2.11
8.55	0.28	0.64	5.00	0.00	2.10	2.10
8.60	0.28	0.64	5.00	0.00	2.08	2.08
8.65	0.28	0.64	5.00	0.00	2.07	2.07
8.70	0.28	0.64	5.00	0.00	2.06	2.06
8.75	0.28	0.64	5.00	0.00	2.05	2.05
8.80	0.27	0.64	5.00	0.00	2.04	2.04
8.85	0.27	0.64	5.00	0.00	2.03	2.03
8.90	0.27	0.64	5.00	0.00	2.02	2.02
8.95	0.27	0.64	5.00	0.00	2.01	2.01
9.00	0.27	0.64	5.00	0.00	2.00	2.00
9.05	0.27	0.64	5.00	0.00	1.99	1.99
9.10	0.27	0.64	5.00	0.00	1.98	1.98
9.15	0.27	0.64	5.00	0.00	1.97	1.97
9.20	0.27	0.64	5.00	0.00	1.95	1.95
9.25	0.27	0.64	5.00	0.00	1.94	1.94
9.30	0.26	0.64	5.00	0.00	1.93	1.93
9.35	0.26	0.64	5.00	0.00	1.92	1.92
9.40	0.26	0.64	5.00	0.00	1.91	1.91
9.45	0.26	0.64	5.00	0.00	1.90	1.90
9.50	0.26	0.64	5.00	0.00	1.89	1.89
9.55	0.26	0.64	5.00	0.00	1.88	1.88
9.60	0.26	0.64	5.00	0.00	1.86	1.86
9.65	0.26	0.64	5.00	0.00	1.85	1.85
9.70	0.26	0.64	5.00	0.00	1.84	1.84
9.75	0.26	0.64	5.00	0.00	1.83	1.83
9.80	0.25	0.64	5.00	0.00	1.82	1.82
9.85	0.25	0.64	5.00	0.00	1.80	1.80
9.90	0.25	0.64	5.00	0.00	1.79	1.79

9.95	0.25	0.64	5.00	0.00	1.78	1.78
10.00	0.25	0.64	5.00	0.00	1.77	1.77
10.05	0.25	0.64	5.00	0.00	1.76	1.76
10.10	0.25	0.64	5.00	0.00	1.74	1.74
10.15	0.25	0.64	5.00	0.00	1.73	1.73
10.20	0.25	0.64	5.00	0.00	1.72	1.72
10.25	0.25	0.64	5.00	0.00	1.71	1.71
10.30	0.25	0.64	5.00	0.00	1.70	1.70
10.35	0.25	0.64	5.00	0.00	1.69	1.69
10.40	0.26	0.64	5.00	0.00	1.67	1.67
10.45	0.26	0.64	5.00	0.00	1.66	1.66
10.50	0.26	0.64	5.00	0.00	1.65	1.65
10.55	0.26	0.64	5.00	0.00	1.64	1.64
10.60	0.26	0.64	5.00	0.00	1.63	1.63
10.65	0.26	0.64	5.00	0.00	1.61	1.61
10.70	0.26	0.64	5.00	0.00	1.60	1.60
10.75	0.26	0.64	5.00	0.00	1.59	1.59
10.80	0.26	0.64	5.00	0.00	1.58	1.58
10.85	0.26	0.64	5.00	0.00	1.57	1.57
10.90	0.26	0.64	5.00	0.00	1.56	1.56
10.95	0.26	0.64	5.00	0.00	1.55	1.55
11.00	0.26	0.64	5.00	0.00	1.53	1.53
11.05	0.26	0.64	5.00	0.00	1.52	1.52
11.10	0.26	0.64	5.00	0.00	1.51	1.51
11.15	0.26	0.64	5.00	0.00	1.50	1.50
11.20	0.26	0.64	5.00	0.00	1.49	1.49
11.25	0.26	0.64	5.00	0.00	1.48	1.48
11.30	0.27	0.64	5.00	0.00	1.47	1.47
11.35	0.27	0.64	5.00	0.00	1.45	1.45
11.40	0.27	0.64	5.00	0.00	1.44	1.44
11.45	0.27	0.64	5.00	0.00	1.43	1.43
11.50	0.27	0.64	5.00	0.00	1.42	1.42
11.55	0.27	0.64	5.00	0.00	1.41	1.41
11.60	0.27	0.64	5.00	0.00	1.40	1.40
11.65	0.27	0.64	5.00	0.00	1.39	1.39
11.70	0.27	0.64	5.00	0.00	1.38	1.38
11.75	0.27	0.64	5.00	0.00	1.37	1.37
11.80	0.27	0.64	5.00	0.00	1.36	1.36
11.85	0.27	0.64	5.00	0.00	1.34	1.34
11.90	0.27	0.64	5.00	0.00	1.33	1.33
11.95	0.27	0.64	5.00	0.00	1.32	1.32
12.00	0.27	0.64	5.00	0.00	1.31	1.31
12.05	0.27	0.64	5.00	0.00	1.30	1.30
12.10	0.27	0.64	5.00	0.00	1.29	1.29
12.15	0.27	0.64	5.00	0.00	1.28	1.28
12.20	0.27	0.64	5.00	0.00	1.27	1.27
12.25	0.28	0.64	5.00	0.00	1.26	1.26
12.30	0.28	0.64	5.00	0.00	1.25	1.25
12.35	0.28	0.64	5.00	0.00	1.24	1.24
12.40	0.28	0.64	5.00	0.00	1.23	1.23
12.45	0.28	0.64	5.00	0.00	1.22	1.22
12.50	0.28	0.64	5.00	0.00	1.20	1.20
12.55	0.28	0.64	5.00	0.00	1.19	1.19
12.60	0.28	0.64	5.00	0.00	1.18	1.18
12.65	0.28	0.64	5.00	0.00	1.17	1.17
12.70	0.28	0.64	5.00	0.00	1.16	1.16
12.75	0.28	0.64	5.00	0.00	1.15	1.15
12.80	0.28	0.64	5.00	0.00	1.14	1.14
12.85	0.28	0.64	5.00	0.00	1.13	1.13
12.90	0.28	0.64	5.00	0.00	1.12	1.12
12.95	0.28	0.64	5.00	0.00	1.11	1.11
13.00	0.28	0.64	5.00	0.00	1.10	1.10
13.05	0.28	0.64	5.00	0.00	1.09	1.09
13.10	0.28	0.64	5.00	0.00	1.08	1.08
13.15	0.28	0.64	5.00	0.00	1.07	1.07
13.20	0.28	0.64	5.00	0.00	1.06	1.06
13.25	0.29	0.64	5.00	0.00	1.05	1.05

13.30	0.29	0.64	5.00	0.00	1.04	1.04
13.35	0.29	0.64	5.00	0.00	1.03	1.03
13.40	0.29	0.64	5.00	0.00	1.02	1.02
13.45	0.29	0.64	5.00	0.00	1.01	1.01
13.50	0.29	0.64	5.00	0.00	1.00	1.00
13.55	0.29	0.64	5.00	0.00	0.99	0.99
13.60	0.29	0.64	5.00	0.00	0.98	0.98
13.65	0.29	0.64	5.00	0.00	0.97	0.97
13.70	0.29	0.64	5.00	0.00	0.96	0.96
13.75	0.29	0.64	5.00	0.00	0.95	0.95
13.80	0.29	0.64	5.00	0.00	0.94	0.94
13.85	0.29	0.64	5.00	0.00	0.93	0.93
13.90	0.29	0.64	5.00	0.00	0.92	0.92
13.95	0.29	0.64	5.00	0.00	0.91	0.91
14.00	0.29	0.64	5.00	0.00	0.90	0.90
14.05	0.29	0.64	5.00	0.00	0.89	0.89
14.10	0.29	0.63	5.00	0.00	0.88	0.88
14.15	0.29	0.63	5.00	0.00	0.87	0.87
14.20	0.29	0.63	5.00	0.00	0.86	0.86
14.25	0.29	0.63	5.00	0.00	0.85	0.85
14.30	0.30	0.63	5.00	0.00	0.84	0.84
14.35	0.30	0.63	5.00	0.00	0.83	0.83
14.40	0.30	0.63	5.00	0.00	0.82	0.82
14.45	0.30	0.63	5.00	0.00	0.81	0.81
14.50	0.30	0.63	5.00	0.00	0.80	0.80
14.55	0.30	0.63	5.00	0.00	0.79	0.79
14.60	0.30	0.63	5.00	0.00	0.78	0.78
14.65	0.30	0.63	5.00	0.00	0.77	0.77
14.70	0.30	0.63	5.00	0.00	0.76	0.76
14.75	0.30	0.63	5.00	0.00	0.75	0.75
14.80	0.32	0.63	5.00	0.00	0.74	0.74
14.85	0.32	0.63	5.00	0.00	0.73	0.73
14.90	0.32	0.63	5.00	0.00	0.72	0.72
14.95	0.32	0.63	5.00	0.00	0.72	0.72
15.00	0.32	0.63	5.00	0.00	0.71	0.71
15.05	0.32	0.63	5.00	0.00	0.70	0.70
15.10	0.33	0.63	5.00	0.00	0.69	0.69
15.15	0.33	0.63	5.00	0.00	0.68	0.68
15.20	0.33	0.63	5.00	0.00	0.67	0.67
15.25	0.34	0.63	5.00	0.00	0.66	0.66
15.30	0.34	0.63	5.00	0.00	0.65	0.65
15.35	0.34	0.63	5.00	0.00	0.65	0.65
15.40	0.35	0.63	5.00	0.00	0.64	0.64
15.45	0.35	0.63	5.00	0.00	0.63	0.63
15.50	0.36	0.63	5.00	0.00	0.62	0.62
15.55	0.36	0.63	5.00	0.00	0.61	0.61
15.60	0.36	0.63	5.00	0.00	0.61	0.61
15.65	0.37	0.63	5.00	0.00	0.60	0.60
15.70	0.37	0.63	5.00	0.00	0.59	0.59
15.75	0.37	0.63	5.00	0.00	0.58	0.58
15.80	0.38	0.63	5.00	0.00	0.58	0.58
15.85	0.38	0.63	5.00	0.00	0.57	0.57
15.90	0.39	0.63	5.00	0.00	0.56	0.56
15.95	0.39	0.63	5.00	0.00	0.56	0.56
16.00	0.39	0.63	5.00	0.00	0.55	0.55
16.05	0.40	0.63	5.00	0.00	0.54	0.54
16.10	0.40	0.63	5.00	0.00	0.53	0.53
16.15	0.41	0.63	5.00	0.00	0.53	0.53
16.20	0.41	0.63	5.00	0.00	0.52	0.52
16.25	0.42	0.63	5.00	0.00	0.51	0.51
16.30	0.42	0.63	5.00	0.00	0.51	0.51
16.35	0.43	0.63	5.00	0.00	0.50	0.50
16.40	0.43	0.63	5.00	0.00	0.49	0.49
16.45	0.43	0.63	5.00	0.00	0.49	0.49
16.50	0.44	0.63	5.00	0.00	0.48	0.48
16.55	0.45	0.63	5.00	0.00	0.47	0.47
16.60	0.45	0.63	5.00	0.00	0.47	0.47

16.65	0.46	0.63	5.00	0.00	0.46	0.46
16.70	0.46	0.63	5.00	0.00	0.46	0.46
16.75	0.47	0.63	5.00	0.00	0.45	0.45
16.80	0.47	0.63	5.00	0.00	0.44	0.44
16.85	0.48	0.63	5.00	0.00	0.44	0.44
16.90	0.48	0.63	5.00	0.00	0.43	0.43
16.95	0.49	0.63	5.00	0.00	0.43	0.43
17.00	0.50	0.63	5.00	0.00	0.42	0.42
17.05	0.51	0.63	5.00	0.00	0.41	0.41
17.10	0.51	0.63	5.00	0.00	0.41	0.41
17.15	0.52	0.63	5.00	0.00	0.40	0.40
17.20	0.53	0.63	5.00	0.00	0.40	0.40
17.25	0.54	0.63	5.00	0.00	0.39	0.39
17.30	0.55	0.63	5.00	0.00	0.39	0.39
17.35	0.56	0.63	5.00	0.00	0.38	0.38
17.40	0.58	0.63	5.00	0.00	0.37	0.37
17.45	0.60	0.63	5.00	0.00	0.37	0.37
17.50	0.63	0.63	5.00	0.00	0.36	0.36
17.55	0.69	0.63	5.00	0.00	0.36	0.36
17.60	2.87	0.63	5.00	0.00	0.35	0.35
17.65	2.87	0.63	5.00	0.00	0.35	0.35
17.70	2.87	0.63	5.00	0.00	0.34	0.34
17.75	2.87	0.63	5.00	0.00	0.34	0.34
17.80	2.87	0.63	5.00	0.00	0.33	0.33
17.85	2.87	0.63	5.00	0.00	0.33	0.33
17.90	2.87	0.63	5.00	0.00	0.32	0.32
17.95	2.87	0.63	5.00	0.00	0.32	0.32
18.00	2.87	0.63	5.00	0.00	0.31	0.31
18.05	2.87	0.63	5.00	0.00	0.31	0.31
18.10	2.87	0.63	5.00	0.00	0.30	0.30
18.15	2.87	0.63	5.00	0.00	0.30	0.30
18.20	2.87	0.63	5.00	0.00	0.29	0.29
18.25	2.87	0.63	5.00	0.00	0.29	0.29
18.30	2.87	0.63	5.00	0.00	0.28	0.28
18.35	2.87	0.63	5.00	0.00	0.28	0.28
18.40	2.87	0.63	5.00	0.00	0.27	0.27
18.45	2.87	0.63	5.00	0.00	0.27	0.27
18.50	2.87	0.63	5.00	0.00	0.27	0.27
18.55	2.87	0.63	5.00	0.00	0.26	0.26
18.60	2.87	0.63	5.00	0.00	0.26	0.26
18.65	2.87	0.63	5.00	0.00	0.25	0.25
18.70	2.87	0.63	5.00	0.00	0.25	0.25
18.75	2.87	0.63	5.00	0.00	0.24	0.24
18.80	2.87	0.63	5.00	0.00	0.24	0.24
18.85	2.87	0.63	5.00	0.00	0.24	0.24
18.90	2.87	0.63	5.00	0.00	0.23	0.23
18.95	2.87	0.63	5.00	0.00	0.23	0.23
19.00	2.87	0.63	5.00	0.00	0.22	0.22
19.05	2.87	0.63	5.00	0.00	0.22	0.22
19.10	2.87	0.63	5.00	0.00	0.21	0.21
19.15	2.87	0.63	5.00	0.00	0.21	0.21
19.20	2.87	0.63	5.00	0.00	0.21	0.21
19.25	2.87	0.63	5.00	0.00	0.20	0.20
19.30	2.87	0.63	5.00	0.00	0.20	0.20
19.35	2.87	0.63	5.00	0.00	0.19	0.19
19.40	2.87	0.63	5.00	0.00	0.19	0.19
19.45	2.87	0.63	5.00	0.00	0.19	0.19
19.50	2.87	0.63	5.00	0.00	0.18	0.18
19.55	2.87	0.63	5.00	0.00	0.18	0.18
19.60	2.87	0.63	5.00	0.00	0.18	0.18
19.65	2.87	0.63	5.00	0.00	0.17	0.17
19.70	2.87	0.63	5.00	0.00	0.17	0.17
19.75	2.87	0.63	5.00	0.00	0.17	0.17
19.80	2.87	0.63	5.00	0.00	0.16	0.16
19.85	2.87	0.63	5.00	0.00	0.16	0.16
19.90	2.87	0.63	5.00	0.00	0.15	0.15
19.95	2.87	0.63	5.00	0.00	0.15	0.15

20.00	2.87	0.63	5.00	0.00	0.15	0.15
20.05	2.87	0.63	5.00	0.00	0.14	0.14
20.10	2.87	0.63	5.00	0.00	0.14	0.14
20.15	2.87	0.63	5.00	0.00	0.14	0.14
20.20	2.87	0.63	5.00	0.00	0.13	0.13
20.25	2.87	0.63	5.00	0.00	0.13	0.13
20.30	2.87	0.63	5.00	0.00	0.13	0.13
20.35	2.87	0.63	5.00	0.00	0.12	0.12
20.40	2.87	0.63	5.00	0.00	0.12	0.12
20.45	2.87	0.63	5.00	0.00	0.12	0.12
20.50	2.87	0.63	5.00	0.00	0.11	0.11
20.55	2.87	0.63	5.00	0.00	0.11	0.11
20.60	2.87	0.63	5.00	0.00	0.11	0.11
20.65	2.87	0.62	5.00	0.00	0.10	0.10
20.70	2.87	0.62	5.00	0.00	0.10	0.10
20.75	2.87	0.62	5.00	0.00	0.10	0.10
20.80	2.87	0.62	5.00	0.00	0.09	0.09
20.85	2.87	0.62	5.00	0.00	0.09	0.09
20.90	2.87	0.62	5.00	0.00	0.08	0.08
20.95	2.87	0.62	5.00	0.00	0.08	0.08
21.00	2.87	0.62	5.00	0.00	0.08	0.08
21.05	2.87	0.62	5.00	0.00	0.07	0.07
21.10	2.87	0.62	5.00	0.00	0.07	0.07
21.15	2.87	0.62	5.00	0.00	0.07	0.07
21.20	2.87	0.62	5.00	0.00	0.06	0.06
21.25	2.87	0.62	5.00	0.00	0.06	0.06
21.30	2.87	0.62	5.00	0.00	0.06	0.06
21.35	2.87	0.62	5.00	0.00	0.06	0.06
21.40	2.87	0.62	5.00	0.00	0.06	0.06
21.45	2.87	0.62	5.00	0.00	0.06	0.06
21.50	2.87	0.62	5.00	0.00	0.05	0.05
21.55	2.87	0.62	5.00	0.00	0.05	0.05
21.60	2.87	0.62	5.00	0.00	0.05	0.05
21.65	2.87	0.62	5.00	0.00	0.05	0.05
21.70	2.87	0.62	5.00	0.00	0.05	0.05
21.75	2.87	0.62	5.00	0.00	0.05	0.05
21.80	2.87	0.62	5.00	0.00	0.04	0.04
21.85	2.87	0.62	5.00	0.00	0.04	0.04
21.90	2.87	0.62	5.00	0.00	0.04	0.04
21.95	2.87	0.62	5.00	0.00	0.04	0.04
22.00	2.87	0.62	5.00	0.00	0.04	0.04
22.05	2.87	0.62	5.00	0.00	0.04	0.04
22.10	2.87	0.62	5.00	0.00	0.04	0.04
22.15	2.87	0.62	5.00	0.00	0.03	0.03
22.20	2.87	0.62	5.00	0.00	0.03	0.03
22.25	2.87	0.62	5.00	0.00	0.03	0.03
22.30	2.87	0.62	5.00	0.00	0.03	0.03
22.35	2.87	0.62	5.00	0.00	0.03	0.03
22.40	2.87	0.62	5.00	0.00	0.02	0.02
22.45	2.87	0.62	5.00	0.00	0.02	0.02
22.50	2.87	0.62	5.00	0.00	0.02	0.02
22.55	2.87	0.62	5.00	0.00	0.02	0.02
22.60	2.87	0.62	5.00	0.00	0.02	0.02
22.65	2.87	0.62	5.00	0.00	0.02	0.02
22.70	2.87	0.62	5.00	0.00	0.01	0.01
22.75	2.87	0.62	5.00	0.00	0.01	0.01
22.80	2.87	0.62	5.00	0.00	0.01	0.01
22.85	2.87	0.62	5.00	0.00	0.01	0.01
22.90	2.87	0.62	5.00	0.00	0.01	0.01
22.95	2.87	0.62	5.00	0.00	0.00	0.00
23.00	2.87	0.62	5.00	0.00	0.00	0.00
23.05	2.87	0.62	4.62	0.00	0.00	0.00
23.10	2.87	0.62	4.62	0.00	0.00	0.00
23.15	2.87	0.62	4.61	0.00	0.00	0.00
23.20	2.87	0.62	4.61	0.00	0.00	0.00
23.25	2.87	0.62	4.60	0.00	0.00	0.00
23.30	2.87	0.62	4.60	0.00	0.00	0.00

23.35	2.87	0.63	4.59	0.00	0.00	0.00
23.40	2.87	0.63	4.59	0.00	0.00	0.00
23.45	2.87	0.63	4.59	0.00	0.00	0.00
23.50	2.87	0.63	4.58	0.00	0.00	0.00
23.55	2.87	0.63	4.58	0.00	0.00	0.00
23.60	2.87	0.63	4.57	0.00	0.00	0.00
23.65	2.87	0.63	4.57	0.00	0.00	0.00
23.70	2.87	0.63	4.56	0.00	0.00	0.00
23.75	2.87	0.63	4.56	0.00	0.00	0.00
23.80	2.87	0.63	4.55	0.00	0.00	0.00
23.85	2.87	0.63	4.55	0.00	0.00	0.00
23.90	2.87	0.63	4.54	0.00	0.00	0.00
23.95	2.87	0.63	4.54	0.00	0.00	0.00
24.00	2.87	0.63	4.54	0.00	0.00	0.00
24.05	2.87	0.63	4.53	0.00	0.00	0.00
24.10	2.87	0.63	4.53	0.00	0.00	0.00
24.15	2.87	0.64	4.52	0.00	0.00	0.00
24.20	2.87	0.64	4.52	0.00	0.00	0.00
24.25	2.87	0.64	4.51	0.00	0.00	0.00
24.30	2.87	0.64	4.51	0.00	0.00	0.00
24.35	2.87	0.64	4.50	0.00	0.00	0.00
24.40	2.87	0.64	4.50	0.00	0.00	0.00
24.45	2.87	0.64	4.50	0.00	0.00	0.00
24.50	2.87	0.64	4.49	0.00	0.00	0.00
24.55	2.87	0.64	4.49	0.00	0.00	0.00
24.60	2.87	0.64	4.48	0.00	0.00	0.00
24.65	2.87	0.64	4.48	0.00	0.00	0.00
24.70	2.87	0.64	4.47	0.00	0.00	0.00
24.75	2.87	0.64	4.47	0.00	0.00	0.00
24.80	2.87	0.64	4.47	0.00	0.00	0.00
24.85	2.87	0.64	4.46	0.00	0.00	0.00
24.90	2.87	0.64	4.46	0.00	0.00	0.00
24.95	2.87	0.64	4.45	0.00	0.00	0.00
25.00	2.87	0.65	4.45	0.00	0.00	0.00
25.05	2.87	0.65	4.45	0.00	0.00	0.00
25.10	2.87	0.65	4.44	0.00	0.00	0.00
25.15	2.87	0.65	4.44	0.00	0.00	0.00
25.20	2.87	0.65	4.43	0.00	0.00	0.00
25.25	2.87	0.65	4.43	0.00	0.00	0.00
25.30	2.87	0.65	4.43	0.00	0.00	0.00
25.35	2.87	0.65	4.42	0.00	0.00	0.00
25.40	2.87	0.65	4.42	0.00	0.00	0.00
25.45	2.87	0.65	4.41	0.00	0.00	0.00
25.50	2.87	0.65	4.41	0.00	0.00	0.00
25.55	2.87	0.65	4.41	0.00	0.00	0.00
25.60	2.87	0.65	4.40	0.00	0.00	0.00
25.65	2.87	0.65	4.40	0.00	0.00	0.00
25.70	2.87	0.65	4.39	0.00	0.00	0.00
25.75	2.87	0.65	4.39	0.00	0.00	0.00
25.80	2.87	0.65	4.39	0.00	0.00	0.00
25.85	2.87	0.66	4.38	0.00	0.00	0.00
25.90	2.87	0.66	4.38	0.00	0.00	0.00
25.95	2.87	0.66	4.38	0.00	0.00	0.00
26.00	2.87	0.66	4.37	0.00	0.00	0.00
26.05	2.87	0.66	4.37	0.00	0.00	0.00
26.10	2.87	0.66	4.36	0.00	0.00	0.00
26.15	2.87	0.66	4.36	0.00	0.00	0.00
26.20	2.87	0.66	4.36	0.00	0.00	0.00
26.25	2.87	0.66	4.35	0.00	0.00	0.00
26.30	2.87	0.66	4.35	0.00	0.00	0.00
26.35	2.87	0.66	4.35	0.00	0.00	0.00
26.40	2.87	0.66	4.34	0.00	0.00	0.00
26.45	2.87	0.66	4.34	0.00	0.00	0.00
26.50	2.87	0.66	4.33	0.00	0.00	0.00
26.55	2.87	0.66	4.33	0.00	0.00	0.00
26.60	2.87	0.66	4.33	0.00	0.00	0.00
26.65	2.87	0.66	4.32	0.00	0.00	0.00

26.70	2.87	0.66	4.32	0.00	0.00	0.00
26.75	2.87	0.67	4.32	0.00	0.00	0.00
26.80	2.87	0.67	4.31	0.00	0.00	0.00
26.85	2.87	0.67	4.31	0.00	0.00	0.00
26.90	2.87	0.67	4.31	0.00	0.00	0.00
26.95	2.87	0.67	4.30	0.00	0.00	0.00
27.00	2.87	0.67	4.30	0.00	0.00	0.00
27.05	2.87	0.67	4.30	0.00	0.00	0.00
27.10	2.87	0.67	4.29	0.00	0.00	0.00
27.15	2.87	0.67	4.29	0.00	0.00	0.00
27.20	2.87	0.67	4.29	0.00	0.00	0.00
27.25	2.87	0.67	4.28	0.00	0.00	0.00
27.30	2.87	0.67	4.28	0.00	0.00	0.00
27.35	2.87	0.67	4.28	0.00	0.00	0.00
27.40	2.87	0.67	4.27	0.00	0.00	0.00
27.45	2.87	0.67	4.27	0.00	0.00	0.00
27.50	2.87	0.67	4.26	0.00	0.00	0.00
27.55	2.87	0.67	4.26	0.00	0.00	0.00
27.60	2.87	0.67	4.26	0.00	0.00	0.00
27.65	2.87	0.68	4.25	0.00	0.00	0.00
27.70	2.87	0.68	4.25	0.00	0.00	0.00
27.75	2.87	0.68	4.25	0.00	0.00	0.00
27.80	2.87	0.68	4.25	0.00	0.00	0.00
27.85	2.87	0.68	4.24	0.00	0.00	0.00
27.90	2.87	0.68	4.24	0.00	0.00	0.00
27.95	2.87	0.68	4.24	0.00	0.00	0.00
28.00	2.87	0.68	4.23	0.00	0.00	0.00
28.05	2.87	0.68	4.23	0.00	0.00	0.00
28.10	2.87	0.68	4.23	0.00	0.00	0.00
28.15	2.87	0.68	4.22	0.00	0.00	0.00
28.20	2.87	0.68	4.22	0.00	0.00	0.00
28.25	2.87	0.68	4.22	0.00	0.00	0.00
28.30	2.87	0.68	4.21	0.00	0.00	0.00
28.35	2.87	0.68	4.21	0.00	0.00	0.00
28.40	2.87	0.68	4.21	0.00	0.00	0.00
28.45	2.87	0.68	4.20	0.00	0.00	0.00
28.50	2.87	0.68	4.20	0.00	0.00	0.00
28.55	2.87	0.68	4.20	0.00	0.00	0.00
28.60	2.87	0.68	4.19	0.00	0.00	0.00
28.65	2.87	0.69	4.19	0.00	0.00	0.00
28.70	2.87	0.69	4.19	0.00	0.00	0.00
28.75	2.87	0.69	4.19	0.00	0.00	0.00
28.80	2.87	0.69	4.18	0.00	0.00	0.00
28.85	2.87	0.69	4.18	0.00	0.00	0.00
28.90	2.87	0.69	4.18	0.00	0.00	0.00
28.95	2.87	0.69	4.17	0.00	0.00	0.00
29.00	2.87	0.69	4.17	0.00	0.00	0.00
29.05	2.87	0.69	4.17	0.00	0.00	0.00
29.10	2.87	0.69	4.16	0.00	0.00	0.00
29.15	2.87	0.69	4.16	0.00	0.00	0.00
29.20	2.87	0.69	4.16	0.00	0.00	0.00
29.25	2.87	0.69	4.16	0.00	0.00	0.00
29.30	2.87	0.69	4.15	0.00	0.00	0.00
29.35	2.87	0.69	4.15	0.00	0.00	0.00
29.40	2.87	0.69	4.15	0.00	0.00	0.00
29.45	2.87	0.69	4.14	0.00	0.00	0.00
29.50	2.87	0.69	4.14	0.00	0.00	0.00
29.55	2.87	0.69	4.14	0.00	0.00	0.00
29.60	2.87	0.69	4.13	0.00	0.00	0.00
29.65	2.87	0.70	4.13	0.00	0.00	0.00
29.70	2.87	0.70	4.13	0.00	0.00	0.00
29.75	2.87	0.70	4.13	0.00	0.00	0.00
29.80	2.87	0.70	4.12	0.00	0.00	0.00
29.85	2.87	0.70	4.12	0.00	0.00	0.00
29.90	2.87	0.70	4.12	0.00	0.00	0.00
29.95	2.87	0.70	4.11	0.00	0.00	0.00
30.00	2.87	0.70	4.11	0.00	0.00	0.00

30.05	2.00	0.70	5.00	0.00	0.00	0.00
30.10	2.00	0.70	5.00	0.00	0.00	0.00
30.15	2.00	0.70	5.00	0.00	0.00	0.00
30.20	2.00	0.70	5.00	0.00	0.00	0.00
30.25	2.00	0.70	5.00	0.00	0.00	0.00
30.30	2.00	0.70	5.00	0.00	0.00	0.00
30.35	2.00	0.70	5.00	0.00	0.00	0.00
30.40	2.00	0.70	5.00	0.00	0.00	0.00
30.45	2.00	0.70	5.00	0.00	0.00	0.00
30.50	2.00	0.70	5.00	0.00	0.00	0.00
30.55	2.00	0.70	5.00	0.00	0.00	0.00
30.60	2.00	0.70	5.00	0.00	0.00	0.00
30.65	2.00	0.70	5.00	0.00	0.00	0.00
30.70	2.00	0.70	5.00	0.00	0.00	0.00
30.75	2.00	0.70	5.00	0.00	0.00	0.00
30.80	2.00	0.70	5.00	0.00	0.00	0.00
30.85	2.00	0.70	5.00	0.00	0.00	0.00
30.90	2.00	0.70	5.00	0.00	0.00	0.00
30.95	2.00	0.70	5.00	0.00	0.00	0.00
31.00	2.00	0.70	5.00	0.00	0.00	0.00
31.05	2.00	0.70	5.00	0.00	0.00	0.00
31.10	2.00	0.70	5.00	0.00	0.00	0.00
31.15	2.00	0.70	5.00	0.00	0.00	0.00
31.20	2.00	0.70	5.00	0.00	0.00	0.00
31.25	2.00	0.70	5.00	0.00	0.00	0.00
31.30	2.00	0.70	5.00	0.00	0.00	0.00
31.35	2.00	0.70	5.00	0.00	0.00	0.00
31.40	2.00	0.71	5.00	0.00	0.00	0.00
31.45	2.00	0.71	5.00	0.00	0.00	0.00
31.50	2.00	0.71	5.00	0.00	0.00	0.00
31.55	2.00	0.71	5.00	0.00	0.00	0.00
31.60	2.00	0.71	5.00	0.00	0.00	0.00
31.65	2.00	0.71	5.00	0.00	0.00	0.00
31.70	2.00	0.71	5.00	0.00	0.00	0.00
31.75	2.00	0.71	5.00	0.00	0.00	0.00
31.80	2.00	0.71	5.00	0.00	0.00	0.00
31.85	2.00	0.71	5.00	0.00	0.00	0.00
31.90	2.00	0.71	5.00	0.00	0.00	0.00
31.95	2.00	0.71	5.00	0.00	0.00	0.00
32.00	2.00	0.71	5.00	0.00	0.00	0.00
32.05	2.00	0.71	5.00	0.00	0.00	0.00
32.10	2.00	0.71	5.00	0.00	0.00	0.00
32.15	2.00	0.71	5.00	0.00	0.00	0.00
32.20	2.00	0.71	5.00	0.00	0.00	0.00
32.25	2.00	0.71	5.00	0.00	0.00	0.00
32.30	2.00	0.71	5.00	0.00	0.00	0.00
32.35	2.00	0.71	5.00	0.00	0.00	0.00
32.40	2.00	0.71	5.00	0.00	0.00	0.00
32.45	2.00	0.71	5.00	0.00	0.00	0.00
32.50	2.00	0.71	5.00	0.00	0.00	0.00
32.55	2.00	0.71	5.00	0.00	0.00	0.00
32.60	2.00	0.71	5.00	0.00	0.00	0.00
32.65	2.00	0.71	5.00	0.00	0.00	0.00
32.70	2.00	0.71	5.00	0.00	0.00	0.00
32.75	2.00	0.71	5.00	0.00	0.00	0.00
32.80	2.00	0.71	5.00	0.00	0.00	0.00
32.85	2.00	0.71	5.00	0.00	0.00	0.00
32.90	2.00	0.71	5.00	0.00	0.00	0.00
32.95	2.00	0.71	5.00	0.00	0.00	0.00
33.00	2.00	0.71	5.00	0.00	0.00	0.00
33.05	2.00	0.71	5.00	0.00	0.00	0.00
33.10	2.00	0.71	5.00	0.00	0.00	0.00
33.15	2.00	0.71	5.00	0.00	0.00	0.00
33.20	2.00	0.71	5.00	0.00	0.00	0.00
33.25	2.00	0.71	5.00	0.00	0.00	0.00
33.30	2.00	0.71	5.00	0.00	0.00	0.00
33.35	2.00	0.71	5.00	0.00	0.00	0.00

33.40	2.00	0.71	5.00	0.00	0.00	0.00
33.45	2.00	0.71	5.00	0.00	0.00	0.00
33.50	2.00	0.71	5.00	0.00	0.00	0.00
33.55	2.00	0.71	5.00	0.00	0.00	0.00
33.60	2.00	0.71	5.00	0.00	0.00	0.00
33.65	2.00	0.71	5.00	0.00	0.00	0.00
33.70	2.00	0.71	5.00	0.00	0.00	0.00
33.75	2.00	0.71	5.00	0.00	0.00	0.00
33.80	2.00	0.71	5.00	0.00	0.00	0.00
33.85	2.00	0.71	5.00	0.00	0.00	0.00
33.90	2.00	0.71	5.00	0.00	0.00	0.00
33.95	2.00	0.71	5.00	0.00	0.00	0.00
34.00	2.00	0.71	5.00	0.00	0.00	0.00
34.05	2.00	0.72	5.00	0.00	0.00	0.00
34.10	2.00	0.72	5.00	0.00	0.00	0.00
34.15	2.00	0.72	5.00	0.00	0.00	0.00
34.20	2.00	0.72	5.00	0.00	0.00	0.00
34.25	2.00	0.72	5.00	0.00	0.00	0.00
34.30	2.00	0.72	5.00	0.00	0.00	0.00
34.35	2.00	0.72	5.00	0.00	0.00	0.00
34.40	2.00	0.72	5.00	0.00	0.00	0.00
34.45	2.00	0.72	5.00	0.00	0.00	0.00
34.50	2.00	0.72	5.00	0.00	0.00	0.00
34.55	2.00	0.72	5.00	0.00	0.00	0.00
34.60	2.00	0.72	5.00	0.00	0.00	0.00
34.65	2.00	0.72	5.00	0.00	0.00	0.00
34.70	2.00	0.72	5.00	0.00	0.00	0.00
34.75	2.00	0.72	5.00	0.00	0.00	0.00
34.80	2.00	0.72	5.00	0.00	0.00	0.00
34.85	2.00	0.72	5.00	0.00	0.00	0.00
34.90	2.00	0.72	5.00	0.00	0.00	0.00
34.95	2.00	0.72	5.00	0.00	0.00	0.00
35.00	2.00	0.72	5.00	0.00	0.00	0.00
35.05	2.00	0.72	5.00	0.00	0.00	0.00
35.10	2.00	0.72	5.00	0.00	0.00	0.00
35.15	2.00	0.72	5.00	0.00	0.00	0.00
35.20	2.00	0.72	5.00	0.00	0.00	0.00
35.25	2.00	0.72	5.00	0.00	0.00	0.00
35.30	2.00	0.72	5.00	0.00	0.00	0.00
35.35	2.00	0.72	5.00	0.00	0.00	0.00
35.40	2.00	0.72	5.00	0.00	0.00	0.00
35.45	2.00	0.72	5.00	0.00	0.00	0.00
35.50	2.00	0.72	5.00	0.00	0.00	0.00
35.55	2.00	0.72	5.00	0.00	0.00	0.00
35.60	2.00	0.72	5.00	0.00	0.00	0.00
35.65	2.00	0.72	5.00	0.00	0.00	0.00
35.70	2.00	0.72	5.00	0.00	0.00	0.00
35.75	2.00	0.72	5.00	0.00	0.00	0.00
35.80	2.00	0.72	5.00	0.00	0.00	0.00
35.85	2.00	0.72	5.00	0.00	0.00	0.00
35.90	2.00	0.72	5.00	0.00	0.00	0.00
35.95	2.00	0.72	5.00	0.00	0.00	0.00
36.00	2.00	0.72	5.00	0.00	0.00	0.00
36.05	2.00	0.72	5.00	0.00	0.00	0.00
36.10	2.00	0.72	5.00	0.00	0.00	0.00
36.15	2.00	0.72	5.00	0.00	0.00	0.00
36.20	2.00	0.72	5.00	0.00	0.00	0.00
36.25	2.00	0.72	5.00	0.00	0.00	0.00
36.30	2.00	0.72	5.00	0.00	0.00	0.00
36.35	2.00	0.72	5.00	0.00	0.00	0.00
36.40	2.00	0.72	5.00	0.00	0.00	0.00
36.45	2.00	0.72	5.00	0.00	0.00	0.00
36.50	2.00	0.72	5.00	0.00	0.00	0.00
36.55	2.00	0.72	5.00	0.00	0.00	0.00
36.60	2.00	0.72	5.00	0.00	0.00	0.00
36.65	2.00	0.72	5.00	0.00	0.00	0.00
36.70	2.00	0.72	5.00	0.00	0.00	0.00

36.75	2.00	0.72	5.00	0.00	0.00	0.00
36.80	2.00	0.72	5.00	0.00	0.00	0.00
36.85	2.00	0.72	5.00	0.00	0.00	0.00
36.90	2.00	0.72	5.00	0.00	0.00	0.00
36.95	2.00	0.72	5.00	0.00	0.00	0.00
37.00	2.00	0.72	5.00	0.00	0.00	0.00
37.05	2.00	0.72	5.00	0.00	0.00	0.00
37.10	2.00	0.72	5.00	0.00	0.00	0.00
37.15	2.00	0.72	5.00	0.00	0.00	0.00
37.20	2.00	0.72	5.00	0.00	0.00	0.00
37.25	2.00	0.72	5.00	0.00	0.00	0.00
37.30	2.00	0.72	5.00	0.00	0.00	0.00
37.35	2.00	0.72	5.00	0.00	0.00	0.00
37.40	2.00	0.72	5.00	0.00	0.00	0.00
37.45	2.00	0.72	5.00	0.00	0.00	0.00
37.50	2.00	0.72	5.00	0.00	0.00	0.00
37.55	2.00	0.72	5.00	0.00	0.00	0.00
37.60	2.00	0.72	5.00	0.00	0.00	0.00
37.65	2.00	0.72	5.00	0.00	0.00	0.00
37.70	2.00	0.72	5.00	0.00	0.00	0.00
37.75	2.00	0.72	5.00	0.00	0.00	0.00
37.80	2.00	0.72	5.00	0.00	0.00	0.00
37.85	2.00	0.72	5.00	0.00	0.00	0.00
37.90	2.00	0.72	5.00	0.00	0.00	0.00
37.95	2.00	0.72	5.00	0.00	0.00	0.00
38.00	2.00	0.72	5.00	0.00	0.00	0.00
38.05	2.00	0.72	5.00	0.00	0.00	0.00
38.10	2.00	0.72	5.00	0.00	0.00	0.00
38.15	2.00	0.72	5.00	0.00	0.00	0.00
38.20	2.00	0.72	5.00	0.00	0.00	0.00
38.25	2.00	0.72	5.00	0.00	0.00	0.00
38.30	2.00	0.72	5.00	0.00	0.00	0.00
38.35	2.00	0.72	5.00	0.00	0.00	0.00
38.40	2.00	0.72	5.00	0.00	0.00	0.00
38.45	2.00	0.72	5.00	0.00	0.00	0.00
38.50	2.00	0.72	5.00	0.00	0.00	0.00
38.55	2.00	0.72	5.00	0.00	0.00	0.00
38.60	2.00	0.72	5.00	0.00	0.00	0.00
38.65	2.00	0.72	5.00	0.00	0.00	0.00
38.70	2.00	0.72	5.00	0.00	0.00	0.00
38.75	2.00	0.72	5.00	0.00	0.00	0.00
38.80	2.00	0.72	5.00	0.00	0.00	0.00
38.85	2.00	0.73	5.00	0.00	0.00	0.00
38.90	2.00	0.73	5.00	0.00	0.00	0.00
38.95	2.00	0.73	5.00	0.00	0.00	0.00
39.00	2.00	0.73	5.00	0.00	0.00	0.00
39.05	2.00	0.73	5.00	0.00	0.00	0.00
39.10	2.00	0.73	5.00	0.00	0.00	0.00
39.15	2.00	0.73	5.00	0.00	0.00	0.00
39.20	2.00	0.73	5.00	0.00	0.00	0.00
39.25	2.00	0.73	5.00	0.00	0.00	0.00
39.30	2.00	0.73	5.00	0.00	0.00	0.00
39.35	2.00	0.73	5.00	0.00	0.00	0.00
39.40	2.00	0.73	5.00	0.00	0.00	0.00
39.45	2.00	0.73	5.00	0.00	0.00	0.00
39.50	2.00	0.73	5.00	0.00	0.00	0.00
39.55	2.00	0.73	5.00	0.00	0.00	0.00
39.60	2.00	0.73	5.00	0.00	0.00	0.00
39.65	2.00	0.73	5.00	0.00	0.00	0.00
39.70	2.00	0.73	5.00	0.00	0.00	0.00
39.75	2.00	0.73	5.00	0.00	0.00	0.00
39.80	2.00	0.73	5.00	0.00	0.00	0.00
39.85	2.00	0.73	5.00	0.00	0.00	0.00
39.90	2.00	0.73	5.00	0.00	0.00	0.00
39.95	2.00	0.73	5.00	0.00	0.00	0.00
40.00	2.00	0.73	5.00	0.00	0.00	0.00
40.05	2.85	0.73	3.93	0.00	0.00	0.00

40.10	2.85	0.73	3.93	0.00	0.00	0.00
40.15	2.85	0.73	3.93	0.00	0.00	0.00
40.20	2.85	0.73	3.93	0.00	0.00	0.00
40.25	2.85	0.73	3.93	0.00	0.00	0.00
40.30	2.85	0.73	3.93	0.00	0.00	0.00
40.35	2.85	0.73	3.93	0.00	0.00	0.00
40.40	2.85	0.73	3.93	0.00	0.00	0.00
40.45	2.85	0.73	3.93	0.00	0.00	0.00
40.50	2.85	0.73	3.93	0.00	0.00	0.00
40.55	2.85	0.73	3.92	0.00	0.00	0.00
40.60	2.85	0.73	3.92	0.00	0.00	0.00
40.65	2.85	0.73	3.92	0.00	0.00	0.00
40.70	2.85	0.73	3.92	0.00	0.00	0.00
40.75	2.85	0.73	3.92	0.00	0.00	0.00
40.80	2.85	0.73	3.92	0.00	0.00	0.00
40.85	2.85	0.73	3.92	0.00	0.00	0.00
40.90	2.85	0.73	3.92	0.00	0.00	0.00
40.95	2.85	0.73	3.92	0.00	0.00	0.00
41.00	2.85	0.73	3.92	0.00	0.00	0.00
41.05	2.85	0.73	3.92	0.00	0.00	0.00
41.10	2.85	0.73	3.92	0.00	0.00	0.00
41.15	2.85	0.73	3.92	0.00	0.00	0.00
41.20	2.85	0.73	3.92	0.00	0.00	0.00
41.25	2.85	0.73	3.92	0.00	0.00	0.00
41.30	2.85	0.73	3.92	0.00	0.00	0.00
41.35	2.85	0.73	3.92	0.00	0.00	0.00
41.40	2.85	0.73	3.92	0.00	0.00	0.00
41.45	2.85	0.73	3.92	0.00	0.00	0.00
41.50	2.84	0.73	3.91	0.00	0.00	0.00
41.55	2.84	0.73	3.91	0.00	0.00	0.00
41.60	2.84	0.73	3.91	0.00	0.00	0.00
41.65	2.84	0.73	3.91	0.00	0.00	0.00
41.70	2.84	0.73	3.91	0.00	0.00	0.00
41.75	2.84	0.73	3.91	0.00	0.00	0.00
41.80	2.84	0.73	3.91	0.00	0.00	0.00
41.85	2.84	0.73	3.91	0.00	0.00	0.00
41.90	2.84	0.73	3.91	0.00	0.00	0.00
41.95	2.84	0.73	3.91	0.00	0.00	0.00
42.00	2.84	0.73	3.91	0.00	0.00	0.00
42.05	2.84	0.73	3.91	0.00	0.00	0.00
42.10	2.84	0.73	3.91	0.00	0.00	0.00
42.15	2.84	0.73	3.91	0.00	0.00	0.00
42.20	2.84	0.73	3.91	0.00	0.00	0.00
42.25	2.84	0.73	3.91	0.00	0.00	0.00
42.30	2.84	0.73	3.91	0.00	0.00	0.00
42.35	2.84	0.73	3.91	0.00	0.00	0.00
42.40	2.84	0.73	3.91	0.00	0.00	0.00
42.45	2.84	0.73	3.91	0.00	0.00	0.00
42.50	2.84	0.73	3.91	0.00	0.00	0.00
42.55	2.84	0.73	3.91	0.00	0.00	0.00
42.60	2.84	0.73	3.90	0.00	0.00	0.00
42.65	2.84	0.73	3.90	0.00	0.00	0.00
42.70	2.84	0.73	3.90	0.00	0.00	0.00
42.75	2.84	0.73	3.90	0.00	0.00	0.00
42.80	2.84	0.73	3.90	0.00	0.00	0.00
42.85	2.84	0.73	3.90	0.00	0.00	0.00
42.90	2.84	0.73	3.90	0.00	0.00	0.00
42.95	2.84	0.73	3.90	0.00	0.00	0.00
43.00	2.84	0.73	3.90	0.00	0.00	0.00
43.05	2.84	0.73	3.90	0.00	0.00	0.00
43.10	2.83	0.73	3.90	0.00	0.00	0.00
43.15	2.83	0.73	3.90	0.00	0.00	0.00
43.20	2.83	0.73	3.90	0.00	0.00	0.00
43.25	2.83	0.73	3.90	0.00	0.00	0.00
43.30	2.83	0.73	3.90	0.00	0.00	0.00
43.35	2.83	0.73	3.90	0.00	0.00	0.00
43.40	2.83	0.73	3.90	0.00	0.00	0.00

43.45	2.83	0.73	3.90	0.00	0.00	0.00
43.50	2.83	0.73	3.90	0.00	0.00	0.00
43.55	2.83	0.73	3.90	0.00	0.00	0.00
43.60	2.83	0.73	3.90	0.00	0.00	0.00
43.65	2.83	0.73	3.90	0.00	0.00	0.00
43.70	2.83	0.73	3.90	0.00	0.00	0.00
43.75	2.83	0.73	3.90	0.00	0.00	0.00
43.80	2.83	0.73	3.90	0.00	0.00	0.00
43.85	2.83	0.73	3.90	0.00	0.00	0.00
43.90	2.83	0.73	3.90	0.00	0.00	0.00
43.95	2.83	0.73	3.90	0.00	0.00	0.00
44.00	2.83	0.73	3.90	0.00	0.00	0.00
44.05	2.83	0.73	3.89	0.00	0.00	0.00
44.10	2.83	0.73	3.89	0.00	0.00	0.00
44.15	2.83	0.73	3.89	0.00	0.00	0.00
44.20	2.83	0.73	3.89	0.00	0.00	0.00
44.25	2.83	0.73	3.89	0.00	0.00	0.00
44.30	2.83	0.73	3.89	0.00	0.00	0.00
44.35	2.83	0.73	3.89	0.00	0.00	0.00
44.40	2.83	0.73	3.89	0.00	0.00	0.00
44.45	2.83	0.73	3.89	0.00	0.00	0.00
44.50	2.83	0.73	3.89	0.00	0.00	0.00
44.55	2.83	0.73	3.89	0.00	0.00	0.00
44.60	2.83	0.73	3.89	0.00	0.00	0.00
44.65	2.83	0.73	3.89	0.00	0.00	0.00
44.70	2.83	0.73	3.89	0.00	0.00	0.00
44.75	2.82	0.73	3.89	0.00	0.00	0.00
44.80	2.82	0.73	3.89	0.00	0.00	0.00
44.85	2.82	0.73	3.89	0.00	0.00	0.00
44.90	2.82	0.73	3.89	0.00	0.00	0.00
44.95	2.82	0.73	3.89	0.00	0.00	0.00
45.00	2.82	0.73	3.89	0.00	0.00	0.00
45.05	2.82	0.73	3.89	0.00	0.00	0.00
45.10	2.82	0.73	3.89	0.00	0.00	0.00
45.15	2.82	0.73	3.89	0.00	0.00	0.00
45.20	2.82	0.73	3.89	0.00	0.00	0.00
45.25	2.82	0.73	3.89	0.00	0.00	0.00
45.30	2.82	0.73	3.89	0.00	0.00	0.00
45.35	2.82	0.73	3.89	0.00	0.00	0.00
45.40	2.82	0.73	3.89	0.00	0.00	0.00
45.45	2.82	0.73	3.89	0.00	0.00	0.00
45.50	2.82	0.73	3.89	0.00	0.00	0.00
45.55	2.82	0.73	3.89	0.00	0.00	0.00
45.60	2.82	0.73	3.89	0.00	0.00	0.00
45.65	2.82	0.73	3.89	0.00	0.00	0.00
45.70	2.82	0.73	3.89	0.00	0.00	0.00
45.75	2.82	0.73	3.89	0.00	0.00	0.00
45.80	2.82	0.73	3.89	0.00	0.00	0.00
45.85	2.82	0.73	3.89	0.00	0.00	0.00
45.90	2.82	0.72	3.89	0.00	0.00	0.00
45.95	2.82	0.72	3.89	0.00	0.00	0.00
46.00	2.82	0.72	3.89	0.00	0.00	0.00
46.05	2.82	0.72	3.89	0.00	0.00	0.00
46.10	2.82	0.72	3.89	0.00	0.00	0.00
46.15	2.82	0.72	3.89	0.00	0.00	0.00
46.20	2.82	0.72	3.89	0.00	0.00	0.00
46.25	2.82	0.72	3.89	0.00	0.00	0.00
46.30	2.82	0.72	3.89	0.00	0.00	0.00
46.35	2.82	0.72	3.89	0.00	0.00	0.00
46.40	2.81	0.72	3.89	0.00	0.00	0.00
46.45	2.81	0.72	3.89	0.00	0.00	0.00
46.50	2.81	0.72	3.89	0.00	0.00	0.00
46.55	2.81	0.72	3.89	0.00	0.00	0.00
46.60	2.81	0.72	3.89	0.00	0.00	0.00
46.65	2.81	0.72	3.89	0.00	0.00	0.00
46.70	2.81	0.72	3.89	0.00	0.00	0.00
46.75	2.81	0.72	3.89	0.00	0.00	0.00

46.80	2.81	0.72	3.88	0.00	0.00	0.00
46.85	2.81	0.72	3.88	0.00	0.00	0.00
46.90	2.81	0.72	3.88	0.00	0.00	0.00
46.95	2.81	0.72	3.88	0.00	0.00	0.00
47.00	2.81	0.72	3.88	0.00	0.00	0.00
47.05	2.81	0.72	3.88	0.00	0.00	0.00
47.10	2.81	0.72	3.88	0.00	0.00	0.00
47.15	2.81	0.72	3.88	0.00	0.00	0.00
47.20	2.81	0.72	3.88	0.00	0.00	0.00
47.25	2.81	0.72	3.88	0.00	0.00	0.00
47.30	2.81	0.72	3.88	0.00	0.00	0.00
47.35	2.81	0.72	3.88	0.00	0.00	0.00
47.40	2.81	0.72	3.88	0.00	0.00	0.00
47.45	2.81	0.72	3.88	0.00	0.00	0.00
47.50	2.81	0.72	3.88	0.00	0.00	0.00
47.55	2.81	0.72	3.88	0.00	0.00	0.00
47.60	2.81	0.72	3.88	0.00	0.00	0.00
47.65	2.81	0.72	3.88	0.00	0.00	0.00
47.70	2.81	0.72	3.88	0.00	0.00	0.00
47.75	2.81	0.72	3.88	0.00	0.00	0.00
47.80	2.81	0.72	3.88	0.00	0.00	0.00
47.85	2.81	0.72	3.88	0.00	0.00	0.00
47.90	2.81	0.72	3.88	0.00	0.00	0.00
47.95	2.81	0.72	3.88	0.00	0.00	0.00
48.00	2.81	0.72	3.88	0.00	0.00	0.00
48.05	2.81	0.72	3.88	0.00	0.00	0.00
48.10	2.80	0.72	3.88	0.00	0.00	0.00
48.15	2.80	0.72	3.88	0.00	0.00	0.00
48.20	2.80	0.72	3.88	0.00	0.00	0.00
48.25	2.80	0.72	3.88	0.00	0.00	0.00
48.30	2.80	0.72	3.88	0.00	0.00	0.00
48.35	2.80	0.72	3.88	0.00	0.00	0.00
48.40	2.80	0.72	3.88	0.00	0.00	0.00
48.45	2.80	0.72	3.88	0.00	0.00	0.00
48.50	2.80	0.72	3.88	0.00	0.00	0.00
48.55	2.80	0.72	3.88	0.00	0.00	0.00
48.60	2.80	0.72	3.88	0.00	0.00	0.00
48.65	2.80	0.72	3.88	0.00	0.00	0.00
48.70	2.80	0.72	3.88	0.00	0.00	0.00
48.75	2.80	0.72	3.88	0.00	0.00	0.00
48.80	2.80	0.72	3.89	0.00	0.00	0.00
48.85	2.80	0.72	3.89	0.00	0.00	0.00
48.90	2.80	0.72	3.89	0.00	0.00	0.00
48.95	2.80	0.72	3.89	0.00	0.00	0.00
49.00	2.80	0.72	3.89	0.00	0.00	0.00
49.05	2.80	0.72	3.89	0.00	0.00	0.00
49.10	2.80	0.72	3.89	0.00	0.00	0.00
49.15	2.80	0.72	3.89	0.00	0.00	0.00
49.20	2.80	0.72	3.89	0.00	0.00	0.00
49.25	2.80	0.72	3.89	0.00	0.00	0.00
49.30	2.80	0.72	3.89	0.00	0.00	0.00
49.35	2.80	0.72	3.89	0.00	0.00	0.00
49.40	2.80	0.72	3.89	0.00	0.00	0.00
49.45	2.80	0.72	3.89	0.00	0.00	0.00
49.50	2.80	0.72	3.89	0.00	0.00	0.00
49.55	2.80	0.72	3.89	0.00	0.00	0.00
49.60	2.80	0.72	3.89	0.00	0.00	0.00
49.65	2.80	0.72	3.89	0.00	0.00	0.00
49.70	2.80	0.72	3.89	0.00	0.00	0.00
49.75	2.80	0.72	3.89	0.00	0.00	0.00
49.80	2.79	0.72	3.89	0.00	0.00	0.00
49.85	2.79	0.72	3.89	0.00	0.00	0.00
49.90	2.79	0.72	3.89	0.00	0.00	0.00
49.95	2.79	0.72	3.89	0.00	0.00	0.00
50.00	2.79	0.72	3.89	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

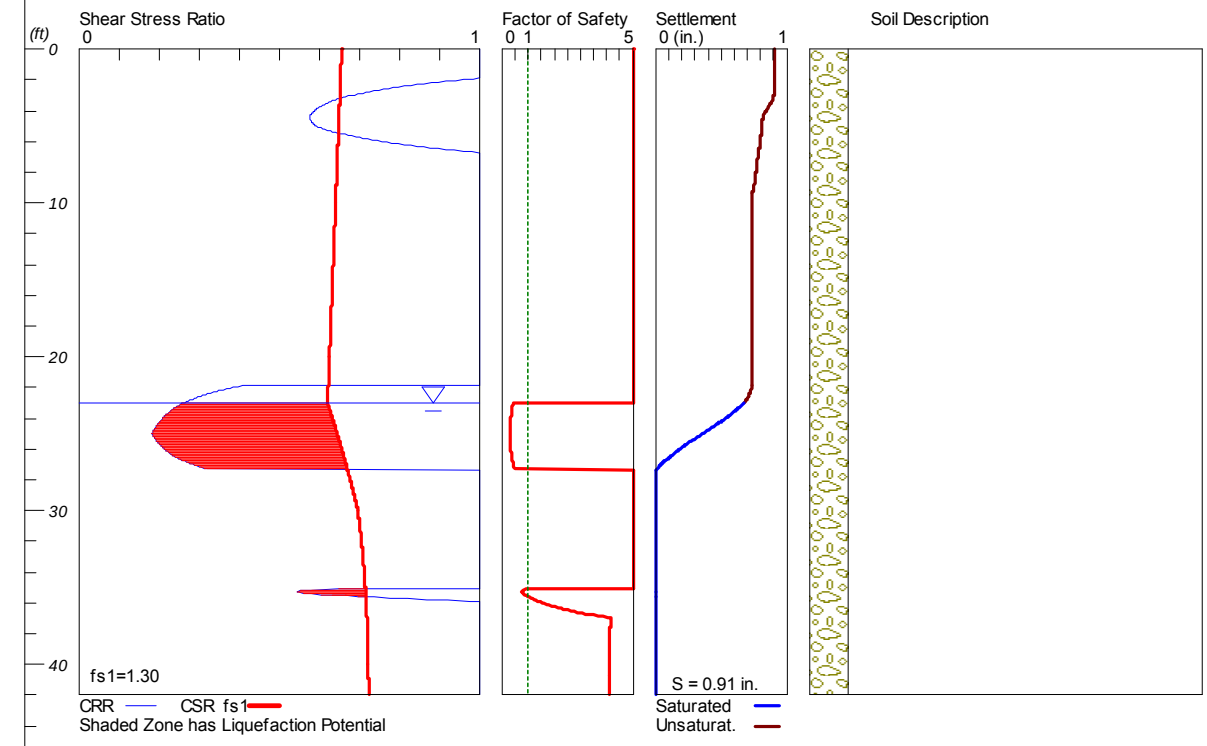
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Parking Lot S MT Sac

Hole No.=CPT 8 Water Depth=23 ft

Magnitude=6.51
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.

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Input File Name: K:\Ram\17-31-247-00 MT SAC lot R&S\Parking Lot S\UNTITLED CPT.liq

Title: Parking Lot S MT Sac

Subtitle: 17-31-247-01

Surface Elev.=

Hole No.=CPT 8

Depth of Hole= 42.00 ft

Water Table during Earthquake= 23.00 ft

Water Table during In-Situ Testing= 23.00 ft

Max. Acceleration= 0.78 g

Earthquake Magnitude= 6.51

Input Data:

Surface Elev.=

Hole No.=CPT 8

Depth of Hole=42.00 ft

Water Table during Earthquake= 23.00 ft

Water Table during In-Situ Testing= 23.00 ft

Max. Acceleration=0.78 g

Earthquake Magnitude=6.51

No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	qc atm	fs atm	Rf pcf	gamma %	Fines mm	D50
0.00	50.75	0.94	1.85	114.00	0.00	0.50
5.00	35.61	1.15	3.23	114.00	0.00	0.50
10.00	29.97	1.78	5.94	118.00	0.00	0.50
15.00	20.05	0.63	3.14	118.00	0.00	0.50
20.00	30.81	1.04	3.38	118.00	0.00	0.50
25.00	42.50	0.63	1.48	118.00	0.00	0.50
30.00	32.79	1.15	3.51	113.00	0.00	0.50
35.00	52.63	1.98	3.76	112.00	0.00	0.50
40.00	674.30	13.68	2.03	110.00	0.00	0.50
42.00	732.00	13.80	1.89	110.00	0.00	0.50

Modify Robertson method generates Fines from qc/fs. Inputted Fines are not relevant.

Output Results:

Settlement of Saturated Sands=0.67 in.

Settlement of Unsaturated Sands=0.24 in.

Total Settlement of Saturated and Unsaturated Sands=0.91 in.

Differential Settlement=0.454 to 0.600 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.67	0.24	0.91

0.05	2.99	0.66	5.00	0.67	0.24	0.91
0.10	2.99	0.66	5.00	0.67	0.24	0.91
0.15	2.99	0.66	5.00	0.67	0.24	0.91
0.20	2.99	0.66	5.00	0.67	0.24	0.91
0.25	2.99	0.66	5.00	0.67	0.24	0.91
0.30	2.99	0.66	5.00	0.67	0.24	0.91
0.35	2.99	0.66	5.00	0.67	0.24	0.91
0.40	2.99	0.66	5.00	0.67	0.24	0.91
0.45	2.99	0.66	5.00	0.67	0.24	0.91
0.50	2.99	0.66	5.00	0.67	0.24	0.91
0.55	2.99	0.66	5.00	0.67	0.24	0.91
0.60	2.99	0.66	5.00	0.67	0.24	0.91
0.65	2.99	0.66	5.00	0.67	0.24	0.91
0.70	2.99	0.66	5.00	0.67	0.24	0.91
0.75	2.92	0.66	5.00	0.67	0.24	0.91
0.80	2.69	0.66	5.00	0.67	0.24	0.91
0.85	2.50	0.66	5.00	0.67	0.24	0.91
0.90	2.33	0.66	5.00	0.67	0.24	0.91
0.95	2.19	0.66	5.00	0.67	0.24	0.91
1.00	2.06	0.66	5.00	0.67	0.24	0.91
1.05	1.94	0.65	5.00	0.67	0.24	0.91
1.10	1.84	0.65	5.00	0.67	0.24	0.91
1.15	1.75	0.65	5.00	0.67	0.24	0.91
1.20	1.66	0.65	5.00	0.67	0.24	0.91
1.25	1.59	0.65	5.00	0.67	0.24	0.91
1.30	1.52	0.65	5.00	0.67	0.24	0.91
1.35	1.46	0.65	5.00	0.67	0.24	0.91
1.40	1.40	0.65	5.00	0.67	0.24	0.91
1.45	1.35	0.65	5.00	0.67	0.24	0.91
1.50	1.30	0.65	5.00	0.67	0.24	0.91
1.55	1.25	0.65	5.00	0.67	0.24	0.91
1.60	1.21	0.65	5.00	0.67	0.24	0.91
1.65	1.17	0.65	5.00	0.67	0.24	0.91
1.70	1.14	0.65	5.00	0.67	0.24	0.91
1.75	1.10	0.65	5.00	0.67	0.24	0.91
1.80	1.07	0.65	5.00	0.67	0.24	0.91
1.85	1.04	0.65	5.00	0.67	0.24	0.91
1.90	1.01	0.65	5.00	0.67	0.24	0.91
1.95	0.99	0.65	5.00	0.67	0.24	0.91
2.00	0.96	0.65	5.00	0.67	0.24	0.91
2.05	0.94	0.65	5.00	0.67	0.23	0.91
2.10	0.92	0.65	5.00	0.67	0.23	0.91
2.15	0.90	0.65	5.00	0.67	0.23	0.91
2.20	0.88	0.65	5.00	0.67	0.23	0.91
2.25	0.86	0.65	5.00	0.67	0.23	0.91
2.30	0.84	0.65	5.00	0.67	0.23	0.91
2.35	0.83	0.65	5.00	0.67	0.23	0.91
2.40	0.81	0.65	5.00	0.67	0.23	0.91
2.45	0.80	0.65	5.00	0.67	0.23	0.91
2.50	0.79	0.65	5.00	0.67	0.23	0.90
2.55	0.77	0.65	5.00	0.67	0.23	0.90
2.60	0.76	0.65	5.00	0.67	0.23	0.90
2.65	0.75	0.65	5.00	0.67	0.23	0.90
2.70	0.74	0.65	5.00	0.67	0.23	0.90
2.75	0.73	0.65	5.00	0.67	0.23	0.90
2.80	0.72	0.65	5.00	0.67	0.23	0.90
2.85	0.71	0.65	5.00	0.67	0.23	0.90
2.90	0.70	0.65	5.00	0.67	0.23	0.90
2.95	0.69	0.65	5.00	0.67	0.23	0.90
3.00	0.68	0.65	5.00	0.67	0.23	0.90
3.05	0.67	0.65	5.00	0.67	0.23	0.90
3.10	0.67	0.65	5.00	0.67	0.23	0.90
3.15	0.66	0.65	5.00	0.67	0.23	0.90
3.20	0.65	0.65	5.00	0.67	0.22	0.90
3.25	0.65	0.65	5.00	0.67	0.22	0.89
3.30	0.64	0.65	5.00	0.67	0.22	0.89
3.35	0.63	0.65	5.00	0.67	0.22	0.89

3.40	0.63	0.65	5.00	0.67	0.22	0.89
3.45	0.62	0.65	5.00	0.67	0.21	0.88
3.50	0.62	0.65	5.00	0.67	0.21	0.88
3.55	0.62	0.65	5.00	0.67	0.20	0.88
3.60	0.61	0.65	5.00	0.67	0.20	0.87
3.65	0.61	0.65	5.00	0.67	0.20	0.87
3.70	0.60	0.65	5.00	0.67	0.19	0.86
3.75	0.60	0.65	5.00	0.67	0.19	0.86
3.80	0.60	0.65	5.00	0.67	0.18	0.86
3.85	0.59	0.65	5.00	0.67	0.18	0.85
3.90	0.59	0.65	5.00	0.67	0.18	0.85
3.95	0.59	0.65	5.00	0.67	0.17	0.84
4.00	0.59	0.65	5.00	0.67	0.17	0.84
4.05	0.59	0.65	5.00	0.67	0.17	0.84
4.10	0.58	0.65	5.00	0.67	0.16	0.83
4.15	0.58	0.65	5.00	0.67	0.16	0.83
4.20	0.58	0.65	5.00	0.67	0.15	0.82
4.25	0.58	0.65	5.00	0.67	0.15	0.82
4.30	0.58	0.65	5.00	0.67	0.15	0.82
4.35	0.58	0.65	5.00	0.67	0.15	0.82
4.40	0.58	0.65	5.00	0.67	0.14	0.82
4.45	0.58	0.65	5.00	0.67	0.14	0.82
4.50	0.58	0.65	5.00	0.67	0.14	0.82
4.55	0.58	0.65	5.00	0.67	0.14	0.81
4.60	0.58	0.65	5.00	0.67	0.14	0.81
4.65	0.58	0.65	5.00	0.67	0.14	0.81
4.70	0.58	0.65	5.00	0.67	0.14	0.81
4.75	0.58	0.65	5.00	0.67	0.14	0.81
4.80	0.58	0.65	5.00	0.67	0.14	0.81
4.85	0.59	0.65	5.00	0.67	0.14	0.81
4.90	0.59	0.65	5.00	0.67	0.14	0.81
4.95	0.59	0.65	5.00	0.67	0.14	0.81
5.00	0.59	0.65	5.00	0.67	0.14	0.81
5.05	0.60	0.65	5.00	0.67	0.14	0.81
5.10	0.60	0.65	5.00	0.67	0.14	0.81
5.15	0.61	0.65	5.00	0.67	0.14	0.81
5.20	0.61	0.65	5.00	0.67	0.14	0.81
5.25	0.62	0.65	5.00	0.67	0.14	0.81
5.30	0.63	0.65	5.00	0.67	0.14	0.81
5.35	0.63	0.65	5.00	0.67	0.13	0.81
5.40	0.64	0.65	5.00	0.67	0.13	0.81
5.45	0.65	0.65	5.00	0.67	0.13	0.80
5.50	0.66	0.65	5.00	0.67	0.13	0.80
5.55	0.66	0.65	5.00	0.67	0.13	0.80
5.60	0.67	0.65	5.00	0.67	0.13	0.80
5.65	0.68	0.65	5.00	0.67	0.13	0.80
5.70	0.69	0.65	5.00	0.67	0.13	0.80
5.75	0.70	0.65	5.00	0.67	0.13	0.80
5.80	0.71	0.65	5.00	0.67	0.13	0.80
5.85	0.72	0.65	5.00	0.67	0.13	0.80
5.90	0.73	0.65	5.00	0.67	0.13	0.80
5.95	0.74	0.65	5.00	0.67	0.13	0.80
6.00	0.76	0.65	5.00	0.67	0.13	0.80
6.05	0.77	0.65	5.00	0.67	0.12	0.80
6.10	0.78	0.65	5.00	0.67	0.12	0.80
6.15	0.80	0.65	5.00	0.67	0.12	0.79
6.20	0.81	0.65	5.00	0.67	0.12	0.79
6.25	0.83	0.65	5.00	0.67	0.12	0.79
6.30	0.84	0.65	5.00	0.67	0.12	0.79
6.35	0.86	0.65	5.00	0.67	0.12	0.79
6.40	0.88	0.65	5.00	0.67	0.12	0.79
6.45	0.90	0.65	5.00	0.67	0.12	0.79
6.50	0.92	0.65	5.00	0.67	0.12	0.79
6.55	0.94	0.65	5.00	0.67	0.12	0.79
6.60	0.96	0.65	5.00	0.67	0.12	0.79
6.65	0.98	0.65	5.00	0.67	0.11	0.79
6.70	1.01	0.65	5.00	0.67	0.11	0.79

6.75	1.03	0.65	5.00	0.67	0.11	0.78
6.80	1.06	0.65	5.00	0.67	0.11	0.78
6.85	1.09	0.65	5.00	0.67	0.11	0.78
6.90	1.12	0.65	5.00	0.67	0.11	0.78
6.95	1.15	0.65	5.00	0.67	0.11	0.78
7.00	1.19	0.65	5.00	0.67	0.11	0.78
7.05	1.22	0.65	5.00	0.67	0.11	0.78
7.10	1.26	0.65	5.00	0.67	0.11	0.78
7.15	1.30	0.65	5.00	0.67	0.11	0.78
7.20	1.34	0.65	5.00	0.67	0.11	0.78
7.25	1.39	0.65	5.00	0.67	0.10	0.78
7.30	1.44	0.65	5.00	0.67	0.10	0.78
7.35	1.49	0.65	5.00	0.67	0.10	0.77
7.40	1.55	0.65	5.00	0.67	0.10	0.77
7.45	1.61	0.65	5.00	0.67	0.10	0.77
7.50	1.67	0.65	5.00	0.67	0.10	0.77
7.55	1.74	0.65	5.00	0.67	0.10	0.77
7.60	1.81	0.64	5.00	0.67	0.10	0.77
7.65	1.89	0.64	5.00	0.67	0.10	0.77
7.70	1.98	0.64	5.00	0.67	0.10	0.77
7.75	2.07	0.64	5.00	0.67	0.10	0.77
7.80	2.17	0.64	5.00	0.67	0.10	0.77
7.85	2.17	0.64	5.00	0.67	0.10	0.77
7.90	2.14	0.64	5.00	0.67	0.10	0.77
7.95	1.79	0.64	5.00	0.67	0.10	0.77
8.00	1.85	0.64	5.00	0.67	0.09	0.77
8.05	1.92	0.64	5.00	0.67	0.09	0.76
8.10	2.00	0.64	5.00	0.67	0.09	0.76
8.15	2.08	0.64	5.00	0.67	0.09	0.76
8.20	2.16	0.64	5.00	0.67	0.09	0.76
8.25	2.25	0.64	5.00	0.67	0.09	0.76
8.30	2.35	0.64	5.00	0.67	0.09	0.76
8.35	2.46	0.64	5.00	0.67	0.09	0.76
8.40	2.58	0.64	5.00	0.67	0.09	0.76
8.45	2.71	0.64	5.00	0.67	0.09	0.76
8.50	2.84	0.64	5.00	0.67	0.09	0.76
8.55	2.77	0.64	5.00	0.67	0.09	0.76
8.60	2.72	0.64	5.00	0.67	0.08	0.76
8.65	2.68	0.64	5.00	0.67	0.08	0.76
8.70	2.63	0.64	5.00	0.67	0.08	0.75
8.75	2.59	0.64	5.00	0.67	0.08	0.75
8.80	2.55	0.64	5.00	0.67	0.08	0.75
8.85	2.50	0.64	5.00	0.67	0.08	0.75
8.90	2.46	0.64	5.00	0.67	0.08	0.75
8.95	2.42	0.64	5.00	0.67	0.08	0.75
9.00	2.38	0.64	5.00	0.67	0.08	0.75
9.05	2.34	0.64	5.00	0.67	0.08	0.75
9.10	2.30	0.64	5.00	0.67	0.08	0.75
9.15	2.27	0.64	5.00	0.67	0.07	0.75
9.20	2.23	0.64	5.00	0.67	0.07	0.74
9.25	2.19	0.64	5.00	0.67	0.07	0.74
9.30	2.16	0.64	5.00	0.67	0.07	0.74
9.35	2.13	0.64	5.00	0.67	0.07	0.74
9.40	2.00	0.64	5.00	0.67	0.07	0.74
9.45	2.00	0.64	5.00	0.67	0.07	0.74
9.50	2.00	0.64	5.00	0.67	0.07	0.74
9.55	2.00	0.64	5.00	0.67	0.07	0.74
9.60	2.00	0.64	5.00	0.67	0.07	0.74
9.65	2.00	0.64	5.00	0.67	0.07	0.74
9.70	2.00	0.64	5.00	0.67	0.07	0.74
9.75	2.00	0.64	5.00	0.67	0.07	0.74
9.80	2.00	0.64	5.00	0.67	0.07	0.74
9.85	2.00	0.64	5.00	0.67	0.07	0.74
9.90	2.00	0.64	5.00	0.67	0.07	0.74
9.95	2.00	0.64	5.00	0.67	0.07	0.74
10.00	2.00	0.64	5.00	0.67	0.07	0.74
10.05	2.00	0.64	5.00	0.67	0.07	0.74

10.10	2.00	0.64	5.00	0.67	0.07	0.74
10.15	2.00	0.64	5.00	0.67	0.07	0.74
10.20	2.00	0.64	5.00	0.67	0.07	0.74
10.25	2.00	0.64	5.00	0.67	0.07	0.74
10.30	2.00	0.64	5.00	0.67	0.07	0.74
10.35	2.00	0.64	5.00	0.67	0.07	0.74
10.40	2.00	0.64	5.00	0.67	0.07	0.74
10.45	2.00	0.64	5.00	0.67	0.07	0.74
10.50	2.00	0.64	5.00	0.67	0.07	0.74
10.55	2.00	0.64	5.00	0.67	0.07	0.74
10.60	2.00	0.64	5.00	0.67	0.07	0.74
10.65	2.00	0.64	5.00	0.67	0.07	0.74
10.70	2.00	0.64	5.00	0.67	0.07	0.74
10.75	2.00	0.64	5.00	0.67	0.07	0.74
10.80	2.00	0.64	5.00	0.67	0.07	0.74
10.85	2.00	0.64	5.00	0.67	0.07	0.74
10.90	2.00	0.64	5.00	0.67	0.07	0.74
10.95	2.00	0.64	5.00	0.67	0.07	0.74
11.00	2.00	0.64	5.00	0.67	0.07	0.74
11.05	2.00	0.64	5.00	0.67	0.07	0.74
11.10	2.00	0.64	5.00	0.67	0.07	0.74
11.15	2.00	0.64	5.00	0.67	0.07	0.74
11.20	2.00	0.64	5.00	0.67	0.07	0.74
11.25	2.00	0.64	5.00	0.67	0.07	0.74
11.30	2.00	0.64	5.00	0.67	0.07	0.74
11.35	2.00	0.64	5.00	0.67	0.07	0.74
11.40	2.00	0.64	5.00	0.67	0.07	0.74
11.45	2.00	0.64	5.00	0.67	0.07	0.74
11.50	2.00	0.64	5.00	0.67	0.07	0.74
11.55	2.00	0.64	5.00	0.67	0.07	0.74
11.60	2.00	0.64	5.00	0.67	0.07	0.74
11.65	2.00	0.64	5.00	0.67	0.07	0.74
11.70	2.00	0.64	5.00	0.67	0.07	0.74
11.75	2.00	0.64	5.00	0.67	0.07	0.74
11.80	2.00	0.64	5.00	0.67	0.07	0.74
11.85	2.00	0.64	5.00	0.67	0.07	0.74
11.90	2.00	0.64	5.00	0.67	0.07	0.74
11.95	2.00	0.64	5.00	0.67	0.07	0.74
12.00	2.00	0.64	5.00	0.67	0.07	0.74
12.05	2.00	0.64	5.00	0.67	0.07	0.74
12.10	2.00	0.64	5.00	0.67	0.07	0.74
12.15	2.00	0.64	5.00	0.67	0.07	0.74
12.20	2.00	0.64	5.00	0.67	0.07	0.74
12.25	2.00	0.64	5.00	0.67	0.07	0.74
12.30	2.00	0.64	5.00	0.67	0.07	0.74
12.35	2.00	0.64	5.00	0.67	0.07	0.74
12.40	2.00	0.64	5.00	0.67	0.07	0.74
12.45	2.00	0.64	5.00	0.67	0.07	0.74
12.50	2.00	0.64	5.00	0.67	0.07	0.74
12.55	2.00	0.64	5.00	0.67	0.07	0.74
12.60	2.00	0.64	5.00	0.67	0.07	0.74
12.65	2.00	0.64	5.00	0.67	0.07	0.74
12.70	2.00	0.64	5.00	0.67	0.07	0.74
12.75	2.00	0.64	5.00	0.67	0.07	0.74
12.80	2.00	0.64	5.00	0.67	0.07	0.74
12.85	2.00	0.64	5.00	0.67	0.07	0.74
12.90	2.00	0.64	5.00	0.67	0.07	0.74
12.95	2.00	0.64	5.00	0.67	0.07	0.74
13.00	2.00	0.64	5.00	0.67	0.07	0.74
13.05	2.00	0.64	5.00	0.67	0.07	0.74
13.10	2.00	0.64	5.00	0.67	0.07	0.74
13.15	2.00	0.64	5.00	0.67	0.07	0.74
13.20	2.00	0.64	5.00	0.67	0.07	0.74
13.25	2.00	0.64	5.00	0.67	0.07	0.74
13.30	2.00	0.64	5.00	0.67	0.07	0.74
13.35	2.00	0.64	5.00	0.67	0.07	0.74
13.40	2.00	0.64	5.00	0.67	0.07	0.74

13.45	2.00	0.64	5.00	0.67	0.07	0.74
13.50	2.00	0.64	5.00	0.67	0.07	0.74
13.55	2.00	0.64	5.00	0.67	0.07	0.74
13.60	2.00	0.64	5.00	0.67	0.07	0.74
13.65	2.00	0.64	5.00	0.67	0.07	0.74
13.70	2.00	0.64	5.00	0.67	0.07	0.74
13.75	2.00	0.64	5.00	0.67	0.07	0.74
13.80	2.00	0.64	5.00	0.67	0.07	0.74
13.85	2.00	0.64	5.00	0.67	0.07	0.74
13.90	2.00	0.64	5.00	0.67	0.07	0.74
13.95	2.00	0.64	5.00	0.67	0.07	0.74
14.00	2.00	0.64	5.00	0.67	0.07	0.74
14.05	2.00	0.64	5.00	0.67	0.07	0.74
14.10	2.00	0.63	5.00	0.67	0.07	0.74
14.15	2.00	0.63	5.00	0.67	0.07	0.74
14.20	2.00	0.63	5.00	0.67	0.07	0.74
14.25	2.00	0.63	5.00	0.67	0.07	0.74
14.30	2.00	0.63	5.00	0.67	0.07	0.74
14.35	2.00	0.63	5.00	0.67	0.07	0.74
14.40	2.00	0.63	5.00	0.67	0.07	0.74
14.45	2.00	0.63	5.00	0.67	0.07	0.74
14.50	2.00	0.63	5.00	0.67	0.07	0.74
14.55	2.00	0.63	5.00	0.67	0.07	0.74
14.60	2.00	0.63	5.00	0.67	0.07	0.74
14.65	2.00	0.63	5.00	0.67	0.07	0.74
14.70	2.00	0.63	5.00	0.67	0.07	0.74
14.75	2.00	0.63	5.00	0.67	0.07	0.74
14.80	2.00	0.63	5.00	0.67	0.07	0.74
14.85	2.00	0.63	5.00	0.67	0.07	0.74
14.90	2.00	0.63	5.00	0.67	0.07	0.74
14.95	2.00	0.63	5.00	0.67	0.07	0.74
15.00	2.00	0.63	5.00	0.67	0.07	0.74
15.05	2.00	0.63	5.00	0.67	0.07	0.74
15.10	2.00	0.63	5.00	0.67	0.07	0.74
15.15	2.00	0.63	5.00	0.67	0.07	0.74
15.20	2.00	0.63	5.00	0.67	0.07	0.74
15.25	2.00	0.63	5.00	0.67	0.07	0.74
15.30	2.00	0.63	5.00	0.67	0.07	0.74
15.35	2.00	0.63	5.00	0.67	0.07	0.74
15.40	2.00	0.63	5.00	0.67	0.07	0.74
15.45	2.00	0.63	5.00	0.67	0.07	0.74
15.50	2.00	0.63	5.00	0.67	0.07	0.74
15.55	2.00	0.63	5.00	0.67	0.07	0.74
15.60	2.00	0.63	5.00	0.67	0.07	0.74
15.65	2.00	0.63	5.00	0.67	0.07	0.74
15.70	2.00	0.63	5.00	0.67	0.07	0.74
15.75	2.00	0.63	5.00	0.67	0.07	0.74
15.80	2.00	0.63	5.00	0.67	0.07	0.74
15.85	2.00	0.63	5.00	0.67	0.07	0.74
15.90	2.00	0.63	5.00	0.67	0.07	0.74
15.95	2.00	0.63	5.00	0.67	0.07	0.74
16.00	2.00	0.63	5.00	0.67	0.07	0.74
16.05	2.00	0.63	5.00	0.67	0.07	0.74
16.10	2.00	0.63	5.00	0.67	0.07	0.74
16.15	2.00	0.63	5.00	0.67	0.07	0.74
16.20	2.00	0.63	5.00	0.67	0.07	0.74
16.25	2.00	0.63	5.00	0.67	0.07	0.74
16.30	2.00	0.63	5.00	0.67	0.07	0.74
16.35	2.00	0.63	5.00	0.67	0.07	0.74
16.40	2.00	0.63	5.00	0.67	0.07	0.74
16.45	2.00	0.63	5.00	0.67	0.07	0.74
16.50	2.00	0.63	5.00	0.67	0.07	0.74
16.55	2.00	0.63	5.00	0.67	0.07	0.74
16.60	2.00	0.63	5.00	0.67	0.07	0.74
16.65	2.00	0.63	5.00	0.67	0.07	0.74
16.70	2.00	0.63	5.00	0.67	0.07	0.74
16.75	2.00	0.63	5.00	0.67	0.07	0.74

16.80	2.00	0.63	5.00	0.67	0.07	0.74
16.85	2.00	0.63	5.00	0.67	0.07	0.74
16.90	2.00	0.63	5.00	0.67	0.07	0.74
16.95	2.00	0.63	5.00	0.67	0.07	0.74
17.00	2.00	0.63	5.00	0.67	0.07	0.74
17.05	2.00	0.63	5.00	0.67	0.07	0.74
17.10	2.00	0.63	5.00	0.67	0.07	0.74
17.15	2.00	0.63	5.00	0.67	0.07	0.74
17.20	2.00	0.63	5.00	0.67	0.07	0.74
17.25	2.00	0.63	5.00	0.67	0.07	0.74
17.30	2.00	0.63	5.00	0.67	0.07	0.74
17.35	2.00	0.63	5.00	0.67	0.07	0.74
17.40	2.00	0.63	5.00	0.67	0.07	0.74
17.45	2.00	0.63	5.00	0.67	0.07	0.74
17.50	2.00	0.63	5.00	0.67	0.07	0.74
17.55	2.00	0.63	5.00	0.67	0.07	0.74
17.60	2.00	0.63	5.00	0.67	0.07	0.74
17.65	2.00	0.63	5.00	0.67	0.07	0.74
17.70	2.00	0.63	5.00	0.67	0.07	0.74
17.75	2.00	0.63	5.00	0.67	0.07	0.74
17.80	2.00	0.63	5.00	0.67	0.07	0.74
17.85	2.00	0.63	5.00	0.67	0.07	0.74
17.90	2.00	0.63	5.00	0.67	0.07	0.74
17.95	2.00	0.63	5.00	0.67	0.07	0.74
18.00	2.00	0.63	5.00	0.67	0.07	0.74
18.05	2.00	0.63	5.00	0.67	0.07	0.74
18.10	2.00	0.63	5.00	0.67	0.07	0.74
18.15	2.00	0.63	5.00	0.67	0.07	0.74
18.20	2.00	0.63	5.00	0.67	0.07	0.74
18.25	2.00	0.63	5.00	0.67	0.07	0.74
18.30	2.00	0.63	5.00	0.67	0.07	0.74
18.35	2.00	0.63	5.00	0.67	0.07	0.74
18.40	2.00	0.63	5.00	0.67	0.07	0.74
18.45	2.00	0.63	5.00	0.67	0.07	0.74
18.50	2.00	0.63	5.00	0.67	0.07	0.74
18.55	2.00	0.63	5.00	0.67	0.07	0.74
18.60	2.00	0.63	5.00	0.67	0.07	0.74
18.65	2.00	0.63	5.00	0.67	0.07	0.74
18.70	2.00	0.63	5.00	0.67	0.07	0.74
18.75	2.00	0.63	5.00	0.67	0.07	0.74
18.80	2.00	0.63	5.00	0.67	0.07	0.74
18.85	2.00	0.63	5.00	0.67	0.07	0.74
18.90	2.00	0.63	5.00	0.67	0.07	0.74
18.95	2.00	0.63	5.00	0.67	0.07	0.74
19.00	2.00	0.63	5.00	0.67	0.07	0.74
19.05	2.00	0.63	5.00	0.67	0.07	0.74
19.10	2.00	0.63	5.00	0.67	0.07	0.74
19.15	2.00	0.63	5.00	0.67	0.07	0.74
19.20	2.00	0.63	5.00	0.67	0.07	0.74
19.25	2.00	0.63	5.00	0.67	0.07	0.74
19.30	2.00	0.63	5.00	0.67	0.07	0.74
19.35	2.00	0.63	5.00	0.67	0.07	0.74
19.40	2.00	0.63	5.00	0.67	0.07	0.74
19.45	2.00	0.63	5.00	0.67	0.07	0.74
19.50	2.00	0.63	5.00	0.67	0.07	0.74
19.55	2.00	0.63	5.00	0.67	0.07	0.74
19.60	2.00	0.63	5.00	0.67	0.07	0.74
19.65	2.00	0.63	5.00	0.67	0.07	0.74
19.70	2.00	0.63	5.00	0.67	0.07	0.74
19.75	2.00	0.63	5.00	0.67	0.07	0.74
19.80	2.00	0.63	5.00	0.67	0.07	0.74
19.85	2.00	0.63	5.00	0.67	0.07	0.74
19.90	2.00	0.63	5.00	0.67	0.07	0.74
19.95	2.00	0.63	5.00	0.67	0.07	0.74
20.00	2.00	0.63	5.00	0.67	0.07	0.74
20.05	2.00	0.63	5.00	0.67	0.07	0.74
20.10	2.00	0.63	5.00	0.67	0.07	0.74

20.15	2.00	0.63	5.00	0.67	0.07	0.74
20.20	2.00	0.63	5.00	0.67	0.07	0.74
20.25	2.00	0.63	5.00	0.67	0.07	0.74
20.30	2.00	0.63	5.00	0.67	0.07	0.74
20.35	2.00	0.63	5.00	0.67	0.07	0.74
20.40	2.00	0.63	5.00	0.67	0.07	0.74
20.45	2.00	0.63	5.00	0.67	0.07	0.74
20.50	2.00	0.63	5.00	0.67	0.07	0.74
20.55	2.00	0.63	5.00	0.67	0.07	0.74
20.60	2.00	0.63	5.00	0.67	0.07	0.74
20.65	2.00	0.62	5.00	0.67	0.07	0.74
20.70	2.00	0.62	5.00	0.67	0.07	0.74
20.75	2.00	0.62	5.00	0.67	0.07	0.74
20.80	2.00	0.62	5.00	0.67	0.07	0.74
20.85	2.00	0.62	5.00	0.67	0.07	0.74
20.90	2.00	0.62	5.00	0.67	0.07	0.74
20.95	2.00	0.62	5.00	0.67	0.07	0.74
21.00	2.00	0.62	5.00	0.67	0.07	0.74
21.05	2.00	0.62	5.00	0.67	0.07	0.74
21.10	2.00	0.62	5.00	0.67	0.07	0.74
21.15	2.00	0.62	5.00	0.67	0.07	0.74
21.20	2.00	0.62	5.00	0.67	0.07	0.74
21.25	2.00	0.62	5.00	0.67	0.07	0.74
21.30	2.00	0.62	5.00	0.67	0.07	0.74
21.35	2.00	0.62	5.00	0.67	0.07	0.74
21.40	2.00	0.62	5.00	0.67	0.07	0.74
21.45	2.00	0.62	5.00	0.67	0.07	0.74
21.50	2.00	0.62	5.00	0.67	0.07	0.74
21.55	2.00	0.62	5.00	0.67	0.07	0.74
21.60	2.00	0.62	5.00	0.67	0.07	0.74
21.65	2.00	0.62	5.00	0.67	0.07	0.74
21.70	2.00	0.62	5.00	0.67	0.07	0.74
21.75	2.00	0.62	5.00	0.67	0.07	0.74
21.80	2.00	0.62	5.00	0.67	0.07	0.74
21.85	2.00	0.62	5.00	0.67	0.07	0.74
21.90	0.41	0.62	5.00	0.67	0.07	0.74
21.95	0.40	0.62	5.00	0.67	0.06	0.74
22.00	0.39	0.62	5.00	0.67	0.06	0.73
22.05	0.38	0.62	5.00	0.67	0.06	0.73
22.10	0.37	0.62	5.00	0.67	0.06	0.73
22.15	0.36	0.62	5.00	0.67	0.06	0.73
22.20	0.35	0.62	5.00	0.67	0.06	0.73
22.25	0.34	0.62	5.00	0.67	0.05	0.72
22.30	0.34	0.62	5.00	0.67	0.05	0.72
22.35	0.33	0.62	5.00	0.67	0.05	0.72
22.40	0.32	0.62	5.00	0.67	0.05	0.72
22.45	0.32	0.62	5.00	0.67	0.04	0.71
22.50	0.31	0.62	5.00	0.67	0.04	0.71
22.55	0.30	0.62	5.00	0.67	0.04	0.71
22.60	0.30	0.62	5.00	0.67	0.03	0.71
22.65	0.29	0.62	5.00	0.67	0.03	0.70
22.70	0.29	0.62	5.00	0.67	0.03	0.70
22.75	0.28	0.62	5.00	0.67	0.02	0.70
22.80	0.28	0.62	5.00	0.67	0.02	0.69
22.85	0.27	0.62	5.00	0.67	0.02	0.69
22.90	0.27	0.62	5.00	0.67	0.01	0.68
22.95	0.27	0.62	5.00	0.67	0.01	0.68
23.00	0.26	0.62	5.00	0.67	0.00	0.68
23.05	0.26	0.62	0.41*	0.67	0.00	0.67
23.10	0.25	0.62	0.41*	0.66	0.00	0.66
23.15	0.25	0.62	0.40*	0.66	0.00	0.66
23.20	0.25	0.62	0.40*	0.65	0.00	0.65
23.25	0.24	0.62	0.39*	0.64	0.00	0.64
23.30	0.24	0.62	0.39*	0.64	0.00	0.64
23.35	0.24	0.63	0.38*	0.63	0.00	0.63
23.40	0.24	0.63	0.38*	0.62	0.00	0.62
23.45	0.23	0.63	0.37*	0.62	0.00	0.62

23.50	0.23	0.63	0.37*	0.61	0.00	0.61
23.55	0.23	0.63	0.36*	0.60	0.00	0.60
23.60	0.23	0.63	0.36*	0.59	0.00	0.59
23.65	0.22	0.63	0.35*	0.59	0.00	0.59
23.70	0.22	0.63	0.35*	0.58	0.00	0.58
23.75	0.22	0.63	0.35*	0.57	0.00	0.57
23.80	0.22	0.63	0.34*	0.56	0.00	0.56
23.85	0.21	0.63	0.34*	0.56	0.00	0.56
23.90	0.21	0.63	0.34*	0.55	0.00	0.55
23.95	0.21	0.63	0.33*	0.54	0.00	0.54
24.00	0.21	0.63	0.33*	0.53	0.00	0.53
24.05	0.21	0.63	0.33*	0.52	0.00	0.52
24.10	0.20	0.63	0.32*	0.52	0.00	0.52
24.15	0.20	0.64	0.32*	0.51	0.00	0.51
24.20	0.20	0.64	0.32*	0.50	0.00	0.50
24.25	0.20	0.64	0.31*	0.49	0.00	0.49
24.30	0.20	0.64	0.31*	0.48	0.00	0.48
24.35	0.20	0.64	0.31*	0.47	0.00	0.47
24.40	0.20	0.64	0.31*	0.46	0.00	0.46
24.45	0.19	0.64	0.30*	0.46	0.00	0.46
24.50	0.19	0.64	0.30*	0.45	0.00	0.45
24.55	0.19	0.64	0.30*	0.44	0.00	0.44
24.60	0.19	0.64	0.30*	0.43	0.00	0.43
24.65	0.19	0.64	0.30*	0.42	0.00	0.42
24.70	0.19	0.64	0.29*	0.41	0.00	0.41
24.75	0.19	0.64	0.29*	0.40	0.00	0.40
24.80	0.19	0.64	0.29*	0.39	0.00	0.39
24.85	0.18	0.64	0.29*	0.38	0.00	0.38
24.90	0.18	0.64	0.29*	0.38	0.00	0.38
24.95	0.18	0.64	0.28*	0.37	0.00	0.37
25.00	0.18	0.65	0.28*	0.36	0.00	0.36
25.05	0.18	0.65	0.28*	0.35	0.00	0.35
25.10	0.18	0.65	0.28*	0.34	0.00	0.34
25.15	0.19	0.65	0.29*	0.33	0.00	0.33
25.20	0.19	0.65	0.29*	0.32	0.00	0.32
25.25	0.19	0.65	0.29*	0.31	0.00	0.31
25.30	0.19	0.65	0.29*	0.30	0.00	0.30
25.35	0.19	0.65	0.29*	0.29	0.00	0.29
25.40	0.19	0.65	0.30*	0.28	0.00	0.28
25.45	0.19	0.65	0.30*	0.28	0.00	0.28
25.50	0.19	0.65	0.30*	0.27	0.00	0.27
25.55	0.20	0.65	0.30*	0.26	0.00	0.26
25.60	0.20	0.65	0.30*	0.25	0.00	0.25
25.65	0.20	0.65	0.31*	0.24	0.00	0.24
25.70	0.20	0.65	0.31*	0.23	0.00	0.23
25.75	0.20	0.65	0.31*	0.22	0.00	0.22
25.80	0.21	0.65	0.31*	0.22	0.00	0.22
25.85	0.21	0.65	0.32*	0.21	0.00	0.21
25.90	0.21	0.66	0.32*	0.20	0.00	0.20
25.95	0.21	0.66	0.32*	0.19	0.00	0.19
26.00	0.21	0.66	0.33*	0.18	0.00	0.18
26.05	0.22	0.66	0.33*	0.17	0.00	0.17
26.10	0.22	0.66	0.33*	0.17	0.00	0.17
26.15	0.22	0.66	0.33*	0.16	0.00	0.16
26.20	0.22	0.66	0.34*	0.15	0.00	0.15
26.25	0.23	0.66	0.34*	0.14	0.00	0.14
26.30	0.23	0.66	0.35*	0.14	0.00	0.14
26.35	0.23	0.66	0.35*	0.13	0.00	0.13
26.40	0.23	0.66	0.35*	0.12	0.00	0.12
26.45	0.24	0.66	0.36*	0.11	0.00	0.11
26.50	0.24	0.66	0.36*	0.11	0.00	0.11
26.55	0.24	0.66	0.37*	0.10	0.00	0.10
26.60	0.25	0.66	0.37*	0.09	0.00	0.09
26.65	0.25	0.66	0.38*	0.09	0.00	0.09
26.70	0.26	0.66	0.38*	0.08	0.00	0.08
26.75	0.26	0.66	0.39*	0.07	0.00	0.07
26.80	0.26	0.67	0.40*	0.07	0.00	0.07

26.85	0.27	0.67	0.40*	0.06	0.00	0.06
26.90	0.27	0.67	0.41*	0.05	0.00	0.05
26.95	0.28	0.67	0.42*	0.05	0.00	0.05
27.00	0.28	0.67	0.42*	0.04	0.00	0.04
27.05	0.29	0.67	0.43*	0.03	0.00	0.03
27.10	0.29	0.67	0.44*	0.03	0.00	0.03
27.15	0.30	0.67	0.45*	0.02	0.00	0.02
27.20	0.31	0.67	0.46*	0.02	0.00	0.02
27.25	0.31	0.67	0.47*	0.01	0.00	0.01
27.30	0.32	0.67	0.48*	0.01	0.00	0.01
27.35	2.00	0.67	5.00	0.01	0.00	0.01
27.40	2.00	0.67	5.00	0.01	0.00	0.01
27.45	2.00	0.67	5.00	0.01	0.00	0.01
27.50	2.00	0.67	5.00	0.01	0.00	0.01
27.55	2.00	0.67	5.00	0.01	0.00	0.01
27.60	2.00	0.67	5.00	0.01	0.00	0.01
27.65	2.00	0.67	5.00	0.01	0.00	0.01
27.70	2.00	0.67	5.00	0.01	0.00	0.01
27.75	2.00	0.68	5.00	0.01	0.00	0.01
27.80	2.00	0.68	5.00	0.01	0.00	0.01
27.85	2.00	0.68	5.00	0.01	0.00	0.01
27.90	2.00	0.68	5.00	0.01	0.00	0.01
27.95	2.00	0.68	5.00	0.01	0.00	0.01
28.00	2.00	0.68	5.00	0.01	0.00	0.01
28.05	2.00	0.68	5.00	0.01	0.00	0.01
28.10	2.00	0.68	5.00	0.01	0.00	0.01
28.15	2.00	0.68	5.00	0.01	0.00	0.01
28.20	2.00	0.68	5.00	0.01	0.00	0.01
28.25	2.00	0.68	5.00	0.01	0.00	0.01
28.30	2.00	0.68	5.00	0.01	0.00	0.01
28.35	2.00	0.68	5.00	0.01	0.00	0.01
28.40	2.00	0.68	5.00	0.01	0.00	0.01
28.45	2.00	0.68	5.00	0.01	0.00	0.01
28.50	2.00	0.68	5.00	0.01	0.00	0.01
28.55	2.00	0.68	5.00	0.01	0.00	0.01
28.60	2.00	0.68	5.00	0.01	0.00	0.01
28.65	2.00	0.68	5.00	0.01	0.00	0.01
28.70	2.00	0.68	5.00	0.01	0.00	0.01
28.75	2.00	0.69	5.00	0.01	0.00	0.01
28.80	2.00	0.69	5.00	0.01	0.00	0.01
28.85	2.00	0.69	5.00	0.01	0.00	0.01
28.90	2.00	0.69	5.00	0.01	0.00	0.01
28.95	2.00	0.69	5.00	0.01	0.00	0.01
29.00	2.00	0.69	5.00	0.01	0.00	0.01
29.05	2.00	0.69	5.00	0.01	0.00	0.01
29.10	2.00	0.69	5.00	0.01	0.00	0.01
29.15	2.00	0.69	5.00	0.01	0.00	0.01
29.20	2.00	0.69	5.00	0.01	0.00	0.01
29.25	2.00	0.69	5.00	0.01	0.00	0.01
29.30	2.00	0.69	5.00	0.01	0.00	0.01
29.35	2.00	0.69	5.00	0.01	0.00	0.01
29.40	2.00	0.69	5.00	0.01	0.00	0.01
29.45	2.00	0.69	5.00	0.01	0.00	0.01
29.50	2.00	0.69	5.00	0.01	0.00	0.01
29.55	2.00	0.69	5.00	0.01	0.00	0.01
29.60	2.00	0.69	5.00	0.01	0.00	0.01
29.65	2.00	0.69	5.00	0.01	0.00	0.01
29.70	2.00	0.69	5.00	0.01	0.00	0.01
29.75	2.00	0.69	5.00	0.01	0.00	0.01
29.80	2.00	0.70	5.00	0.01	0.00	0.01
29.85	2.00	0.70	5.00	0.01	0.00	0.01
29.90	2.00	0.70	5.00	0.01	0.00	0.01
29.95	2.00	0.70	5.00	0.01	0.00	0.01
30.00	2.00	0.70	5.00	0.01	0.00	0.01
30.05	2.00	0.70	5.00	0.01	0.00	0.01
30.10	2.00	0.70	5.00	0.01	0.00	0.01
30.15	2.00	0.70	5.00	0.01	0.00	0.01

30.20	2.00	0.70	5.00	0.01	0.00	0.01
30.25	2.00	0.70	5.00	0.01	0.00	0.01
30.30	2.00	0.70	5.00	0.01	0.00	0.01
30.35	2.00	0.70	5.00	0.01	0.00	0.01
30.40	2.00	0.70	5.00	0.01	0.00	0.01
30.45	2.00	0.70	5.00	0.01	0.00	0.01
30.50	2.00	0.70	5.00	0.01	0.00	0.01
30.55	2.00	0.70	5.00	0.01	0.00	0.01
30.60	2.00	0.70	5.00	0.01	0.00	0.01
30.65	2.00	0.70	5.00	0.01	0.00	0.01
30.70	2.00	0.70	5.00	0.01	0.00	0.01
30.75	2.00	0.70	5.00	0.01	0.00	0.01
30.80	2.00	0.70	5.00	0.01	0.00	0.01
30.85	2.00	0.70	5.00	0.01	0.00	0.01
30.90	2.00	0.70	5.00	0.01	0.00	0.01
30.95	2.00	0.70	5.00	0.01	0.00	0.01
31.00	2.00	0.70	5.00	0.01	0.00	0.01
31.05	2.00	0.70	5.00	0.01	0.00	0.01
31.10	2.00	0.70	5.00	0.01	0.00	0.01
31.15	2.00	0.70	5.00	0.01	0.00	0.01
31.20	2.00	0.70	5.00	0.01	0.00	0.01
31.25	2.00	0.70	5.00	0.01	0.00	0.01
31.30	2.00	0.70	5.00	0.01	0.00	0.01
31.35	2.00	0.70	5.00	0.01	0.00	0.01
31.40	2.00	0.70	5.00	0.01	0.00	0.01
31.45	2.00	0.70	5.00	0.01	0.00	0.01
31.50	2.00	0.70	5.00	0.01	0.00	0.01
31.55	2.00	0.70	5.00	0.01	0.00	0.01
31.60	2.00	0.70	5.00	0.01	0.00	0.01
31.65	2.00	0.70	5.00	0.01	0.00	0.01
31.70	2.00	0.70	5.00	0.01	0.00	0.01
31.75	2.00	0.70	5.00	0.01	0.00	0.01
31.80	2.00	0.70	5.00	0.01	0.00	0.01
31.85	2.00	0.71	5.00	0.01	0.00	0.01
31.90	2.00	0.71	5.00	0.01	0.00	0.01
31.95	2.00	0.71	5.00	0.01	0.00	0.01
32.00	2.00	0.71	5.00	0.01	0.00	0.01
32.05	2.00	0.71	5.00	0.01	0.00	0.01
32.10	2.00	0.71	5.00	0.01	0.00	0.01
32.15	2.00	0.71	5.00	0.01	0.00	0.01
32.20	2.00	0.71	5.00	0.01	0.00	0.01
32.25	2.00	0.71	5.00	0.01	0.00	0.01
32.30	2.00	0.71	5.00	0.01	0.00	0.01
32.35	2.00	0.71	5.00	0.01	0.00	0.01
32.40	2.00	0.71	5.00	0.01	0.00	0.01
32.45	2.00	0.71	5.00	0.01	0.00	0.01
32.50	2.00	0.71	5.00	0.01	0.00	0.01
32.55	2.00	0.71	5.00	0.01	0.00	0.01
32.60	2.00	0.71	5.00	0.01	0.00	0.01
32.65	2.00	0.71	5.00	0.01	0.00	0.01
32.70	2.00	0.71	5.00	0.01	0.00	0.01
32.75	2.00	0.71	5.00	0.01	0.00	0.01
32.80	2.00	0.71	5.00	0.01	0.00	0.01
32.85	2.00	0.71	5.00	0.01	0.00	0.01
32.90	2.00	0.71	5.00	0.01	0.00	0.01
32.95	2.00	0.71	5.00	0.01	0.00	0.01
33.00	2.00	0.71	5.00	0.01	0.00	0.01
33.05	2.00	0.71	5.00	0.01	0.00	0.01
33.10	2.00	0.71	5.00	0.01	0.00	0.01
33.15	2.00	0.71	5.00	0.01	0.00	0.01
33.20	2.00	0.71	5.00	0.01	0.00	0.01
33.25	2.00	0.71	5.00	0.01	0.00	0.01
33.30	2.00	0.71	5.00	0.01	0.00	0.01
33.35	2.00	0.71	5.00	0.01	0.00	0.01
33.40	2.00	0.71	5.00	0.01	0.00	0.01
33.45	2.00	0.71	5.00	0.01	0.00	0.01
33.50	2.00	0.71	5.00	0.01	0.00	0.01

33.55	2.00	0.71	5.00	0.01	0.00	0.01
33.60	2.00	0.71	5.00	0.01	0.00	0.01
33.65	2.00	0.71	5.00	0.01	0.00	0.01
33.70	2.00	0.71	5.00	0.01	0.00	0.01
33.75	2.00	0.71	5.00	0.01	0.00	0.01
33.80	2.00	0.71	5.00	0.01	0.00	0.01
33.85	2.00	0.71	5.00	0.01	0.00	0.01
33.90	2.00	0.71	5.00	0.01	0.00	0.01
33.95	2.00	0.71	5.00	0.01	0.00	0.01
34.00	2.00	0.71	5.00	0.01	0.00	0.01
34.05	2.00	0.71	5.00	0.01	0.00	0.01
34.10	2.00	0.71	5.00	0.01	0.00	0.01
34.15	2.00	0.71	5.00	0.01	0.00	0.01
34.20	2.00	0.71	5.00	0.01	0.00	0.01
34.25	2.00	0.71	5.00	0.01	0.00	0.01
34.30	2.00	0.71	5.00	0.01	0.00	0.01
34.35	2.00	0.71	5.00	0.01	0.00	0.01
34.40	2.00	0.71	5.00	0.01	0.00	0.01
34.45	2.00	0.71	5.00	0.01	0.00	0.01
34.50	2.00	0.71	5.00	0.01	0.00	0.01
34.55	2.00	0.71	5.00	0.01	0.00	0.01
34.60	2.00	0.71	5.00	0.01	0.00	0.01
34.65	2.00	0.71	5.00	0.01	0.00	0.01
34.70	2.00	0.71	5.00	0.01	0.00	0.01
34.75	2.00	0.71	5.00	0.01	0.00	0.01
34.80	2.00	0.71	5.00	0.01	0.00	0.01
34.85	2.00	0.71	5.00	0.01	0.00	0.01
34.90	2.00	0.71	5.00	0.01	0.00	0.01
34.95	2.00	0.72	5.00	0.01	0.00	0.01
35.00	2.00	0.72	5.00	0.01	0.00	0.01
35.05	2.00	0.72	5.00	0.01	0.00	0.01
35.10	0.65	0.72	0.91*	0.01	0.00	0.01
35.15	0.58	0.72	0.81*	0.01	0.00	0.01
35.20	0.55	0.72	0.77*	0.01	0.00	0.01
35.25	0.55	0.72	0.76*	0.01	0.00	0.01
35.30	0.55	0.72	0.77*	0.00	0.00	0.00
35.35	0.56	0.72	0.79*	0.00	0.00	0.00
35.40	0.58	0.72	0.81*	0.00	0.00	0.00
35.45	0.60	0.72	0.84*	0.00	0.00	0.00
35.50	0.63	0.72	0.88*	0.00	0.00	0.00
35.55	0.66	0.72	0.93*	0.00	0.00	0.00
35.60	0.70	0.72	0.97*	0.00	0.00	0.00
35.65	0.74	0.72	1.03	0.00	0.00	0.00
35.70	0.78	0.72	1.09	0.00	0.00	0.00
35.75	0.82	0.72	1.15	0.00	0.00	0.00
35.80	0.87	0.72	1.21	0.00	0.00	0.00
35.85	0.92	0.72	1.29	0.00	0.00	0.00
35.90	0.98	0.72	1.36	0.00	0.00	0.00
35.95	1.03	0.72	1.44	0.00	0.00	0.00
36.00	1.09	0.72	1.52	0.00	0.00	0.00
36.05	1.16	0.72	1.61	0.00	0.00	0.00
36.10	1.22	0.72	1.71	0.00	0.00	0.00
36.15	1.29	0.72	1.80	0.00	0.00	0.00
36.20	1.37	0.72	1.90	0.00	0.00	0.00
36.25	1.44	0.72	2.01	0.00	0.00	0.00
36.30	1.52	0.72	2.12	0.00	0.00	0.00
36.35	1.61	0.72	2.24	0.00	0.00	0.00
36.40	1.69	0.72	2.36	0.00	0.00	0.00
36.45	1.78	0.72	2.48	0.00	0.00	0.00
36.50	1.88	0.72	2.62	0.00	0.00	0.00
36.55	1.98	0.72	2.75	0.00	0.00	0.00
36.60	2.08	0.72	2.89	0.00	0.00	0.00
36.65	2.18	0.72	3.04	0.00	0.00	0.00
36.70	2.29	0.72	3.19	0.00	0.00	0.00
36.75	2.41	0.72	3.35	0.00	0.00	0.00
36.80	2.52	0.72	3.51	0.00	0.00	0.00
36.85	2.64	0.72	3.68	0.00	0.00	0.00

36.90	2.77	0.72	3.85	0.00	0.00	0.00
36.95	2.90	0.72	4.03	0.00	0.00	0.00
37.00	2.98	0.72	4.15	0.00	0.00	0.00
37.05	2.98	0.72	4.15	0.00	0.00	0.00
37.10	2.98	0.72	4.15	0.00	0.00	0.00
37.15	2.98	0.72	4.14	0.00	0.00	0.00
37.20	2.98	0.72	4.14	0.00	0.00	0.00
37.25	2.98	0.72	4.14	0.00	0.00	0.00
37.30	2.98	0.72	4.14	0.00	0.00	0.00
37.35	2.98	0.72	4.14	0.00	0.00	0.00
37.40	2.98	0.72	4.14	0.00	0.00	0.00
37.45	2.98	0.72	4.14	0.00	0.00	0.00
37.50	2.98	0.72	4.14	0.00	0.00	0.00
37.55	2.98	0.72	4.14	0.00	0.00	0.00
37.60	2.98	0.72	4.14	0.00	0.00	0.00
37.65	2.98	0.72	4.14	0.00	0.00	0.00
37.70	2.98	0.72	4.13	0.00	0.00	0.00
37.75	2.98	0.72	4.13	0.00	0.00	0.00
37.80	2.98	0.72	4.13	0.00	0.00	0.00
37.85	2.98	0.72	4.13	0.00	0.00	0.00
37.90	2.98	0.72	4.13	0.00	0.00	0.00
37.95	2.98	0.72	4.13	0.00	0.00	0.00
38.00	2.98	0.72	4.13	0.00	0.00	0.00
38.05	2.98	0.72	4.13	0.00	0.00	0.00
38.10	2.98	0.72	4.13	0.00	0.00	0.00
38.15	2.98	0.72	4.13	0.00	0.00	0.00
38.20	2.97	0.72	4.13	0.00	0.00	0.00
38.25	2.97	0.72	4.12	0.00	0.00	0.00
38.30	2.97	0.72	4.12	0.00	0.00	0.00
38.35	2.97	0.72	4.12	0.00	0.00	0.00
38.40	2.97	0.72	4.12	0.00	0.00	0.00
38.45	2.97	0.72	4.12	0.00	0.00	0.00
38.50	2.97	0.72	4.12	0.00	0.00	0.00
38.55	2.97	0.72	4.12	0.00	0.00	0.00
38.60	2.97	0.72	4.12	0.00	0.00	0.00
38.65	2.97	0.72	4.12	0.00	0.00	0.00
38.70	2.97	0.72	4.12	0.00	0.00	0.00
38.75	2.97	0.72	4.12	0.00	0.00	0.00
38.80	2.97	0.72	4.12	0.00	0.00	0.00
38.85	2.97	0.72	4.12	0.00	0.00	0.00
38.90	2.97	0.72	4.11	0.00	0.00	0.00
38.95	2.97	0.72	4.11	0.00	0.00	0.00
39.00	2.97	0.72	4.11	0.00	0.00	0.00
39.05	2.97	0.72	4.11	0.00	0.00	0.00
39.10	2.97	0.72	4.11	0.00	0.00	0.00
39.15	2.97	0.72	4.11	0.00	0.00	0.00
39.20	2.97	0.72	4.11	0.00	0.00	0.00
39.25	2.97	0.72	4.11	0.00	0.00	0.00
39.30	2.97	0.72	4.11	0.00	0.00	0.00
39.35	2.97	0.72	4.11	0.00	0.00	0.00
39.40	2.97	0.72	4.11	0.00	0.00	0.00
39.45	2.97	0.72	4.11	0.00	0.00	0.00
39.50	2.97	0.72	4.11	0.00	0.00	0.00
39.55	2.97	0.72	4.10	0.00	0.00	0.00
39.60	2.97	0.72	4.10	0.00	0.00	0.00
39.65	2.96	0.72	4.10	0.00	0.00	0.00
39.70	2.96	0.72	4.10	0.00	0.00	0.00
39.75	2.96	0.72	4.10	0.00	0.00	0.00
39.80	2.96	0.72	4.10	0.00	0.00	0.00
39.85	2.96	0.72	4.10	0.00	0.00	0.00
39.90	2.96	0.72	4.10	0.00	0.00	0.00
39.95	2.96	0.72	4.10	0.00	0.00	0.00
40.00	2.96	0.72	4.10	0.00	0.00	0.00
40.05	2.96	0.72	4.10	0.00	0.00	0.00
40.10	2.96	0.72	4.10	0.00	0.00	0.00
40.15	2.96	0.72	4.10	0.00	0.00	0.00
40.20	2.96	0.72	4.10	0.00	0.00	0.00

40.25	2.96	0.72	4.10	0.00	0.00	0.00
40.30	2.96	0.72	4.10	0.00	0.00	0.00
40.35	2.96	0.72	4.09	0.00	0.00	0.00
40.40	2.96	0.72	4.09	0.00	0.00	0.00
40.45	2.96	0.72	4.09	0.00	0.00	0.00
40.50	2.96	0.72	4.09	0.00	0.00	0.00
40.55	2.96	0.72	4.09	0.00	0.00	0.00
40.60	2.96	0.72	4.09	0.00	0.00	0.00
40.65	2.96	0.72	4.09	0.00	0.00	0.00
40.70	2.96	0.72	4.09	0.00	0.00	0.00
40.75	2.96	0.72	4.09	0.00	0.00	0.00
40.80	2.96	0.72	4.09	0.00	0.00	0.00
40.85	2.96	0.72	4.09	0.00	0.00	0.00
40.90	2.96	0.72	4.09	0.00	0.00	0.00
40.95	2.96	0.72	4.09	0.00	0.00	0.00
41.00	2.96	0.72	4.09	0.00	0.00	0.00
41.05	2.96	0.72	4.09	0.00	0.00	0.00
41.10	2.95	0.72	4.09	0.00	0.00	0.00
41.15	2.95	0.72	4.09	0.00	0.00	0.00
41.20	2.95	0.72	4.08	0.00	0.00	0.00
41.25	2.95	0.72	4.08	0.00	0.00	0.00
41.30	2.95	0.72	4.08	0.00	0.00	0.00
41.35	2.95	0.72	4.08	0.00	0.00	0.00
41.40	2.95	0.72	4.08	0.00	0.00	0.00
41.45	2.95	0.72	4.08	0.00	0.00	0.00
41.50	2.95	0.72	4.08	0.00	0.00	0.00
41.55	2.95	0.72	4.08	0.00	0.00	0.00
41.60	2.95	0.72	4.08	0.00	0.00	0.00
41.65	2.95	0.72	4.08	0.00	0.00	0.00
41.70	2.95	0.72	4.08	0.00	0.00	0.00
41.75	2.95	0.72	4.08	0.00	0.00	0.00
41.80	2.95	0.72	4.08	0.00	0.00	0.00
41.85	2.95	0.72	4.08	0.00	0.00	0.00
41.90	2.95	0.72	4.08	0.00	0.00	0.00
41.95	2.95	0.72	4.08	0.00	0.00	0.00
42.00	2.95	0.72	4.08	0.00	0.00	0.00

---

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Appendix D

Earthwork Specifications

APPENDIX D: EARTHWORK SPECIFICATIONS

D.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D.2 Site Inspection

- The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

- This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

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D.3 Authority of the Geotechnical Engineer

- The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

- As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

- The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D.4 Site Clearing

- Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavements, utilities, trees and vegetation.

- Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D.5 Excavations

- Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D.6 Preparation of Fill Areas

- All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

- In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 5 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All undocumented fill should be removed and replaced with compacted fill. The excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations

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before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

- The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

- Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

- All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

D.7 Placement and Compaction of Fill

- Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

- Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    - All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

    - Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

- Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

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- All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

- Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

- Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

- Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

- It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

- Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

- Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

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- Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter, and rocks shall be well mixed with finer soil.

- The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

- Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

- The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

- The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

- Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

- It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

- Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

D.9 Observation and Testing

- During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

- Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than

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specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

- A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

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Storm Water Low Impact Development (LID) Report

Athletic Complex East Storm Water Improvements

PREPARED FOR

Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
(909) 274-7500

August 30, 2018
Psomas Project No.: 1HMC015300

Balancing the Natural and Built Environment

PSOMAS

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1 OWNER'S CERTIFICATION

This project-specific Storm Water Low Impact Development (LID) Report has been prepared for Mt. San Antonio College by Psomas for the project known as the Athletics Complex Storm Water Improvements at 1100 N. Grand Ave., Walnut, CA 91789.

This LID Report is intended to comply with the requirements of the City of Walnut and County of Los Angeles which includes the requirement for the preparation and implementation of a project-specific LID Report.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation of this LID Report and will ensure that this LID Report is amended as appropriate to reflect up-to-date conditions on the site. This LID Report will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this LID Report. At least one copy of this LID Report will be maintained at the project site or project office in perpetuity.

The undersigned is authorized to certify and to approve implementation of this LID Report. The undersigned is aware that implementation of this LID Report may be enforceable under County of Los Angeles Water Quality Ordinance.

If the undersigned transfers its interest in the subject property/project, its successor in interest the undersigned shall notify the successor in interest of its responsibility to implement this LID Report.

"I, the undersigned, certify under penalty of law that the provisions of this LID Report have been reviewed and accepted and that the LID Report will be transferred to future successors in interest."

Owner's Signature	Date
Mikaela Klein	Senior Facilities Planner
Owner's Printed Name	Owner's Title/Position

Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Telephone: 909-274-7500

2 INTRODUCTION

2.1 Project Summary

The Athletic Complex East (ACE) at Mount San Antonio College (Mt. SAC), located in the eastern area of the campus near the intersection of Bonita Avenue and Temple Avenue, is a project consisting of several proposed structures, a track and field, practice fields, walkways, and a parking structure. The Athletic Complex East area has been identified in the Vicinity Map in Appendix A. The proposed storm water quality LID improvements will be incorporated into the site drainage and utility infrastructure to comprehensively provide treatment for the entire complex.

This project is a Designated Project, as defined in the County of Los Angeles LID Manual, because the development is larger than one acre of disturbed area and more than 10,000 square feet of impervious surface area are being added to the site. This project classifies as a Redevelopment Project given that more than 50 percent of the impervious surface of the previously developed site is proposed to be altered and the previous development project was not subject to storm water quality control measures. As such, the entire development site must meet the requirements of the County of Los Angeles LID Manual, regardless of the existing hydrologic conditions.

2.2 Purpose and Scope

The project falls under the jurisdiction of the City of Walnut and the County of Los Angeles. The purpose of this Low Impact Development (LID) report is:

- To meet City of Walnut requirements in allowing final design and construction to proceed in a timely manner;
- To provide project compliance with Order Number R4-2012-0175, MS4 Discharges within the Coastal Watersheds of Los Angeles County and County of Los Angeles LID requirements;
- Lessen the adverse impacts of storm water runoff from development and urban runoff on natural drainage systems, receiving waters, and other water bodies;
- Minimize pollutant loadings from impervious surfaces by incorporating properly-designed, technically-appropriate Best Management Practices (BMPs) and other Low Impact Development (LID) strategies; and
- Minimize erosion and other hydrologic impacts on natural drainage systems.

3 EXISTING AND PROPOSED DRAINAGE CONDITIONS

3.1 Existing Conditions

The ACE project site at Mt. SAC consists of an old athletic complex and impervious parking lots. There are no known sources of contamination at the site.

Existing topography directs site drainage currently towards the southwest. The elevations of the existing site range from 770 to 714 feet above mean sea level (msl). Surface drainage at the site currently flows southwest and is collected in various storm drain inlets. Storm water is conveyed through a combination of surface flow and underground drainage systems.

The site ultimately discharges to the San Jose Creek Reach 2, which is listed for water quality impairment on the most recent 303(d)-list for:

- Coliforms

Existing site topography, drainage patterns, and storm water conveyances are shown in the Existing Drainage Map in Appendix D.

3.2 Proposed Conditions

The ACE project at Mt. SAC is approximately 32.5 acres of new athletics facilities, fields, and a parking structure (Structure R). The total area is divided into five drainage sub-areas, generally draining from east to west and ultimately west through the existing storm water utility system. Drainage includes surface runoff, building roof drains, and field underdrain systems.

There are two backbone storm drain lines that collect and convey runoff from four of the five drainage sub-areas to an existing 81-inch regional storm drain line that runs along the west boundary of the project site adjacent to Bonita Avenue. Two diversion structures are proposed, one for each backbone storm drain line, to divert the Storm Water Quality Design Volume (SWQDv) to a proposed underground ADS StormTech Infiltration Chamber system. The fifth drainage sub-area contains bioswales that treat the SWQDv and then discharge directly to the regional storm drain main line. A description of each sub-area is presented below.

Sub-area A is approximately 11.13 acres that includes field buildings, complex entrance road, small parking lot, and other landscaped slopes. Storm water runoff from this subarea will be collected through surface inlets and conveyed through the proposed underground storm drain system. The SWQDv for this subarea is diverted by a manhole diversion structure to the ADS StormTech Infiltration Chamber system.

Sub-area B consists of 16.04 acres that includes a new stadium with track and field, bleachers and field house, practice fields, and a portion of the cross-country path. Storm water runoff from this subarea will be collected through surface inlets and conveyed through the proposed underground storm drain system. The SWQDv for this subarea is diverted by a manhole diversion structure to the ADS StormTech Infiltration Chamber system.

Sub-area C consists of a portion of the proposed parking structure, Structure R. Storm water from the parking structure drains to bioswales within the Structure R area for treatment. The discharge from the bioswales connects to the existing 81-inch storm drain line adjacent to Bonita

Avenue. Portions of Structure R which do not drain to the bioswales are considered separate subareas and are discussed in the following paragraphs.

Sub-area E consists of a portion of the Structure R which is not tributary to the proposed bioswales. Drainage for this area is collected through roof drains and area drains within the parking structure and conveyed to the same backbone storm drain line as sub-area A for diversion of the SWQDv to the ADS StormTech Infiltration Chamber unit.

Sub-area F consists of the remainder portion of the Structure R which is not tributary to the proposed bioswales. Drainage is collected through roof drains and area drains within the parking structure and conveyed to the same to the same backbone storm drain line as sub-area B for diversion to the ADS StormTech Infiltration Chamber unit.

Proposed drainage areas and the LID treatment layout are presented in the LID Site Plan Exhibit in Appendix C. Proposed site topography, drainage patterns, and storm water conveyances are shown in the Proposed Drainage Map in Appendix D.

(Note: Sub-area D is not analyzed as part of the Athletic Complex LID report. This is an off-site area that is not tributary to the proposed ACE storm drain system. Future development of this area will provide LID compliant measures within the sub-area.)

4 HYDROLOGIC CALCULATIONS

The project site is located in the San Dimas Quadrant of Hydrologic Map Figure LACDPW1-H1.22 (see Appendix B). The 85th Percentile (24-hour) rainfall isohyet nearest to the project is 1.0 inches. The soil type is classified as No.002 per LA County Department of Public Works Hydrology Manual (2006).

The design storm, from which the SWQDv is calculated, is defined as the greater of:

- The 0.75-inch, 24-hour rain event; or
- The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map.

Based on our analysis, the run-off generated by the 85th percentile storm event is larger than the 0.75-inch storm event. Therefore, the 85th percentile storm event is the design storm and was used to calculate the SWQDv for the project site. The existing project site consists of approximately 50% impervious ground surface cover. The proposed project will have a surface imperviousness of approximately 85% for a net increase of 35% imperviousness; however, the project is a Designated Redevelopment Project so the entire proposed project redevelopment SWQDv must be addressed.

The Los Angeles County approved hydrology program HydroCalc 1.0.2 was used to calculate the SWQDv and peak flows for the site per LID guidelines.

4.1 Proposed Condition Results

Refer to Appendix D for a map of proposed drainage sub-areas. Appendix E includes output results from the HydroCalc software. Table 1 summarizes the SWQDv for the proposed condition.

Table 1: Proposed Hydrologic Summary; 85th Percentile Storm Event

Sub-Area	Area	85th Percentile Storm Event				
		Impervious	Time of Concentration	Q	SWQDv	SWQDv*
	(acres)	(%)	(min)	(cfs)	(ft^3)	(ft^3)
A	11.13	0.76	28	2.30	28,692	N/A
B	16.04	0.85	26	3.64	45,336	
C	2.55	0.85	24	0.603	7,214	10,821
E	1.93	1.00	22	0.518	6,267	N/A
F	0.80	1.00	15	0.256	2,592	
TOTAL	**32.45**			**7.317**	**93,708**	

*Treatment flow is increased 1.5 times for biofiltration design per Los Angeles County LID guidelines.

5 SITE CHARACTERIZATION

The project site is tributary to San Jose Creek Reach 2. San Jose Creek Reach 2 is listed on the 2016 California Integrated Report (Clean Water Act Section 303(d) list) as impaired due to the prevalence of the pollutants shown in Table 3. According to the *Water Quality Control Plan for the Los Angeles Region*, San Jose Creek watershed is not designated beneficial uses for rare, threaten, or endangered species (RARE).

Table 2: 2016 California Integrated Report (Clean Air Act Section 303(d) list)

Receiving Waters	303(d) List Impairments	Proximity to RARE Uses
San Jose Creek Reach 2	Coliforms	Not Applicable

5.1 Site Designation

This project is a Designated Project as defined in the County of Los Angeles LID Manual, per the following:

- Proposed development is larger than one acre of disturbed area; and
- More than 10,000 square feet of impervious surface area are being added to the site as part of the proposed design.

The proposed design gives this project classification as a Redevelopment Project because more than 50 percent of the impervious surface of the previously developed site is proposed to be altered and the previous development project was not subject to storm water quality control measures. As such, the entire development site must meet the requirements of the County of Los Angeles LID Manual, regardless of existing hydrologic conditions.

5.2 Feasibility of Infiltration

Infiltration has been selected as the most feasible method for handling storm water generated by the design storm. Percolation testing was performed at the project site, and the full report is provided in Appendix G. The exploratory boring located nearest the proposed ADS StormTech Chamber Isolation unit has an average percolation rate of 1.81 in/hr. The exploratory boring located nearest the proposed Structure R bioswales has an average percolation rate of 0.54 in/hr.

5.3 Feasibility of Storm Water Runoff Harvesting

Storm water runoff harvesting is not feasible for the ACE project site due to storage restraints. Harvesting rain water requires large areas and/or tanks to hold the water until use, and such large storage areas are not available for incorporation into the proposed design. Additionally, infrequent rain events would not provide enough rain water to be used at the frequency needed for irrigation.

5.4 Feasibility of Green Roof Design

Green roofs are not feasible as part of the proposed ACE site design because the proposed building types are not suitable for maintaining or planting green roofs.

6 SOURCE CONTROL MEASURES

Source control measures are designed to prevent pollutants from contacting storm water runoff or prevent discharge of contaminated storm water runoff to the storm drain system and/or receiving waters. This section includes structural-type source control measures that were considered for implementation in conjunction with appropriate non-structural source control measures, such as good housekeeping and employee training. Combined, source control measures of structural-type and non-structural-type optimize pollution prevention.

Table 3 below identifies the source control measures to be implemented for this project.

Table 3: Source Control Measures Selection Matrix (*Ref. LID Manual*)

Project Type	**Source Control Measures**										
	Storm Drain Message and Signage (S-1)	Outdoor Material Storage Area (S-2)	Outdoor Trash Storage/ Waste Handling Area (s-3)	Outdoor Loading/ Unloading Dock Area (S-4)	Outdoor Vehicle/ Equipment Repair/ Maintenance Area (S-5)	Outdoor Vehicle/ Equipment/ Accessory Wash Area (S-6)	Fuel & Maintenance Area (s-7)	Landscape Irrigation Practices (S-8)	Building Materials (S-9)	Animal Care and Handling Facilities (S-10)	Outdoor Horticulture Areas (S-11)
Designated Projects – Redevelopment											
Development ≥ 1 acre and ≥ 10,000 ft² new impervious area	**X**	**X**	**X**					**X**	**X**		

Source control measures shall be implemented to the maximum extent practicable to mitigate pollutant mobilization from the project site in storm water and non-storm water runoff.

Education and outreach are key components to any successful storm water program. Public education and involvement are effective means to spread the message on preventing storm water pollution. Refer to Appendix J for Storm Water Outreach Material for Los Angeles County.

7 STORM WATER QUALITY CONTROL MEASURES

Storm water quality control measures are required to supplement site design principles and source control measures to achieve reduced volume of stormwater runoff and potential pollution loads to the maximum extent practicable. Stormwater quality control measures are designed to handle the frequent, smaller storm rain events, or the initial volume of stormwater of runoff from larger storm events (first flush). The first flush of larger storm rain events is the initial period of the storm where stormwater runoff typically carries the highest concentration and variety of pollutants. Designated Projects are required to retain the SWQDv onsite using retention-based stormwater quality control measures.

Infiltration was selected for the site as the primary means to handle the SWQDv from the proposed drainage subareas based. See Appendix G for supporting Geotechnical Reports and analysis.

The layout of the LID treatment items is shown on the site plan in Appendix C.

- Sub-area A, sub-area B, sub-area E, and sub-area F – ADS StormTech Chamber Isolation System, manufactured by ADS – Qty 1, 194' x 124' footprint (volume-based)
- The storm water quality design volume (SWQDv) diverted to the ADS StormTech Chamber Isolation Unit is equal to 82,887 ft^3, per Table 2.
- Per the manufacturer drawings, the ADS StormTech Chamber Isolation unit has been sized to treat 82,920 ft^3, exceeding the SWQDv.

Refer to Appendix H for ADS StormTech Chamber Isolation unit specifications, sizing information, and installation and maintenance procedures.

Biofiltration was used for areas where the site characteristics allowed for the construction of bioswales.

- Sub-area C – vegetated bioswales – Qty 2
- The design LID flow for each bioswale is as follows: 0.79 cfs to the northern bioswale and 0.61 cfs to the southern bioswale.
- Given the provided 1.5' depths in each bioswale, the required lengths are 128 feet and 98 feet for the northern and southern bioswales, respectively.
- The provided bioswale lengths in the LID design are as follows:
    - North L_1 = 134 ft (flow-based), South L_2 = 142 ft (flow-based)
    - Each bioswale exceeds the required lengths necessary to treat LID flows.

The Los Angeles County LID Manual guidelines requires biofiltration treatment flows to include a 1.5x factor for sizing purposes. The flow (Q) calculated in Section 3.4 includes the 1.5x factor and the bioswales were designed accordingly. Refer to Appendix H for bioswale sizing calculations.

8 MAINTENANCE

The owner is responsible for the implementation of this LID report for the onsite areas, including the long-term inspection and maintenance of all source control measures and all storm water quality control measures.

8.1 Maintenance Requirements

Maintenance and cleaning of the ADS StormTech Chamber Isolation unit shall be in accordance with the manufacturer's recommendations. At a minimum, the control measures shall be inspected and maintained once prior to the rainy season, once during the rainy season, and once after the rainy season (generally accepted as October 1st through April 30th). All control measures shall be inspected and maintained according to the executed maintenance agreement in Appendix F.

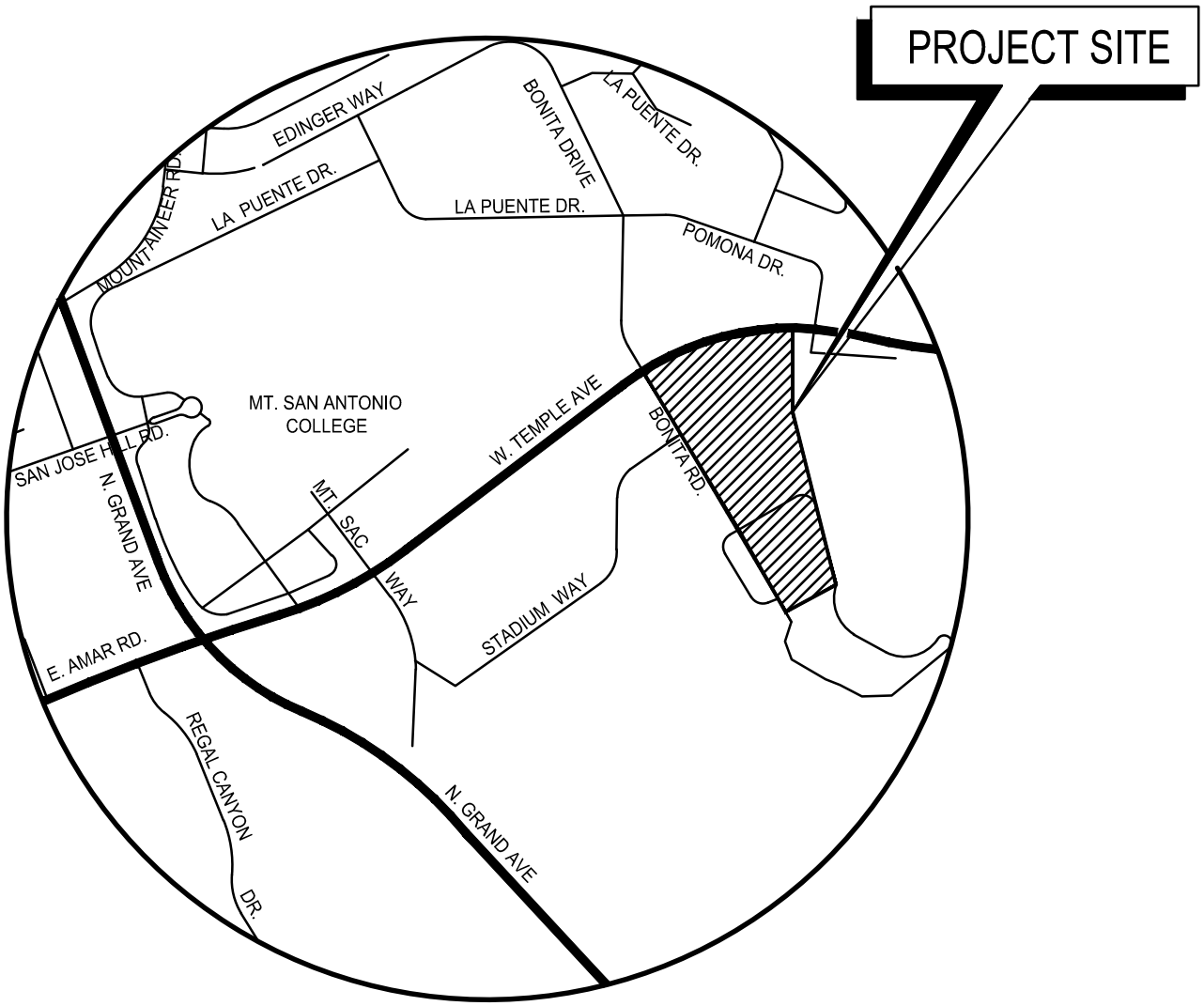
REFERENCES

Los Angeles Department of Public Works, *Low Impact Development, Standard Manual*, (February 2014)

Los Angeles County Department of Public Works, *LACDPW Hydrology Manual and Appendices* (LACDPW 1991, 1992, 1993, 2002, 2006).

APPENDICIES

Appendix A: Vicinity Map



Appendix A - Vicinity Map
N.T.S.

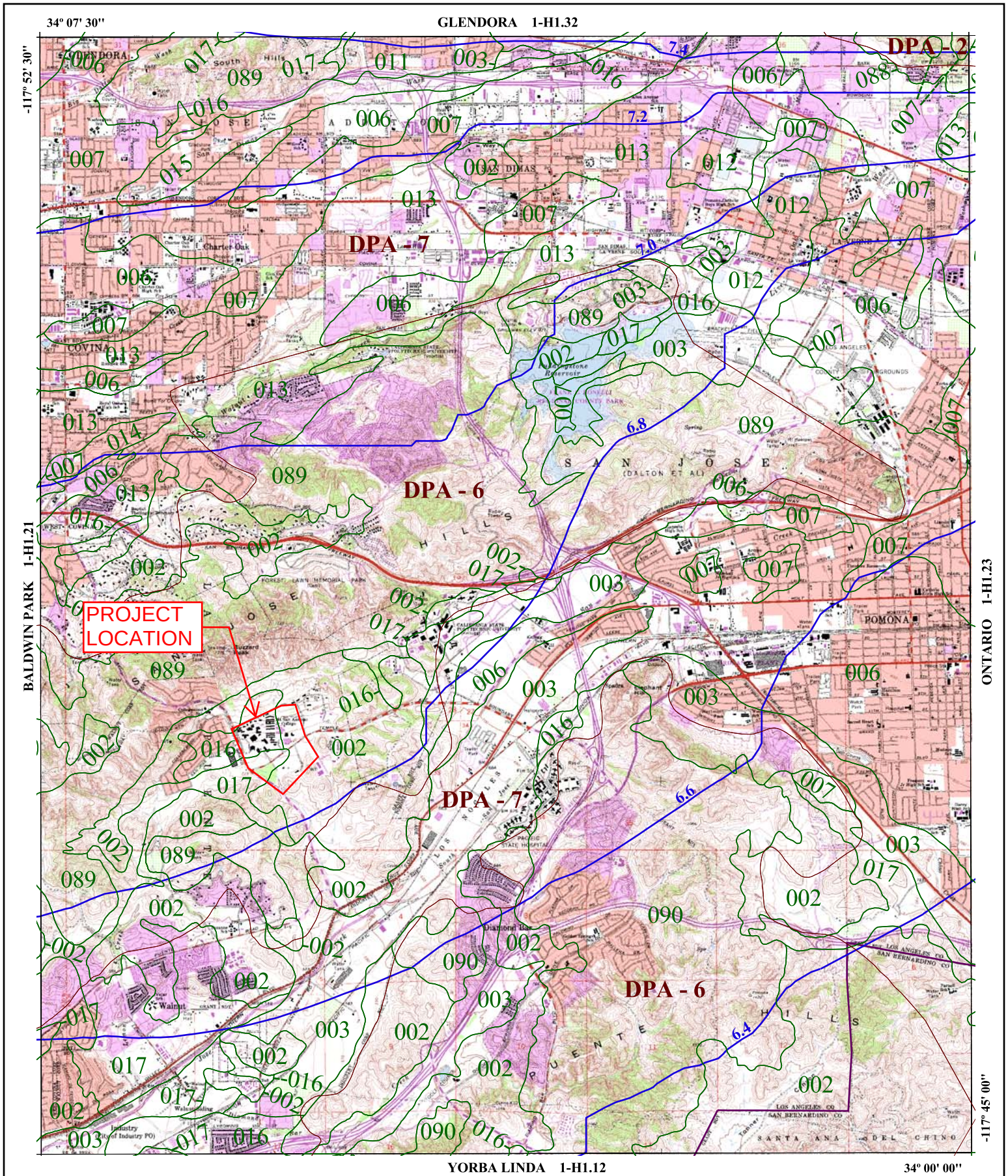
PSOMAS

Mount San Antonio College

DATE: 08-30-18 REVISED ON:
JOB No:1HMC015300
SHEET 1 OF 1

Plotted:

Appendix B: LA County Soil Runoff Curve& Isohyet Hydrology Map



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

SAN DIMAS
50-YEAR 24-HOUR ISOHYET

1-H1.22

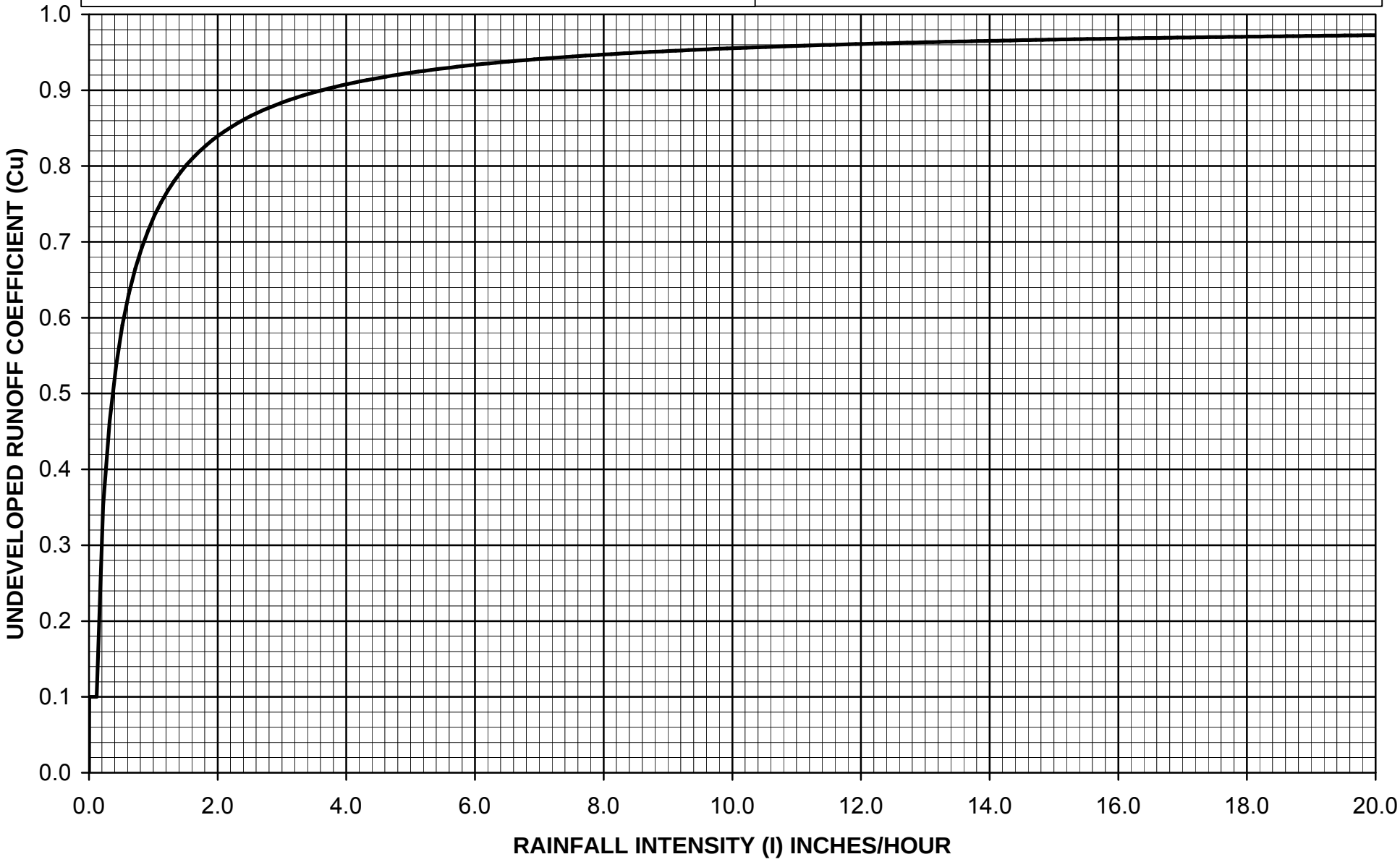
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

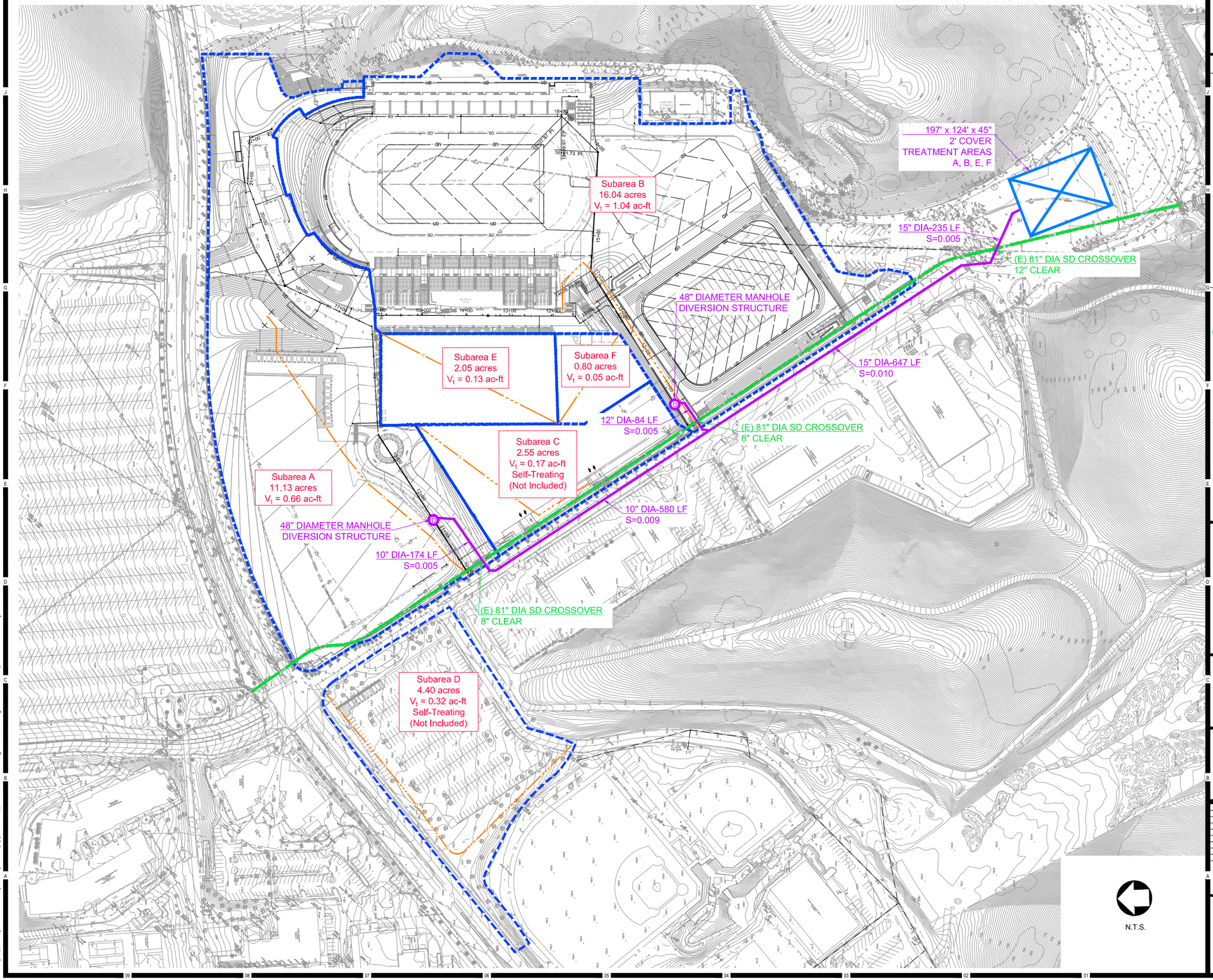
Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 002



Appendix C: LID Site Plan Exhibit



NOTES

- DIVERSION STRUCTURE
- EXISTING 21" STORM DRAIN
- ADS STORMTECH CHAMBER ISOLATION ROW TREATMENT SYSTEM
- ACE STORM DRAIN

HMC Architects
3 4 C S F S CA 917 4
T 909 9 9979

PSOMAS
S F S S 4300
LA CA 90071
T 213 223-1400 F 213 223-1444

MT SAN ANTONIO COLLEGE
S r d r
1100 N r Gr d A
W CA 917 9
909 274-7 00

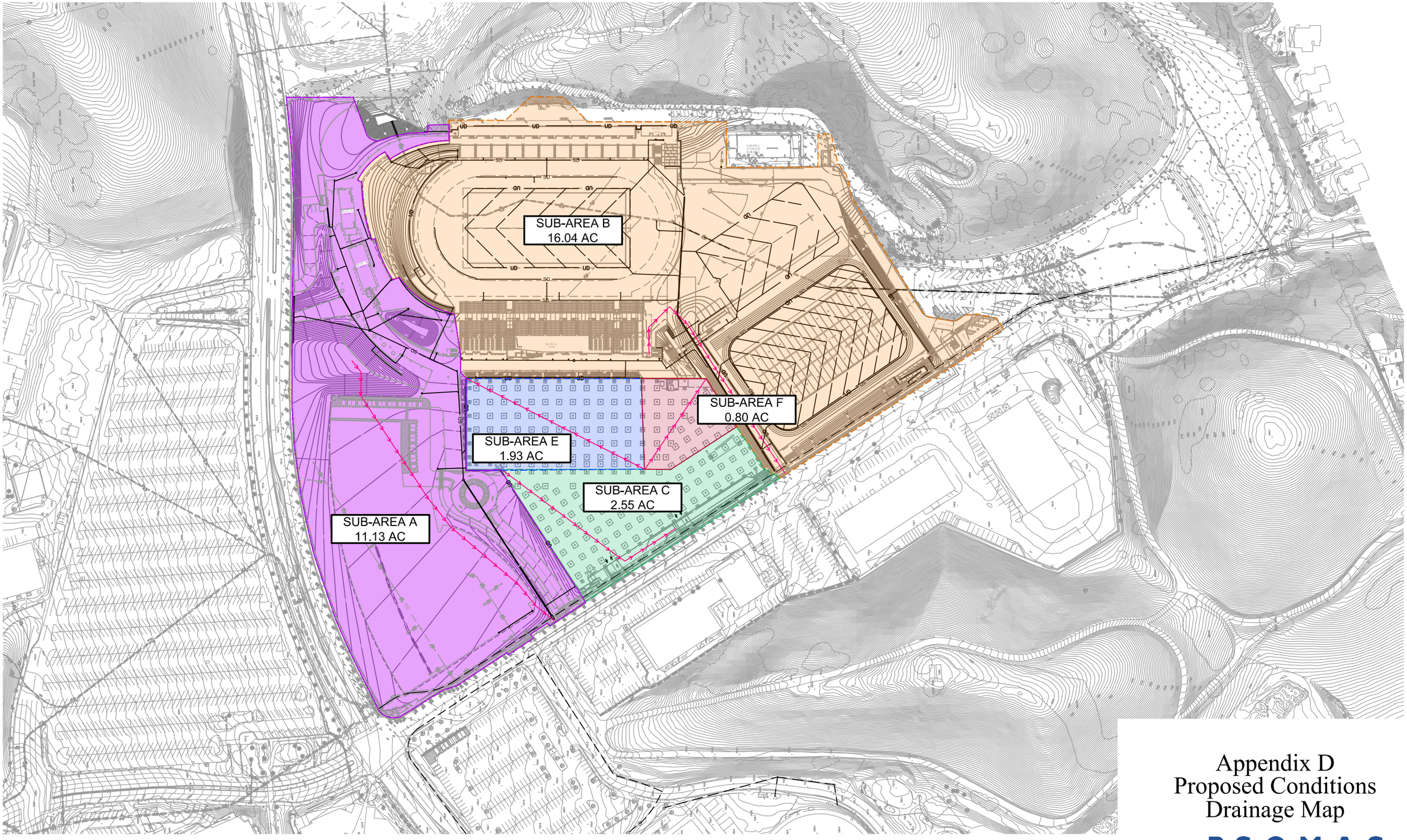
M SAC S r W r l r
LID S E

1HMC01 300
MM
EH
AW
AS SHOWN
C-E H-1
0 30 201

W:\Mt_SAC\1HMC015300\ENGR\Exhibits\Appendix C_LID Site Plan.dwg Tue, 28 Aug 2018 - 1:56pm Plotted by: emma.harrison

PLEASE RECYCLE

Appendix D: Proposed Hydrologic Exhibit



Mount San Antonio College

200' 100' 0' 200'
GRAPHIC SCALE
Note: For reduced sized prints, original scale is in inches

Appendix D
Proposed Conditions Drainage Map

PSOMAS

DATE: 08-30-18 REVISED ON:
JOB No:1HMC015300

SHEET 1 OF 1

Plotted:

Appendix E: Hydrology Calculations

Peak Flow Hydrologic Analysis

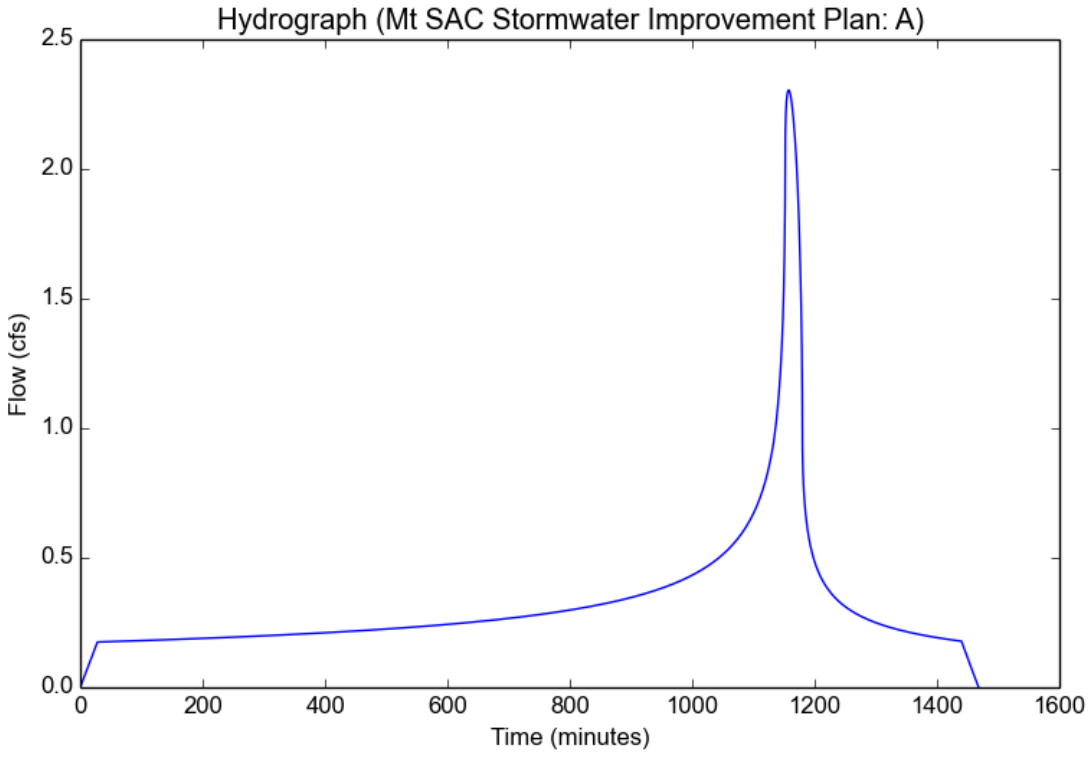
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt SAC Stormwater Improvement Plan
Subarea ID	A
Area (ac)	11.13
Flow Path Length (ft)	771.0
Flow Path Slope (vft/hft)	0.032
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.76
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2655
Undeveloped Runoff Coefficient (Cu)	0.3991
Developed Runoff Coefficient (Cd)	0.7798
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	2.3042
Burned Peak Flow Rate (cfs)	2.3042
24-Hr Clear Runoff Volume (ac-ft)	0.6587
24-Hr Clear Runoff Volume (cu-ft)	28691.6134



Peak Flow Hydrologic Analysis

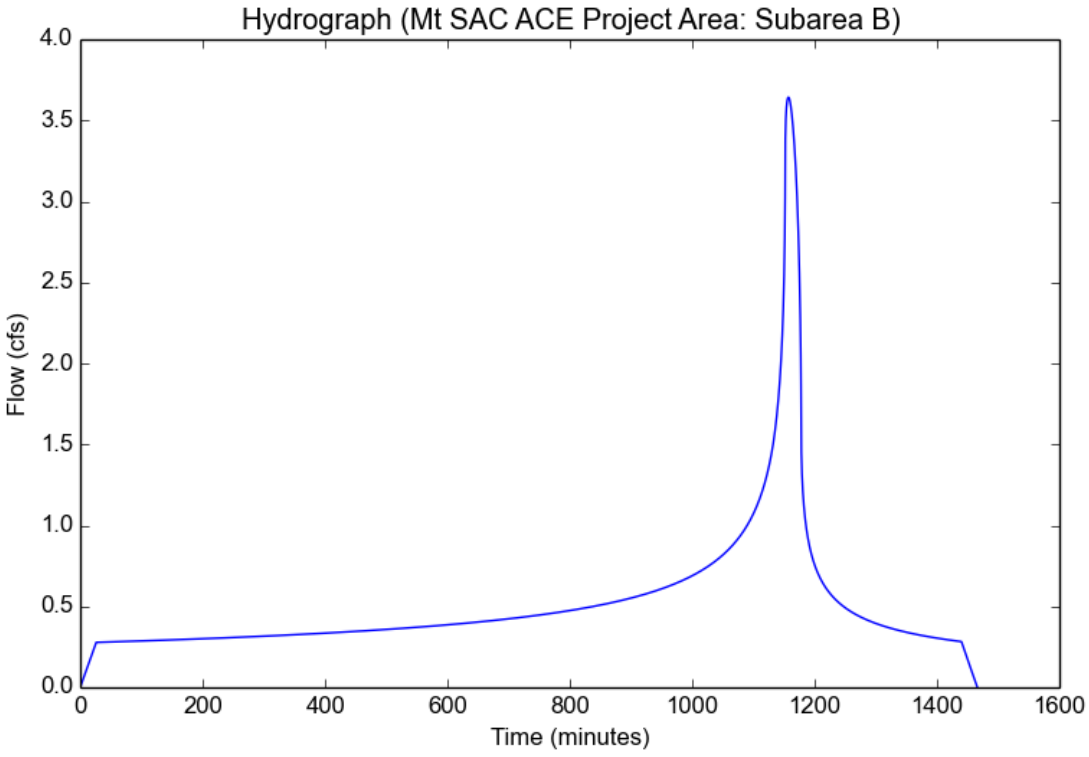
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt SAC ACE Project Area
Subarea ID	Subarea B
Area (ac)	16.04
Flow Path Length (ft)	594.0
Flow Path Slope (vft/hft)	0.013
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2749
Undeveloped Runoff Coefficient (Cu)	0.4078
Developed Runoff Coefficient (Cd)	0.8262
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	3.643
Burned Peak Flow Rate (cfs)	3.643
24-Hr Clear Runoff Volume (ac-ft)	1.0408
24-Hr Clear Runoff Volume (cu-ft)	45335.5939



Peak Flow Hydrologic Analysis

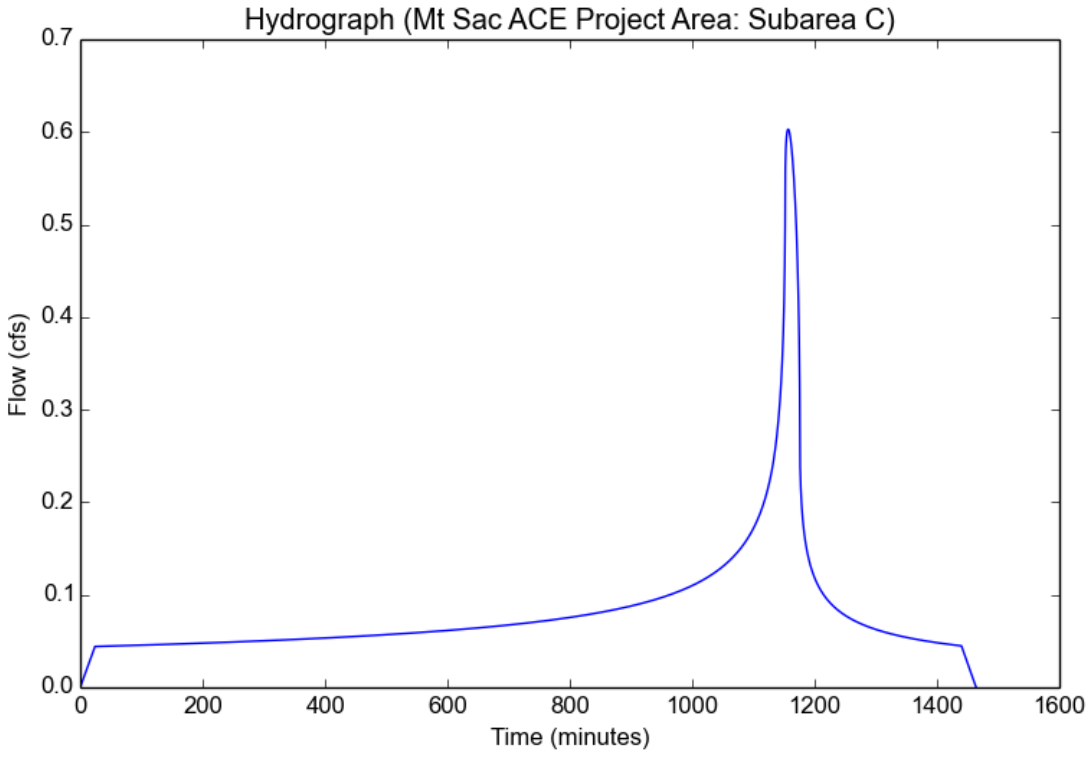
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt Sac ACE Project Area
Subarea ID	Subarea C
Area (ac)	2.552
Flow Path Length (ft)	484.458
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2854
Undeveloped Runoff Coefficient (Cu)	0.4176
Developed Runoff Coefficient (Cd)	0.8276
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.6029
Burned Peak Flow Rate (cfs)	0.6029
24-Hr Clear Runoff Volume (ac-ft)	0.1656
24-Hr Clear Runoff Volume (cu-ft)	7213.5746



Peak Flow Hydrologic Analysis

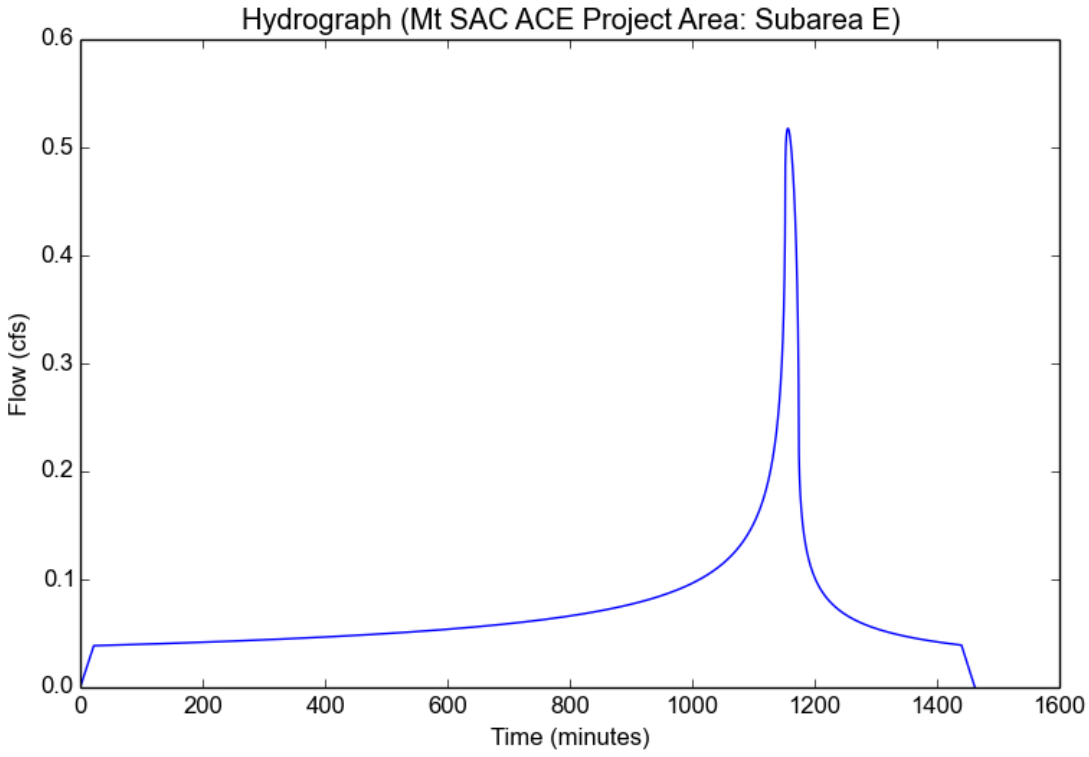
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt SAC ACE Project Area
Subarea ID	Subarea E
Area (ac)	1.934
Flow Path Length (ft)	456.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2974
Undeveloped Runoff Coefficient (Cu)	0.4286
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.5176
Burned Peak Flow Rate (cfs)	0.5176
24-Hr Clear Runoff Volume (ac-ft)	0.1439
24-Hr Clear Runoff Volume (cu-ft)	6266.1985



Peak Flow Hydrologic Analysis

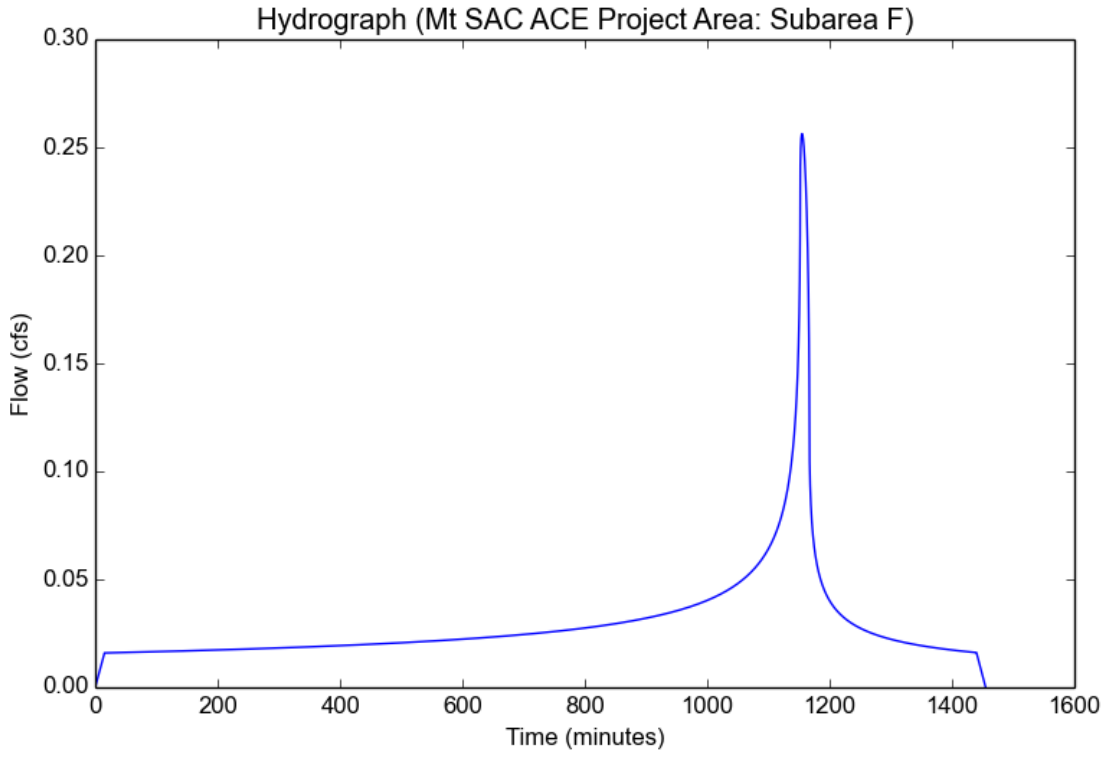
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt SAC ACE Project Area
Subarea ID	Subarea F
Area (ac)	0.8
Flow Path Length (ft)	250.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.356
Undeveloped Runoff Coefficient (Cu)	0.4829
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	0.2563
Burned Peak Flow Rate (cfs)	0.2563
24-Hr Clear Runoff Volume (ac-ft)	0.0595
24-Hr Clear Runoff Volume (cu-ft)	2592.0074



Peak Flow Hydrologic Analysis

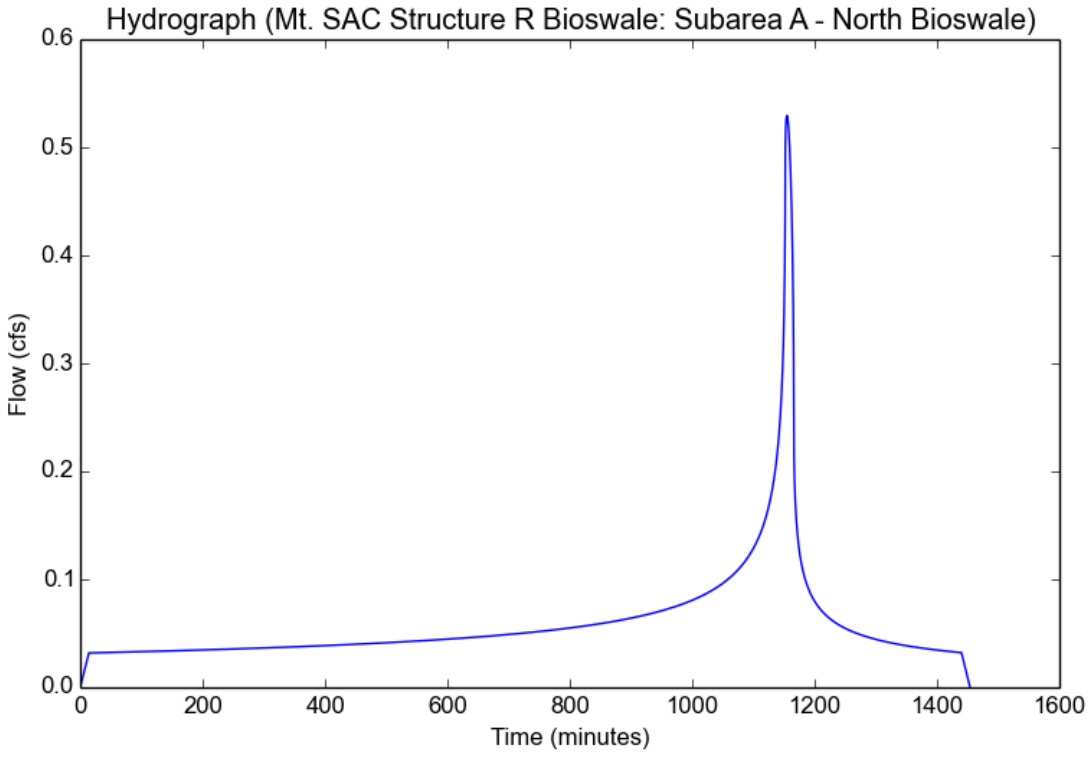
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt. SAC Structure R Bioswale
Subarea ID	Subarea A - North Bioswale
Area (ac)	1.6
Flow Path Length (ft)	347.0
Flow Path Slope (vft/hft)	0.043
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3677
Undeveloped Runoff Coefficient (Cu)	0.4938
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.5295
Burned Peak Flow Rate (cfs)	0.5295
24-Hr Clear Runoff Volume (ac-ft)	0.119
24-Hr Clear Runoff Volume (cu-ft)	5184.0128



Peak Flow Hydrologic Analysis

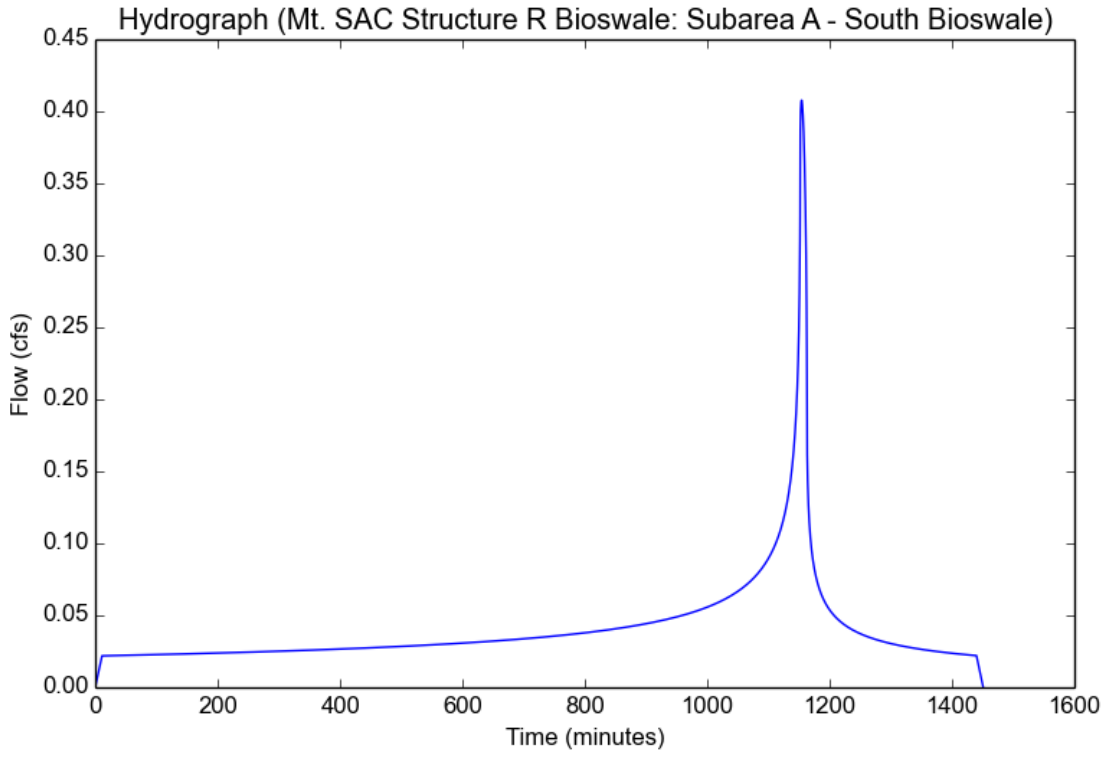
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Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mt. SAC Structure R Bioswale
Subarea ID	Subarea A - South Bioswale
Area (ac)	1.1
Flow Path Length (ft)	261.0
Flow Path Slope (vft/hft)	0.057
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	1.0
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.4119
Undeveloped Runoff Coefficient (Cu)	0.5286
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	0.4078
Burned Peak Flow Rate (cfs)	0.4078
24-Hr Clear Runoff Volume (ac-ft)	0.0818
24-Hr Clear Runoff Volume (cu-ft)	3564.0054



Appendix F: Master Covenant and Agreement

RECORDING REQUESTED BY
AND MAIL TO:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
900 S. FREMONT AVENUE, 3RD FLOOR
ALHAMBRA, CA 91803-1331

Space above this line is for Recorder's use

COVENANT AND AGREEMENT
REGARDING THE MAINTENANCE OF LOW IMPACT DEVELOPMENT (LID) & NATIONAL POLLUTANTS DISCHARGE ELIMINATION SYSTEM (NPDES) BMPs

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the County of Los Angeles, State of California:

LEGAL DESCRIPTION

ASSESSOR'S ID #_____TRACT NO._____LOT NO._____

ADDRESS: _____

_____

Owner is aware of the requirements of the County of Los Angeles' Green Building Standards Code, Title 31, Section 4.106.4 (LID), and National Pollutant Discharge Elimination System (NPDES) permit. The following post-construction BMP features have been installed on the Subject Property:

- □ Porous pavement
- □ Cistern/rain barrel
- □ Infiltration trench/pit
- □ Bioretention or biofiltration
- □ Rain garden/planter box
- □ Disconnect impervious surfaces
- □ Dry Well
- □ Storage containers
- □ Landscaping and landscape irrigation
- □ Green roof
- □ Other _____

_____

The location, including GPS x-y coordinates, and type of each post-construction BMP feature installed on the Subject Property is identified on the site diagram attached hereto as Exhibit 1.

Owner hereby covenants and agrees to maintain the above-described post-construction BMP features in a good and operable condition at all times, and in accordance with the LID/NPDES Maintenance Guidelines, attached hereto as Exhibit 2.

Owner further covenants and agrees that the above-described post-construction BMP features shall not be removed from the Subject Property unless and until they have been replaced with other post-construction BMP features in accordance with County of Los Angeles' Green Building Standards Code, Title 31 and NPDES permit.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the post-construction BMP features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the County of Los Angeles, in its sole discretion.

Owner(s):

By:_____ Date:_____

By:_____ Date:_____

(PLEASE ATTACH NOTARY)

REFERENCE

PLAN CHECK NO.: _____ DISTRICT OFFICE NO.:_____

ATTACHMENTS

RECORDING REQUEST BY AND MAIL TO:

County of Los Angeles
Department of Public Works

Building and Safety – Drainage and Grading Section
Land Development – Drainage and Grading Section

P.O. Box 1460
Alhambra, California 91802-1460

Space above this line is for Recorder's use

COVENANT FOR MAINTENANCE OF WATER QUALITY (WQ) DEVICES

I (we) _____, hereby certify that I (we) am (are) the legal owner(s) of Tract # _____, and as such owners for the mutual benefit of future purchasers, their heirs, successors, and assigns, do hereby fix the following protective conditions to which their property, or portions thereof, shall be held, sold and/or conveyed.

That owner(s) shall maintain the WQ system shown on attached Exhibit A map and on Grading Plan GPC # _____, on file in the office of the Director of Public Works, in a good and functional condition at least once a year and retain proof of the inspection. The owner(s) shall perform this responsibility, unless the County discharges this obligation through a subsequently recorded written instrument.

The undersigned also covenants and agrees for himself, his heirs, successors, and assigns, to indemnify, defend, and save harmless the County, its agents, officers and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages of any nature whatsoever, including, but not limited to, bodily injury, death, personal injury, or property damage arising from or connected with the construction or maintenance of said work.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

Appendix G: Geotechnical Reports

Geotechnical Study Report for Proposed Lot R Tennis and Parking Structure Project, prepared by Converse Consultants, dated December 1, 2017.	Provided on enclosed CD.
Geoseismic/Geotechnical Study Report for Proposed Building 12 Renovation Project, prepared by Converse Consultants, dated September 19, 2011.	
Geotechnical Study Report for Proposed Athletic Complex East, prepared by Converse Consultants, dated November 25, 2014, and revised on January 23, 2015, and updated March 14, 2016.	
Geotechnical Study Report for Proposed Athletic Complex East (Telecommunications Building D), prepared by Converse Consultants, dated July 31, 2015.	

Summary of Percolation Test Results, prepared by Converse Consultants, dated May 17, 2018.

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

May 17, 2018

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **SUMMARY OF PERCOLATION TEST RESULTS**
Percolation Tests within Mt San Antonio College
Mt. San Antonio College
Walnut, Los Angeles County, California
Converse Project No. 14-31-124-04

Dear Mr. Gidcumb:

Converse Consultants (Converse) has prepared this letter to summarize the results of the percolation tests performed to assist in the dry well design as per our proposal dated April 30th, 2018. Converse conducted five percolation tests on May 4th, 2018 at the Athletic Complex East area within Mt San Antonio College. The testing was performed in general accordance with Los Angeles County Low Impact Development, Best Management Practices Guidelines.

The percolation tests were conducted at the Athletic Complex East area within Mt San Antonio College as shown on Figure No. 1, *Site and Percolation Location Map*. Five (5) exploratory borings (PT-1 through PT-5) were drilled within the project site on May 4th, using a truck-mounted drill rig equipped with 8-inch diameter hollow-stem augers. Boring was terminated to a depth of 15 to 27 feet due to shallow ground water and the percolation test was performed to meet the County of Los Angeles requirement. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*.

Upon completion of drilling, a 2-inch-thick gravel layer was placed at the bottom of the hole and a 2-inch diameter perforated pipe was installed above the gravel to the ground surface. The boring annulus around the pipe was filled with gravel. The purpose of the pipe and gravel was to reduce the potential for erosion and caving due to the addition of water to the holes.

The test holes were presoaked by filling with water. Based on the percolation of water during presoaking at percolation tests, the site soils meet the conditions for clay soils (*Administrative Manual, Los Angeles County 2017*) for four bore holes (PT-1 through PT-

4) and meet the conditions for sandy soils for one bore hole (PT-5). The corresponding clay soil and sandy soil test procedures were used.

For clayey soil, the water level and total depth of test hole were measured from the top of the pipe every 30 minutes for 90 minutes. For sandy soil, the water level and total depth of test hole were measured from the top of the pipe every 10 minutes for 30 minutes. After each measurement, the water level was adjusted to a depth greater than 5 times the hole radius. There were at least three (3) sets of measurements taken for each test and each set consisted of at least three (3) measurements.

The percolation test hole data is presented in the table below.

Percolation Test	Location	Test Hole Diameter (inches)	Total Depth of Test Hole (feet)	Perforated Pipe Inside Diameter (inches)	Porosity of Gravel (n)
PT-1	South side of ACE area	8	17	1.92	0.48
PT-2	Within ACE subarea B	8	27	1.92	0.48
PT-3	Within ACE subarea C along the service road	8	25	1.92	0.48
PT-4	Within ACE subarea A	8	20	1.92	0.48
PT-5	Next to ACE subarea D along the service road	8	21	1.92	0.48

Percolation rates describe the movement of water horizontally and downward into the soil from a boring. Infiltration rates describe the downward movement of water through a horizontal surface. Percolation rates are related to infiltration rates but are generally higher and may require conversion before use in design. It is our understanding that infiltration rates are not needed for the design of the drywell and have not been provided in this letter. If an infiltration rate is needed, the percolation test data can be used to estimate infiltration rates using the Porchet Inverse Borehole Method, in accordance with the Los Angeles County guidelines. The results of the percolation test and requirements are presented in Appendix C, *Percolation Testing*. The well designer should determine whether additional design-related safety factors are appropriate and whether infiltration rates or percolation rates are appropriate for use in the well design. Details of the dry well can be seen in Figure No. 2, *Standard Drywell Detail*.

The field data of the most conservative test interval and percolation rates are presented in the following table.

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Percolation Test	Location	Test Depth (feet bgs)	Time Interval (min)	Average Change in Water Height In 30 Mins (feet)	Average Percolation Rate (in/hour)	Lowest Percolation Rate (in/hour)
PT-1*	South side of ACE area	17	30	2.84	1.81	0.98
PT-2*	Within ACE subarea B	27	30	3.29	1.20	0.72
PT-3*	Within ACE subarea C along the service road	25	30	1.51	0.54	0.18
PT-4*	Within ACE subarea A	20	30	0.96	0.41	0.26
PT-5*	Next to ACE subarea D along the service road	21	10	1.46	0.57	0.3

*Percolation rate was obtained from an 8-inch diameter bore hole to a depth which shows in the next column (Test Depth). The percolation rate may change with different well dimensions. The adjustment to the provided percolation rate to a well with different dimensions should be determined by the well designer.

We appreciate the opportunity to be of continued service to Mt San Antonio College. If you have any questions or require additional information, please contact the undersigned at (626) 930-1275.

CONVERSE CONSULTANTS

Sivathasan

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
KATHIRAVETPILLAI SIVATHASAN
No. 2708
Exp. 6-30-18
GEOTECHNICAL
STATE OF CALIFORNIA

Dist: 2/Addressee
Encl: Figures
Appendix A
Appendix B
Appendix C

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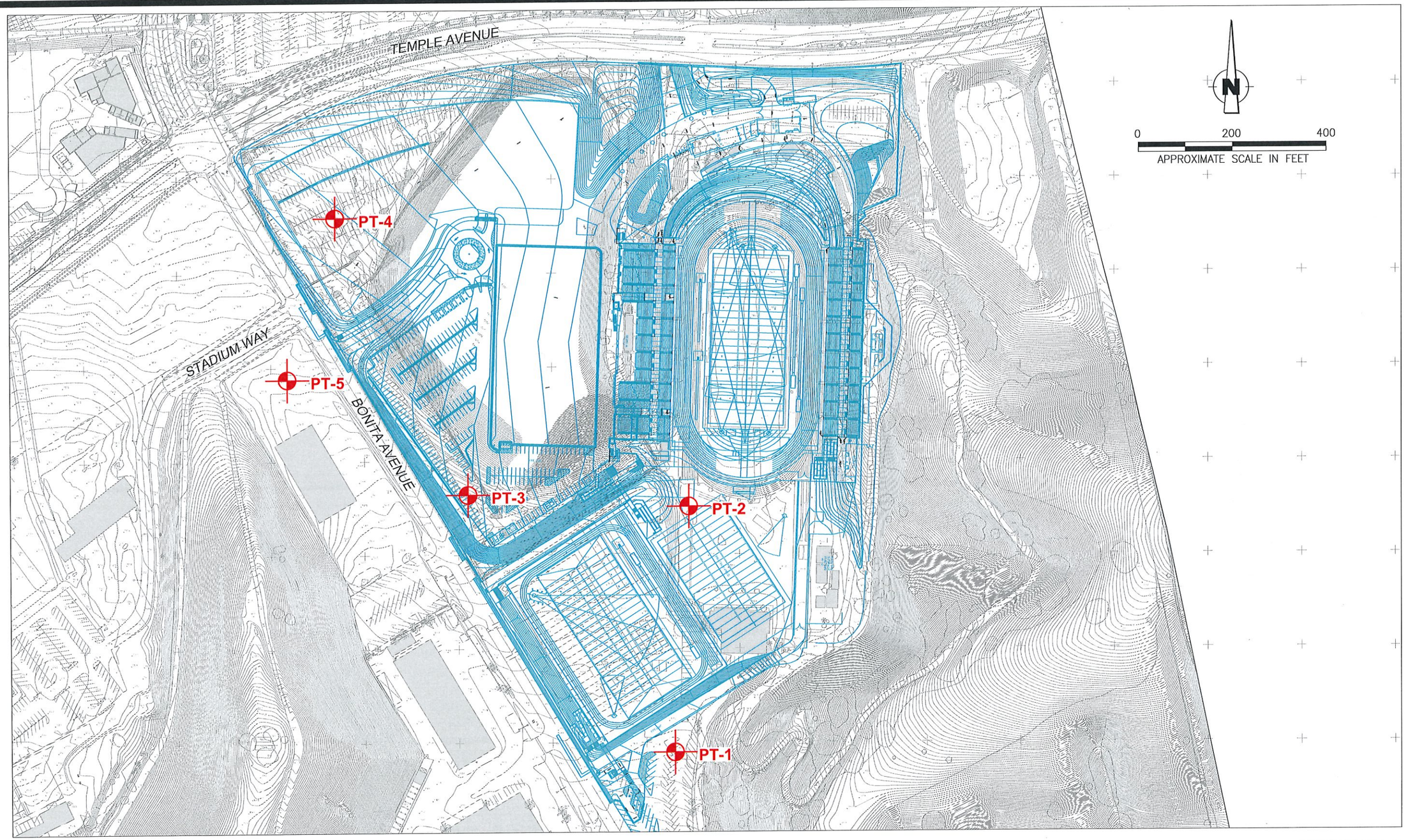
REFERENCES

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, *Low Impact Development, Standard Manual*, February 2014.

COUNTY OF LOS ANGELES, *Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration*, 2017.

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Figures



EXPLANATION

APPROXIMATE LOCATION OF PERCOLATION TESTING

SITE PLAN AND APPROXIMATE BORING LOCATIONS MAP

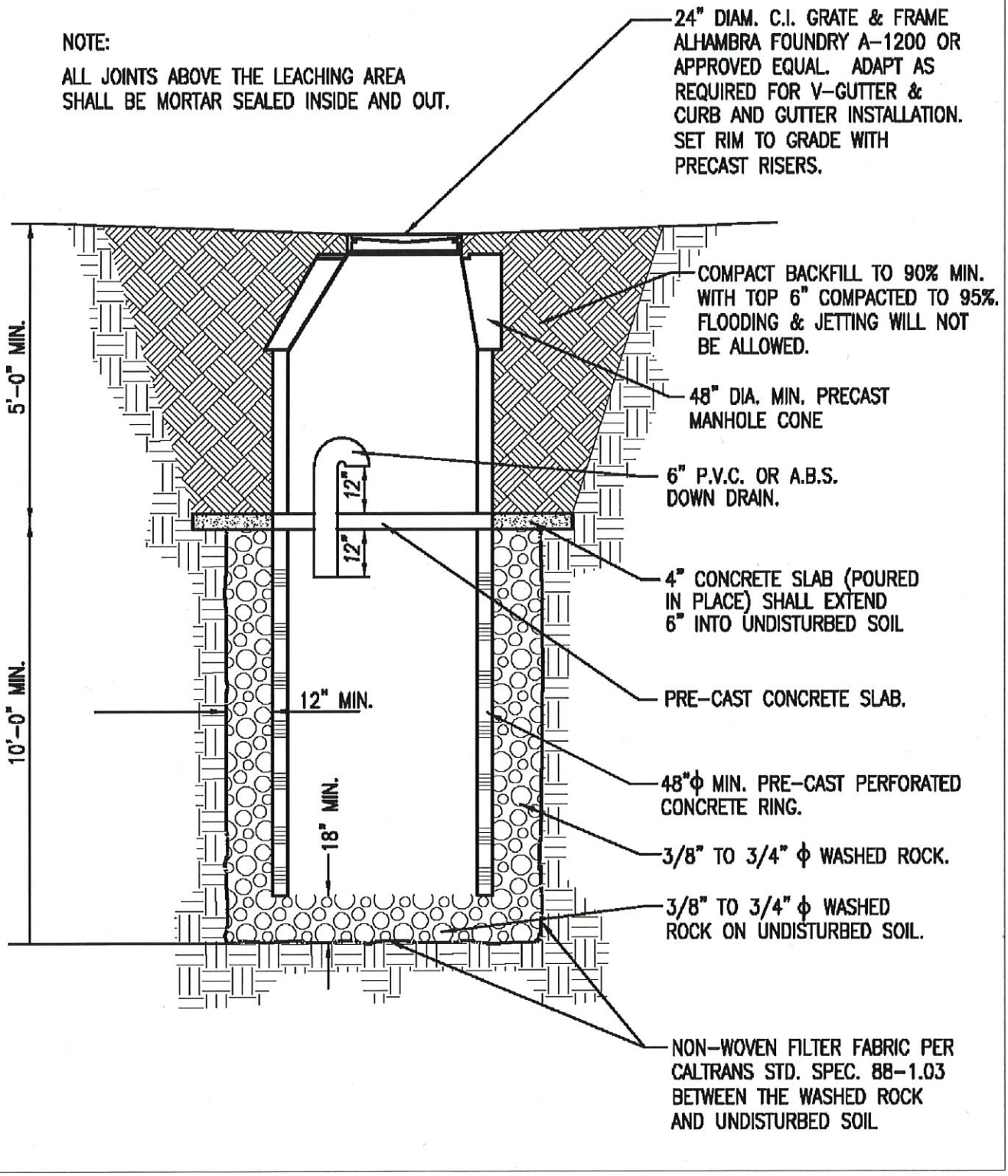
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PROPOSED LOT M IMPROVEMENT
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.	Drawing No.
14-31-124-04	1

NOTE:

ALL JOINTS ABOVE THE LEACHING AREA SHALL BE MORTAR SEALED INSIDE AND OUT.



STANDARD DRYWELL DETAIL

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Project No. 14-31-124-04

Drawing No. 2

Appendix A

Field Exploration

APPENDIX A: FIELD EXPLORATION

Field exploration included a site reconnaissance and subsurface exploration program. During the site reconnaissance, the surface conditions were noted, and the approximate location of the boring was determined. The exploratory boring was approximately located using existing boundary and other features as a guide and should be considered accurate only to the degree implied by the method used. The various field study methods performed are discussed below.

Five (5) exploratory borings (PT-1 through PT-5) were drilled within the project site on May 4th, 2017. The borings were advanced using a truck-mounted 8-inch-diameter hollow stem auger drill rig to a maximum depth of 27 feet below the existing ground surface (bgs). The boring was visually logged by a Converse engineer in accordance with the Unified Soil Classification System and sampled at regular intervals and at changes in subsurface soils. The field descriptions have been modified where appropriate to reflect laboratory test results.

California Modified Sampler (ring samples) of the subsurface materials were obtained at frequent intervals in the exploratory boring using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained. The boring location is shown on Figure No. 1, *Site Location map*.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The log of the exploratory borings is presented in Drawing Nos. A-2 through A-6, *Log of Borings*.

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE 2.42" I.D. sampler.
- DRIVE SAMPLE No recovery
- BULK SAMPLE
- GRAB SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-1

Log of Boring No. PT-1

Dates Drilled: 5/4/2018 Logged by: RAM Checked By: SKS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 715 Depth to Water (ft): 19

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SANDY CLAY (CL):** with gravels, dark brown to black.						
5		**ALLUVIUM (Qal):** **SILTY SAND (SM):** with gravel, few clay, brown.			7/7/7	7	107	wa (fc=30%)
10		**CLAY (CL):** with gravel, dark brown.			3/6/9			
15					8/9/17	16	103	
					2/4/4			
20		End of boring at 20 feet. Groundwater encountered at 19 feet. Percolation test was performed. Borehole was backfilled with soil cuttings and tamped on 5-4-18.						

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WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-2

Log of Boring No. PT-2

Dates Drilled: 5/4/2018 Logged by: RAM Checked By: SKS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 731 Depth to Water (ft): 29

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** brown.						
5			■		13/27/33	10	112	
		ALLUVIUM (Qal): **CLAY (CL):** with gravels, brown to black.						
10			■		13/17/18	17	96	
15			■		13/19/21	16	98	wa (fc=70%)
20		-light brown	☒		4/7/11			
25			■		10/20/26	23	101	wa (fc=84%)
		▽	☒		4/6/9			
30		End of boring at 30 feet. Groundwater encountered at 29 feet. Percolation test was performed. Borehole was backfilled with soil cuttings and tamped on 5-4-18.						

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Project Name
PROPOSED LOT M IMPROVEMENT
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-3

Log of Boring No. PT-3

Dates Drilled: 5/4/2018 Logged by: RAM Checked By: SKS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 730 Depth to Water (ft): 25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** with gravels, brown.						
5		**ALLUVIUM (Qal):** **CLAY (CL):** with gravel, brown.	■		7/11/16	32	86	
10		brown to black	■		8/11/21	25	94	wa (fc=89%)
15								
20		-moist, black	■		7/9/13	30	90	wa (fc=93%)
25			■		4/5/7	37	86	
		End of boring at 26.5 feet. Groundwater encountered at 25 feet. Percolation test was performed. Borehole was backfilled with soil cuttings and tamped on 5-4-18.						

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-4

Log of Boring No. PT-4

Dates Drilled: 5/4/2018 Logged by: RAM Checked By: SKS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 728 Depth to Water (ft): 23

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		4" ASPHALT OVER 6" BASE						
		FILL (Af): **SILTY SAND (SM):** with gravels, brown.						
5			■		11/13/14	11	107	wa (fc=27%)
		ALLUVIUM (Qal): **CLAY (CL):** with gravels.						
10								
15		**SAND SILT (ML):** with gravels, few clay, reddish brown.	■		6/9/10	17	103	wa (fc=76%)
20								
		End of boring at 23 feet. Groundwater encountered at 23 feet. Percolation test was performed. Borehole was backfilled with soil cuttings and tamped and patched with cold asphalt on 5-4-18.						

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-5

Log of Boring No. PT-5

Dates Drilled: 5/4/2018 Logged by: RAM Checked By: SKS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 726 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		4" ASPHALT OVER 2" BASE						
		FILL (Af): **SILTY SAND (SM):** with gravel, reddish brown.						
5		**ALLUVIUM (Qal):** **SILTY SAND (SM):** with gravel, reddish brown.			6/13/15	15	108	
		SANDY SILT (ML): with gravel, brown.			7/11/13	27	93	wa (fc=55%)
10								
		SILTY SAND (SM): with graels, brown.						
15								
20		**SANDY CLAY (CL):** reddish brown.			11/18/7	27	93	
		End of boring at 21.5 feet. Groundwater not encountered Percolation test was performed. Borehole was backfilled with soil cuttings and tamped and patched with cold asphalt on 5-4-18.						

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Project Name
PROPOSED LOT M IMPROVEMENT
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 14-31-124-04

Figure No. A-6

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

Moisture Content and Dry Density

Results of moisture content and dry density tests performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

Percent Finer than Sieve No. 200

The percent finer than sieve No. 200 tests were performed on eight (8) representative soil samples to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM Standard D1140 test method. Test results are presented in the Logs of Borings in Appendix A, *Field Exploration*.

Table No. B-1, Percent Passing Sieve No. 200 Results

Boring No.	Depth (feet)	Soil Classification	Percent Passing Sieve No. 200
PT-1	5	Silty Sand (SM)	30%
PT -2	15	Clay (CL)	70%
PT -2	25	Clay (CL)	84%
PT -3	10	Clay (CL)	89%
PT -3	20	Clay (CL)	93%
PT -4	5	Silty Sand (SM)	27%
PT -4	15	Sandy Silt (ML)	76%
PT -5	10	Sandy Silt (ML)	55%

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Appendix C

Percolation Testing

APPENDIX C: PERCOLATION TESTING

Percolation testing was performed utilizing exploratory borings PT-1 to PT-5 on May 4th, 2018. The continuous pre-soak falling-head test method for water percolation testing was utilized to evaluate soil infiltration rates of the native soils encountered between depths of 0 to 27 feet below the ground surface at the respective boring locations in accordance with Los Angeles County (2017), Administrative Manual--Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration. The test location was prepared by placing a perforated 2-inch diameter PVC pipe surrounded by pea gravel after drilling and sampling. Water was filled to the ground surface to pre-soak prior to testing.

The borings were cased using a two-inch diameter perforated casing. Water was added to the bore hole until the water level was as near the ground surface as could be achieved and allowed to pre-soak for at least 4 hours if the water did not drain entirely within 30 minutes after filling the boring two (2) consecutive times. After pre-soak, water was added to the bore hole until the water level was as near the ground surface as could be achieved. The water level was measured to the nearest 1/8-inch. There were at least three (3) sets of measurements taken for each test and each set consisted of at least three (3) measurements. The results of the percolation tests are tabulated in the tables below:

Table No. C-1, Soil Boring Percolation Test Results

Boring No.	Depth of Test (feet)	Top Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
PT-1*	17	Silty Sand (SM) / Sandy Clay (CL)	1.81	0.98
PT-2*	27	Silty Sand (SM) / Clay (CL)	1.20	0.72
PT-3*	25	Silty Sand (SM) / Clay (CL)	0.54	0.18
PT-4*	20	Silty Sand (SM) / Clay (CL) / Sandy Silt (ML)	0.41	0.26
PT-5*	21	Silty Sand (SM) / Sandy Silt (ML) / Sandy Clay (CL)	0.57	0.3

*Percolation rate was obtained from an 8-inch diameter bore hole to a depth which shows in the next column (Depth of Test). The percolation rate may change with different well dimensions. The adjustment to the provided percolation rate to a well with different dimensions should be determined by the well designer.

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration systems for storm water management is 0.3 inches per hour. It should be noted that per Los Angeles County Low Impact Development, Best Management Practices Guidelines, any planned infiltration systems should be at least 10 feet above historically highest groundwater levels. The historic ground water level at the project site is 25 feet below ground level according to the seismic hazard zone report for the San Dimas Quadrangle by the Department of Conservation. The project Civil Engineer shall review the percolation rates presented for design of the proposed

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infiltration system. Additional details about drywell design and requirements can be found in the Low Impact Development Manual, County of Los Angeles Department of Public Works, latest edition. The infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system.

Table No. C-2, Infiltration Facility Setback Requirements per Los Angeles County

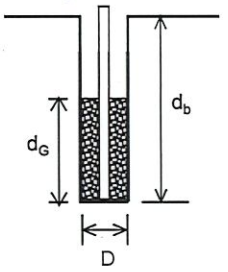
Setback from	Distance
Property lines and public right of way	5 feet
Any foundation	15 feet or within 1:1 plane drawn up from the bottom of foundation, whichever greater
Face of any slope	H/2, 5 feet minimum (H is height of slope)
Water wells used for drinking water	100 feet
Historically highest groundwater levels	10 feet above

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Percolation Testing

Job Name: ACE, Mt San Antonio College
Job No.: 14-31-124-04
Location: South Side of ACE area
Test Date: May 4, 2018

Test Boring No **PT-1**
Depth of Boring (d_b): 17.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: CQ



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Percolation Test											
11:00:00 AM	11:30:00 AM	0.50	0.00	3.08	17.00	13.92	3.08	15.46	73.92	47.1	1.57
11:30:00 AM	12:00:00 PM	0.50	3.08	6.33	13.92	10.67	3.25	12.30	78.00	37.7	2.07
12:00:00 PM	12:30:00 PM	0.50	6.33	9.25	10.67	7.75	2.92	9.21	70.08	28.5	2.46
12:30:00 PM	1:00:00 PM	0.50	0.00	2.08	17.00	14.92	2.08	15.96	49.92	48.6	1.03
1:00:00 PM	1:30:00 PM	0.50	2.08	6.00	14.92	11.00	3.92	12.96	94.08	39.7	2.37
1:30:00 PM	2:00:00 PM	0.50	6.00	8.60	11.00	8.40	2.60	9.70	62.40	30.0	2.08
2:00:00 PM	2:30:00 PM	0.50	0.00	2.00	17.00	15.00	2.00	16.00	48.00	48.8	0.98
2:30:00 PM	3:00:00 PM	0.50	2.00	6.42	15.00	10.58	4.42	12.79	106.08	39.2	2.71
3:00:00 PM	3:30:00 PM	0.50	6.42	7.75	10.58	9.25	1.33	9.92	31.92	30.6	1.04

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

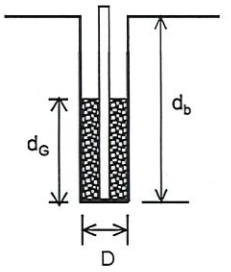
Lowest Perlcolaton Rate = 0.98 inch/hr
Average Percolation Rate = 1.81 inch/hr

Reference: Los Angeles County (2017). Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration , 6/30/17.

Percolation Testing

Job Name: ACE, Mt San Antonio College
Job No.: 14-31-124-04
Location: ACE Subarea B
Test Date: May 4, 2018

Test Boring No **PT-2**
Depth of Boring (d_b): 27.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: CQ



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Percolation Test											
11:00:00 AM	11:30:00 AM	0.50	0.00	3.67	27.00	23.33	3.67	25.17	88.08	76.1	1.16
11:30:00 AM	12:00:00 PM	0.50	3.67	8.34	23.33	18.66	4.67	21.00	112.08	63.7	1.76
12:00:00 PM	12:30:00 PM	0.50	8.34	10.67	18.66	16.33	2.33	17.50	55.92	53.2	1.05
12:30:00 PM	1:00:00 PM	0.50	0.00	4.00	27.00	23.00	4.00	25.00	96.00	75.6	1.27
1:00:00 PM	1:30:00 PM	0.50	4.00	7.50	23.00	19.50	3.50	21.25	84.00	64.4	1.30
1:30:00 PM	2:00:00 PM	0.50	7.50	9.40	19.50	17.60	1.90	18.55	45.60	56.4	0.81
2:00:00 PM	2:30:00 PM	0.50	0.00	3.25	27.00	23.75	3.25	25.38	78.00	76.7	1.02
2:30:00 PM	3:00:00 PM	0.50	3.25	7.92	23.75	19.08	4.67	21.42	112.08	64.9	1.73
3:00:00 PM	3:30:00 PM	0.50	7.92	9.58	19.08	17.42	1.66	18.25	39.84	55.5	0.72

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

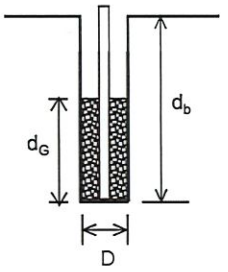
Lowest Perlcolaton Rate = 0.72 inch/hr
Average Percolation Rate = 1.20 inch/hr

Reference: Los Angeles County (2017). Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration , 6/30/17.

Percolation Testing

Job Name: ACE, Mt San Antonio College
Job No.: 14-31-124-04
Location: ACE Subarea C along the service road
Test Date: May 4, 2018

Test Boring No **PT-3**
Depth of Boring (d_b): 25.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: JC



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Percolation Test											
12:30:00 PM	1:00:00 PM	0.50	0.00	2.70	25.00	22.30	2.70	23.65	64.80	71.6	0.91
1:00:00 PM	1:30:00 PM	0.50	2.70	4.30	22.30	20.70	1.60	21.50	38.40	65.2	0.59
1:30:00 PM	2:00:00 PM	0.50	4.30	6.97	20.70	18.03	2.67	19.37	64.08	58.8	1.09
2:00:00 PM	2:30:00 PM	0.50	0.00	1.97	25.00	23.03	1.97	24.02	47.28	72.7	0.65
2:30:00 PM	3:00:00 PM	0.50	1.97	2.90	23.03	22.10	0.93	22.57	22.32	68.4	0.33
3:00:00 PM	3:30:00 PM	0.50	2.90	3.43	22.10	21.57	0.53	21.84	12.72	66.2	0.19
3:30:00 PM	4:00:00 PM	0.50	0.00	1.90	25.00	23.10	1.90	24.05	45.60	72.8	0.63
4:00:00 PM	4:30:00 PM	0.50	1.90	2.70	23.10	22.30	0.80	22.70	19.20	68.8	0.28
4:30:00 PM	5:00:00 PM	0.50	2.70	3.20	22.30	21.80	0.50	22.05	12.00	66.8	0.18

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

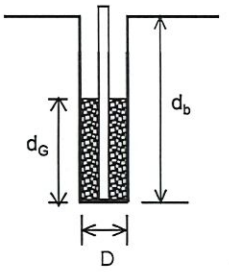
Lowest Perlcolaton Rate = 0.18 inch/hr
Average Percolation Rate = 0.54 inch/hr

Reference: Los Angeles County (2017). Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration , 6/30/17.

Percolation Testing

Job Name: ACE, Mt San Antonio College
Job No.: 14-31-124-04
Location: within ACE Subarea A
Test Date: May 4, 2018

Test Boring No **PT-4**
Depth of Boring (d_b): 20.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: JC



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Percolation Test											
2:00:00 PM	2:30:00 PM	0.50	0.00	1.10	20.00	18.90	1.10	19.45	26.40	59.1	0.45
2:30:00 PM	3:00:00 PM	0.50	1.10	2.00	18.90	18.00	0.90	18.45	21.60	56.1	0.39
3:00:00 PM	3:30:00 PM	0.50	2.00	2.60	18.00	17.40	0.60	17.70	14.40	53.8	0.27
3:30:00 PM	4:00:00 PM	0.50	0.00	1.30	20.00	18.70	1.30	19.35	31.20	58.8	0.53
4:00:00 PM	4:30:00 PM	0.50	1.30	2.10	18.70	17.90	0.80	18.30	19.20	55.6	0.35
4:30:00 PM	5:00:00 PM	0.50	2.10	2.96	17.90	17.04	0.86	17.47	20.64	53.1	0.39
5:00:00 PM	5:30:00 PM	0.50	0.00	1.37	20.00	18.63	1.37	19.32	32.88	58.7	0.56
5:30:00 PM	6:00:00 PM	0.50	1.37	1.98	18.63	18.02	0.61	18.33	14.64	55.7	0.26
6:00:00 PM	6:30:00 PM	0.50	1.98	3.13	18.02	16.87	1.15	17.45	27.60	53.1	0.52

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

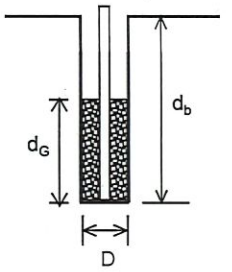
Lowest Perlcolaton Rate = 0.26 inch/hr
Average Percolation Rate = 0.41 inch/hr

Reference: Los Angeles County (2017). Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration , 6/30/17.

Percolation Testing

Job Name: ACE, Mt San Antonio College
Job No.: 14-31-124-04
Location: Next to ACE subarea D along the service road
Test Date: May 4, 2018

Test Boring No **PT-5**
Depth of Boring (d_b): 21.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: PA



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Percolation Test											
5:00:00 PM	5:10:00 PM	0.17	0.00	0.75	21.00	20.25	0.75	20.63	54.00	62.6	0.86
5:10:00 PM	5:20:00 PM	0.17	0.75	1.30	20.25	19.70	0.55	19.98	39.60	60.6	0.65
5:20:00 PM	5:30:00 PM	0.17	1.30	1.72	19.70	19.28	0.42	19.49	30.24	59.2	0.51
5:30:00 PM	5:40:00 PM	0.17	0.00	0.68	21.00	20.32	0.68	20.66	48.96	62.7	0.78
5:40:00 PM	5:50:00 PM	0.17	0.68	1.16	20.32	19.84	0.48	20.08	34.56	60.9	0.57
5:50:00 PM	6:00:00 PM	0.17	1.15	1.40	19.85	19.60	0.25	19.73	18.00	59.9	0.30
6:00:00 PM	6:10:00 PM	0.17	0.00	0.60	21.00	20.40	0.60	20.70	43.20	62.8	0.69
6:10:00 PM	6:20:00 PM	0.17	0.60	0.95	20.40	20.05	0.35	20.23	25.20	61.4	0.41
6:20:00 PM	6:30:00 PM	0.17	0.95	1.25	20.05	19.75	0.30	19.90	21.60	60.4	0.36

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

Lowest Perlcolaton Rate = 0.30 inch/hr
Average Percolation Rate = 0.57 inch/hr

Reference: Los Angeles County (2017). Administrative Manual - Guidelines for Design, Investigation, and Reporting Low Impact Development Storm Water Infiltration , 6/30/17.

Appendix H: LID Treatment Stormwater Quality Control Sizing Calculation and Information

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	TERENCE ZHAO 626-425-2874 TERENCE.ZHAO@ADS-PIPE.COM
ADS SALES REP:	ARNE ERIKSEN (951)-796-2048 ARNE.ERIKSEN@ADS-PIPE.COM
PROJECT NO:	S096323

ADVANCED DRAINAGE SYSTEMS, INC.

MT SAC ATHLETIC COMPLEX

WALNUT, CA

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE MADE FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT

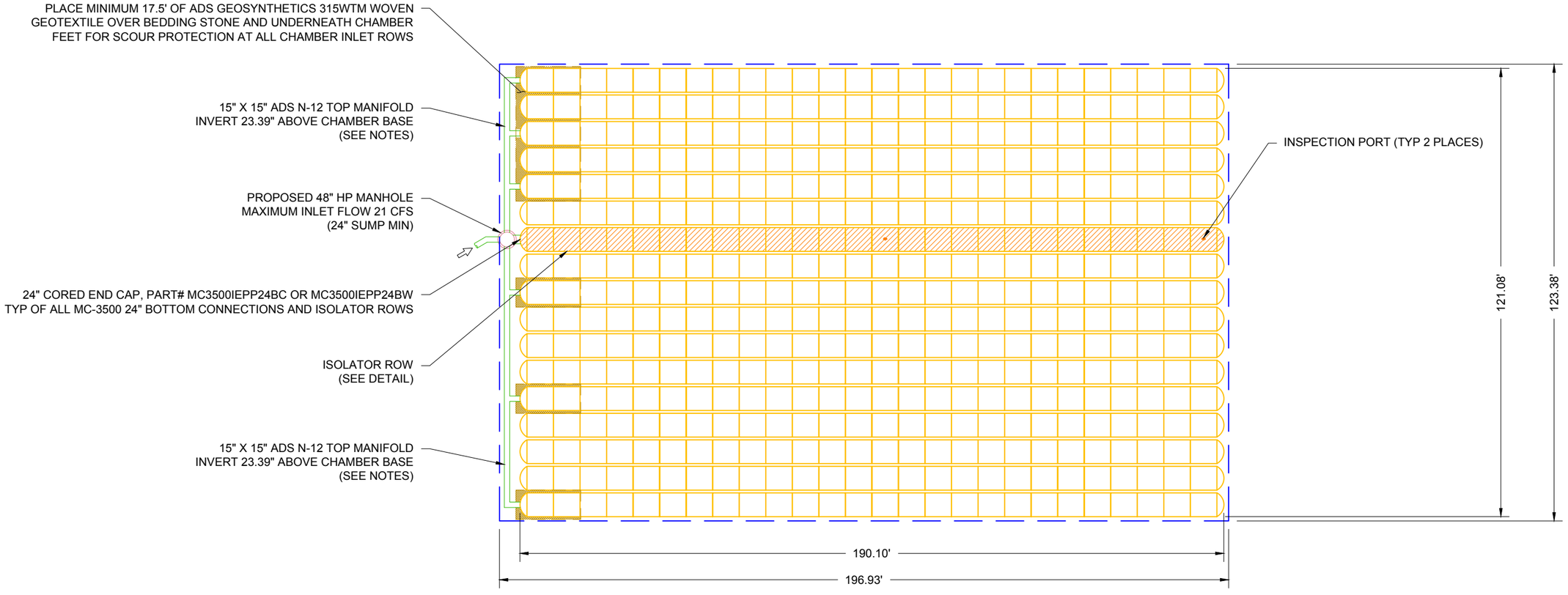
442	STORMTECH MC-3500 CHAMBERS
34	STORMTECH MC-3500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
82,920	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
24,298	SYSTEM AREA (ft²)
641	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS

715.08	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
709.58	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
709.08	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
709.08	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
709.08	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
708.08	TOP OF STONE
707.08	TOP OF MC-3500 CHAMBER
705.28	15" TOP MANIFOLD INVERT
703.50	24" ISOLATOR ROW CONNECTION INVERT
703.33	BOTTOM OF MC-3500 CHAMBER
702.58	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- THE SITE DESIGN ENGINEER MUST REVIEW THE PROXIMITY OF THE CHAMBERS TO THE SLOPE AND CONSIDER EFFECTS OF POSSIBLE SATURATED SOILS ON THE SLOPE'S INTEGRITY.



MT SAC ATHLETIC COMPLEX
WALNUT, CA

DATE: 8-13-18 | DRAWN: HB | PROJECT #: S096323 | CHECKED: JPR

DATE	DRWN	CHKD	DESCRIPTION
8/22/18	NBR	DAF	LARGER VOLUME

StormTech
Detention•Retention•Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026

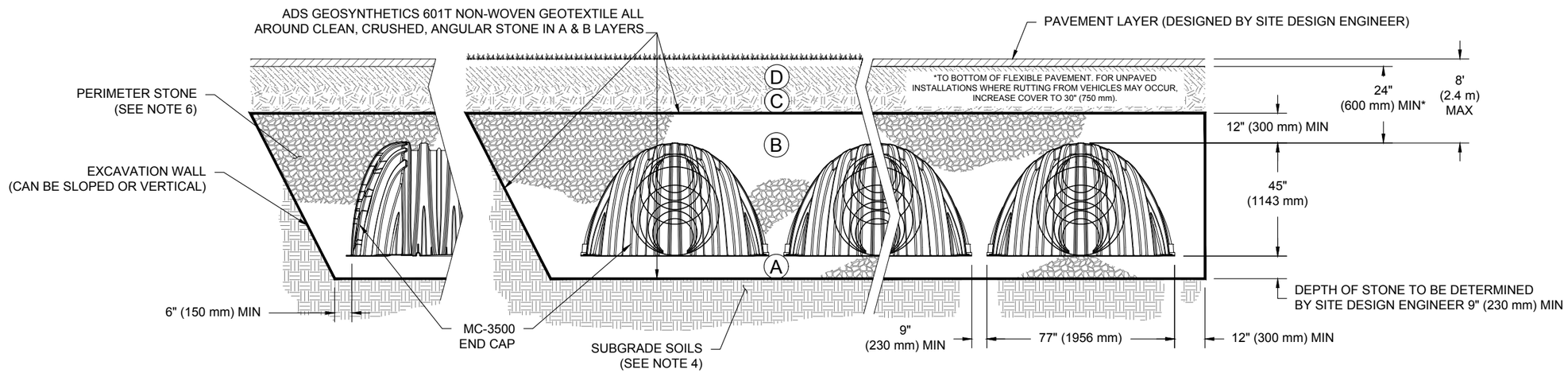
0 30' 60'

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

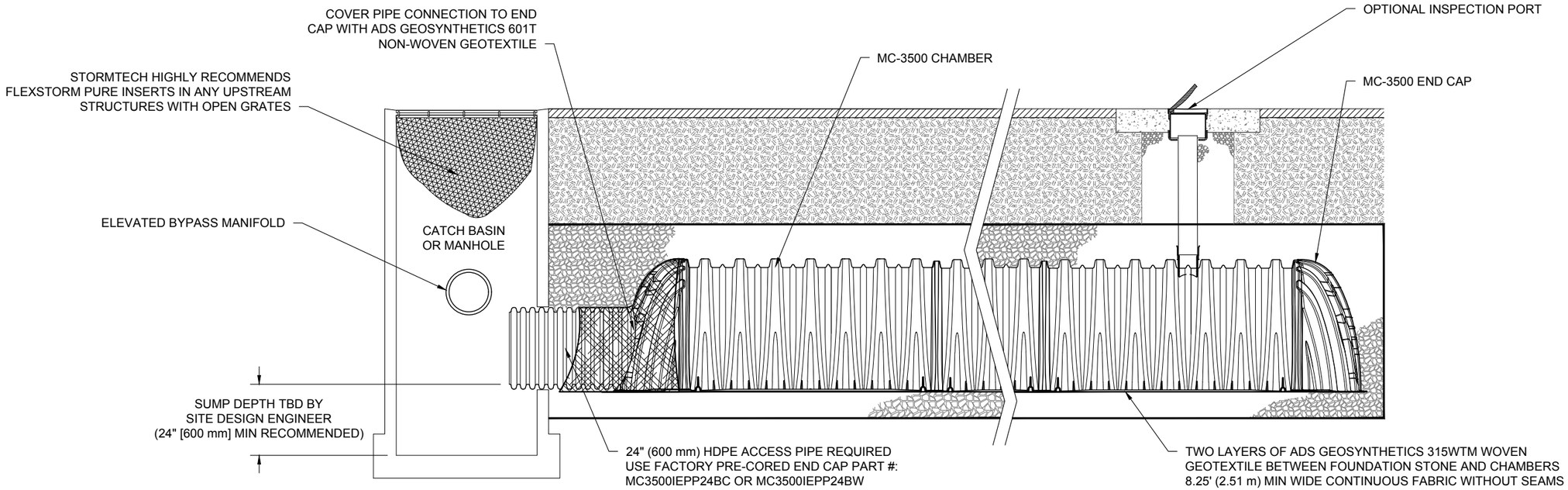
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WALNUT, CA
DATE: 8-13-18 | DRAWN: HB | CHECKED: JPR | PROJECT #: S096323

DATE	DESCRIPTION	CHKD	DRWN
8/22/18	LARGER VOLUME	DAF	NBR

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MC-3500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

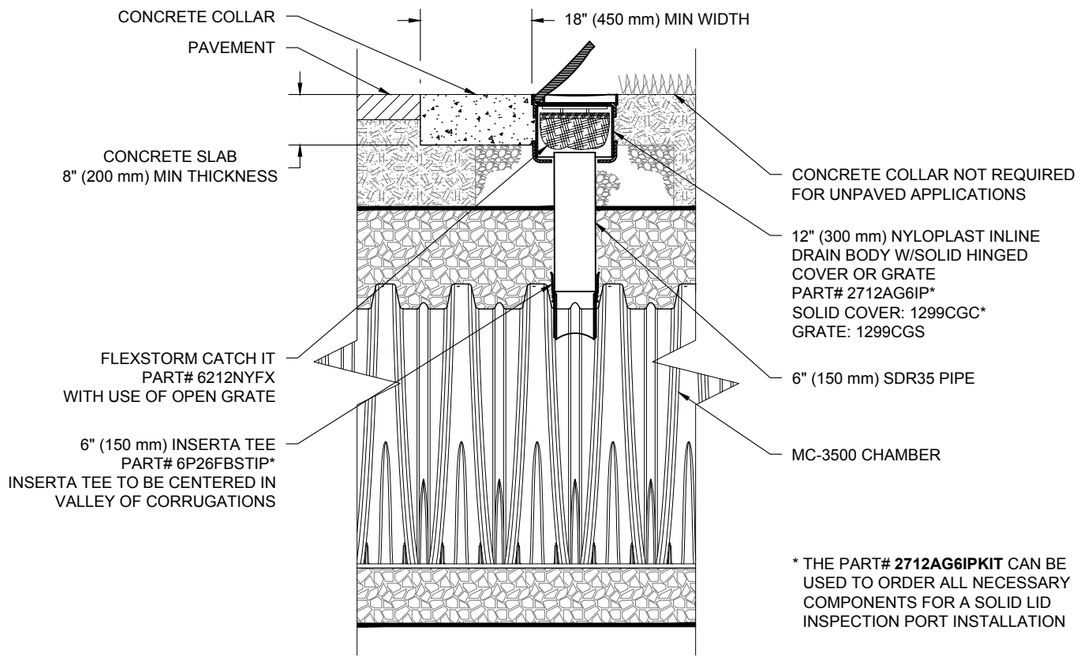
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



* THE PART# **2712AG6IPKIT** CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

MC-3500 6" INSPECTION PORT DETAIL
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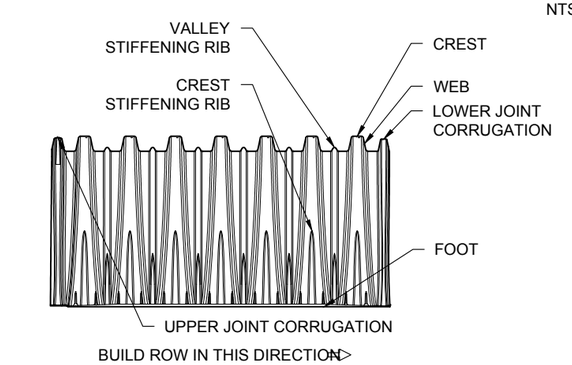
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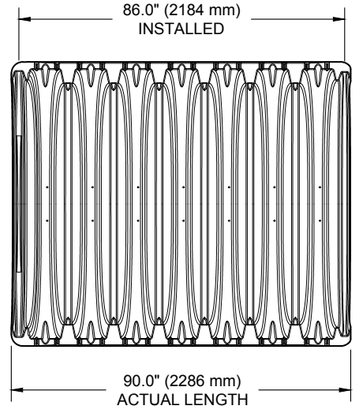
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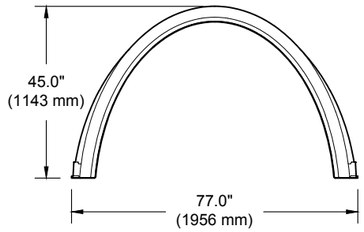
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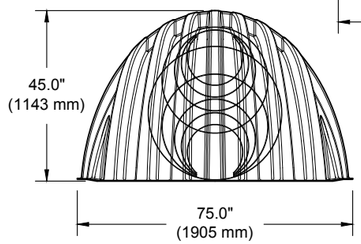
MC-3500 TECHNICAL SPECIFICATION

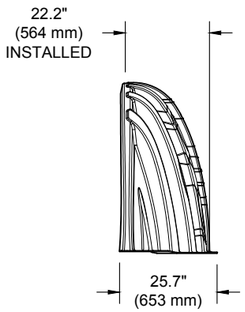
NTS











NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	(5.06 m³)
WEIGHT	134 lbs.	(60.8 kg)

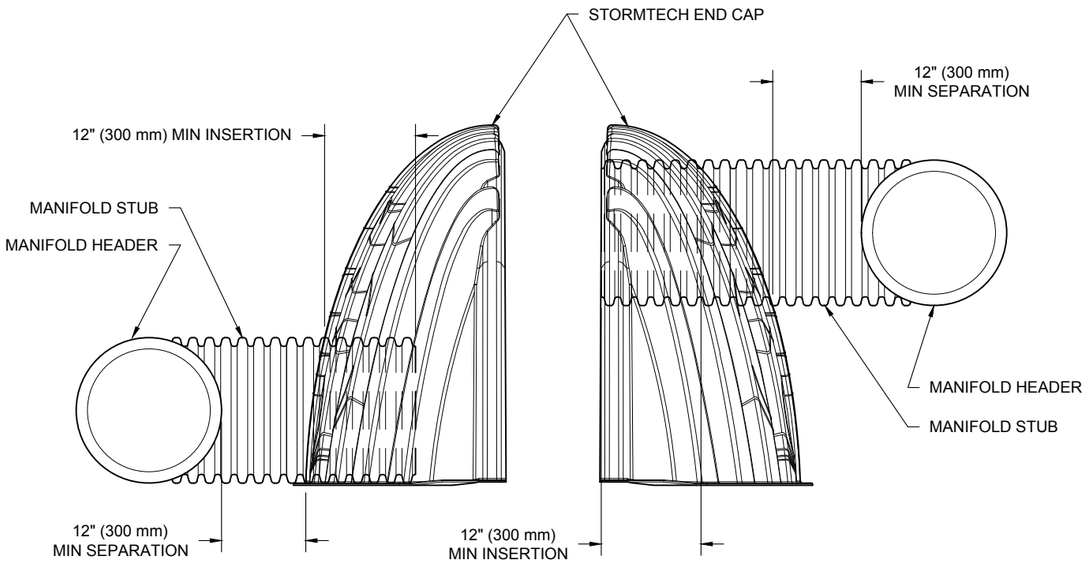
NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	(1.30 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

MC-SERIES END CAP INSERTION DETAIL

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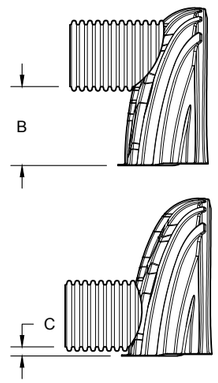


NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

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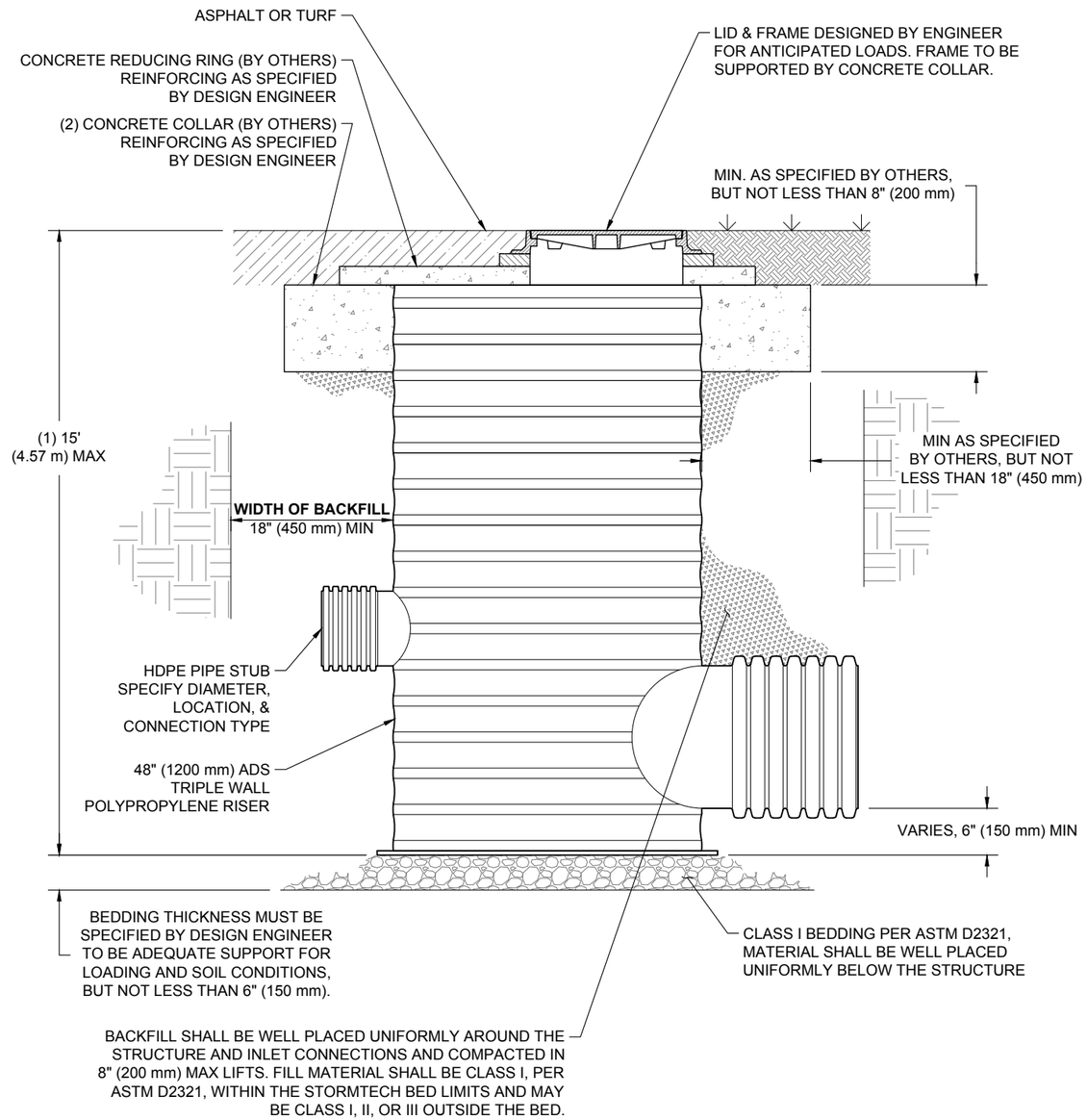
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HP MANHOLE INSTALLATION FOR STORMTECH SYSTEMS

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NOTES:
1. FOR BURIAL DEPTHS GREATER THAN 15' (4.57 m), OR WHERE GROUND WATER WILL BE ENCOUNTERED, CONTACT ADS ENGINEERING SERVICES.
2. AVOID CONSTRUCTION LOADING ON STRUCTURE PRIOR TO CONCRETE COLLAR INSTALLATION.



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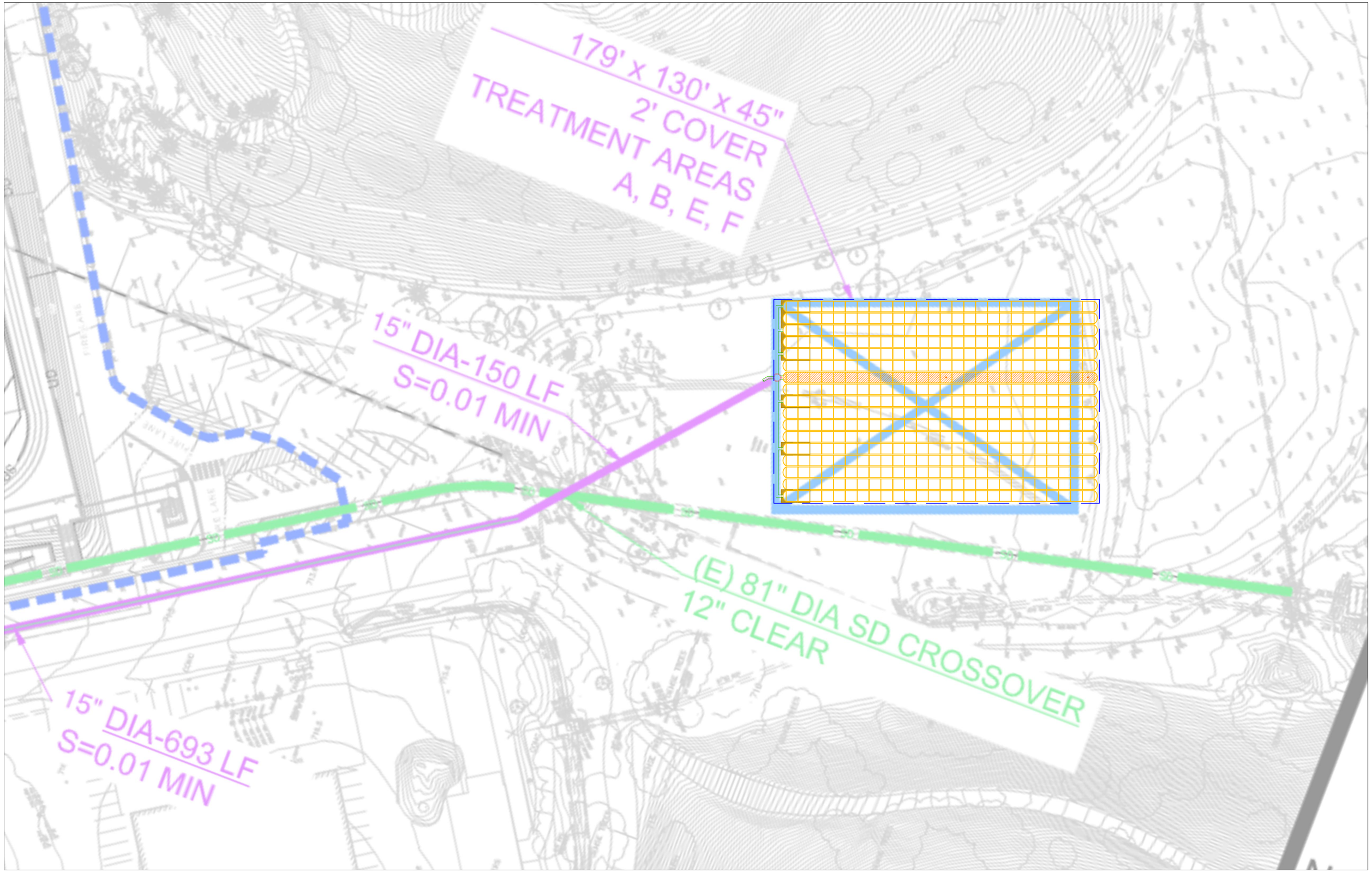
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179' x 130' x 45"
2' COVER
TREATMENT AREAS
A, B, E, F
15" DIA-150 LF
S=0.01 MIN
(E) 81" DIA SD CROSSOVER
12" CLEAR
15" DIA-693 LF
S=0.01 MIN

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Isolator® Row O&M Manual







THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

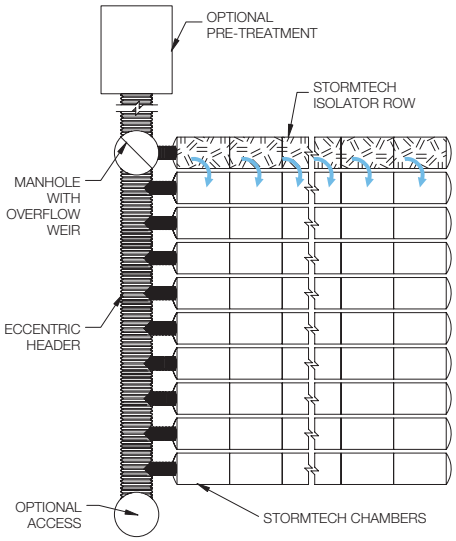
Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)





ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

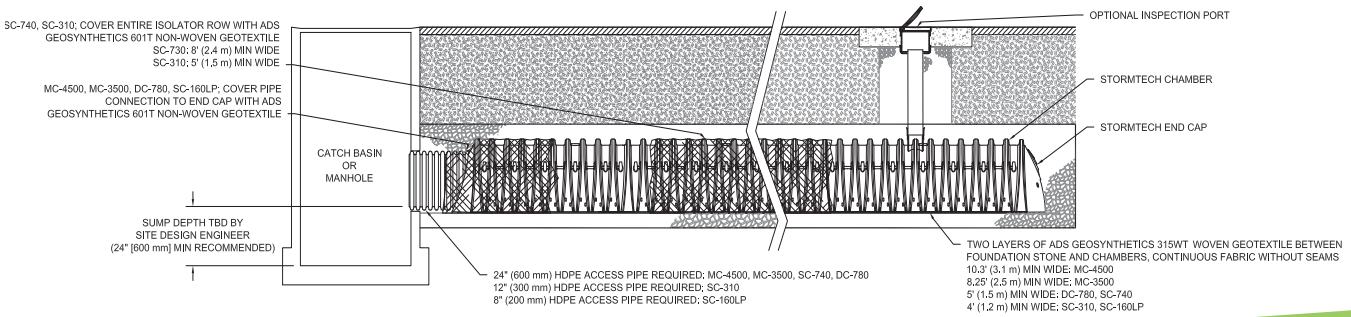
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



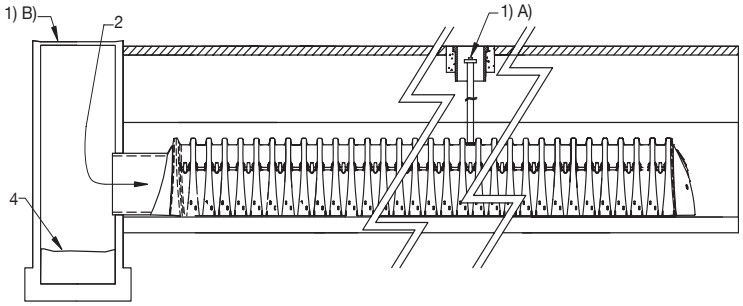
ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1
Inspect Isolator Row for sediment.
- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    1. Mirrors on poles or cameras may be used to avoid a confined space entry
    2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2
Clean out Isolator Row using the JetVac process.
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3
Replace all caps, lids and covers, record observations and actions.

STEP 4
Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

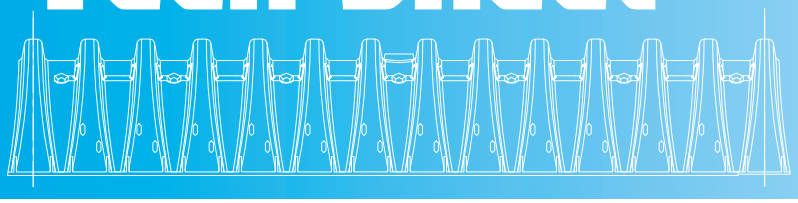
Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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Tech Sheet



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ASTM & AASHTO Standards for Buried Thermoplastic Structures

Tech Sheet # 6
November 2012

Design Requirements for Thermoplastic Structures:

1. **The structural design must evaluate short term live loads, intermediate term loads and long term soil loads.**
2. **The materials used in production must provide necessary short, intermediate and long term properties.**
3. **The structural design must be completed by experts in the field of soil-structure interaction.**
4. **The product must be designed and manufactured to meet meaningful standards.**
5. **The structural design of the subsurface stormwater system must be up to the standards that a professional engineer expects.**

General:
This summarizes key components of structural design and national standards for subsurface thermoplastic structures. Although the focus of this guidance is on chamber systems, the principles apply to the wider category of buried products of various structural shapes and material properties.

Structural Design of a Subsurface Thermoplastic System:
The objective of *structural* design is to ensure a proper safety factor over the intended ***service life*** of the buried system. Typically the intended service life of a subsurface storm drainage system ranges from 20 to 100 years. Since the polypropylene and polyethylene, thermoplastic materials now used for subsurface structures are very stable in the stormwater environment; the limiting criterion for service life is generally long-term structural stability.

The primary benefit of subsurface systems is to facilitate additional paved surfaces for the purpose of parking or traffic flow. For such applications, where public safety is of paramount importance, "structural survival", i.e. lack of failure, is not sufficient. For a design to be safe, structural ***safety factors*** must be demonstrated for the entire service life of the project to account for uncertainties in loading, installation, and material performance. AASHTO design procedures mandate load factors of 1.75 for live loads to account for impact effects and the presence of multiple or overweight loads and 1.95 for earth loads on buried culverts.

There are two components to ensuring long term performance of any structural product: 1) the product must be designed, tested and manufactured to meet meaningful ***product standards*** and 2) the system must be designed to meet meaningful ***design standards***. ASTM and AASHTO, the most respected, dependable standards available, have developed standards for buried structures.

Short Term Properties, Intermediate Term Properties, Long Term Properties, Strain and Deflection:
Buried thermoplastic products must be designed for three conditions: 1) short duration live loads under shallow cover, 2) minimum 1-week sustained loads and 3) permanent earth loads. ***Load duration*** is a key criterion for the design of thermoplastic structures since the "apparent strength" and stiffness decrease with increasing load duration. For live load design, the thermoplastic product must be able to withstand the dynamic load from moving vehicles. *Live load design is based on short duration loads and short term material properties.* Intermediate load design requires the thermoplastic product to withstand 1-week sustained loads from parked oversized loads. *Intermediate load design is based on 1-week duration loads and 1-week material properties.*

1 AASHTO is the American Association of State Highway and Transportation Officials
2 ASTM / ASTM International is the American Society of Testing Materials

Earth (dead) loads are permanent in duration and magnitude. For dead load design, the thermoplastic product must be able to withstand the continuous dead load and remain stable after 75 years or more under sustained load. For thermoplastic systems using structural aggregate (stone) support, the performance of the structure is a function of the ability of the thermoplastic structure to a shed significant portion of the load to the surrounding stone (arching). *Earth load design is based on permanent loads and long term material properties.* The material properties that govern long-term design are tensile creep rupture and creep modulus.

Strain limits are the maximum strains that can occur before the structure fails. Long, slender shapes are inherently unstable and fail at lower loads by buckling. Wide, flat shapes may also buckle under continuous load. Design for long-term service life must be based on long duration loads, long term creep modulus and strain limits. ***Without proper soil support, thermoplastic structures may reach a strain limit and fail.***

Deflection is generally not a failure limit or a service limit for soil supported chamber systems. When deflection is not limited by soil support, excessive deflection of thermoplastic structures has been found to cause pavement distress. ***Without proper soil support, deflection is a service limit for thermoplastic structures.***

Specifying industry standards, not just products, establishes objective, meaningful performance criteria and a defensible basis of design.

AASHTO Standards:
The AASHTO LRFD Bridge Design Specification is the primary source of design standards for soil-structure interaction under traffic loads. Section 3 of this specification provides for calculation of loads and Section 12.12 provides for structural design of buried thermoplastic structures.
The AASHTO standard:
- **Assures design safety factors for live loads and long-term loads**
- **Provides the design method for soil-structure interaction**
- **Assures a long-term service life by designing for creep and strain limits**
- **Provides consulting engineers with a defensible basis of design**

ASTM Standards:
ASTM is an internationally recognized source for a variety of standards including; testing methods, standard practices and product specifications. ASTM has developed two product standards for Stormwater chambers, designations ASTM F2418 (polypropylene chambers) and ASTM F2922 (polyethylene chambers).
The ASTM F 2418 and F2922 Standards:
- **Assure consistent product quality in a non-proprietary specification**
- **Establish physical and mechanical requirements for the finished product**
- **Establish long and short-term material properties for design**
- **Require AASHTO safety factors and full scale validation testing**

ASTM has developed a design standard for Stormwater chambers, designation: ASTM F 2787, entitled “Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers”.
The ASTM F 2787 Standard:
- **Applies the AASHTO Section 12.12 thermoplastic pipe design criteria and applies it directly to chambers**
- **Includes an additional design load for a minimum 1-week sustained vehicle load to account for parked vehicles**
- **Provides design criteria that can be applied to different thermoplastic resins.**

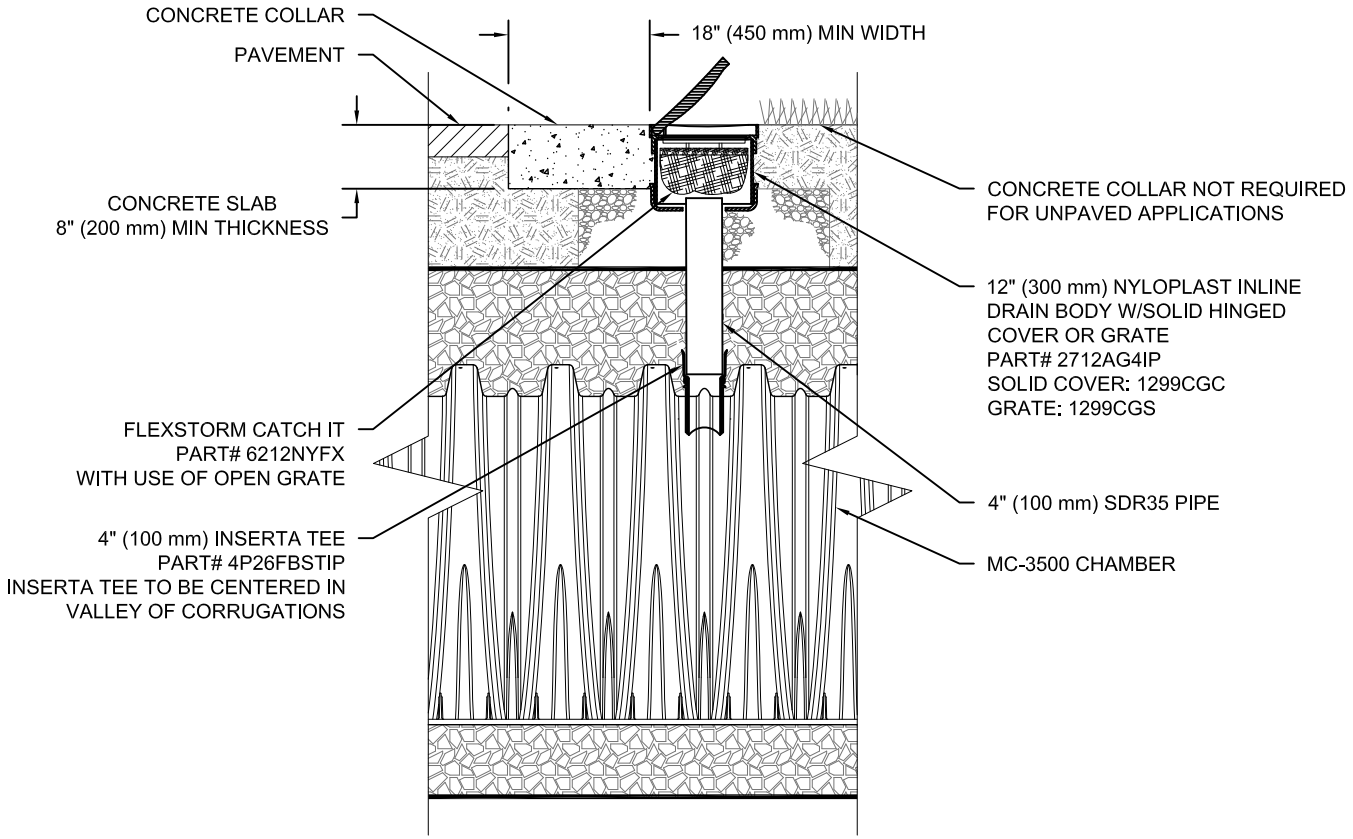
Product Design:

Stone support is a key component of the soil-structure interaction system. Stone columns between thermoplastic components provide the load paths from the load above to the foundation below. For stone-structure designs, the stone reduces the load that the thermoplastic components must carry and limits the deflection and strain of the thermoplastic components. Designs of subsurface thermoplastic structures that purport to require no structural stone or are not designed in accordance with AASHTO requirements may result in excessive deflections or complete failure.

StormTech chambers are designed and rigorously tested in accordance with national standards to provide the most reliable subsurface system available.

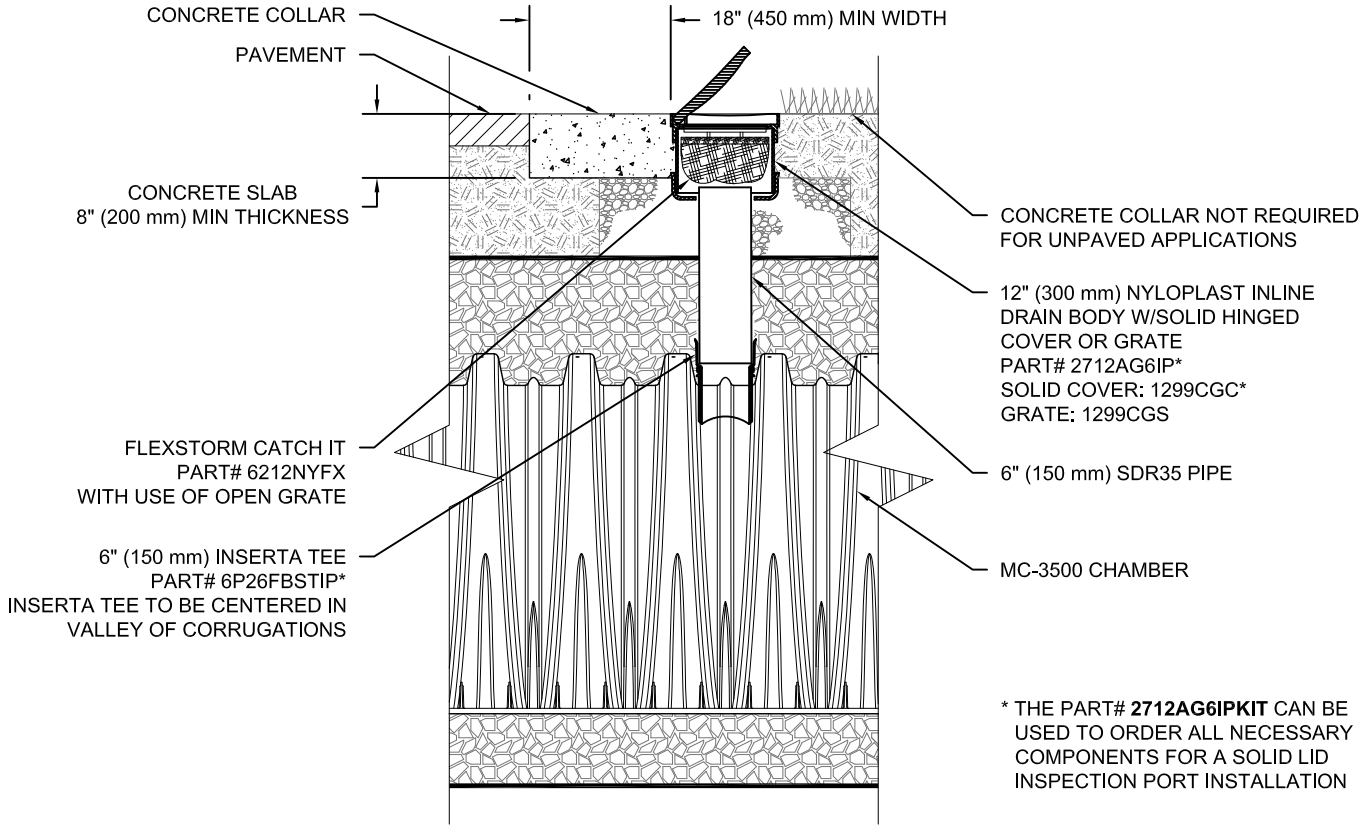
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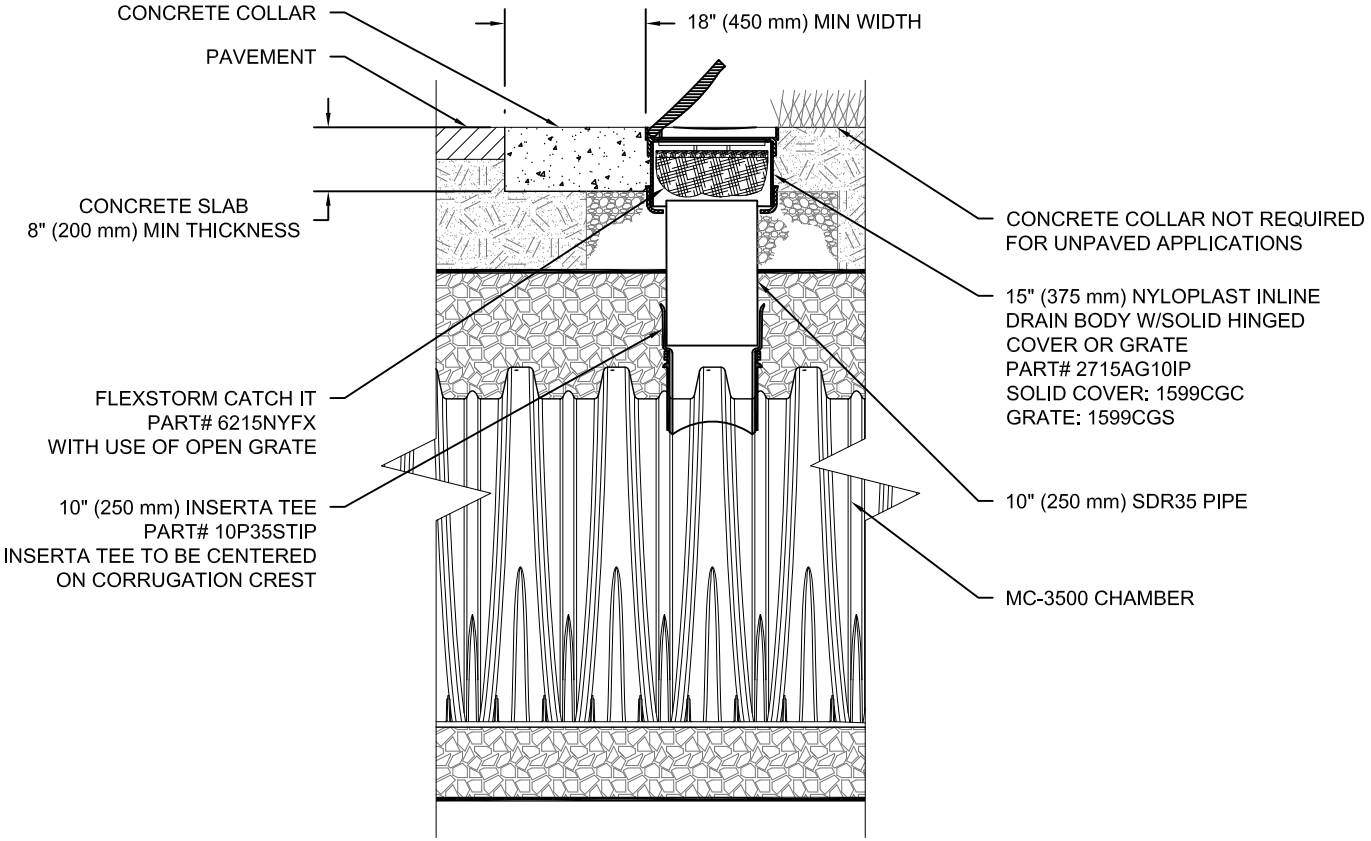
MC-3500 4" INSPECTION PORT DETAIL

NTS



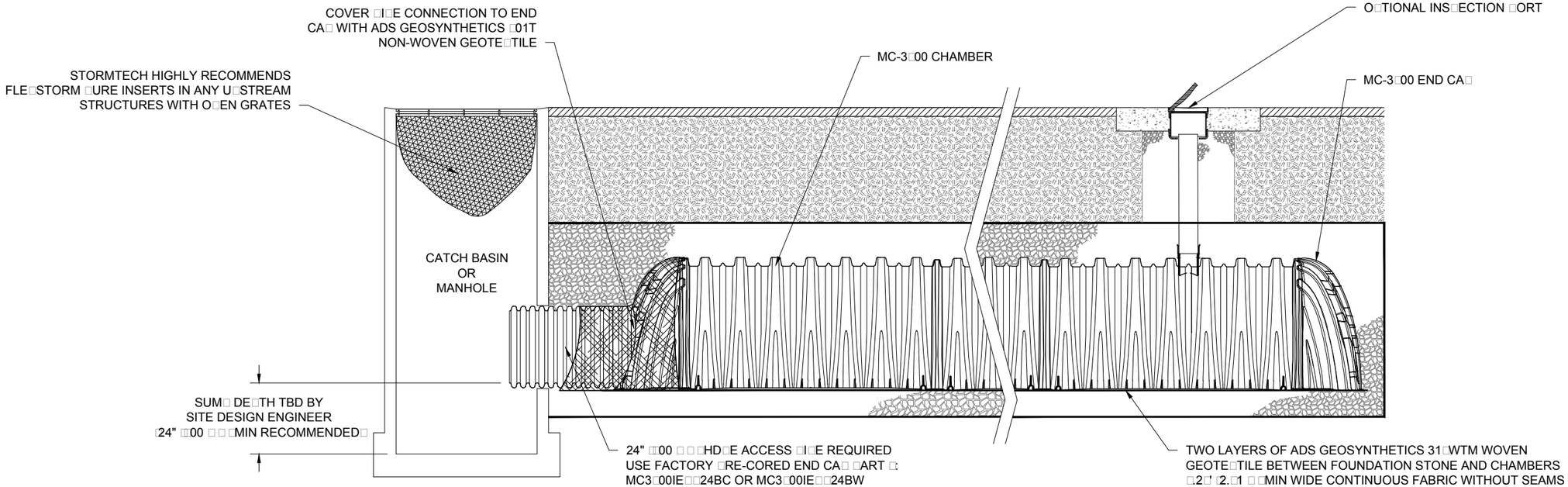
MC-3500 6" INSPECTION PORT DETAIL

NTS



MC-3500 10" INSPECTION PORT DETAIL

NTS



MC-3500 ISOLATOR ROW DETAIL

NTS

INSPECTION & MAINTENANCE

STE□ 1□ INS□ECT ISOLATOR ROW FOR SEDIMENT
- A. INS□ECTION □ORTS □IF □RESENT□
  - A.1. REMOVE□O□EN LID ON NYLO□LAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLE□STORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DE□TH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INS□ECTION OF SEDIMENT LEVELS □O□TIONAL□
  - A.□ IF SEDIMENT IS AT, OR ABOVE, 3" □□0 □ □ □ □ROCEED TO STE□ 2. IF NOT, □ROCEED TO STE□ 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT U□STREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INS□ECT DOWN THE ISOLATOR ROW THROUGH OUTLET □I□E
    - □□ MIRRORS ON □OLES OR CAMERAS MAY BE USED TO AVOID A CONFINED S□ACE ENTRY
    - □□□ FOLLOW OSHA REGULATIONS FOR CONFINED S□ACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" □□0 □ □ □ □ROCEED TO STE□ 2. IF NOT, □ROCEED TO STE□ 3.

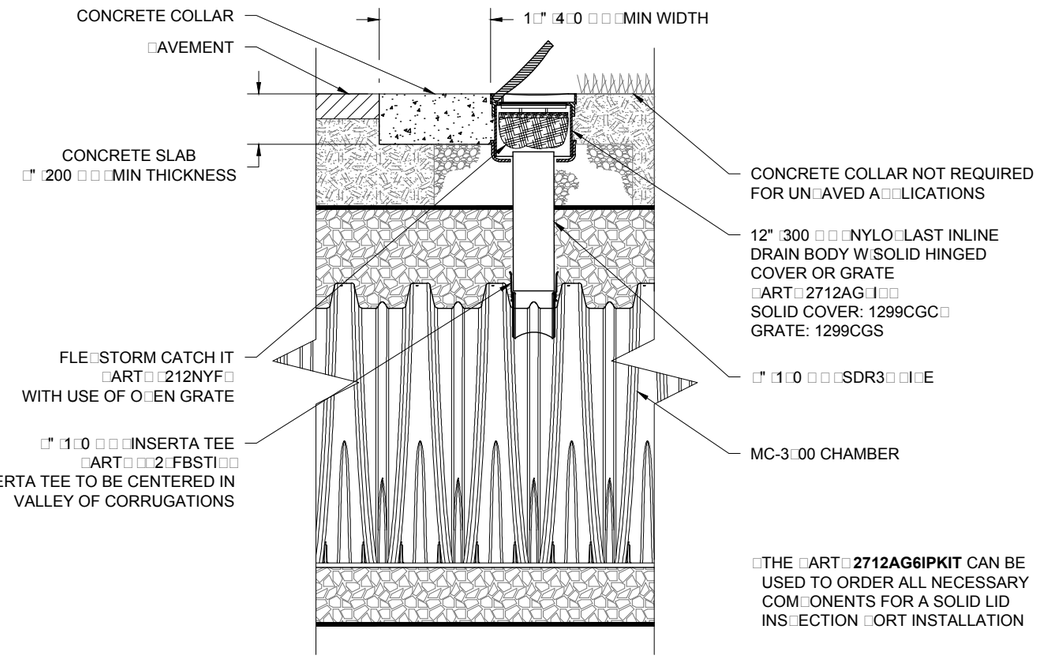
STE□ 2□ CLEAN OUT ISOLATOR ROW USING THE □ETVAC □ROCESS
- A. A FI□ED CULVERT CLEANING NOZZLE WITH REAR FACING S□READ OF 4□" □1.1 □ □OR MORE IS □REFERRED
- B. A□□LY MULTI□LE □ASSES OF □ETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUM□ AS REQUIRED

STE□ 3□ RE□LACE ALL COVERS, GRATES, FILTERS, AND LIDS□RECORD OBSERVATIONS AND ACTIONS.

STE□ 4□ INS□ECT AND CLEAN BASINS AND MANHOLES U□STREAM OF THE STORMTECH SYSTEM.

NOTES

1. INS□ECT EVERY □ MONTHS DURING THE FIRST YEAR OF O□ERATION. AD□UST THE INS□ECTION INTERVAL BASED ON □REVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT □ETTING AND VACTORING ANNUALLY OR WHEN INS□ECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-3500 6" INSPECTION PORT DETAIL

NTS

ISOLATOR ROW DETAILS
MC-3□00
DATE: 03 0 □17 DRAWN: □LM CHECKED:
□RO□ECT □:

REV	DWN	CKD	DESCRIPTION
09.13.17	□LM		U□DATE END CA□ □ART NUMBERS

StormTech
Detention Retention Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
□ 0- 29- 1□□ | □□□ - 92-2 94 | WWW.STORMTECH.COM

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HILLIARD, OH 4302□

SHEET 1 OF 1

THIS DRAWING HAS BEEN □RE□ARED BASED ON INFORMATION □ROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER □RO□ECT RES□ONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE □RODUCT S DE□ICTED AND ALL ASSOCIATED DETAILS MEET ALL A□□LICABLE LAWS, REGULATIONS, AND □RO□ECT REQUIREMENTS.
THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING □RIOR TO CONSTRUCTION. IT IS THE ULTIMATE

STORMTECH MC-3500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



STORMTECH MC-3500 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
90" x 77" x 45"
2,286 mm x 1,956 mm x 1,143 mm

Chamber Storage
109.9 ft³ (3.11 m³)

Min. Installed Storage*
178.9 ft³ (5.06 m³)

Weight
134 lbs (60.8 kg)

Shipping
15 chambers/pallet
7 end caps/pallet
7 pallets/truck

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-3500 END CAP
(not to scale)

Nominal End Cap Specifications

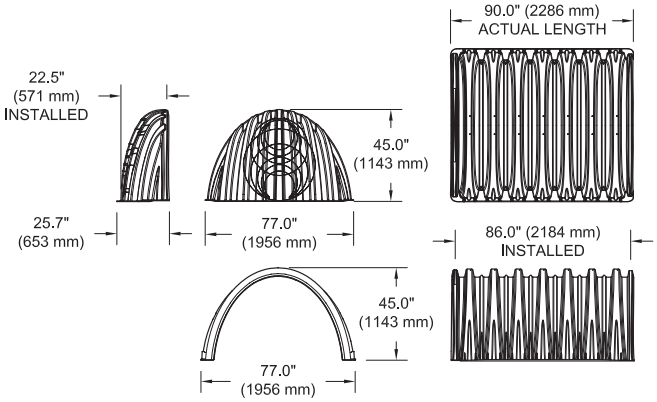
Size (L x W x H)
26.5" x 71" x 45.1"
673 mm x 1,803 mm x 1,145 mm

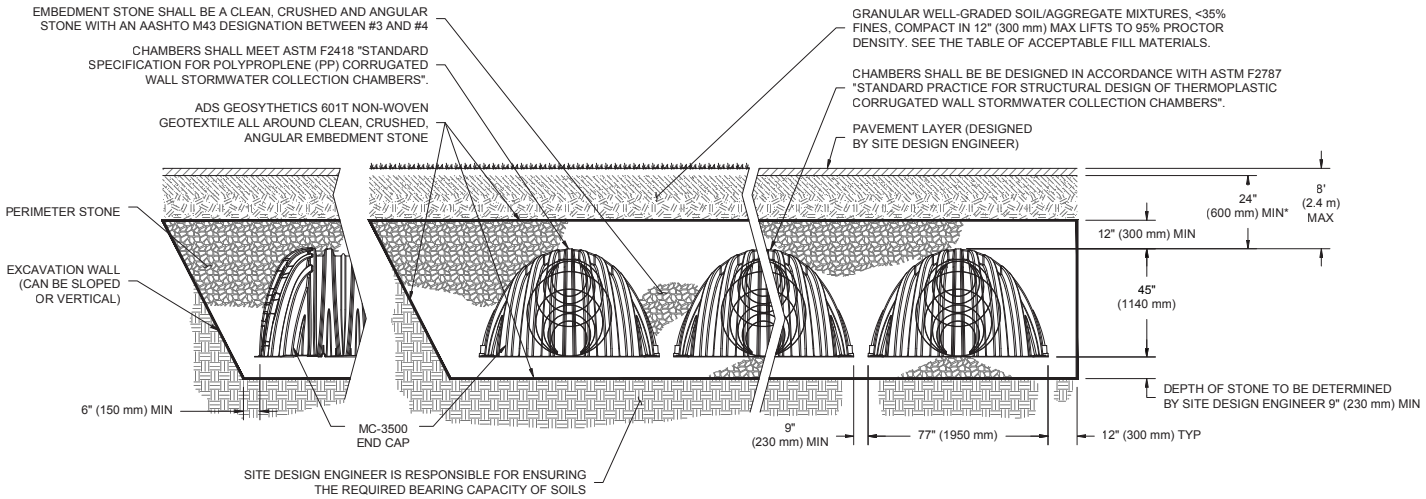
End Cap Storage
14.9 ft³ (1.30 m³)

Min. Installed Storage*
46.0 ft³ (1.30 m³)

Weight
49 lbs (22.2 kg)

*Assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 6" (150 mm) of stone perimeter, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

MC-3500 CHAMBER SPECIFICATION

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-3500 Chamber	109.9 (3.11)	178.9 (5.06)	184.0 (5.21)	189.2 (5.36)	194.3 (5.5)
MC-3500 End Cap	14.9 (.42)	46.0 (1.33)	47.7 (1.35)	49.4 (1.40)	51.1 (1.45)

Note: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume.

AMOUNT OF STONE PER CHAMBER

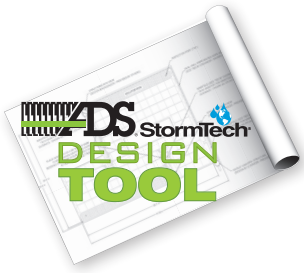
ENGLISH TONS (yds³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-3500 Chamber	9.1 (6.4)	9.7 (6.9)	10.4 (7.3)	11.1 (7.8)
MC-3500 End Cap	4.1 (2.9)	4.3 (3.0)	4.5 (3.2)	4.5 (3.2)
METRIC KILOGRAMS (m³)	**230 mm**	**300 mm**	**375 mm**	**450 mm**
MC-3500 Chamber	8,220 (4.9)	8,831 (5.3)	9,443 (5.6)	10,054 (6.0)
MC-3500 End Cap	3,699 (2.2)	3,900 (2.3)	4,100 (2.5)	4,301 (2.6)

Note: Assumes 12" (300 mm) of stone above and 9" (230 mm) row spacing and 6" (150 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-3500 Chamber	12.4 (9.5)	12.8 (9.8)	13.3 (10.2)	13.8 (10.5)
MC-3500 End Cap	4.1 (3.1)	4.2 (3.2)	4.4. (3.3)	4.5 (3.5)

Note: Assumes 9" (230 mm) of separation between chamber rows and 24" (600 mm) of cover. The volume of excavation will vary as depth of cover increases.



Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech MC-3500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

*THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™*

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MC-3500/MC-4500

StormTech®
Detention • Retention • Water Quality
An ADS company

StormTech Construction Guide

REQUIRED MATERIALS AND EQUIPMENT LIST

- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps, pre-cored and pre-fabricated end caps
- StormTech chambers, manifolds and fittings

NOTE: MC-3500 chamber pallets are 77” x 90” (2.0 m x 2.3 m) and weigh about 2010 lbs. (912 kg) and MC-4500 pallets are 100” x 52” (2.5 m x 1.3 m) and weigh about 840 lbs. (381 kg). Unloading chambers requires 72” (1.8 m) (min.) forks and/or tie downs (straps, chains, etc).

IMPORTANT NOTES:

A. This installation guide provides the minimum requirements for proper installation of chambers. Nonadherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the “dump and push” method are not covered under the StormTech standard warranty.

C. Care should be taken in the handling of chambers and end caps. End caps must be stored standing upright. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation



Excavate bed and prepare subgrade per engineer’s plans.



Place non-woven geotextile over prepared soils and up excavation walls.



Place clean, crushed, angular stone foundation 9” (230 mm) min. Install underdrains if required. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly



Install manifolds and lay out woven scour geotextile at inlet rows [min. 17.5 ft (5.33 m)] at each inlet end cap. Place a continuous piece (no seams) along entire length of Isolator® Row(s) in two layers.

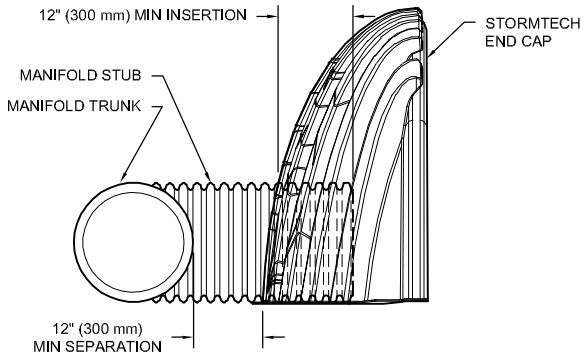


Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.



Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled “Lower Joint – Overlap Here” and “Build this direction – Upper Joint” Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 9” (300 mm) spacing between rows. For the Isolator Row place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.

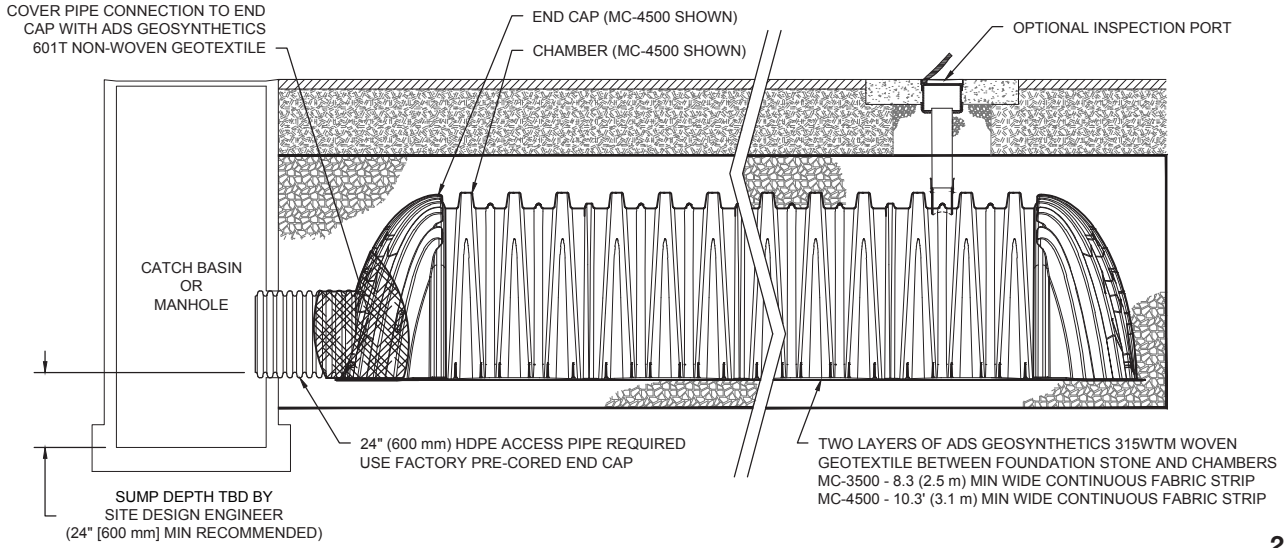
Manifold Insertion



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

Insert inlet and outlet manifolds a minimum 12” (300 mm) into chamber end caps. Manifold header should be a minimum 12” (300 mm) from base of end cap.

StormTech Isolator Row Detail



Initial Anchoring of Chambers – Embedment Stone





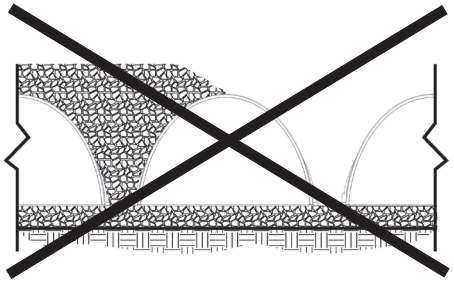
Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.



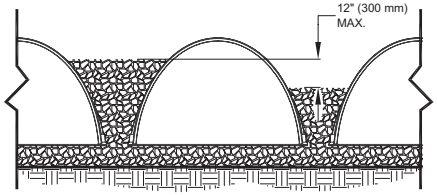


No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone

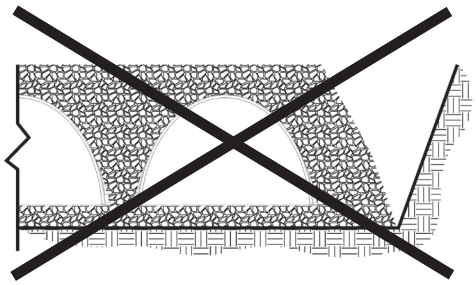


UNEVEN BACKFILL

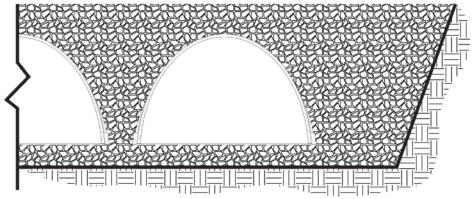


EVEN BACKFILL

Backfill chambers evenly. Stone column height should never differ by more than 12” (300 mm) between adjacent chamber rows or between chamber rows and perimeter.



PERIMETER NOT BACKFILLED



PERIMETER FULLY BACKFILLED

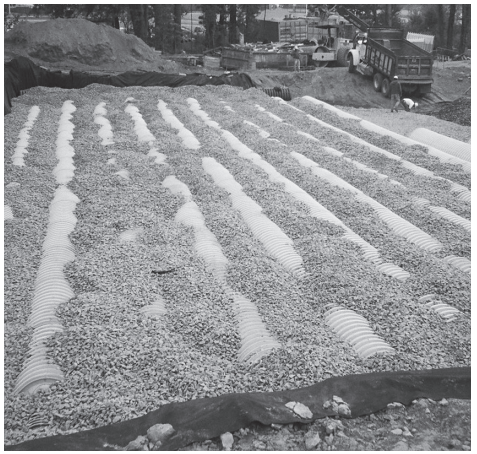
Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Backfill of Chambers – Embedment Stone and Cover Stone





Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers and a minimum 12” (300 mm) of cover stone is in place. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. The recommended backfill methods are with a stone conveyor outside of the bed or build as you go with an excavator inside the bed reaching along the rows. Backfilling while assembling chambers rows as shown in the picture will help to ensure that equipment reach is not exceeded.





Only after chambers have been backfilled to top of chamber and with a minimum 12” (300 mm) of cover stone on top of chambers can skid loaders and small LGP dozers be used to final grade cover stone and backfill material in accordance with ground pressure limits in Table 2. Equipment must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends the contractor inspect chamber rows before placing final backfill. Any chambers damaged by construction equipment shall be removed and replaced.

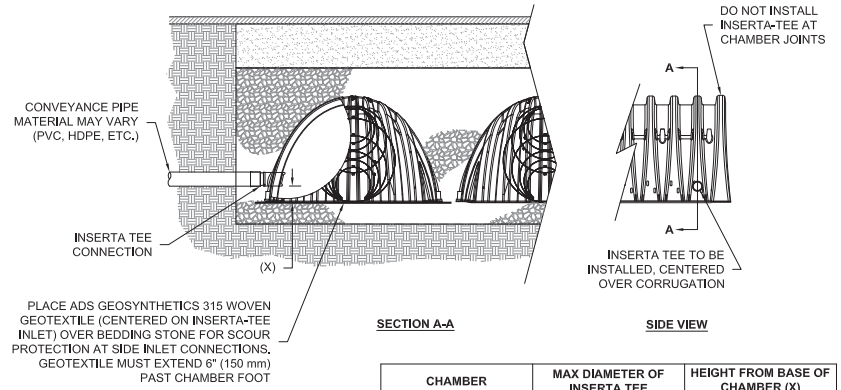
Final Backfill of Chambers – Fill Material





Install non-woven geotextile over stone. Geotextile must overlap 24” (600 mm) in. where edges meet. Compact at 24” (600 mm) of fill. Roller travel parallel with rows.

Inserta Tee Detail



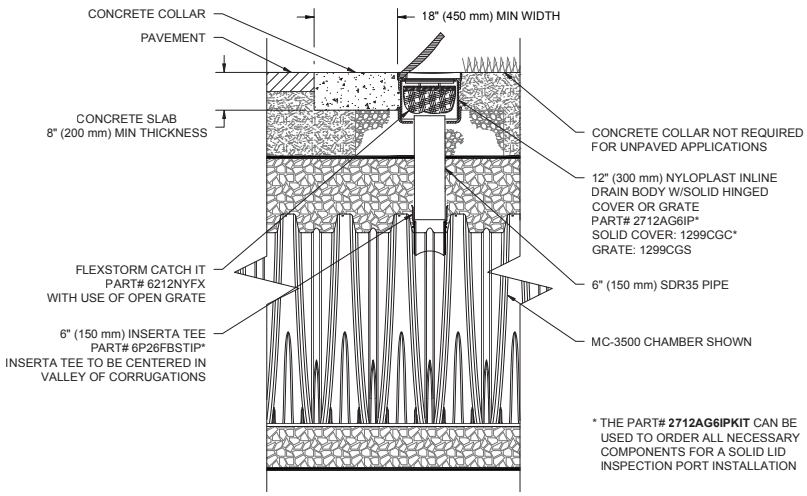
CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

Table 1- Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
(D) **Final Fill:** Fill Material for layer 'D' starts from the top of the 'C' layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the 'D' layer.	Any soil/rock materials, native soils or per engineer's plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer's plans. Paved installations may have stringent material and preparation requirements.
(C) **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone ('B' layer) to 24" (600 mm) above the top of the chamber. Note that pavement subbase may be part of the 'C' layer.	Granular well-graded soil/ aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M145 A-1, A-2-4, A-3 or AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 24" (600 mm) of material over the chambers is reached. Compact additional layers in 12" (300 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials.
(B) **Embedment Stone:** Fill the surrounding surrounding chambers from the foundation stone ('A' layer) to the 'C' layer above.	Clean, crushed, angular stone	AASHTO M43[1] 3, 357, 4	No compaction required.
(A) **Foundation Stone:** Fill below chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone,	AASHTO M43[1] 3, 357, 4	Place and compact in 9" (230 mm) max lifts using two full coverages with a vibratory compactor.[2,3]

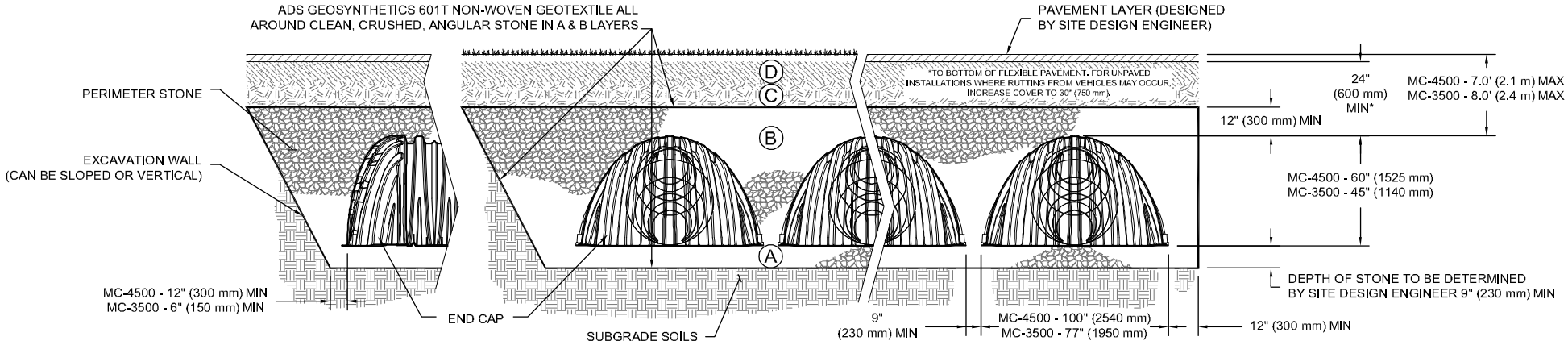
Figure 1- Inspection Port Detail



PLEASE NOTE:

1. ***The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: "clean, crushed, angular no. 4 (AASHTO M43) stone".***
2. ***StormTech compaction requirements are met for 'A' location materials when placed and compacted in 9" (230 mm) (max) lifts using two full coverages with a vibratory compactor.***
3. ***Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.***

Figure 2 - Fill Material Locations



NOTES:

1. ***36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.***
2. ***During paving operations, dump truck axle loads on 24" (600mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 24" (600 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.***
3. ***Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.***
4. ***Mini-excavators (<8,000lbs/3,628 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.***
5. ***StormTech does not require compaction of initial fill at 18" (450 mm) of cover. However, requirements by others for 6" (150 mm) lifts may necessitate the use of small compactors at 18" (450 mm) of cover.***
6. ***Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.***
7. ***Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.***

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Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs [kN]	Max Wheel Load for Loaders lbs [kN]	Track Width in. [mm]	Max Ground Pressure psf [kPa]	Max Drum Weight or Dynamic Force lbs [kN]
Ⓓ **Final Fill Material**	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	3420 [164] 2350 [113] 1850 [89] 1510 [72] 1310 [63]	38,000 [169]
Ⓒ **Initial Fill Material**	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2480 [119] 1770 [85] 1430 [68] 1210 [58] 1070 [51]	20,000 [89]
	24" [600] Loose/Dumped	24,000 [107]	12,000 [53]	12" [305] 18" [457] 24" [610] 30" [762] 36" [914]	2245 [107] 1625 [78] 1325 [63] 1135 [54] 1010 [48]	16,000 [71]
	18" [450]	24,000 [107]	12,000 [53]	12" [305] 18" [457] 24" [610] 30" [762]	2010 [96] 1480 [71] 1220 [58] 1060 [51]	5,000 [22] (static loads only)[5]
Ⓑ **Embedment Stone**	12" [300]	NOT ALLOWED	NOT ALLOWED	12" [305] 18" [457] 24" [610] 30" [762]	1100 [53] 715 [34] 660 [32] 580 [28]	NOT ALLOWED
	6" [150]	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ **Final Fill Material**	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
Ⓒ **Initial Fill Material**	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 24" (600 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 12" (300 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 24" (600 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ **Embedment Stone**	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 12" (300 mm) cover stone is in place.	No rollers allowed.
Ⓐ **Foundation Stone**	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

Mt SAC Parking Structure R LID Calculations for Stormwater Quality Design Volume

Subarea ID	Area (sq ft)	Area (ac)	Flow Path Length (ft)	Flow Path EL 1[1] (ft)	Flow Path EL 2[1] (ft)	Flow Path Slope[1] (ft/ft)	Soil Type[2]	Percent Impervious[3]	Design Storm F	Design Storm Depth[4] (in)	Tc[5] (min)	Peak Flow Rate[5] (cfs)	Bioswale Bottom Width (ft)	Manning's Roughness Coefficient, n	Bioswale slope (ft/ft)	Design Flow Rate = Peak*1.5 (cfs)	Design Flow Depth, d (ft)	Chosen Bioswale Depth, d (ft)	Design Flow Velocity, v (ft/s)	Design Length, L (ft)	Flow-Based Bioswale Length[6], Assumed 4-ft Bottom Width (ft)	Bioswale Length Provided (ft)	Stormwater Quality Design Volume (SWQDv)[5] (cu ft)
North	69,350	1.6	347	743	728	0.043	2	1.00	85th %	1.0	14	0.5295	3	0.25	0.005	0.7943	0.84	1.50	0.21	127.08	128	134	5,184
South	46,653	1.1	261	743	728	0.057	2	1.00	85th %	1.0	11	0.4078	3	0.25	0.005	0.6117	0.72	1.50	0.16	97.87	98	142	3,564
																						TOTAL	**8,748**

[1] Calculated using flow path length and elevations on existing topo

[2] Soil type determined using LA County Hydrology GIS

[3] Estimate based on proposed surfacing in Structure R Paving & Grading Plan

[4] 85th percentile storm depth taken from LA County Hydrology GIS

[5] Calculated using LA County HydroCalc program

[6] Calculated with conservative assumption of 1.5 * Peak Flow Rate

Appendix I: Source Control Measure Fact Sheets

S-1: Storm Drain Message and Signage

Purpose

Waste material dumped into storm drain inlets can adversely impact surface and ground waters. In fact, any material discharged into the storm drain system has the potential to significantly impact downstream receiving waters. Storm drain messages have become a popular method of alerting and reminding the public about the effects of and the prohibitions against waste disposal into the storm drain system. The signs are typically stenciled or affixed near the storm drain inlet or catch basin. The message simply informs the public that dumping of wastes into storm drain inlets is prohibited and/or that the drain ultimately discharges into receiving waters.

General Guidance

- The signs must be placed so they are easily visible to the public.
- Be aware that signs placed on sidewalk will be worn by foot traffic.

Design Specifications

- Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points along channels and streams within the project area. Consult with Los Angeles County Department of Public Works (LACDPW) staff to determine specific signage requirements for channels and streams.
- Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., "No Dumping – Drains to the Ocean") are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side (see Figure D-1 and Figure D-2). LACDPW staff should be contacted to determine specific requirements for types of signs and methods of application. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations must be identified on the project site map.

Maintenance Requirements

Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaced as necessary). If required by LACDPW, the owner/operator or homeowner's association shall enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards and signs.

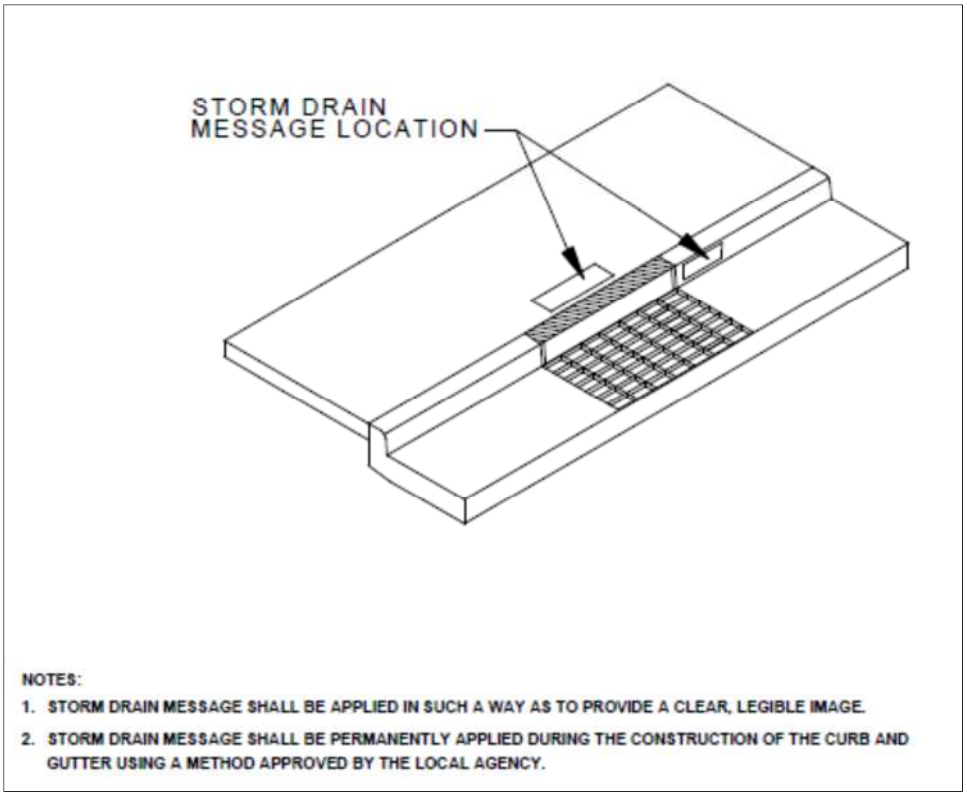


Figure D-1. Storm Drain Message Location – Curb Type Inlet

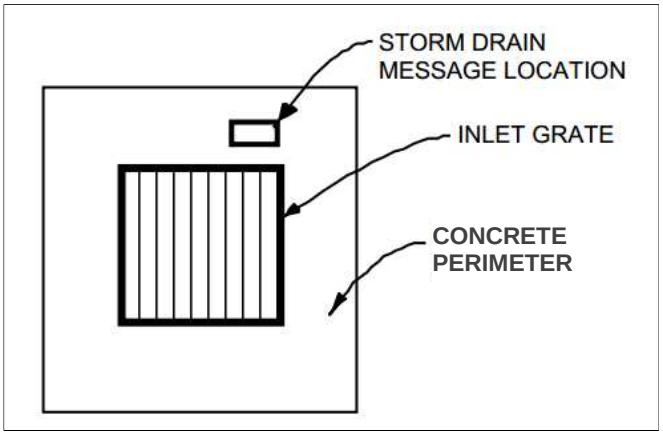


Figure D-2. Storm Drain Message Location – Catch Basin/Area Type Inlet

S-2: Outdoor Material Storage Area

Purpose

The County defines outdoor material storage areas as areas or facilities whose sole purpose is the storage of materials. Materials, including raw materials, by-products, finished products, and waste products, stored outdoors can become sources of pollutants in stormwater runoff if not handled or stored properly. The type of pollutants associated with the materials will vary depending on the type of commercial or industrial activity present.

Materials may be stored in a variety of ways, including bulk piles, containers, shelving, stacking, and tanks. Contamination of stormwater runoff may be prevented by eliminating the possibility of stormwater runoff contact with the material storage areas either through diversion, cover, or capture of the stormwater runoff. Design considerations may also include minimizing the storage area. The source control measures presented in this fact sheet must meet local permitting requirements.

Some materials, such as those containing heavy metals or toxic compounds, are of more concern than other materials. Toxic and hazardous materials must be prevented from coming in contact with stormwater runoff. Non-toxic or non-hazardous materials, such as debris and sediment, can also have significant impacts on receiving waters. Contact between non-toxic or non-hazardous materials and stormwater runoff should be limited, and such materials prevented from being discharged with stormwater runoff.

Materials are classified into three categories based on the potential risk of pollutant release associated with stormwater runoff contact – high risk, medium risk, and low risk. General types of materials under each category are presented in Table D-1. The categorization of the potential pollutant risk is used to determine the design specifications, which are presented in Table D-2, for design features at the project site.

Table D-1. Classification of Materials for Potential Pollutant Risk

High Risk Materials	Medium Risk Materials	Low Risk Materials
• Recycled materials with discharge potential • Corrosives • Food items • Chalk/gypsum products • Scrap or salvage goods • Feedstock/grain • Fertilizers • Pesticides • Compost • Asphalt • Lime/lye/soda ash • Animal/human wastes • Rubber and plastic pellets or other small pieces • Uncured concrete/cement • Lead and copper, and any metals with oil/grease coating	• Clean recycled materials without discharge potential • Metal (excluding lead and copper, and any metals with oil/grease coating) • Sawdust/bark chips • Sand/soil • Unwashed gravel/rock	• Washed gravel/rock • Finished lumber (non-pressure treated) • Rubber or plastic products (excluding small pieces) • Clean, precast concrete products • Glass products (new) • Inert products • Gaseous products • Products in containers that prevent contact with stormwater (fertilizers and pesticides excluded)

Design Specifications

Design specifications for material storage areas are regulated by local building and fire codes, ordinances, and zoning requirements. Source control measures presented in this fact sheet are intended to enhance and be consistent with local code and ordinance requirements while addressing stormwater runoff concerns. The design specifications, presented in Table D-2, must be incorporated into the design of outdoor material storage areas when stored materials could contribute pollutants to the storm drain system. The level of controls required varies relative to the risk category of the material stored.

As general guidance, downspouts and roofs should be directed away from outdoor materials storage areas, and such storage areas should slope towards a dead-end sump to collect stormwater runoff, non-stormwater runoff, and spills. Stormwater runoff, non-stormwater runoff, and spills must be disposed of in accordance with local, state, and federal laws. Locations of design features, including the features presented in Table D-2, must be included on site maps or plans. Additionally, site maps or plans must show all storage areas for chemicals and/or waste materials, with a tank/drum schedule indicating tank capacities, materials of construction, and contents.

Table D-2. Design Specifications for Outdoor Material Storage Areas

Design Feature	Design Specifications
Surfacing	• High-Risk Materials: o Construct/pave outdoor material storage areas with Portland cement concrete or an equivalent impervious surface. Ensure that the surfacing material is chemically-resistant to the materials being stored. • Medium-Risk Materials: o Construct/pave outdoor material storage areas with Portland cement concrete. • Low-Risk Materials: o There are no requirements for surfacing.
Enclosures and Covers	• High-Risk Materials: o Place materials in an enclosure such as a shed, cabinet, or other structure that prevents contact with stormwater runoff; or o Cover entire storage area with a permanent canopy, roof, or awning to prevent precipitation from making direct contact with and collecting within the storage area. Direct stormwater runoff from the cover away from the storage area to a stormwater runoff disposal point that meets all applicable code, ordinance, and LID Standards Manual requirements. For cover structures that do not include sidewalls, include a roof overhang that extends beyond the grade break. o Covers 10 feet high or less should extend a minimum of 3 feet beyond the perimeter of the hydraulically-isolated storage area. o Covers higher than 10 feet should extend a minimum of either 20 percent of the cover's height or 5 feet beyond the perimeter of the hydraulically-isolated storage area, whichever is greater. o LACDPW may grant waivers for covers on a case-by-case basis. • Medium-Risk Materials: o At a minimum, completely cover material with temporary plastic sheeting during storm events. • Low-Risk Materials: o There are no requirements for enclosures or covers.

Table D-2. Design Specifications for Outdoor Material Storage Areas (continued)

Hydraulic Isolation and Drainage	• High-Risk Materials: o Hydraulically-isolate storage area with grading, berms, drains, dikes, or curbs to prevent stormwater run-on from surrounding areas or roof drains. o Direct stormwater runoff from surrounding areas away from the hydraulically-isolated storage area to a stormwater runoff disposal point that meets all applicable LID Standards Manual requirements. o Drainage facilities are not required for the hydraulically-isolated storage area. However, if drainage facilities are provided, drainage from the hydraulically-isolated storage area must be directed to a stormwater runoff disposal point as determined by LACDPW. • Medium-Risk Materials: o Drainage from storage area may be allowed, on a case-by-case basis with approval from LACDPW, to a treatment control measure or standard storm drain(s). o For erodible material, provide grading and a structural containment barrier on at least three sides of each stockpile to prevent stormwater run-on from surrounding areas and migration of material due to wind erosion. • Low-Risk Materials: o Provide appropriate drainage from the storage area to minimize contact with materials.
Spill Containment	• All Materials: o Implement spill containment measures where materials are stored in tanks, drums, or similar containers and that may potentially enter the storm drain system, sanitary sewer system, or contaminate the soil. Spill containment must be designed for the volume of the largest tank/drum or 10 percent of the tank/drum total (whichever is greater). o Separate spill containment systems for all tanks containing incompatible materials such as acids, bases, reactive or flammable materials. o Clean, repair, and seal (using epoxy or equivalent sealant compatible with the stored materials) the interior wall and floors within all spill containment areas. Identify the areas to be sealed on the site maps. o Bond the contact joint for spill containment walls or dikes constructed on existing concrete, masonry or asphalt to the existing surface. Identify the areas to be bonded on the site maps. o Cover the spill containment areas with a roof or awning to minimize collection of stormwater runoff within. o Store materials collected in spill containment areas until its quality and an appropriate approved disposal method have been determined.

Accumulated Water

Stormwater runoff, non-stormwater runoff, and spills will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and regulations, and cannot be discharged directly to the storm drain or sanitary sewer system without appropriate

permitting. Contact LACDPW (1-888-CLEAN-LA) for information regarding discharge of contaminated accumulated water.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor material storage areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Any enclosures and secondary/spill containment areas should be checked periodically to ensure spills are contained efficiently. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

S-3: Outdoor Trash Storage and Waste Handling Area

Purpose

Stormwater runoff from areas where trash is stored or handled can be polluted. Loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or receiving waters. Waste handling operations (i.e., dumpsters, litter control, waste piles) may be sources of stormwater pollution.

Design Specifications

Wastes from commercial and industrial sites are typically hauled away for disposal by either public or commercial carriers that may have design or access requirements for waste storage areas. Design specifications for waste handling areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications, listed below in Table D-3, are recommendations and are not intended to conflict with requirements established by the waste hauler. The design specifications are intended to enhance local codes and ordinances while addressing stormwater runoff concerns. The waste hauler should be contacted prior to the design of trash storage and collection areas to determine established and accepted guidelines for designing trash collection areas. All hazardous waste must be handled in accordance with the legal requirements established in Title 22 of the California Code of Regulations. Conflicts or issues should be discussed with LACDPW staff.

Table D-3. Design Specifications for Outdoor Trash Storage and Waste Handling Area

Design Feature	Design Specifications
Surfacing	• Construct/pave outdoor trash storage and waste handling area with Portland cement concrete or an equivalent impervious surface.
Screens/Covers	• Install a screen or wall around trash storage area to prevent off-site transport of loose trash. • Use lined bins or dumpsters to reduce leaking of liquid wastes. • Use waterproof lids on bins/dumpsters or provide a roof to cover storage area enclosure (LACDPW discretion) to prevent precipitation from entering containers.
Grading/Drainage	• Berm and/or grade waste handling area to prevent stormwater run-on. • Locate waste handling area at least 35 feet from storm drains. • Divert drainage from adjoining roofs and pavement away from adjacent trash storage areas.
Signs	• Post signs on all dumpsters and/or inside enclosures prohibiting disposal of liquids and hazardous materials in accordance with any waste disposal ordinance.

Accumulated Water

Stormwater runoff, non-stormwater runoff, and spills will accumulate in containment areas and sumps with impervious surfaces. Contaminated accumulated water must be disposed of in accordance with applicable laws and regulations, and cannot be discharged directly to the storm drain or sanitary sewer system without appropriate permitting. Contact LACDPW (1-888-CLEAN-LA) for information regarding discharge of contaminated accumulated water.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor trash storage and waste handling areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

S-8: Landscape Irrigation Practices

Purpose

Irrigation runoff provides a pathway for pollutants (i.e., nutrients, bacteria, organics, sediment) to enter the storm drain system. By effectively irrigating, less runoff is produced resulting in less potential for pollutants to enter the storm drain system.

General Guidance

- Do not allow irrigation runoff from the landscaped area to drain directly to storm drain system.
- Minimize use of fertilizer, pesticides, and herbicides on landscaped areas.
- Plan sites with sufficient landscaped area and dispersal capacity (e.g., ability to receive irrigation water without generating runoff).
- Consult a landscape professional regarding appropriate plants, fertilizer, mulching applications, and irrigation requirements (if any) to ensure healthy vegetation growth.

Design Specifications

- Choose plants that minimize the need for fertilizer and pesticides.
- Group plants with similar water requirements and water accordingly.
- Use mulch to minimize evaporation and erosion.
- Include a vegetative boundary around project site to act as a filter.
- Design the irrigation system to only water areas that need it.
- Install an approved subsurface drip, pop-up, or other irrigation system.[1] The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.
- Install rain sensors to shut off the irrigation system during and after storm events.
- Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.
- If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).

[1] If alternative distribution systems (e.g., spray irrigation) are approved, the County will establish guidelines to implement these new systems.

- For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.[2]
- Implement Integrated Pest Management practices.

For additional guidelines and requirements, refer to the Los Angeles County Department of Health Services.

Maintenance Requirements

Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

[2] As determined by the City of Los Angeles, Building and Safety Division

S-9: Building Materials Selection

Purpose

Building materials can potentially contribute pollutants of concern to stormwater runoff through leaching. For example, metal buildings, roofing, and fencing materials may be significant sources of metals in stormwater runoff, especially due to acidic precipitation. The use of alternative building materials can reduce pollutant sources in stormwater runoff by eliminating compounds that can leach into stormwater runoff. Alternative building materials may also reduce the need to perform maintenance activities (i.e., painting) that involve pollutants of concern, and may reduce the volume of stormwater runoff. Alternative materials are available to replace lumber and paving.

Design Specifications

Lumber

Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.

Roofs, Fencing, and Metals

Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:

- Metal roofs;
- Chain-link fencing and siding; and
- Metal downspouts, vents, flashing, and trim on roofs.

Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic.

Green roofs may be an option. Green roofs use vegetation such as grasses and other plants as an exterior surface. The plants reduce the velocity of stormwater runoff and absorb water to reduce the volume of stormwater runoff. One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered. See the Green Roof Fact Sheet (RET-7) in Appendix E.

Pesticides

The use of pesticides around foundations can be reduced through the use of alternative barriers. Sand barriers can be applied around foundations to deter termites, as they cannot tunnel through sand. Metal shields also block termites from tunneling. Additionally, diatomaceous earth can be used to repel or kill a wide variety of other pests.

Maintenance Requirements

The integrity of structural elements that are subject to damage (e.g., signs) must be maintained by the owner/operator as required by local codes and ordinances. Maintenance agreements between LACDPW and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

Appendix J: Storm Water Outreach Material

Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

...they're not recycling centers.

1(888)CLEAN LA
www.888CleanLA.com



Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

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- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

Are You a Litter Bug and Don't Know It?

Take our quiz!

Have you ever...

- Dropped a cigarette butt or trash on the ground?
- Failed to pick up after your dog while out on a walk?
- Overwatered your lawn after applying fertilizers/pesticides?
- Disposed of used motor oil in the street, gutter or garbage?

If you answered **yes** to any of these actions, then **YOU ARE A LITTER BUG**!

Each of these behaviors contribute to stormwater pollution, which contaminates our ocean and waterways, kills marine life and causes beach closures.

You can become part of the solution!
To find out how, flip this card over.

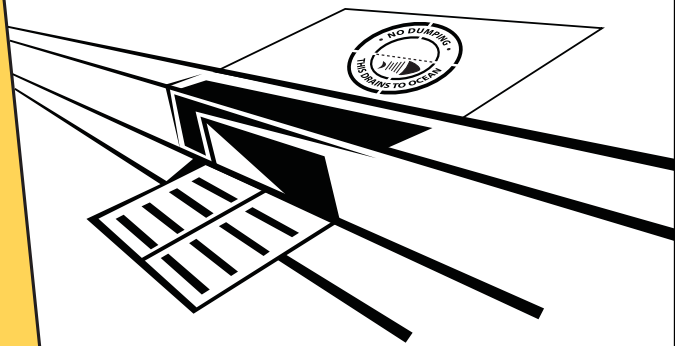
For more information, call or visit:

1 (888) CLEAN LA
www.888CleanLA.com

PROJECT Pollution PREVENTION

Follow these simple steps to prevent stormwater pollution:

- Put your garbage where it belongs — in the trash can.
- Pick up after your dog when out on a walk.
- Reduce pesticide and fertilizer use; don't overwater after application or apply if rain is forecast.
- Dispose of used motor oil at an oil recycling center or at a free Household Hazardous Waste/E-Waste collection event.



A message from the County of Los Angeles Department of Public Works.
Printed on recycled paper.

Don't Paint the Town Red!

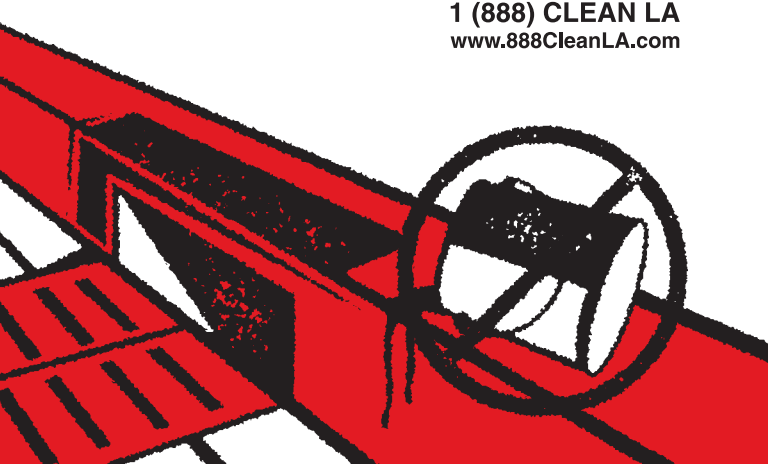
Storm drains are for rain…
they're not for paint disposal.

More than **197,000** times each month, L.A. County residents wash their dirty paint brushes under an outdoor faucet.

This dirty rinse water flows into the street, down the storm drain and straight to the ocean — **untreated**.

Remember to clean water-based paint brushes in the sink, rinse oil-based paint brushes with paint thinner, and take old paint and paint-related products to a Household Hazardous Waste/E-Waste collection event.

1 (888) CLEAN LA
www.888CleanLA.com



Tips for Paint Clean-Up:

L.A. County residents can help solve the stormwater pollution problem by taking these easy steps when working with paint and paint-related products…

- Never dispose of paint or paint-related products in the gutters or storm drains. This is called illegal dumping. Take them to a Household Hazardous Waste/E-Waste collection event. Call 1 (888) CLEAN LA or visit www.888CleanLA.com to locate an event near you.
- Buy only what you need. Reuse leftover paint for touch-ups or donate it to a local graffiti abatement program. Recycle or use excess paint.
- Clean water-based paint brushes in the sink.
- Oil-based paints should be cleaned with paint thinner. Filter and reuse paint thinner. Set the used thinner aside in a closed jar to settle-out paint particles.
- Store paints and paint-related products in rigid, durable and watertight containers with tight-fitting covers.

PROJECT Pollution PREVENTION

A message from the County of Los Angeles Department of Public Works.
Printed on recycled paper.

Storm Drains are for Rain...



More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids in the street or gutter. Take them to your local auto parts store, gas station or repair shop, or a household hazardous waste Roundup for recycling.

1(888)CLEAN LA
www.888CleanLA.com

...not automotive fluids.



Car Care Tips:

You can keep your car running smoothly and efficiently, and at the same time help prevent stormwater pollution by taking these easy steps...

- When changing vehicle fluids — motor oil, transmission, brake and radiator fluids — drain them into separate drip pans to avoid spills. Do not combine these fluids. Do not dispose of these fluids in the street, gutter or garbage. It is illegal.
- If a spill occurs, use kitty litter, sawdust or cornmeal for cleanup. Do not hose or rinse with water.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visitwww.888CleanLA.com for the location of an auto parts store or gas station that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Regularly check and maintain your car to keep it running safely and efficiently. Water runoff from streets, parking lots and driveways picks up oil and grease drippings, asbestos from brake linings, zinc from tires and organic compounds and metals from spilled fuels and carries them to the ocean.



PROJECT Pollution PREVENTION

Printed on recycled paper

Storm Drains are for Rain...



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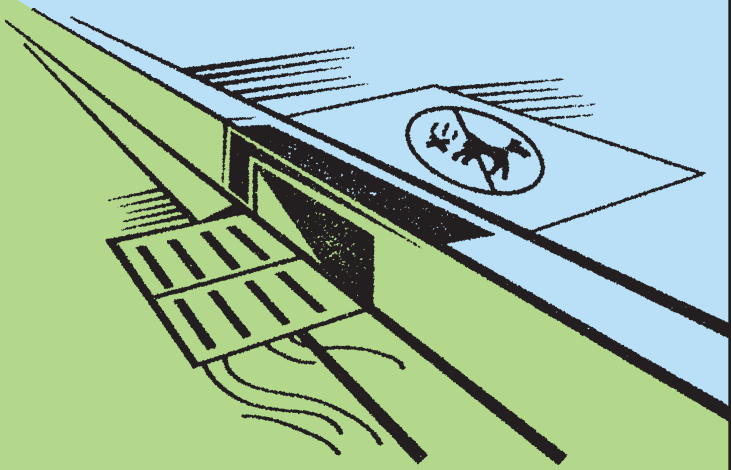
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PROJECT Pollution PREVENTION

Printed on recycled paper

Pick Up After Your Pooch!



Storm drains are for rain…
they're not pooper scoopers.

L.A. County residents walk a dog without picking up the droppings more than **62,000** times per month.

Disease-causing dog waste washes from the ground and streets into storm drains and flows straight to the ocean — untreated.

Remember to bring a bag and clean up after your dog.

1 (888) CLEAN LA
www.888CleanLA.com

Tips for Dog Owners:

Dog owners can help solve the stormwater pollution problem by taking these easy steps…

- Clean up after your dog every single time.
- Take advantage of the complimentary waste bags offered in dispensers at local parks.
- Ensure you always have extra bags in your car so you are prepared when you travel with your dog.
- Carry extra bags when walking your dog and make them available to other pet owners who are without.
- Teach children how to properly clean up after a pet. Encourage them to throw the used bags in the nearest trash receptacle if they are away from home.
- Put a friendly message on the bulletin board at the local dog park to remind pet owners to clean up after their dogs.
- Tell friends and neighbors about the ill effects of animal waste on the environment. Encourage them to clean up after their pets as well.

PROJECT Pollution PREVENTION

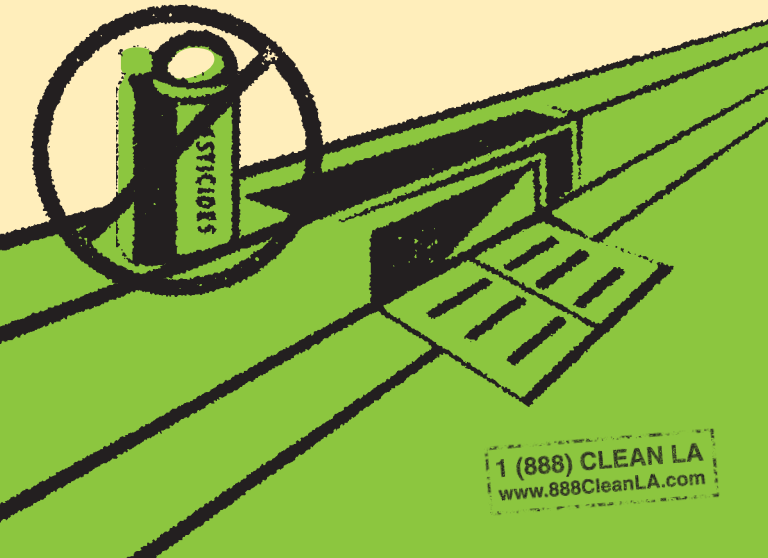
A Yard is a Terrible Thing to Waste!

Storm drains are for rain…**not yard waste.**

Residential yard waste represents about **13 percent** of the total waste generated in L.A. County.

Pesticides, fertilizer and yard waste such as leaves and mowed grass wash from the ground and streets into storm drains and flow straight to the ocean — **untreated**.

Remember to use pesticides and fertilizer wisely and pick-up yard waste.



Tips For Yard Care:

L.A. County residents can help solve the stormwater pollution problem by taking these easy steps…

- Do not over-fertilize and do not use fertilizer or pesticides near ditches, gutters or storm drains.
- Do not use fertilizer or pesticides before a rain.
- Follow the directions on the label carefully.
- Use pesticides sparingly — more is not better. "Spot" apply, rather than "blanket" apply.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street carrying pesticides and other chemicals with it.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides or fertilizer, make sure they are in a sealed, water-proof container in a covered area to prevent runoff.
- Do not blow, sweep, hose or rake leaves or other yard trimmings into the street, gutter or storm drain.

PROJECT Pollution PREVENTION

A message from the County of Los Angeles Department of Public Works.
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Storm Drains are for Rain...

More than 200,000 times each month, lawns and gardens throughout LA County are sprayed with pesticides. Overwatering or rain causes pesticides on leaves and grass to flow into the storm drain and to the ocean — untreated.



Please use pesticides wisely, not before a rain, and water carefully.

...not pesticides.



1(888)CLEAN LA
www.888CleanLA.com

Pesticide Tips:

You can keep your lawn and garden green and at the same time solve the pollution problem by taking these easy steps...

- Never dispose of lawn or garden chemicals in storm drains. This is called illegal dumping. Take them to a household hazardous waste roundup. Call 1(888)CLEAN LA or visit www.888CleanLA.com to locate a roundup or collection facility near you.
- More is not better. Use pesticides sparingly. "Spot" apply, rather than "blanket" apply.
- Read labels! Use only as directed.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides, make sure they are in a sealed, water-proof container that cannot leak.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street and carry pesticide chemicals with it. Don't use pesticides before a rain storm. You will not only lose the pesticide, but also will be harming the environment.



PROJECT Pollution PREVENTION

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- If you must store pesticides, make sure they are in a sealed, water-proof container that cannot leak.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street and carry pesticide chemicals with it. Don't use pesticides before a rain storm. You will not only lose the pesticide, but also will be harming the environment.



PROJECT Pollution PREVENTION

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Storm Drains are for Rain...

Stormdrains take runoff directly to creeks and the ocean without treatment. Pool chemicals can harm our natural creeks and waterways. Anything going into our stormdrains that isn't rainwater contributes to stormwater pollution, which contaminates our creeks and ocean, kills marine life and causes beach closures.

...not pool chemicals



LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

Swimming Pool Tips

Follow these simple steps to prevent stormwater pollution...

- Make sure all chemicals are dissipated before draining a pool or spa
- Do not drain pools within 5 days of adding chemicals
- Never backwash a filter into the street or stormdrain
- Cleanup chemical spills with absorbent, don't wash it down the drain
- Dispose of leftover chemicals and paints through a licensed hazardous waste disposal provider

PROJECT Pollution PREVENTION

DRAFT
Preliminary Low Impact Development Report (LID)

For

MT SAC STUDENT CENTER

PREPARED FOR:

Mt. SAC
Facilities Planning & Management
1100 N. Grand Ave
Walnut, CA 91789

PREPARED BY:

BKF Engineers
4675 MacArthur Court, Suite 400
Newport Beach, CA 92660

LID Report Prepared: September 27th



Bruce Kirby, PE
R.C.E. No. 42393
Expires: 03/31/20

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APPENDIX H – COVENANT AND AGREEMENT

APPENDIX I – GEOTECHNICAL REPORT (FOR REFERENCE ONLY)

OWNER'S CERTIFICATION

This Low Impact Development Report (LID) for the Mt. SAC Student Center Project prepared for Mt. SAC by BKF Engineers. This LID Report is intended to comply with the requirements of the City of Walnut, County of Los Angeles, requiring the preparation of a project specific LID Report.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the County of Los Angeles Low Impact Development Standards Manual, and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this LID Report will be maintained at the project site/office.

This LID Report will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this LID Report. At least one copy of the approved and certified copy of this LID Report shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the LID Report.

	BKF Engineers
Owner/Engineer of Record's Signature	Company
	4675 MacArthur Court, Suite 400
Bruce Kirby, P.E.	Newport Beach, CA 92660
Printed Name/Title	Company Address
(949) 526-8460	9/21/2018
Telephone No.	Date

1.0 INTRODUCTION

This Low Impact Development Report (LID) summarizes storm water protection requirements for the Mt. SAC Student Center (herein referred to as "the project").

This LID Report describes the permanent storm water Best Management Practices (BMPs) that will be incorporated into the project in order to mitigate the impacts of pollutants in storm water runoff from the proposed project. For the purposes of post-construction storm water quality management, the project will follow the guidelines and requirements set forth in the County of Los Angeles "Low Impact Development Standards Manual" dated February 2014 (herein "LID Manual").

Project Applicant: Mt. SAC
1100 N. Grand Ave
Walnut, CA 91789

1.1 SITE AND PROJECT DESCRIPTION

The subject site is located in the City of Walnut, Los Angeles County, California. The proposed student center will be located at near the center of campus. The existing site is currently occupied by 3 concrete buildings, 4 trailer buildings, PCC walkways and landscaped areas. The proposed project will consist of:

- Removal of existing pavement, buildings, landscaping and trees
- Construction of a new 97,000 sf student center
- Installation of (2) underground infiltration vaults

The existing project area has an average slope of 6.1% draining in the southerly direction. Existing drainage is captured within landscape area drains and piped into an underground storm drain system.

Drainage for the proposed student center is designed so that runoff drains away from the building and is captured into a network of area drains in the surrounding landscape along the perimeter of the building. Roof drainage will be conveyed through downspouts which tie into the proposed storm drain system. The stormwater for this site will be routed into underground infiltration vaults to retain runoff for the 85th percentile treatment storm.

2.0 DESIGNATED PROJECT REQUIREMENT

Requirements for permanent BMPs are determine based on the criteria set forth in the LID Manual. Projects are identified by four categories:

- Designated Project
- Non-Designated Project
- Small-Scale Non-Designated Project
- Large-Scale Non-Designated Project

2.1 DETERMINATION FOR PERMANENT BMP REQUIREMENT

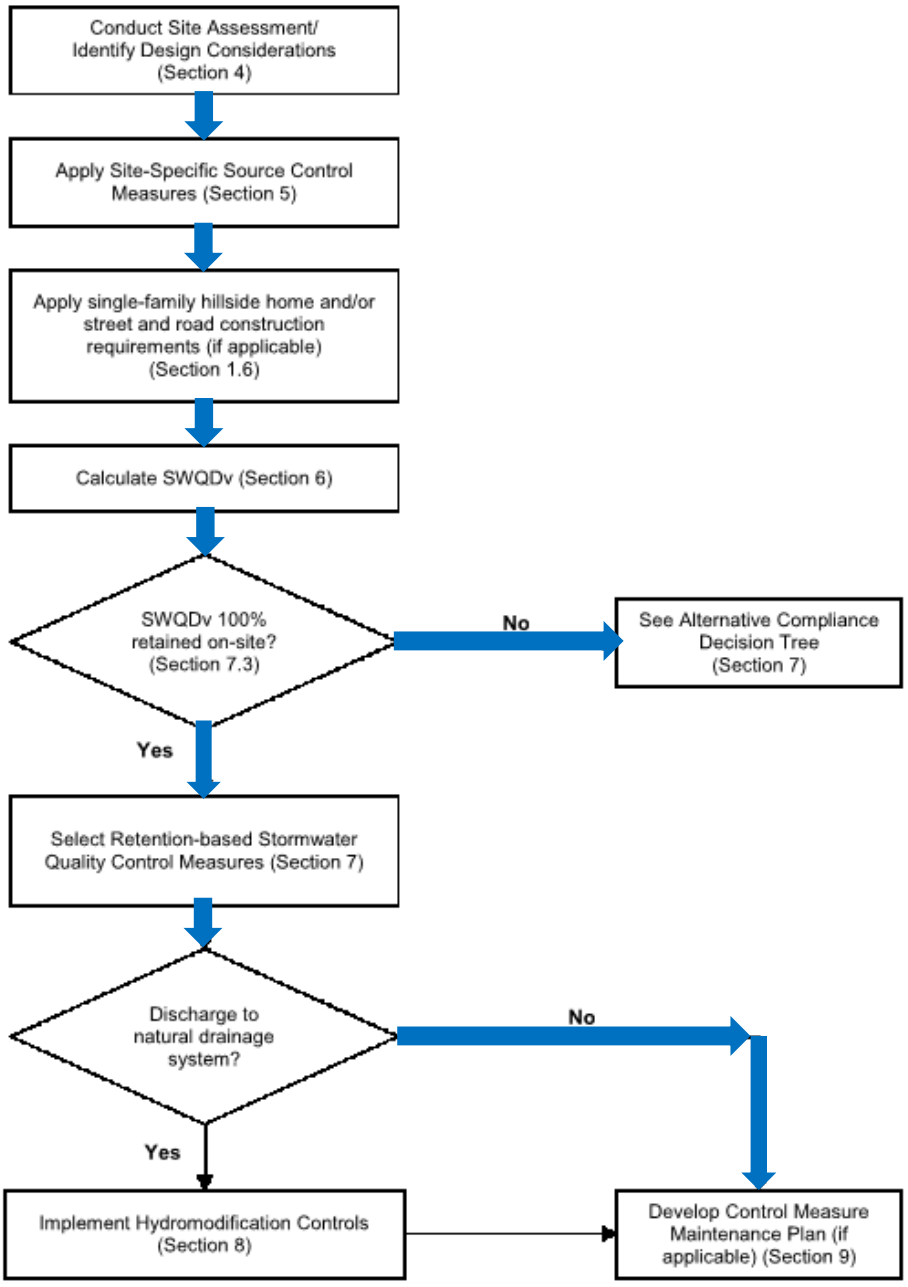
The project is considered a **"Designated Project,"** based on the LID Manual. The project meets the following requirements to be a Designated Project:

1. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces

All "Designated Projects" must retain 100 percent of the Storm Water Quality Design Volume (SWQDv) on-site through infiltration, evapotranspiration, stormwater runoff harvest and use, or a combination thereof unless it is demonstrated that it is technical infeasible to do so.

The project will retain the SWQDv for the site as outlined in the Design Process Chart Breakdown in Section 2.2. For this project site, an underground infiltration system will be utilized to treat the 12,869 cf of SWQDv. See Section 5.0, Section 6.0 and **Appendix E** for more information and calculations.

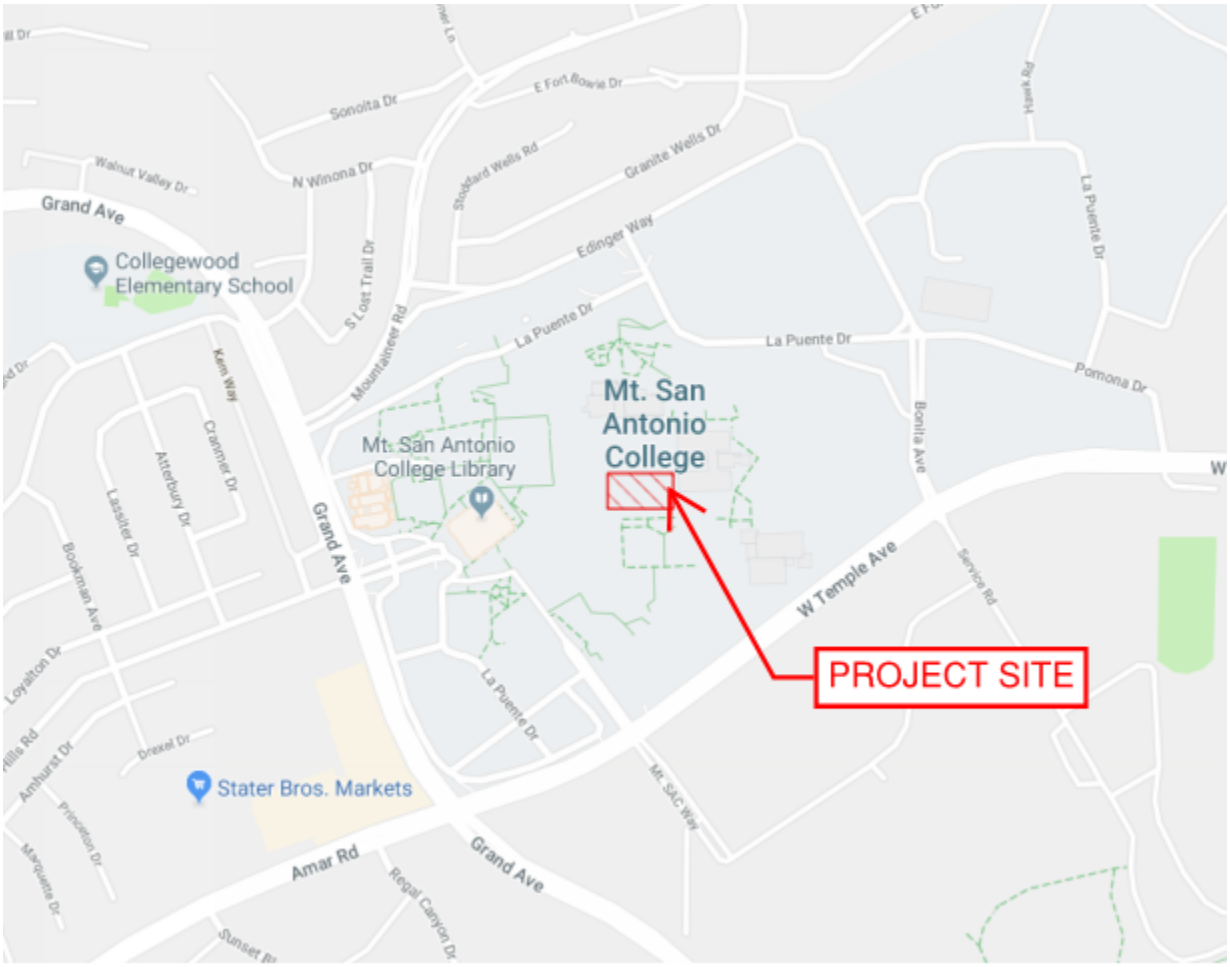
2.2 DESIGN PROCESS CHART BREAKDOWN



3.0 SITE ASSESSMENT AND DESIGN CONSIDERATIONS

This section discusses the steps taken for assessing the project site conditions and identifying design considerations to determine appropriate stormwater quality control measures for the project.

3.1 VICINITY MAP



3.2 PROJECT SUMMARY INFORMATION

Pre-Project

The existing site is currently occupied by 3 concrete buildings, 4 trailer buildings, PCC walkways and landscaped areas.

The existing project area has an average slope of 6.1% draining in the southerly direction. Existing drainage is captured within landscape area drains and piped into an underground storm drain system.

Post-Project

In post-project conditions, the project site consists of a student center in place of existing building 17, 1, 19A, and 19B. Storm water runoff at the roof level of the new student center will drain towards a series of inlet grates which convey the captured stormwater through internal storm drain pipes within the parking structure and discharges into underground storm drain pipe on the west side of the parking structure.

The runoff is then routed into underground stormcapture infiltration vaults to the south where the SWQDv will be retained on site while additional overflow is discharged through an emergency outlet that discharges into the existing storm drain system to the south of the project area.

Percent Area Impervious Created or Replaced

The "Percent Area Impervious Created or Replaced" found was 100%. Since the impervious area created or replaced for the new development is greater than 50% of the impervious area of the previously existing development, the proposed development is required to retain 100% the SWQDv.

3.3 WATERSHED

The proposed development is located within the San Gabriel Watershed and is part of the San Gabriel River Watershed Management Area (SGRWMA). Surface flow from the project enters the municipal storm drain system which outlets into the San Gabriel River and ultimately discharges into the Pacific Ocean.

Region:	Los Angeles Regional Water Quality Control Board (LARWQCB)
Receiving Water:	San Gabriel River
Watershed:	San Jose Creek
303(d) Listing:	Ammonia, Coliform Bacteria, pH, Total Dissolved Solids, Toxicity

3.4 GEOTECHNICAL CONDITIONS

Geotechnical information outlined below was taken from the Geotechnical Report prepared by Converse Consultants dated October 5, 2017.

Topography:	The project site flows across the existing site in the southerly direction at an approximate average slope of 6.1%.
Geologic Setting:	The earth materials encountered during the geotechnical investigation consisted of existing fill soils placed during previous site grading operations and natural alluvial sediments to the depths explored. Undocumented fills, approximately three to five feet in thickness were encountered in the borings Deeper artificial fill may exist at the site. The fills encountered consisted primarily of silty sands, clayey sands, sandy clays, and silty clayey sands. The alluvial soil deposits below the surface fills primarily consisted of fine-grained clays, clayey sands, silty sands, silts, and sandy silts.
Groundwater:	Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs.

3.5 GEOTECHNICAL HAZARDS

Geotechnical information outlined below was taken from the Geotechnical Report prepared by Converse Consultants on October 5, 2017.

The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 8 *Seismic Hazard Zones Map*. Liquefaction analyses were performed for the upper 50 feet below ground surface. Results of the liquefaction analyses indicate the site soils are not susceptible to liquefaction.

3.6 SITE DESIGN PRINCIPLES

Site design can protect sensitive environmental features. The intention of site design principles is to reduce stormwater peak flows and volumes and other impacts associated with land development. The following text discusses the low impact development BMPs outlined in the LID Manual with respect to the project. Italicized text is taken directly from the LID Manual and reproduced for this report. Portions of the italicized text are condensed from the LID Manual. Immediately following and written in regular text, will be the response as it applies to the project.

Site Planning

- *Project applicants must implement a holistic approach to site design in order to develop a more hydraulically-functional site, help to maximize the effectiveness of on-site retention, and integrate stormwater management throughout the project site. Early project site planning can identify physical site constraints, reduce costs of downstream stormwater quality control measures, and prevent potential project site re-design.*

Response:
The project site layout conforms to natural landforms.

Protect and Restore Natural Areas

- *Conservation of natural areas, soils, and vegetation helps to retain numerous functions of pre-development hydrology, including rainfall interception, infiltration, and evapotranspiration. Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Sensitive areas, such as streams and their buffers, floodplains, wetlands, steep slopes, and highly-permeable soils, should be protected and/or restored. Slopes can be a major source of sediment and should be properly protected and stabilized. Locating development in less sensitive areas of a project site and conserving naturally vegetated areas can minimize environmental impacts from stormwater runoff.*

  Response:
  The site is currently developed, and therefore there is no opportunity to preserve existing natural vegetation. The proposed site will include new landscaping and new trees.

Minimize Impervious Area

- *The potential for discharge of pollutants in stormwater runoff from a project site increases as the percentage of impervious area within the project site increases because impervious areas increase the volume and rate of stormwater runoff. Pollutants deposited on impervious areas are easily mobilized and transported by stormwater runoff. Minimizing impervious area through site design is an important method to reducing the pollutant load in stormwater runoff. In addition to the environmental and aesthetic benefits, a highly pervious site may allow reduction of potential downstream conveyance and stormwater quality control measures, yielding savings in development costs. Minimizing impervious area will also reduce the stormwater runoff coefficient, which is directly proportional to the volume of stormwater runoff that must be retained on-site.*

  Response:
  The project incorporates landscaping/vegetated areas onsite to minimize the impervious footprint.

4.0 SOURCE CONTROL MEASURES

Source control measures are designed to prevent pollutants from contacting stormwater runoff or prevent discharge of contaminated stormwater runoff to the storm drain system and/or receiving water. This section describes structural type, source control measures that will be considered for implementation in conjunction with appropriate non-structural source control measures. The following text discusses the source control measures BMPs from the LID Manual with respect to the project. Italicized text is taken directly from the LID Manual, and reproduced for this report. Portions of the italicized text are condensed from the LID Manual. Immediately following and written in regular text, will be the response as it applies to the project. For more information regarding the Source Control Measures outlined below, see Appendix D from the LID Manual.

S-1: Storm Drain Message and Signage

- *Signs with language and/or graphical icons that prohibit illegal dumping, must be posted at designated public access points along channels and streams within the project area. Consult with Los Angeles County Department of Public Works (LACDPW) staff to determine specific signage requirements for channels and streams.*

- *Storm drain message markers, placards, concrete stamps, or stenciled language/icons (e.g., "No Dumping – Drains to the Ocean") are required at all storm drain inlets and catch basins within the project area to discourage illegal or inadvertent dumping. Signs should be placed in clear sight facing anyone approaching the storm drain inlet or catch basin from either side (see Figure D-1 and Figure D-2). LACDPW staff should be contacted to determine specific requirements for types of signs and methods of application. A stencil can be purchased for a nominal fee from LACDPW Building and Safety Office by calling (626) 458-3171. All storm drain inlet and catch basin locations must be identified on the project site map.*

  Response:
  All catch basins with open grates within the project site will be stenciled.

S-2: Outdoor Material Storage

- *Design specifications for material storage areas are regulated by local building and fire codes, ordinances, and zoning requirements. Source control measures presented in the LID Manual are intended to enhance and be consistent with local code and ordinance requirements while addressing stormwater runoff concerns. The design specifications, presented in Table D-2 in the LID Manual, must be incorporated into the design of outdoor material storage areas when stored materials could contribute pollutants to the storm drain system. The level of controls required varies relative to the risk category of the material stored.*

  Response:
  The project does not propose any outdoor material storage areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-3: Outdoor Trash Storage and Waste Handling Area

- *Wastes from commercial and industrial sites are typically hauled away for disposal by either public or commercial carriers that may have design or access requirements for waste storage areas. Design specifications for waste handling areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications, listed below in Table D-3, are recommendations and are not intended to conflict with requirements established by the waste hauler. The design specifications are intended to enhance local codes and ordinances while addressing stormwater runoff concerns. The waste hauler should be contacted prior to the design of trash storage and collection areas to determine established and accepted guidelines for designing trash collection areas. All hazardous waste must be handled in accordance with the legal requirements established in Title 22 of the California Code of Regulations. Conflicts or issues should be discussed with LACDPW staff.*

  Response:
  The project site does propose storage areas for trash storage areas. Therefore, the outdoor trash storage area will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-4: Outdoor Loading/Unloading Dock Area

- *Design specifications for outdoor loading/unloading dock areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. Additionally, individual businesses may have their own design or access requirements for loading docks. Design specifications presented in this fact sheet are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns. The design specifications presented in Table D-4 are not intended to conflict with requirements established by individual businesses, but should be followed to the maximum extent practicable.*

  Response:
  The project does not propose any outdoor loading and unloading dock areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-5: Outdoor Vehicle/Equipment Repair/Maintenance Area

- *Design specifications for vehicle and equipment repair/maintenance areas are regulated by local building and fire codes and by current County ordinances and zoning requirements. The design specifications presented in this fact sheet are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns. The design specifications required for vehicle and equipment repair/maintenance areas are presented in Table D-5. All wash water and hazardous and toxic wastes must be prevented from entering the storm drain system.*

  Response:
  The project does not propose any outdoor vehicle equipment repair areas, or outdoor vehicle maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-6: Outdoor Vehicle/Equipment/Accessory Washing Area

- *Design specifications for vehicle/equipment/accessory washing areas are regulated by local building and fire codes and current County ordinances and zoning requirements. The design specifications presented in Table D-6 are intended to enhance and be consistent with these requirements while addressing stormwater runoff concerns. All wash water and hazardous and toxic wastes must be prevented from entering the storm drain system.*

  Response:
  The project does not propose any outdoor vehicle equipment areas or outdoor vehicle accessory washing areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-7: Fuel and Maintenance Area

- *Design specifications for fuel and maintenance areas are regulated by local building and fire codes and current County ordinances and zoning requirements. The design specifications presented in Table D-7 are intended to enhance and be consistent with these code and ordinance requirements while addressing stormwater runoff concerns.*

  Response:
  The project does not propose any fuel and maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-8: Landscape Irrigation Practices

- *Choose plants that minimize the need for fertilizer and pesticides.*
- *Group plants with similar water requirements and water accordingly.*
- *Use mulch to minimize evaporation and erosion.*
- *Include a vegetative boundary around project site to act as a filter.*
- *Design the irrigation system to only water areas that need it.*
- *Install an approved subsurface drip, pop-up, or other irrigation system. The irrigation system should employ effective energy dissipation and uniform flow spreading methods to prevent erosion and facilitate efficient dispersion.*
- *Install rain sensors to shut off the irrigation system during and after storm events.*
- *Include pressure sensors to shut off flow-through system in case of sudden pressure drop. A sudden pressure drop may indicate a broken irrigation head or water line.*
- *If the hydraulic conductivity in the soil is not sufficient for the necessary water application rate, implement soil amendments to avoid potential geotechnical hazards (i.e., liquefaction, landslide, collapsible soils, and expansive soils).*
- *For sites located on or within 50 feet of a steep slope (15% or greater), do not irrigate landscape within three days of a storm event to avoid potential geotechnical instability.*
- *Implement Integrated Pest Management practices*
- *For additional guidelines and requirements, refer to the Los Angeles County Department of Health Services.*

  Response:
  Irrigation practices and systems for the project will be designed pursuant to the guidelines shown above and in the LID Manual.

S-9: Building Material Selection

Lumber

- *Decks and other house components constructed using pressure-treated wood that is typically treated using arsenate, copper, and chromium compounds are hazardous to the environment. Pressure-treated wood may be replaced with cement-fiber or vinyl.*

Roofs, Fencing, and Metals

- *Minimizing the use of copper and galvanized (zinc-coated) metals on buildings and fencing can reduce leaching of these pollutants into stormwater runoff. The following building materials are conventionally made of galvanized metals:*
    - *Metal roofs*
    - *Chain-link fencing and siding*
    - *Metal downspouts, vents, flashing, and trim on roofs.*

Architectural use of copper for roofs and gutters should be avoided. As an alternative to copper and galvanized materials, coated metal products are available for both roofing and gutter application. Vinyl-coated fencing is an alternative to traditional galvanized chain-link fences. These products eliminate contact of bare metal with precipitation or stormwater runoff, and reduce the potential for stormwater runoff contamination. Roofing materials are also made of recycled rubber and plastic. Green roofs may be an option. Green roofs use vegetation such as grasses and other plants as an exterior surface. The plants reduce the velocity of stormwater runoff and absorb water to reduce the volume of stormwater runoff. One potential problem with using green roofs in the Los Angeles County area is the long, hot and dry summers, which may kill the plants if they are not watered. See the Green Roof Fact Sheet (RET- 7) in Appendix E of the LID Manual.

Response:

Building material selection will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-10: Animal Care and Handling Facilities

- *Site barns, corrals, and pastures on property that drains away from the storm drain system and receiving waters.*
- *Locate animal washing areas, pastures, horse riding areas, stalls, or cages at least 50 feet away from storm drains, domestic wells, septic tank or leach field sites, and receiving waters.*
- *Design berms, gutters, or grassed ditches to divert stormwater runoff away from animal area, storm drain system, and receiving waters.*
- *Cover animal enclosures (i.e., stables) to protect them from precipitation.*
- *Prevent animals from entering sensitive environmental areas.*
- *Regularly sweep or shovel animal holding areas.*

Response:
The project does not propose any animal care or handling facilities. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

S-11: Outdoor Horticulture Areas

- *Do not allow wash water from the horticulture area to drain directly to the storm drain system or receiving waters*

Response:
The project does not propose outdoor horticulture areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.

5.0 STORMWATER QUALITY DESIGN VOLUME CALCULATIONS

Current water quality requirements are based on treating a specific volume of stormwater runoff from the project site (stormwater quality design volume [SWQDv]). By treating the SWQDv, it is expected that pollutant loads, which are typically higher during the beginning of storm events, will be reduced or prevented from reaching the receiving waters.

5.1 DESIGN STORM EVENT

The design storm, for which the SWQDv is calculated, is defined as the greater of:

- *The 0.75-inch, 24-hour rain-event; or*
- *The 85th percentile, 24-hour rain event as determined from the Los Angeles County 85th percentile precipitation isoheytal map.*

It was determined that the 85th percentile, 24-hour rain event will be the design storm for which the SWQDv will be calculated for this project site as shown below.

The 85th percentile, 24-hour rain = 1.0-inch > 0.75-inches **[Use the 85th percentile]**

Note:
The 85th percentile, 24-hour rain event precipitation was found using the Los Angeles County Hydrology Map GIS Viewer, see **Appendix C**.

5.2 STORMWATER QUALITY DESIGN VOLUME (SWQDV)

The project site was determined to be a Designated Project, therefore the project site is required to retain 100% of the SWQDv on-site or provide biotreatment for 1.5 times the SWQDv. The SWQDv for the site was calculated using the HydroCalc software developed by Los Angeles County Department of Public Works (LACDPW). The software completes the full MODRAT calculation process and produces the peak stormwater runoff flow rates and volumes for single subareas. HydroCalc is limited to watersheds and project areas up to 40 acres.

The SWQDv required to be treated is summarized below.

HydroCalc Analysis – 85TH Percentile Storm

DMA A

Input Parameters	
Project Name	MT SAC Student Center
Subarea ID	DMA A
Area (ac)	1.81
Flow Path Length (ft)	345.0
Flow Path Slope (vft/hft)	0.065
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results	
Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3677
Undeveloped Runoff Coefficient (Cu)	0.4938
Developed Runoff Coefficient (Cd)	0.8594
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.572
Burned Peak Flow Rate (cfs)	0.572
24-Hr Clear Runoff Volume (ac-ft)	0.1232
24-Hr Clear Runoff Volume (cu-ft)	5367.219

DMA B

Input Parameters	
Project Name	MT SAC Student Center
Subarea ID	DMA B
Area (ac)	2.53
Flow Path Length (ft)	390.0
Flow Path Slope (vft/hft)	0.04
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results	
Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3454
Undeveloped Runoff Coefficient (Cu)	0.4731
Developed Runoff Coefficient (Cd)	0.8573
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.7491
Burned Peak Flow Rate (cfs)	0.7491
24-Hr Clear Runoff Volume (ac-ft)	0.1722
24-Hr Clear Runoff Volume (cu-ft)	7501.6966

6.0 STORMWATER QUALITY CONTROL MEASURES

Stormwater quality control measures are required to augment site design principles and source control measures to reduce the volume of stormwater runoff and potential pollution loads in stormwater runoff to the maximum extent practicable. Stormwater quality control measures are designed to handle the frequent, smaller storm events, or the initial volume of stormwater runoff from larger storm events (typically referred to as first flush events). The first flush of larger storm events is the initial period of the storm where stormwater runoff typically carries the highest concentration and loads of pollutants. Small, frequent storm events represent most of the total annual average precipitation in the County. The LID Ordinance requires that all Designated Projects retain the SWQDv on-site using retention-based stormwater quality control measures (infiltration and/or stormwater runoff harvest and use) or biofiltrate 1.5 times the SWQDv if infiltration is not feasible.

All the stormwater quality control measures outlined in the LID Manual were evaluated. It was determined that the most practicable treatment BMP for the project will be the following:

- (2) Underground Infiltration Vaults

6.1 UNDERGROUND INFILTRATION SIZING

Stormwater runoff is intercepted by a series of inlet drains within the surrounding landscaping as well as the roof downspouts and is conveyed through underground storm drain pipe into the underground infiltration vaults. The underground infiltration vaults are designed to infiltrate the SWQDv of 12,869 cf for the project site. Overflow for excess stormwater will be conveyed through an emergency outlet device in the underground infiltration system and into the existing storm drain to the south. Calculations for the infiltration vaults are available in **Appendix E**.

7.0 HYDROMODIFICATION

All Designated projects located within natural drainage systems that have not been improved or drainage systems that are tributary to a natural drainage system are required to implement hydromodification controls.

Projects may be exempt from implementation of hydromodification control measures where assessments of downstream channel conditions and proposed discharge hydrology indicate adverse hydromodification effects to beneficial uses of natural drainage systems are unlikely.

The proposed project has been determined to be **EXEMPT** from hydromodification requirements since it is discharges to concrete-lined channels. Therefore the site does not have any adverse hydromodification impacts to natural drainage systems.

8.0 STORMWATER QUALITY CONTROL MEASURE MAINTENANCE

Continued effectiveness of stormwater quality control measures specified in the LID Standards Manual depends on on-going inspection and maintenance. All publicly maintained stormwater quality control measures must have easements for access and maintenance or be in lots dedicated to the County in fee title. To ensure that such maintenance is provided, LACDPW may require the submittal of a Maintenance Plan and execution of a Maintenance Agreement with the owner/operator of stormwater quality control measures. The property owner or his/her designee is responsible for complying with the Maintenance Agreement outlined in the LID Manual. A copy of the Maintenance Agreement is provided in **Appendix H.**

8.1 MAINTENANCE RESPONSIBILITY

The Owner of the project site is the site operator and will be the party responsible to ensure implementation and funding of maintenance of permanent BMPs.

It is anticipated that the owner of the project will manage multiple separate maintenance contracts for different types of maintenance (e.g., landscape maintenance vs. maintenance of the BMPs). Throughout this section, the owner of the project is the "party responsible to ensure implementation and funding of maintenance of permanent BMPs." The party who actually performs the activities is the "inspector," "maintenance contractor," or "maintenance operator."

8.2 INSPECTION AND MAINTENANCE FOR SOURCE CONTROL MEASURES

The following source control measures for the project requires permanent maintenance:

- Storm Drain Message and Signage
- Outdoor Trash Storage and Waste Handling
- Landscape Irrigation Practices

The discussions below provide inspection criteria, maintenance indicators, and maintenance activities for the above listed source control measures that require permanent maintenance.

S-1 Storm Drain Message and Signage

Legibility and visibility of markers and signs should be maintained (e.g., signs should be repainted or replaces as necessary). If required by the City, the owner/operator or homeowner's association shall enter into a maintenance agreement with the agency or record deed restriction upon the property title to maintain the legibility of placards and signs.

S-3 Outdoor Trash Storage and Waste Handling Area

The integrity of structural elements that are subject to damage (e.g., screens, covers, signs) must be maintained by the owner/operator as required by local codes and ordinances. Outdoor trash storage and waste handling areas must be checked periodically to ensure containment of accumulated water and prevention of stormwater run-on. Maintenance agreements between the City and the owner/operator may be required. Failure to properly maintain building and property may subject the property owner to citation.

S-8 Landscape Irrigation Practices

Maintain irrigation areas to remove trash and debris and loose vegetation. Rehabilitate areas of bare soil. If a rain or pressure sensor is installed, it should be checked periodically to ensure proper function. Inspect and maintain irrigation equipment and components to ensure proper functionality. Clean equipment as necessary to prevent algae growth and vector breeding. Failure to properly maintain building and property may subject the property owner to citation.

8.3 INSPECTION AND MAINTENANCE FOR STORM QUALITY MEASURES

The following storm quality measure for the project requires permanent maintenance:

- Underground Infiltration System

The discussions below provide inspection criteria, maintenance indicators, and maintenance activities for the above listed storm quality measure that require permanent maintenance according to manufacturer recommendations. These proprietary systems shall be inspected and maintained per manufacturer specifications and recommendations. See **Appendix G** for the Operations and Maintenance of each BMP listed above.

8.4 INSPECTION AND MAINTENANCE FREQUENCY

The Table below lists the BMPs to be inspected and maintained and the minimum frequency of inspection and maintenance activities.

BMP	Inspection Frequency	Maintenance Frequency
Storm Drain Message and Signage	Monthly	Routine maintenance of marker and sign legibility and visibility. See Section 8.2.
Outdoor Trash Storage and Waste Handling	Monthly	Routine maintenance of structure and waste water within the trash area. See Section 8.2.
Landscape Irrigation Practices	Monthly	Routine trimming and trash removal; monthly non-routine maintenance as-needed based on maintenance indicators in Section 8.2.
Underground Infiltration System	Annual and after major storm events	Routine maintenance to clean the underground infiltration system of sediments, trash, and debris. As-needed maintenance based on maintenance indicators as outlined in **Appendix G**.

The frequencies given in the Summary Table of Inspection and Maintenance Frequency are minimum recommended frequencies for inspection and maintenance activities for the project. Typically, the frequency of maintenance required for permanent BMPs is site and drainage area specific. If it is determined during the regularly scheduled inspection and/or routine maintenance that a BMP requires more frequent maintenance (e.g., to remove accumulated trash) it may be necessary to increase the frequency of inspection and/or routine maintenance. If it is determined during the regularly scheduled inspection that the maintenance thresholds are consistently met or exceeded, it may be necessary to increase the frequency of inspection and routine maintenance.

8.5 RECORD KEEPING REQUIREMENTS

The party responsible to ensure implementation and funding of maintenance of permanent BMPs shall maintain records documenting the inspection and maintenance activities. The records must be kept a minimum of 5 years and shall be made available to the City of Walnut for inspection upon request at any time.

9.0 SUMMARY

This Low Impact Development Report (LID) summarizes the permanent storm water management features proposed for the project site that will collectively meet the requirements set forth in the LID Manual. The project meets the hydromodification exemption criteria and is not required to implement hydromodification management facilities as discussed in Section 7.0 of this report.

The project is a "Designated Project," based on the LID Manual as discussed in Section 2.1.

Based on the "anticipated" pollutants of concern that may be generated on-site and identification of receiving waters that are listed as impaired on the 2010 CWA Section 303(d) List of Water Quality Limited Segments, the following are the project pollutants of concern: Ammonia, Coliform Bacteria, pH, Total Dissolved Solids, and Toxicity as outlined in Section 3.3 of this report.

In addition to treatment control BMPs, the project will incorporate source control BMPs which are described in Section 4.0 and Section 6.0.

The project includes a proposed network of storm water management features that will utilize source control measures to meet the requirements for stormwater quality design measure. The following list provides a summary of stormwater quality design measures selected for the project site:

- (2) underground infiltration vaults

The above stormwater quality design measure was selected for the project and provide "High" removal efficiency for the targeted pollutants of concern as discussed in Section 3.3 and Section 6.1.

The stormwater quality design measure maintenance in Section 8.0 of this report provides inspection criteria, maintenance indicators, and maintenance activities for the above-listed BMPs that require permanent maintenance.

This report accompanies a set of construction drawings and specifications which detail the construction, operation, and maintenance of the proposed Low Impact Development (LID) design elements for this site.

APPENDIX A

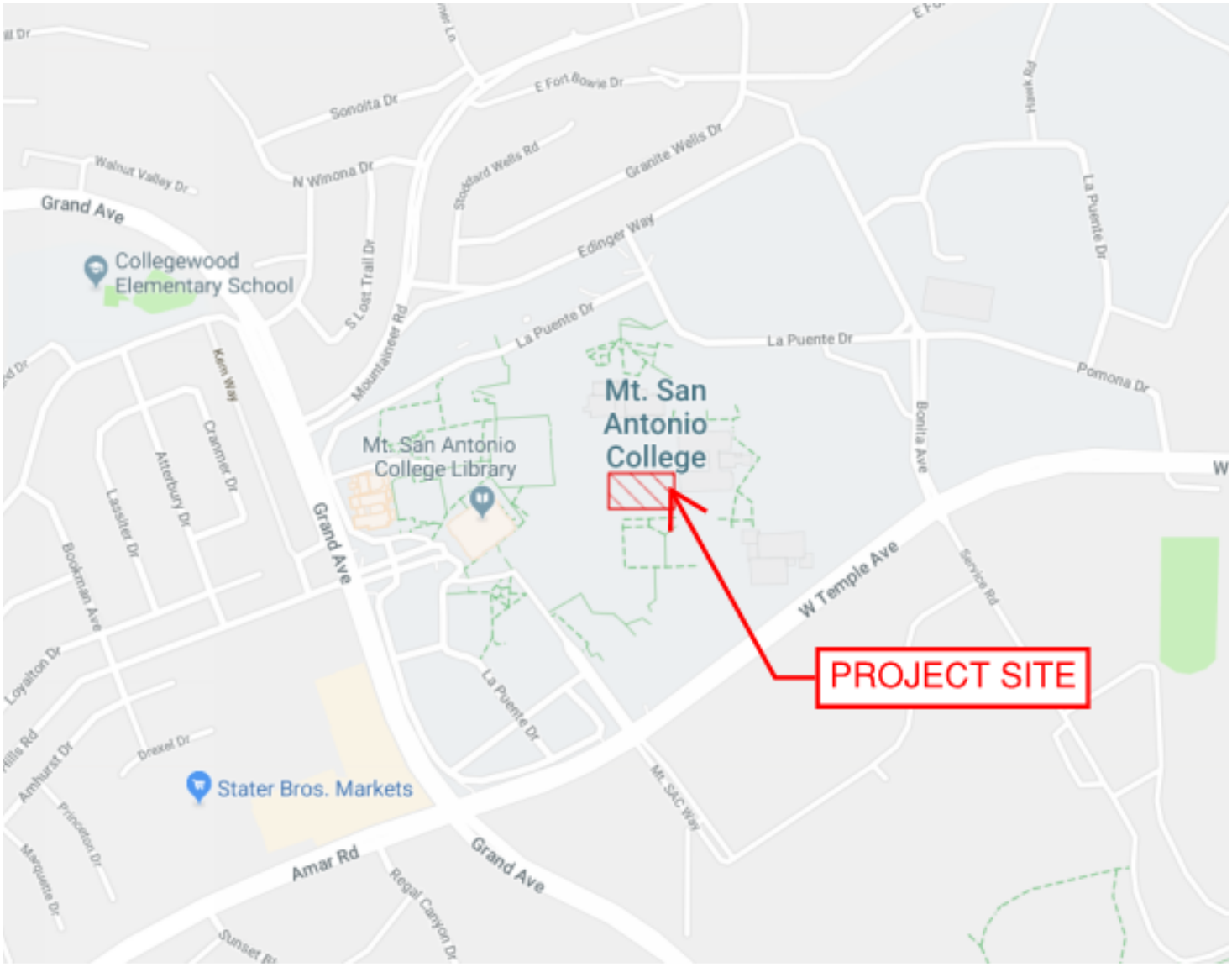
VICINITY MAP

Vicinity Map

For

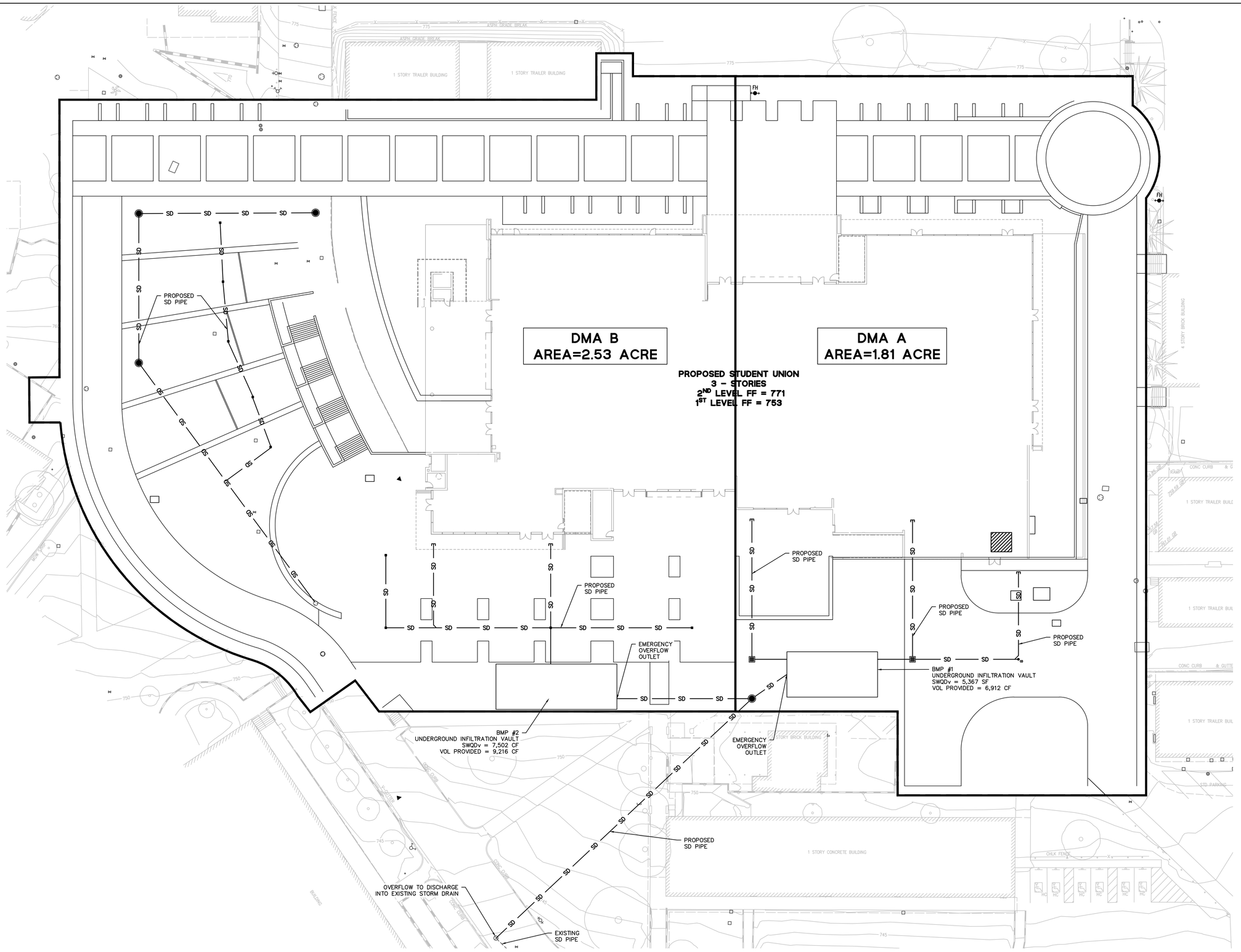
Mt SAC Student Center

N. Grand Ave
Walnut, CA 91789



APPENDIX B

BMP SITE PLAN



TREATMENT SUMMARY

DRAINAGE MANAGEMENT AREA	AREA (ACRES)	LID BMP USED	V_M (CU-FT)	VOL PROVIDED (CU-FT)
DMA A	1.81	UNDERGROUND INFILTRATION VAULT (BMP#1)	5,367	6,192
DMA B	2.53	UNDERGROUND INFILTRATION VAULT (BMP#2)	7,502	9,216
TOTAL	4.34		12,869	15,408

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
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AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
MT. SAC STUDENT CENTER
1100 NORTH GRAND AVENUE
WALNUT, CA 91789
MT. SAC
Mt. San Antonio College

SUBMITTALS		
#	DATE	
	08/20/18	FINAL DD SUBMITTAL

PROJECT IDENTIFICATION
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DATE
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CHECKED BY

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SHEET TITLE
APPENDIX B
BMP SITE PLAN

SHEET NUMBER

DESIGN DEVELOPMENT

APPENDIX C

COUNTY OF LOS ANGELES HYDROLOGY MAPS

Department of Public Works
dpw.lacounty.gov

search our site..

Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [ ] Soils 2004
- [x] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

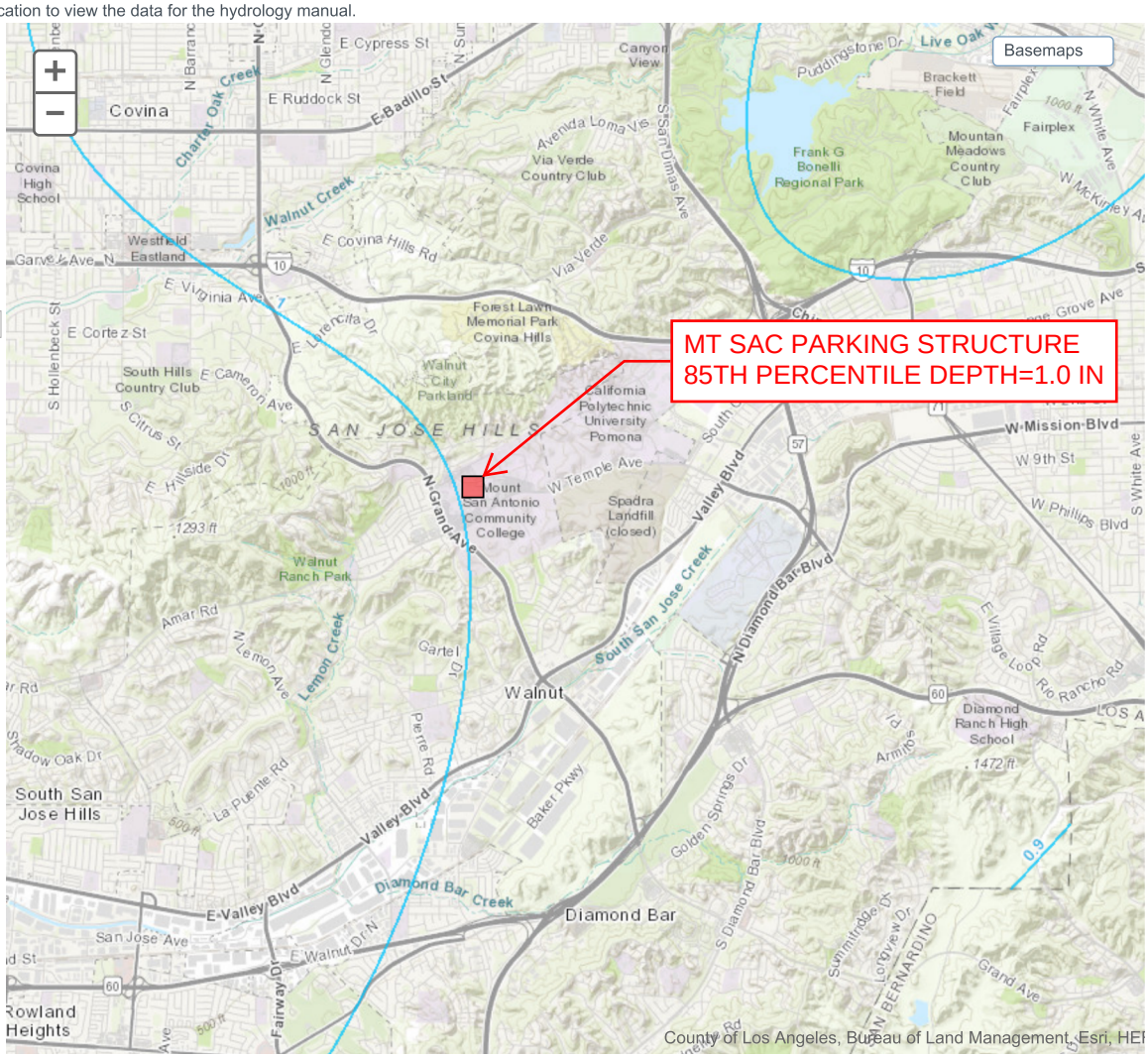
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(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

mt sac

Search

Address Search Results:

mt sac



Map Tips

Department of Public Works
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search our site..

Hydrology Map

A GIS viewer application to view the data for the hydrology manual.

LAYERS

- [ ] 50yr Two Tenths (Rainfall)
- [ ] DPA Zones
- [x] Soils 2004
- [ ] Final 85th Percentile, 24-hr Rainfall
- [ ] Final 95th Percentile, 24-hr Rainfall
- [ ] 1-year, 1-hour Rainfall Intensity

SEARCH

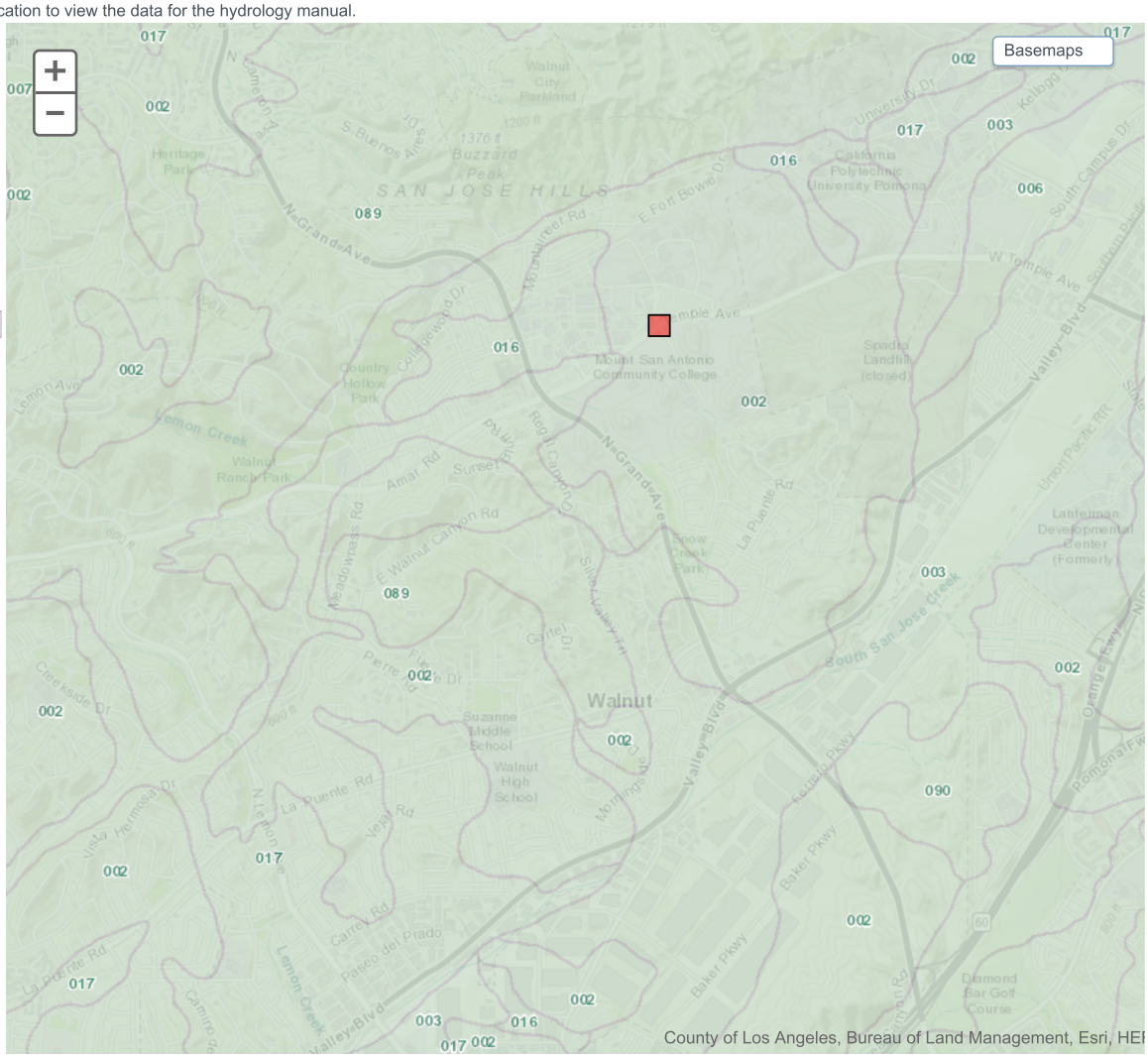
Enter Address, Cross Street, or Parcel No.:
(ex: 900 S. Fremont Ave., Fremont@Valley, 5342005904)

w temple ave and service rd, walnut

Search

Address Search Results:

w temple ave and service rd walnut



Map Tips

APPENDIX D

HYDROCALC OUTPUT - 85TH PERCENTILE STORM

Peak Flow Hydrologic Analysis

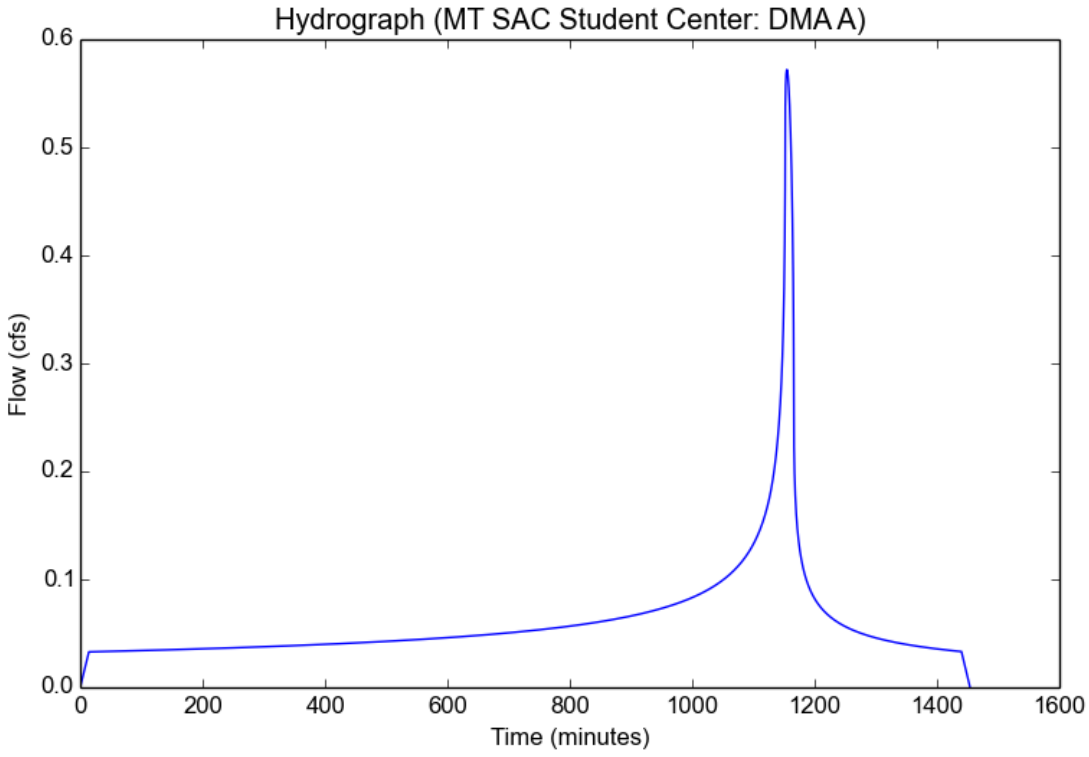
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	MT SAC Student Center
Subarea ID	DMA A
Area (ac)	1.81
Flow Path Length (ft)	345.0
Flow Path Slope (vft/hft)	0.065
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3677
Undeveloped Runoff Coefficient (Cu)	0.4938
Developed Runoff Coefficient (Cd)	0.8594
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.572
Burned Peak Flow Rate (cfs)	0.572
24-Hr Clear Runoff Volume (ac-ft)	0.1232
24-Hr Clear Runoff Volume (cu-ft)	5367.219



Peak Flow Hydrologic Analysis

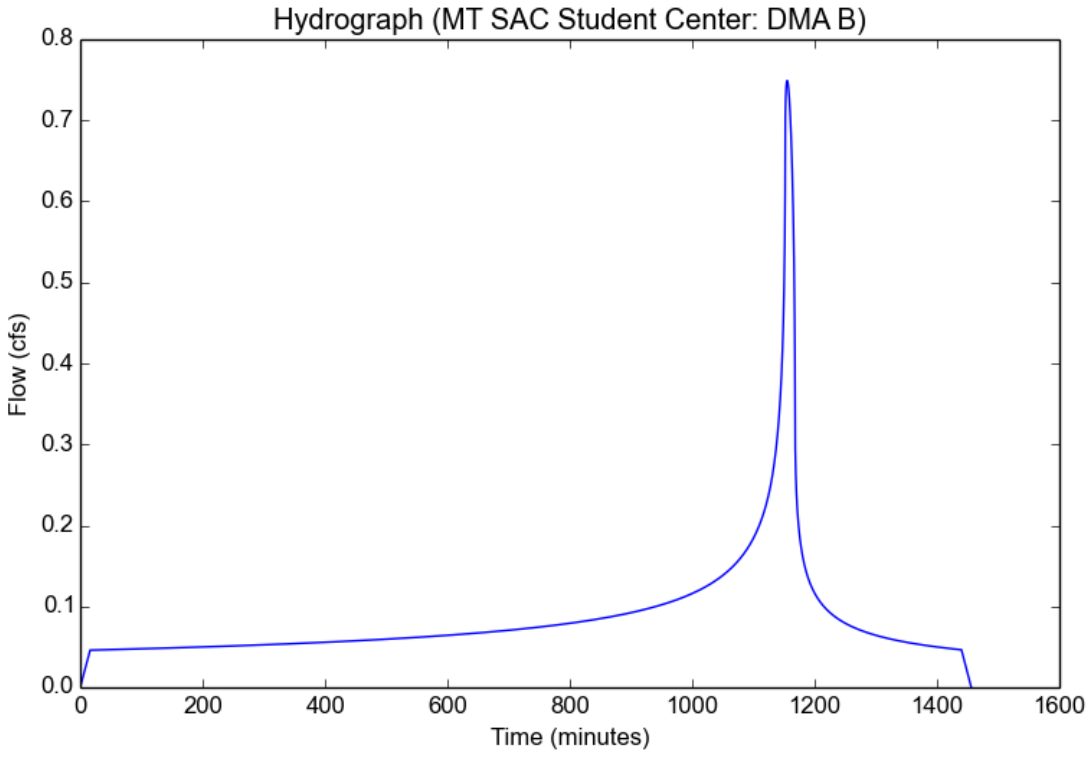
File location: C:/Users/chas/Desktop/MT SAC Student Center - DMA B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MT SAC Student Center
Subarea ID	DMA B
Area (ac)	2.53
Flow Path Length (ft)	390.0
Flow Path Slope (vft/hft)	0.04
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.9
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3454
Undeveloped Runoff Coefficient (Cu)	0.4731
Developed Runoff Coefficient (Cd)	0.8573
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.7491
Burned Peak Flow Rate (cfs)	0.7491
24-Hr Clear Runoff Volume (ac-ft)	0.1722
24-Hr Clear Runoff Volume (cu-ft)	7501.6966



APPENDIX E

STORMWATER QUALITY DESIGN MEASURE CALCULATIONS

APPENDIX F

BMP FACT SHEETS

GENERAL NOTES:

THE STORM CAPTURE™ SYSTEM BY OLDCASTLE PRECAST IS PART OF THE STORMWATER MANAGEMENT SYSTEM FOR THE RESPECTIVE SITE, AS PREPARED BY THE PROJECT DESIGN ENGINEER. IT IS THE RESPONSIBILITY OF THE DESIGN ENGINEER TO DETERMINE DESIGN FLOW RATES, PRE-TREATMENT AND POST-TREATMENT REQUIREMENTS, STORAGE VOLUME, AND ENSURE THE FINAL DESIGN MEETS ALL CONVEYANCE AND STORAGE REQUIREMENTS. SYSTEM DESIGN AND TYPE, SOIL ANALYSIS, LOADING REQUIREMENTS, COVER HEIGHT AND MODULE SIZE DETERMINE THE FOUNDATION TYPE AND REQUIREMENTS AS STATED HEREIN. ANY VARIATIONS FOUND DURING CONSTRUCTION FROM THE SITE AND SYSTEM ANALYSIS MUST BE REPORTED TO THE PROJECT DESIGN ENGINEER. THE PROJECT DESIGN ENGINEER IS RESPONSIBLE FOR OBTAINING A GEOTECHNICAL ENGINEERING REPORT VERIFYING THE BEARING CAPACITY STATED IN DESIGN NOTES.

DESIGN NOTES:

1. DESIGN LOADINGS:
   - A. AASHTO HS20-44 W/ IMPACT.
   - B. DEPTH OF COVER = 6" - 5'-0".
   - C. ASSUMED WATER TABLE = BELOW BOTTOM.
   - D. EQUIVALENT FLUID PRESSURE = 45 PCF.
   - E. LATERAL LIVE LOAD SURCHARGE = 80 PSF.
   - F. NO LATERAL SURCHARGE FROM ADJACENT STRUCTURES.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 6,000 PSI.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615, GRADE 60.
4. CEMENT: ASTM C-150 SPECIFICATION.
5. STORM CAPTURE MODULE TYPE = INFILTRATION.
6. DEPTH OF AGGREGATE BEARING LAYER TO BE DETERMINED IN ACCORDANCE WITH OLDCASTLE TECH NOTE SC-01.
7. ALLOWABLE SOIL BEARING PRESSURE ADDRESSED IN OLDCASTLE TECH NOTE SC-01.
8. REFERENCE STANDARDS:
   - A. ASTM C 890
   - B. ASTM C 891
   - C. ASTM C 913
9. LESS THAN 6" OR GREATER THAN 5' OF COVER REQUIRES CUSTOM STRUCTURAL DESIGN AND MAY REQUIRE THICKER AGGREGATE BEARING LAYER.

INSTALLATION NOTES:

THE STORM CAPTURE™ MODULE SYSTEM IS TO BE INSTALLED IN ACCORDANCE WITH ASTM C891, INSTALLATION OF UNDERGROUND PRECAST UTILITY STRUCTURES. PROJECT PLAN AND SPECIFICATIONS MUST BE FOLLOWED ALONG WITH ANY APPLICABLE REGULATIONS.

1. PLAN LINE, GRADE AND ELEVATIONS MUST BE FOLLOWED.
2. A. WHERE SPECIFIED, AN 8 OZ. NON-WOVEN GEOTEXTILE FABRIC MUST BE USED AS A SEPARATION LAYER AROUND THE STORM CAPTURE SYSTEM.
3. PENETRATIONS IN THE GEOTEXTILE MAY ONLY BE MADE WITH SMOOTH WALL PIPES. MAKE PENETRATIONS FOR ALL OUTLETS BEFORE MAKING PENETRATIONS FOR ANY INLETS.
4. THE AGGREGATE BEARING LAYER SHOULD CONSIST OF CLEAN, DURABLE CRUSHED AGGREGATE COMPACTED AS DIRECTED BY THE ENGINEER. OLDCASTLE RECOMMENDS MATERIALS SUCH AS NO. 56 OR NO. 57 STONE PER ASTM C33.
5. DESIGNATED EMBEDDED LIFTERS MUST BE USED. USE PROPER RIGGING TO ASSURE ALL LIFTERS ARE EQUALLY ENGAGED WITH A MINIMUM 60 DEGREE ANGLE ON SLINGS AS NOTED AND IN ACCORDANCE WITH OLDCASTLE LIFTING PROCEDURES.
6. MODULES MUST BE PLACED AS CLOSE TOGETHER AS POSSIBLE, AND GAPS SHALL NOT BE GREATER THAN 3/4". ALL EXTERIOR SYSTEM JOINTS SHALL BE COVERED WITH A MIN. 8" JOINT WRAP ON SIDES AND TOP (CS-212 CONSEAL OR EQUIVALENT). INSTALL ONE ROW CS-102 CONSEAL (OR EQUIVALENT) BETWEEN PRECAST PIECES.
7. AUTHORIZATION SHOULD BE GIVEN BY THE PROJECT ENGINEER OR DESIGNATED PERSON PRIOR TO PLACEMENT ON BACKFILL FOR THE SYSTEM. CARE SHOULD BE TAKEN DURING PLACEMENT OF BACKFILL NOT TO DISPLACE MODULES OR JOINT WRAP. BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY OR AS SPECIFIED, AND SHOULD NOT BE COMPACTED WITHIN 6" OF MODULE.
8. CONSTRUCTION EQUIPMENT EXCEEDING DESIGN LOADING SHALL NOT BE ALLOWED ON STRUCTURE.

SPLASH PADS, INLETS AND RISERS:

PLACE SPLASH PADS AS DESIGNATED TO PREVENT SCOUR FROM INLETS AND INLET PIPES. ALL PIPE INLETS SHALL EXTEND INSIDE MODULE A MINIMUM OF 4". PLACE A NON-SHRINK, NON-METALIC GROUT, MIN. 3,000 PSI IN ANNULAR SPACE TO ELIMINATE ALL VOIDS.

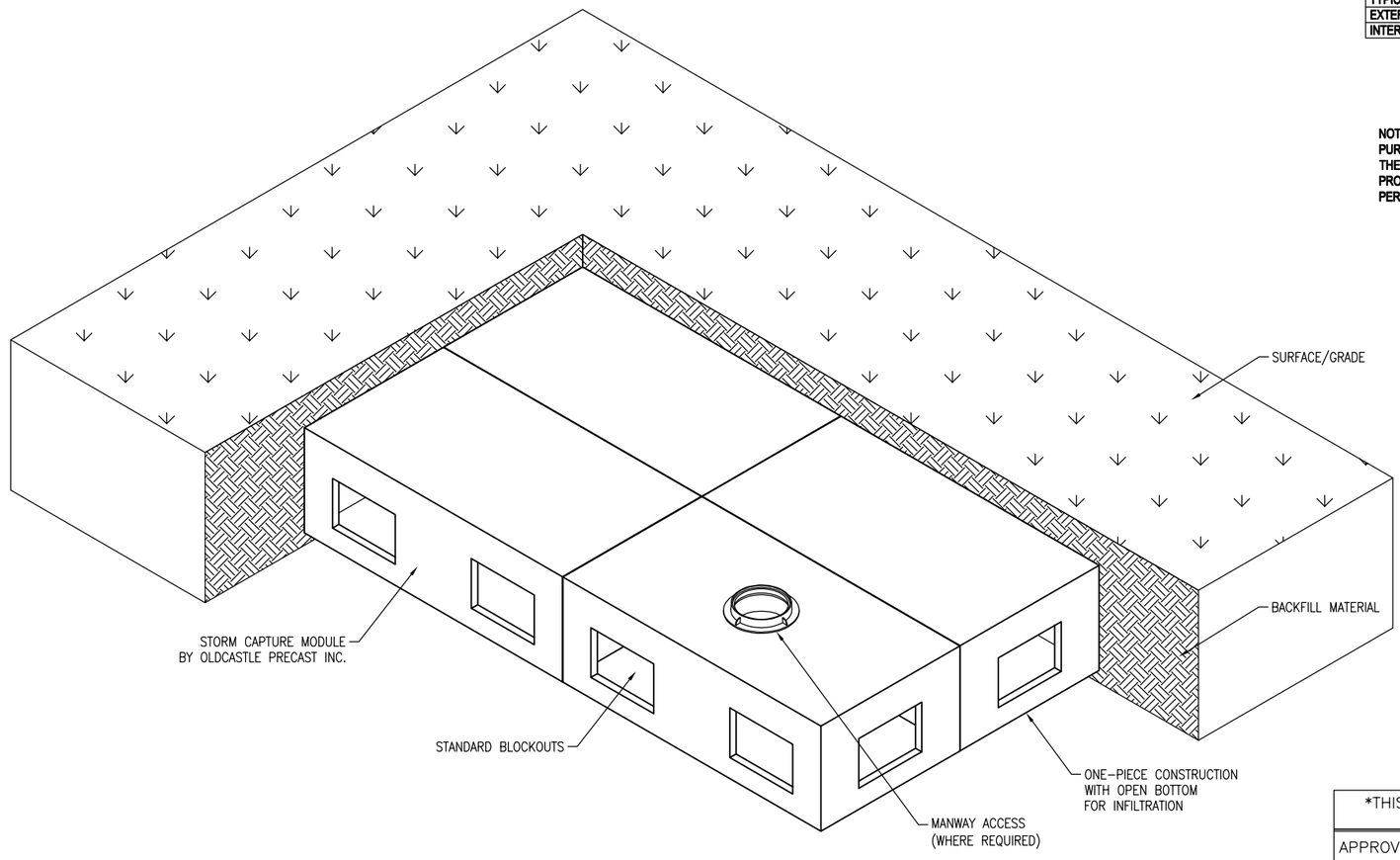
REVISIONS			
REVISION	DATE	SHEETS	DESCRIPTION OF REVISION

STORMCAPTURE®

TABLE OF CONTENTS

NOTES & GENERAL ISO	1
TYPICAL ELEVATION	2
EXTERIOR DETAILS	3
INTERIOR DETAILS	4

NOTE: THIS VIEW IS FOR ILLUSTRATION PURPOSES ONLY TO SHOW FEATURES OF THE SYSTEM. ACTUAL LAYOUT VARIES BY PROJECT, SEE SITE PLAN LAYOUT. ALL PERIMETER WALLS ARE SOLID.



INFILTRATION MODULE ISO VIEW

N.T.S.

THIS MUST BE FILLED OUT BEFORE MANUFACTURING BEGINS

APPROVED W/ NO EXCEPTIONS TAKEN: ☐

APPROVED AS NOTED: ☐

REVISE AND RESUBMIT: ☐

- PRELIMINARY -
NOT FOR CONSTRUCTION

SIGNATURE DATE

Oldcastle® Stormwater Solutions

7921 SOUTHPARK PLAZA, SUITE 200, LITTLETON, CO 80120
PHONE: 1-888-865-3227 FAX: 303-794-7497

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STORMCAPTURE

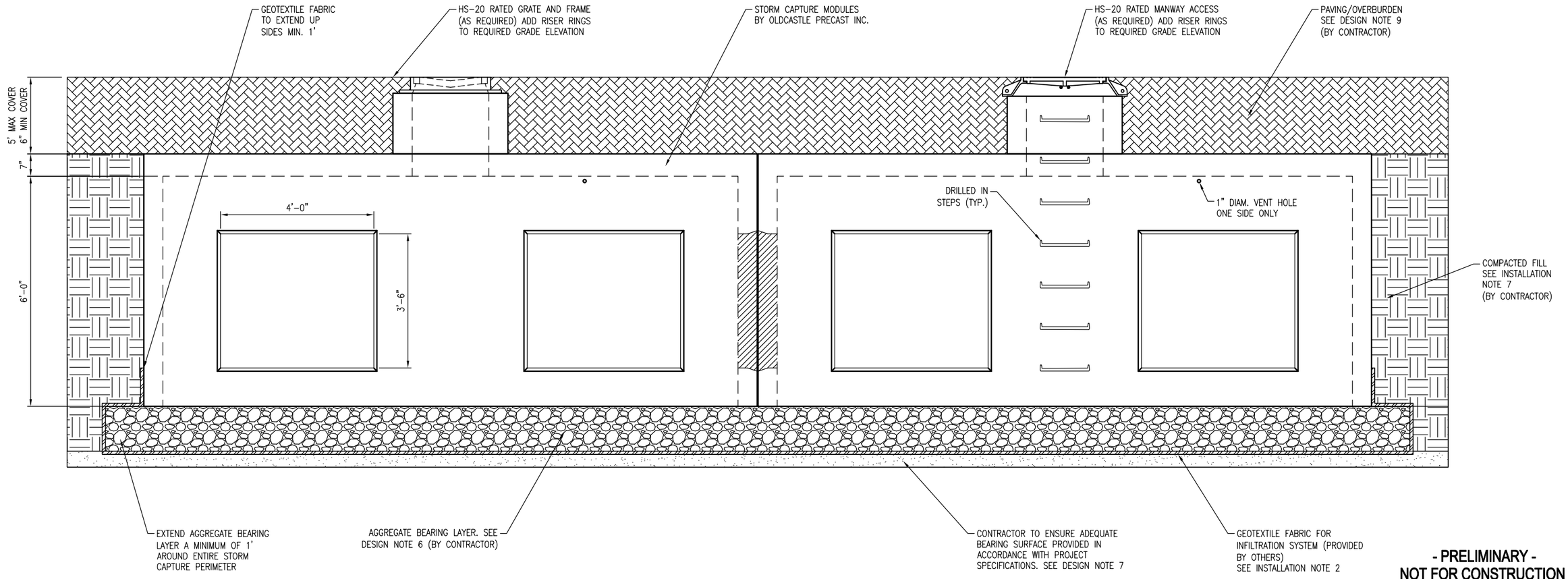
NOTES & GENERAL ISO

CUSTOMER

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
	STS	STS	JH		

DRAWING NUMBER	REVISION	SHEET
SC - 6 ft top-only	REV DATE	1 OF 4

STORMCAPTURE®



TYPICAL ELEVATION

SCALE: 3/8" = 1'-0"

NOTE:
FOR INFILTRATION - EXFILTRATION SYSTEMS, THE AGGREGATE SUBGRADE MUST BE WASHED AND CLEAN.

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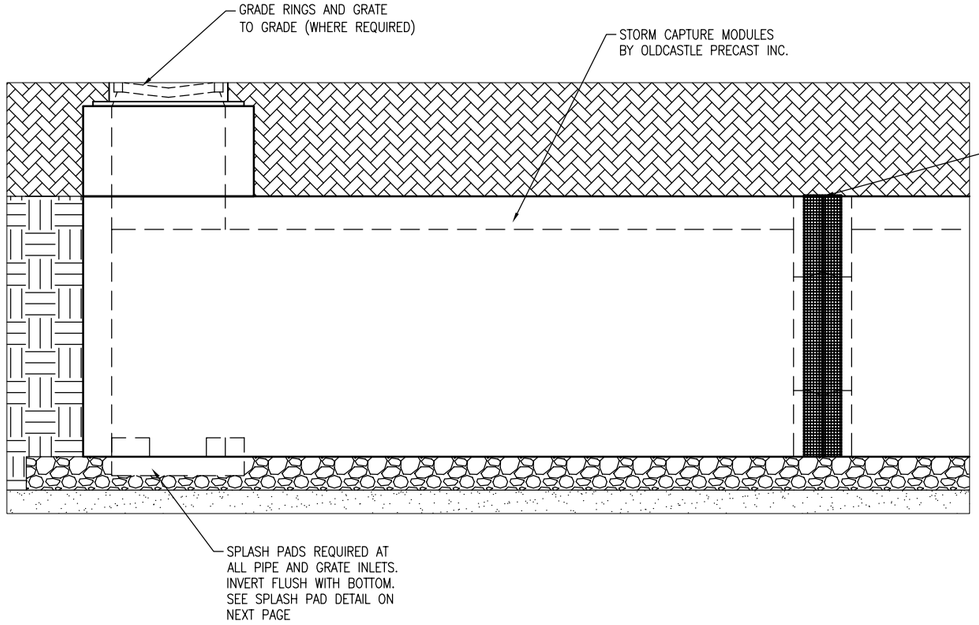
STORMCAPTURE
TYPICAL ELEVATION

CUSTOMER

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
	STS	STS	JH		

DRAWING NUMBER	REVISION	SHEET
SC - 6 ft top-only	REV DATE	2 OF 4

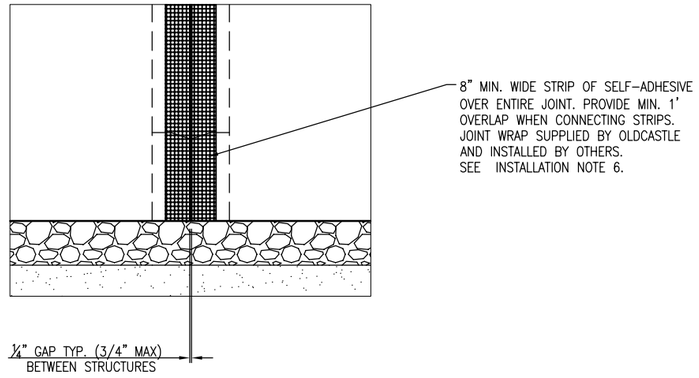
STORMCAPTURE®



GRATE INLET DETAIL

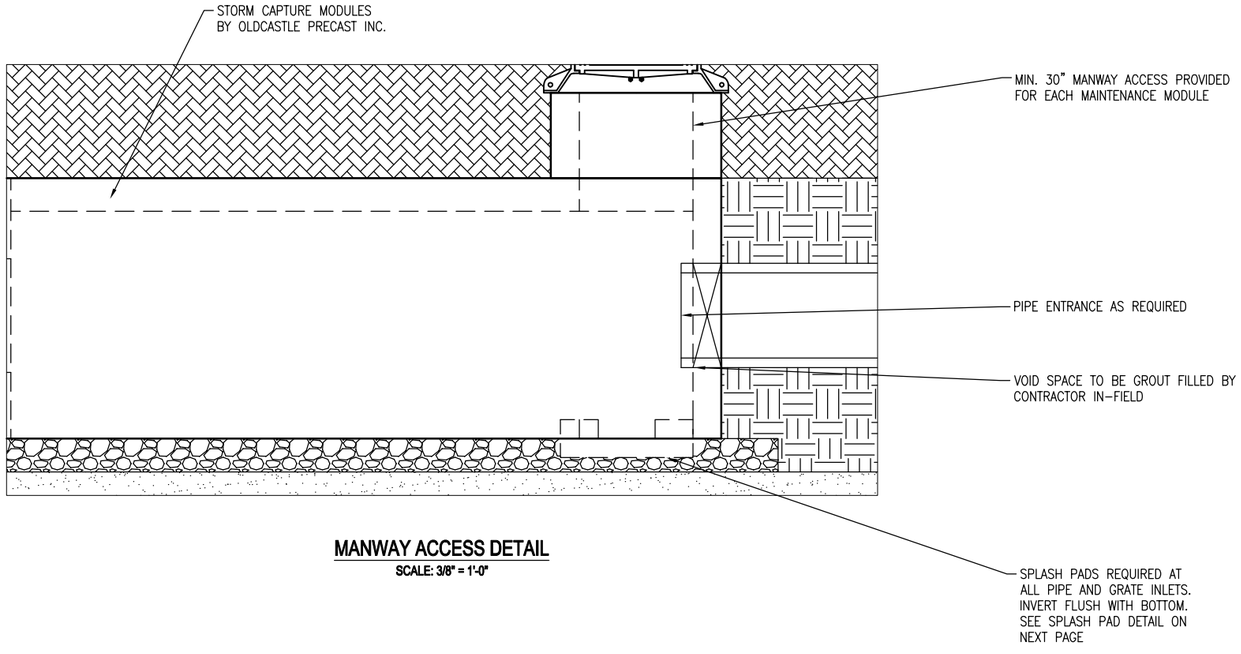
SCALE: 3/8" = 1'-0"

NOTE: WEIR PLATES, IF REQUIRED, MAY BE INSTALLED WITH RED-HEAD ANCHORS (BY OTHERS). ELEVATIONS TO BE DETERMINED BY PROJECT DESIGN ENGINEER



MODULE JOINT DETAIL

SCALE: 1/2" = 1'-0"



MANWAY ACCESS DETAIL

SCALE: 3/8" = 1'-0"

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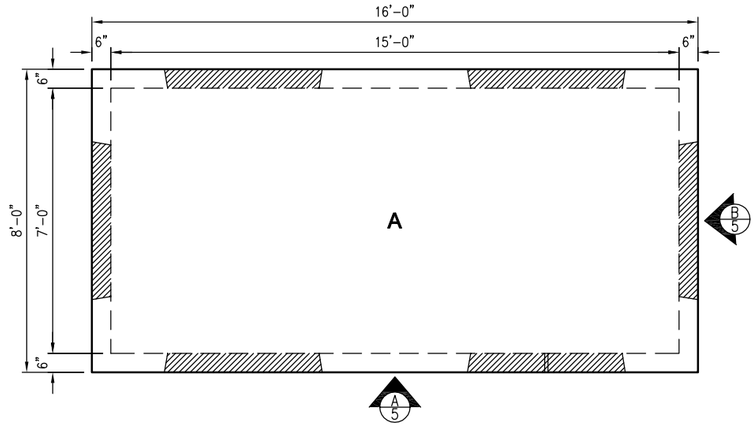
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STORMCAPTURE
EXTERIOR DETAILS

CUSTOMER

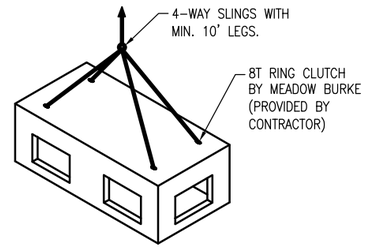
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	STS	STS	JH		

DRAWING NUMBER	REVISION	SHEET
SC - 6 ft top-only	REV DATE	3 OF 4



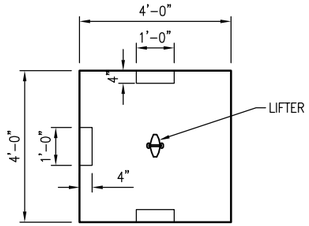
STORM CAPTURE PLAN VIEW

SCALE: 1/4" = 1'-0"



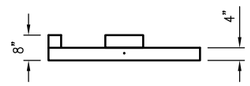
MODULE LIFTING DETAIL

N.T.S.



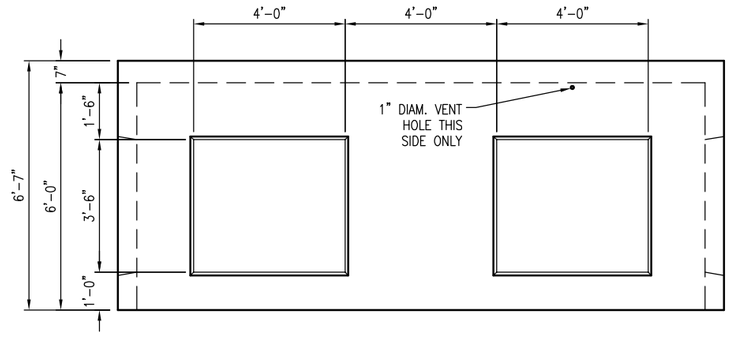
SPLASH PAD - PLAN

SCALE: 1/4" = 1'-0"



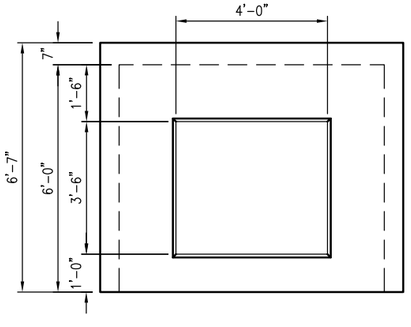
SPLASH PAD - PROFILE

SCALE: 1/4" = 1'-0"



VIEW A

SCALE: 1/4" = 1'-0"



VIEW B

SCALE: 1/4" = 1'-0"

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STORMCAPTURE

INTERIOR DETAILS

CUSTOMER

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
	STS	STS	JH		

DRAWING NUMBER	REVISION	SHEET
SC - 6 ft top-only	REV DATE	4 OF 4

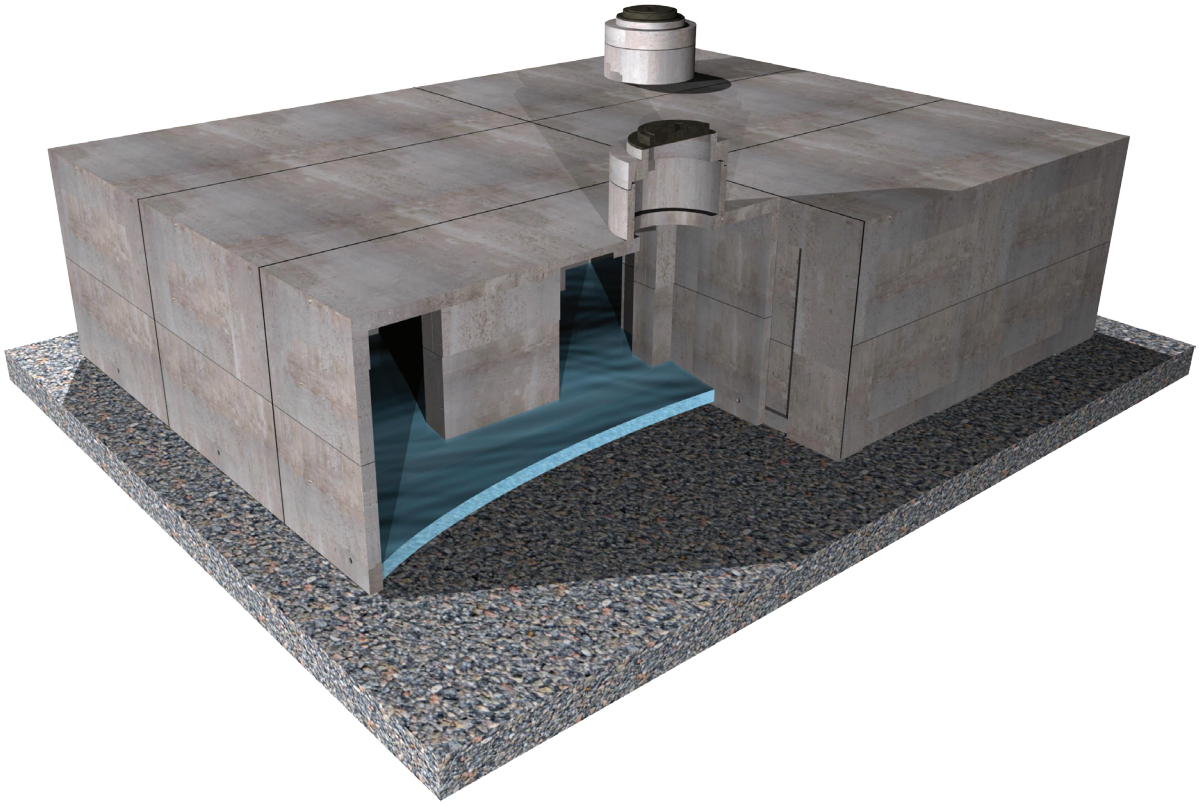
APPENDIX G

BMP OPERATIONS & MAINTENANCE MANUAL

Oldcastle Precast®

STORMCAPTURE®

Inspection and Maintenance Guide



Stormwater

Description

The StormCapture® system is an underground, modular, structural precast concrete storage system for stormwater detention, retention, infiltration, harvesting and reuse, and water quality volume storage. The system's modular design utilizes multiple standard precast concrete units with inside dimensions of 7 feet by 15 feet (outside dimensions of 8 feet by 16 feet) to form a larger storage system. The inside height of the StormCapture system can range from 2 feet to 14 feet. This modular design provides limitless configuration options for site-specific layouts.

StormCapture components can be provided as either open-bottom modules to promote infiltration or closed-bottom modules for detention. In some cases, StormCapture modules can be placed in a checkerboard configuration for an even more efficient design. A Link Slab, with a footprint of 9 feet by 17 feet, is then used to bridge each space without a module.

The standard StormCapture design incorporates lateral and longitudinal passageways between modules to accommodate internal stormwater conveyance throughout the system. These passageways may be classified as either a "window configuration" with standard 12-inch tall sediment baffles extending up from the floor of the module to the bottom of the window, or a "doorway configuration" without the sediment baffles. The function and drainage rate of a StormCapture system depends on site-specific conditions and requirements.

Stormwater typically enters the StormCapture system through an inlet pipe. Grated inlets can also be used for direct discharge into the system. The StormCapture system is rated for H-20 traffic loading with limited cover. Higher load requirements can also be accommodated. In addition, StormCapture systems are typically equipped with a limited number of maintenance modules that provide access to the system for ongoing inspection and maintenance.

Function

The StormCapture system is primarily used to manage water quantity by temporarily storing stormwater runoff from impervious surfaces to prevent flooding, slow down the rate at which stormwater leaves the site, and reduce receiving stream erosion. In addition, the StormCapture system can be used to capture stormwater runoff for water quality treatment. Regardless of how the StormCapture system is used, some sedimentation may occur in the modules during the time water is stored.

Configurations

The configuration of the StormCapture systems may vary, depending on the water quality and/or quantity requirements of the site. StormCapture configurations for detention, retention/infiltration, and retention/harvesting are described below.

Detention

StormCapture Detention systems are designed with a closed bottom to detain stormwater runoff for controlled discharge from the site. This design may incorporate a dead storage sump and a permanent pool of water if the outlet pipe is higher than the floor elevation. Discharge from the system is typically controlled by an outlet orifice and/or outlet weir to regulate the rate of stormwater leaving the system. StormCapture Detention systems are typically designed with silt-tight joints, however when conditions exist that require a StormCapture system to be watertight, the system may be wrapped in a continuous, impermeable geomembrane liner. If the StormCapture Detention system includes Link Slabs, a liner must be used to detain water since the chambers under each Link Slab have no floor slab. In this case, care must be taken by maintenance personnel not to damage the exposed liner beneath each Link Slab.

Retention/Infiltration

StormCapture Retention/Infiltration systems are designed with an open bottom to allow for the retention of stormwater onsite through infiltration into the base rock and surrounding soils. For infiltration systems, the configuration of the base of the StormCapture system may vary, depending on the needs of the site and the height of the system. Some systems may use modules that have fully open bottoms with no concrete floor, while other systems may use modules that incorporate floor openings in the base of each module. These are typically 24-inch by 24-inch openings. For open-bottom systems, concrete splash pads may be installed below inlet grate openings and pipe inlets to prevent erosion of base rock. A StormCapture Infiltration system may have an elevated discharge pipe for peak overflow.

Retention/Harvesting

StormCapture Retention/Harvesting systems are similar to detention systems using closed-bottom modules, but stormwater is typically retained onsite for an extended period of time and later reused for non-potable applications or irrigation. For rainwater harvesting systems, an impermeable geomembrane liner is typically installed around the modules to provide a water-tight system.

Inspection and Maintenance Overview

State and local regulations typically require all stormwater management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Inspections should be used to evaluate the conditions of the system. Based on these inspections, maintenance needs can be determined. Maintenance needs vary by site and system. Using this Inspection & Maintenance Guide, qualified maintenance personnel should be able to provide a recommendation for maintenance needs. Requirements may range from minor activities such as removing trash, debris or pipe blockages to more substantial activities such as vacuuming and removal of sediment and/or non-draining water. Long-term maintenance is important to the operation of the system since it prevents excessive pollutant buildup that may limit system performance by reducing the operating capacity and increasing the potential for scouring of pollutants during periods of high flow.

Only authorized personnel shall inspect and/or enter a StormCapture system. Personnel must be properly trained and equipped before entering any underground or confined space structure. Training includes familiarity with and adherence to any and all local, state and federal regulations governing confined space access and the operation, inspection, and maintenance of underground structures.

Inspection and Maintenance Frequency

The StormCapture system should be inspected on a regular basis, typically twice per year, and maintained as required. The maintenance frequency will be driven by the amount of runoff and pollutant loading encountered by a given system. Local jurisdictions may also dictate inspection and maintenance frequencies.

Inspection Equipment

The following equipment is helpful when conducting StormCapture inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- Measuring stick or sludge sampler
- Long-handled net (optional)

Inspection Procedures

A typical StormCapture system provides strategically placed access points that may be used for inspection. StormCapture inspections are usually conducted visually from the ground surface, without entering the unit. This typically limits inspection to the assessment of sediment depth, water drain down, and general condition of the modules and components, but a more detailed assessment of structural condition may be conducted during a maintenance event.

To complete an inspection, safety measures including traffic control should be deployed before the access covers are removed. Once the covers have been removed, the following items should be inspected and recorded (see form provided at the end of this document) to determine whether maintenance is required:

- Observe inlet and outlet pipe penetrations for blockage or obstruction.
- If possible, observe internal components like baffles, flow control weirs or orifices, and steps or ladders to determine whether they are broken, missing, or possibly obstructed.
- Observe, quantify, and record the sediment depths within the modules.
- Retrieve as much floating trash as possible with a long-handled net. If a significant amount of trash remains, make a note in the Inspection & Maintenance Log.
- For infiltration systems, local regulations may require monitoring of the system to ensure drain down is occurring within the required permit time period (typically 24 to 72 hours). If this is the case, refer to local regulations for proper inspection procedure.

Maintenance Indicators

Maintenance should be scheduled if any of the following conditions are identified during the inspection:

- Inlet or outlet piping is blocked or obstructed.
- Internal components are broken, missing, or obstructed.
- Accumulation of more than six inches of sediment on the system floor or in the sump, if applicable.
- Significant accumulation of floating trash and debris that cannot be retrieved with a net.
- The system has not drained completely after it hasn't rained for one to three days, or the drain down does not meet permit requirements.
- Any hazardous material is observed or reported.

Maintenance Equipment

The following equipment is helpful when conducting StormCapture maintenance:

- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- Vacuum truck

Maintenance Procedures

Maintenance should be conducted during dry weather when no flow is entering the system. Confined space entry is usually required to maintain the StormCapture. Only personnel that are OSHA Confined Space Entry trained and certified may enter underground structures. Once safety measures such as traffic control have been deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove trash and debris using an extension on the end of the boom hose of the vacuum truck. Continue using the vacuum truck to completely remove accumulated sediment. Some jetting may be necessary to fully evacuate sediment from the system floor or sump. Jetting is acceptable in systems with solid concrete floors or base slabs (referred to as closed-bottom systems). However, jetting is not recommended for open-bottom systems with a gravel foundation since it may cause bedding displacement, undermining of the foundation, or internal disturbance.
- All material removed from the system during maintenance must be disposed of in accordance with local regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.
- Inspect inlet and outlet pipe penetrations for cracking and other signs of movement that may cause leakage.
- Inspect the concrete splash pads (applicable for open-bottom systems only) for proper function and placement.
- Inspect the system for movement of modules. There should be less than 3/4-inch spacing between modules.
- Inspect the general interior condition of modules for concrete cracking or deterioration. If the system consists of horizontal joints as part of the modules, inspect those joints for leakage, displacement or deterioration.

Be sure to securely replace all access covers, as appropriate, following inspection and/or maintenance. If the StormCapture modules or any of the system components show significant signs of cracking, spalling, or deterioration or if there is evidence of excessive differential settlement between modules, contact Oldcastle Stormwater at **800-579-8819.**

StormCapture
Inspection & Maintenance Log

Refer to as-built records for details about system size and location onsite

Location _____

System Configuration:

Inspection Date _____

☐ Detention ☐ Infiltration ☐ Retention/Harvesting

Inlet or Outlet Blockage or Obstruction

Notes:

☐ Yes ☐ No

Condition of Internal Components

Notes:

☐ Good ☐ Damaged ☐ Missing

Sediment Depth Observed

Notes:

☐ Inches of Sediment:_____

Trash and Debris Accumulation

Notes:

☐ Significant ☐ Not Significant

Drain Down Observations

Notes:

☐ Appropriate Time Frame ☐ Inappropriate Time Frame

Maintenance Required

☐ **Yes - Schedule Maintenance** ☐ **No - Inspect Again in _____ Months**

STORMCAPTURE®

OUR MARKETS



BUILDING STRUCTURES



COMMUNICATIONS



WATER



ENERGY



TRANSPORTATION

APPENDIX H

COVENANT AND AGREEMENT

RECORDING REQUESTED BY
AND MAIL TO:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
900 S. FREMONT AVENUE, 3RD FLOOR
ALHAMBRA, CA 91803-1331

Space above this line is for Recorder's use

COVENANT AND AGREEMENT
REGARDING THE MAINTENANCE OF LOW IMPACT DEVELOPMENT (LID) & NATIONAL POLLUTANTS DISCHARGE ELIMINATION SYSTEM (NPDES) BMPs

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the County of Los Angeles, State of California:

LEGAL DESCRIPTION

ASSESSOR'S ID #_____TRACT NO._____LOT NO._____

ADDRESS: _____

_____

Owner is aware of the requirements of the County of Los Angeles' Green Building Standards Code, Title 31, Section 4.106.4 (LID), and National Pollutant Discharge Elimination System (NPDES) permit. The following post-construction BMP features have been installed on the Subject Property:

- □ Porous pavement
- □ Cistern/rain barrel
- □ Infiltration trench/pit
- □ Bioretention or biofiltration
- □ Rain garden/planter box
- □ Disconnect impervious surfaces
- □ Dry Well
- □ Storage containers
- □ Landscaping and landscape irrigation
- □ Green roof
- □ Other _____

_____

The location, including GPS x-y coordinates, and type of each post-construction BMP feature installed on the Subject Property is identified on the site diagram attached hereto as Exhibit 1.

Owner hereby covenants and agrees to maintain the above-described post-construction BMP features in a good and operable condition at all times, and in accordance with the LID/NPDES Maintenance Guidelines, attached hereto as Exhibit 2.

Owner further covenants and agrees that the above-described post-construction BMP features shall not be removed from the Subject Property unless and until they have been replaced with other post-construction BMP features in accordance with County of Los Angeles' Green Building Standards Code, Title 31 and NPDES permit.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the post-construction BMP features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the County of Los Angeles, in its sole discretion.

Owner(s):

By:_____ Date:_____

By:_____ Date:_____

(PLEASE ATTACH NOTARY)

REFERENCE

PLAN CHECK NO.: _____ DISTRICT OFFICE NO.:_____

ATTACHMENTS

RECORDING REQUEST BY AND MAIL TO:

County of Los Angeles
Department of Public Works

Building and Safety – Drainage and Grading Section
Land Development – Drainage and Grading Section

P.O. Box 1460
Alhambra, California 91802-1460

Space above this line is for Recorder's use

COVENANT FOR MAINTENANCE OF WATER QUALITY (WQ) DEVICES

I (we) _____, hereby certify that I (we) am (are) the legal owner(s) of Tract # _____, and as such owners for the mutual benefit of future purchasers, their heirs, successors, and assigns, do hereby fix the following protective conditions to which their property, or portions thereof, shall be held, sold and/or conveyed.

That owner(s) shall maintain the WQ system shown on attached Exhibit A map and on Grading Plan GPC # _____, on file in the office of the Director of Public Works, in a good and functional condition at least once a year and retain proof of the inspection. The owner(s) shall perform this responsibility, unless the County discharges this obligation through a subsequently recorded written instrument.

The undersigned also covenants and agrees for himself, his heirs, successors, and assigns, to indemnify, defend, and save harmless the County, its agents, officers and employees from and against any and all liability, expenses, including defense costs and legal fees, and claims for damages of any nature whatsoever, including, but not limited to, bodily injury, death, personal injury, or property damage arising from or connected with the construction or maintenance of said work.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

APPENDIX I

GEOTECHNICAL REPORT (FOR REFERENCE ONLY)

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT
Proposed Student Center Building
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789

Converse Project No. 17-31-234-01

Prepared For:

Mt. San Antonio College
Facilities and Planning Management
Building 46
1100 North Grand Avenue
Walnut, California 91789

Prepared By:

Converse Consultants
717 South Myrtle Avenue
Monrovia, California 91016

October 5, 2017

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

October 5, 2017

Mr. Gary Gidcumb
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 46
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT**
Proposed New Student Center Building
1100 North Grand Avenue
Walnut, California
Mt. San Antonio College
Converse Project No. 17-31-234-01

Dear Mr. Gidcumb:

Enclosed is a Geotechnical Study Report prepared by Converse Consultants (Converse) for the proposed New Student Center Building at Mt. San Antonio College located in the City of Walnut, Los Angeles County, California.

The purpose of the study was to generate a geotechnical study report for design parameters and Division of State Architect (DSA) submittal purposes consistent with the current edition of California Building Code, Title 24, Chapter 16; Earthquake Design, Chapter 18A, Foundation and Retaining Wall; Appendix Chapter 33, Excavation and Grading; Part 1' Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

Based on our field exploration, laboratory testing, geologic evaluation and geotechnical analysis, the site is suitable from a geotechnical standpoint for the proposed new Student Center Building.

We appreciate the opportunity to be of service to Mt. San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1275.

Sincerely,

CONVERSE CONSULTANTS

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President / Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
No. 2708
Exp 6-30-18
GEOTECHNICAL
STATE OF CALIFORNIA

Dist: 3/Addressee

PROFESSIONAL CERTIFICATION

This report for the proposed new Student Center Building at Mt. San Antonio College in the City of Walnut, California, has been prepared by the staff of Converse Consultants under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed and the recommendations of this report are modified or verified in writing.

Victor Nguyen, EIT
Senior Staff Engineer



Mark B. Schluter, PG, CEG, CHG
Senior Engineering Geologist



Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Senior Vice President/Principal Engineer

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EXECUTIVE SUMMARY

The following is a summary of our geotechnical study, findings, conclusions, and recommendations, as presented in the body of this report. Please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed new Student Center Building is to be located within the central portion of the existing Mt. San Antonio College campus. The project site is bounded by Building No. 13 to the north, Building No. 19c to the south, Building No. 26D to the east, and Building No. 10 to the west. Building Nos. 17, 18, 19A, and 19B currently occupy the proposed project site.

- Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck-mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) and by hand-auger excavation methods (BH-4 and BH-6) for limited access areas.

- The earth materials encountered during our investigation consisted of existing fill soils placed during previous site grading operations and natural alluvial sediments to a maximum explored depth of 51.5 feet bgs. Undocumented fills, approximately three (3) to five (5) feet in thickness, were encountered in the borings. Deeper artificial fills may exist at the project site. The fills encountered consisted primarily of silty sand, clayey sand, sandy clay, and silty clayey sand. The alluvial sediment deposits below the surface fills primarily consisted of fine-grained clays, clayey sands, silty sands, silts, and sandy silts.

- Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs.

- The project site is not located within a currently designated State of California Earthquake Fault Zone for surface fault rupture. No active surface faults are known to project through or towards the site.

- The project site is located within a mapped potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

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- We recommend the proposed new Student Center Building be supported on shallow spread foundations provided our earthwork recommendations are incorporated in the design and construction.

- The project will consist of clearing the site, removal of trees and surface vegetation, demolition and removal of existing buildings and utilities, removal of existing sidewalks, pavements, and slabs, and remedial grading consisting of over-excavation and re-compaction of the surface soils to provide structural support for new building pads and improvements.

- Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential.

- In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

- Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The field tests resulted in an average percolation rate of 1.74 inches/hour and a lowest percolation rate of 1.35 inches/hour.

- Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various traffic index (TI) conditions are presented in Table No. 11, Flexible Pavement Structural Sections.

- Based on our field exploration, the earth materials at the project site should be excavatable with conventional heavy-duty earth moving and trenching equipment.

Results of our study indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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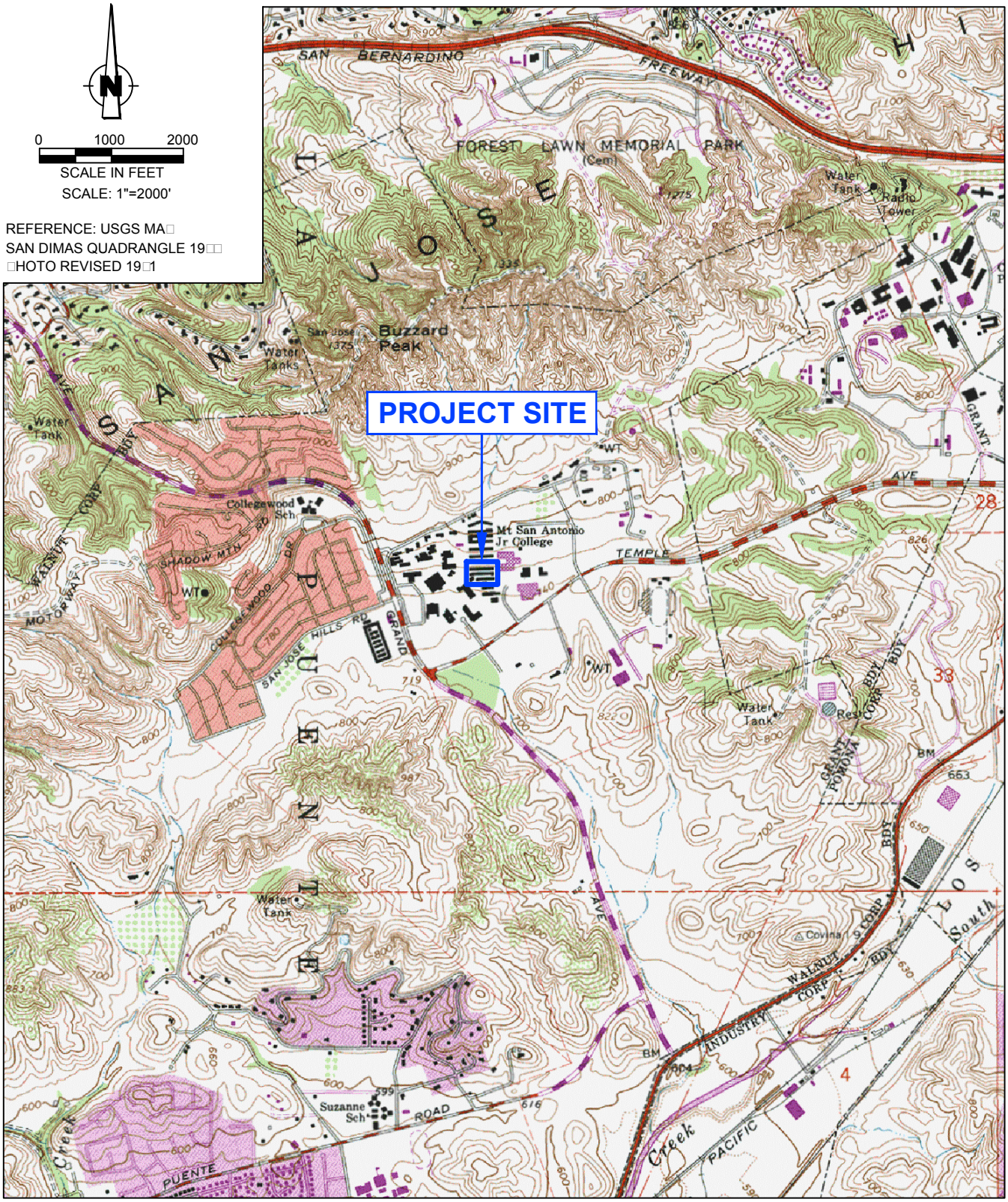
1.0 INTRODUCTION

This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed new Student Center Building located within the central portion of the Mt. San Antonio College campus in the City of Walnut, Los Angeles County, California, as shown in Drawing No. 1, *Site Location Map*.

The purpose of the study was to generate a geotechnical soils report for design and Division of State Architect (DSA) submittal purposes, consistent with the latest edition of California Building Code (CBC), Title 24, Chapter 16; Earthquake Design, Chapter 18A, Foundation and Retaining Wall; Appendix Chapter 33, Excavation and Grading; Part 1, Section 4-317 (e) and the current CGS Note 48-Checklist.

This report is written for the project described herein and is intended for use solely by Mt. San Antonio College and their design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

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SITE LOCATION MAP

STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.

17-31-234-01

Drawing No.

1

Converse Consultants

I:\ACADDRAWINGS\17\31\234\17-31-234-01-SITE LOCATION.DWG

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed new Student Center Building is to be located within the central portion of the existing Mt. San Antonio College campus. The project site is bounded by Building No. 13 to the north, Building No. 19c to the south, Building No. 26D to the east and Building No. 10 to the west. Building Nos. 17, 18, 19A, and 19B currently occupy the proposed project site.

The site coordinates for the proposed Student Center Building are: 34.04696 degrees North Latitude, -117.84507 degrees West Longitude. The site coordinates were centered on the subject site and used to calculate the earthquake ground motions. Review of Engineering Geology and Seismology for Public Schools and Hospitals in California, dated August 9, 2005 indicates that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

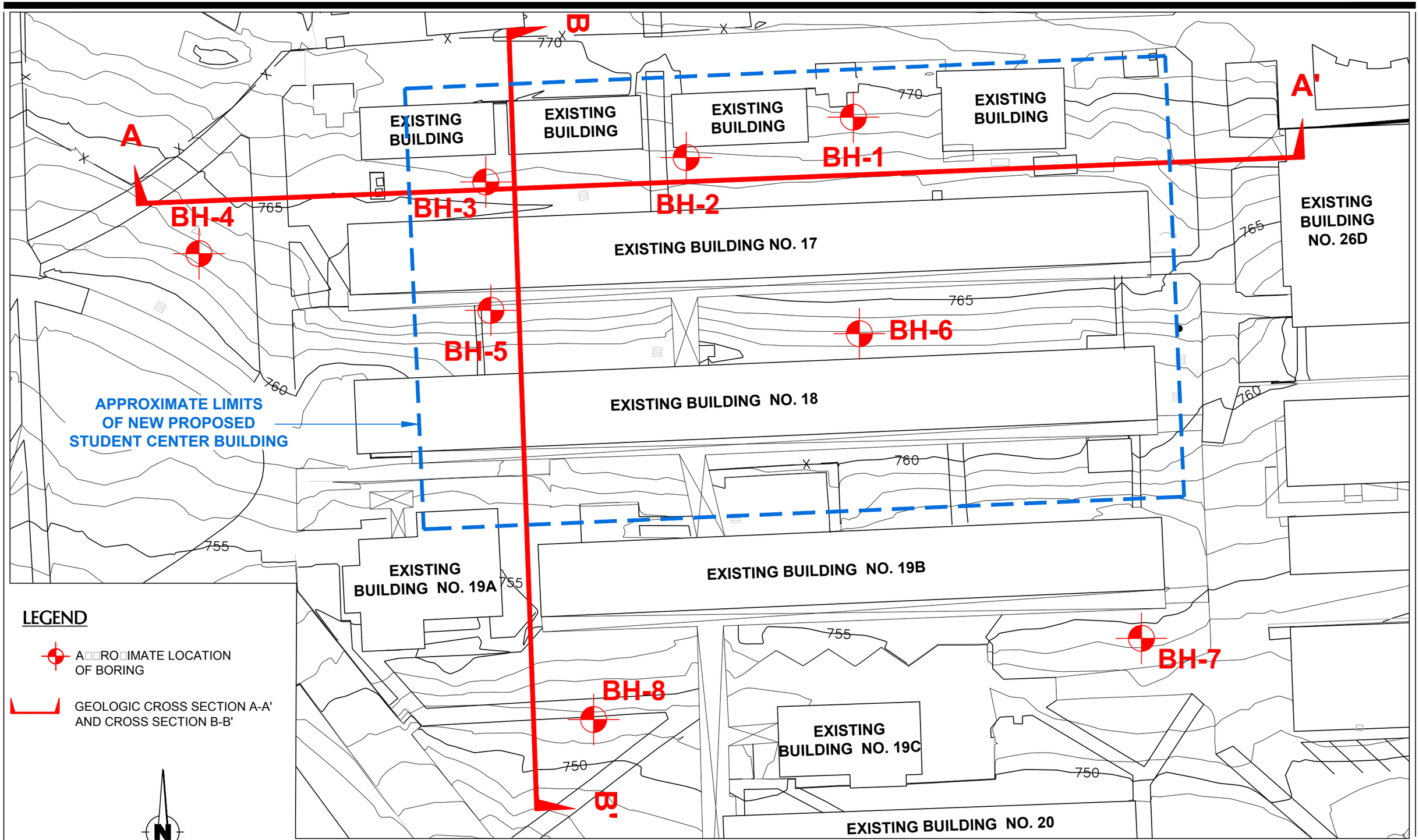
2.2 Project Description

The proposed project will consist of demolition of the existing, single-story, Building Nos. 17, 18, 19A, and 19B to allow for the grading and construction of the proposed new Student Center Building. The new Student Center Building will consist of one building with three stories and an approximate building height of 65 feet. The grade difference between the north and south sides of the building will be approximately 18 feet sloping in a north to south direction. The footprint area of the building is approximately 34,500 square feet with a total square footage of approximately 100,000 square feet.

The Student Center Building will provide space for student life offices, student organization offices, multi-cultural center, sit and study spaces, sit and relax spaces, food services including café, coffeehouse and convenience store, conference center, ball room, event center, and loading and storage areas.

Access to the building's first floor level will be from the south side at the Plaza level. Access to the building from the north side will be at the second level along the Miracle Mile Level. The building will be provided with exterior elevators for accessibility. The exterior spaces around the building will include plazas at both levels, stairs, retaining walls and landscaping. The structural loads are not known at this time, but are anticipated to be moderate. The project site and boring locations are shown in Drawing No. 2, *Site Plan and Approximate Location of Borings.*

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SITE PLAN AND APPROXIMATE LOCATION OF BORINGS

Converse Consultants

STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 2

3.0 SCOPE OF WORK

Our scope of work consists of the tasks described in the following subsections.

3.1 Review of Existing Documents

Our field exploration included review of existing documents by a member of the Converse Staff. The purpose of the review was to have an understanding of the site geology and subsurface soils prior to subsurface exploration.

3.2 Subsurface Exploration and Percolation Testing

Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) and hand-auger excavation methods (BH-4 and BH-6) for limited access areas. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*. The approximate locations of the exploratory borings and percolation test boring are shown in Drawing No. 2, *Site Plan and Approximate Location of Borings*.

California Modified Sampler (Ring samples), Standard Penetration Test samples, and bulk soil samples were obtained for laboratory testing. Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The bore holes were then backfilled and compacted with soil cuttings by reverse spinning of the augers and tamping of the soil cuttings following the completion of drilling.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In situ moisture contents and dry densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Maximum dry density and optimum-moisture content relationship (ASTM Standard D1557)
- Direct shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- Soil corrosivity tests (Caltrans 643, 422, 417, and 532)
- Expansion Index (ASTM Standard D4829)

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- Sand Equivalent (ASTM Standard 2419)
- R-Value (CTM 301)

3.4 Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated with respect to the planned construction. This report was prepared to provide the findings, conclusions and recommendations developed during our study and evaluation.

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4.0 GEOLOGIC CONDITIONS

4.1 Regional Geologic Setting

The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California near the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low *angle reverse or reverse-oblique faults bounding the southern margin of the Transverse* Ranges. Faults in high angle strike slip fault group include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Faults in the low angle reverse and reverse-oblique group include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

The Pomona Valley basin is bounded to the north by the San Jose fault and to the southwest by the Chino-Central Avenue fault. These two fault systems do not exhibit significant evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age faults, having exhibited displacement and movement within the past approximately 130,000 years.

The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. A natural hillside is depicted north of the subject site and has been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and sandstone sedimentary bedrock. Drawing No. 3, *Regional Geologic Map*, has been prepared to show the project site with respect to local geology of the San Dimas Quadrangle.

4.2 Subsurface Profile of Project Site

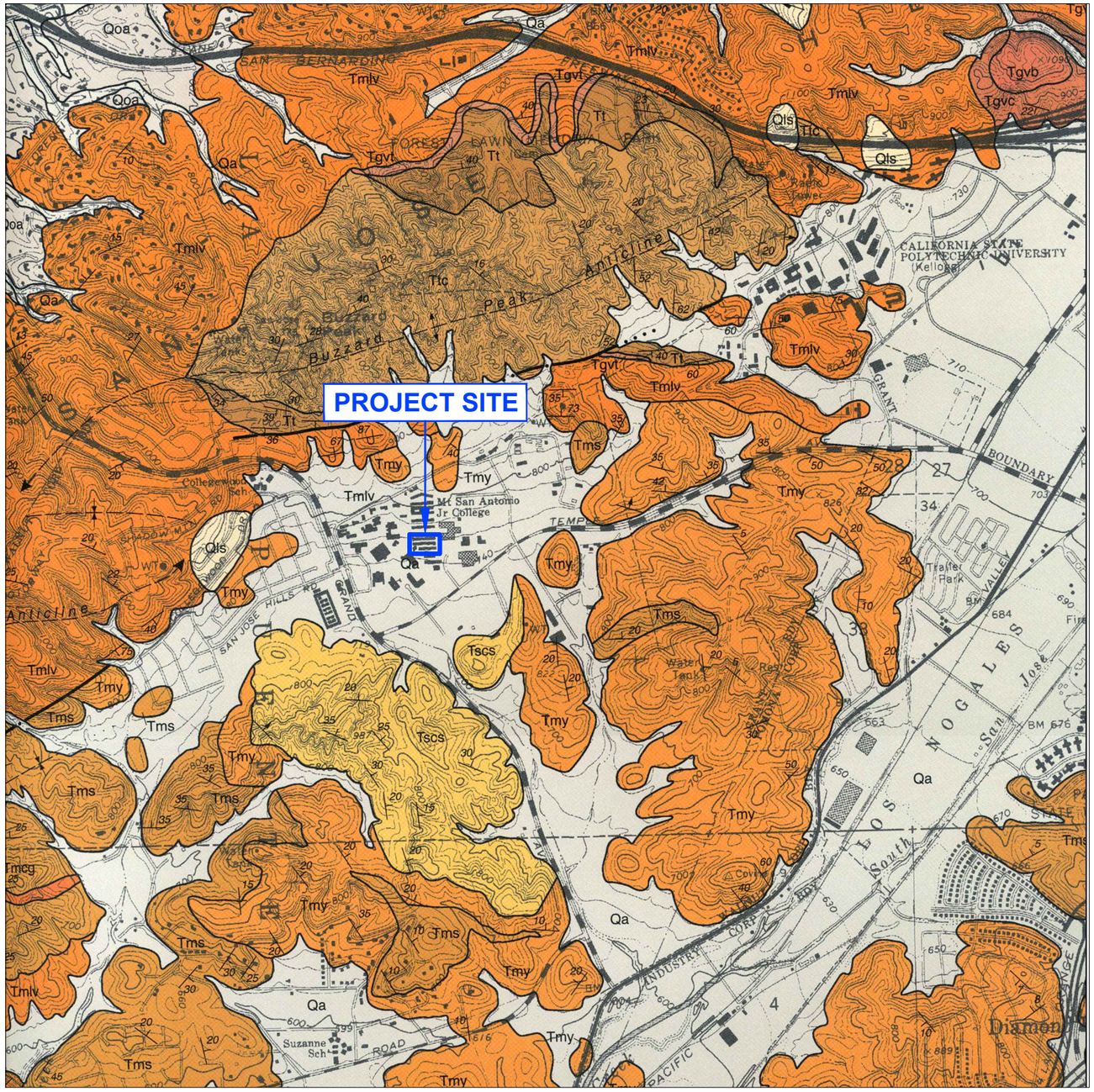
The earth materials encountered during our investigation consist of existing fill soils placed during previous site grading operations and natural alluvial sediments to the depths explored. Undocumented fills, approximately three (3) to five (5) feet in thickness, were encountered in the borings. Deeper artificial fill may exist at the site. The fills encountered consisted primarily of silty sands, clayey sands, sandy clays, and silty clayey sands. The alluvial soil deposits below the surface fills primarily consists of fine-grained clays, clayey sands, silty sands, silts, and sandy silts. Sampling blow-counts correlate to moderately dense conditions near surface, and generally become denser with depth.

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0 1000 2000

SCALE IN FEET

SCALE: 1"=2000'



SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

LANDSLIDE AND TALUS RUBBLE

— *UNCONFORMITY* —

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— *UNCONFORMITY* —

SEDIMENTARY AND VOLCANIC ROCKS

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic; latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg,*** *and siltstone.*

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964; Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

TOPANGA FORMATION

(of Shelton, 1955; Tan. 1998; marine clastic; middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late ? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally intertongued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

— *UNCONFORMITY* —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenoliths elongated parallel to gneissoid structure up to 9 in. long.*

Holocene / Pleistocene — QUATERNARY
Miocene — TERTIARY
CENOZOIC

REFERENCE: THOMAS W. DIBBLE, □r. □DF-91□
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE □2002□

REGIONAL GEOLOGIC MAP

Converse Consultants

STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. 17-31-234-01

Drawing No. 3

Drawing No. 4, *Geologic Cross Section A-A'*, and Drawing No. 5, *Geologic Cross Section B-B'*, have been drawn across the subject site to illustrate the subsurface conditions beneath the project site. For a detailed description of the materials encountered during our exploration, see Appendix A*, Field Exploration.*

4.3 Groundwater

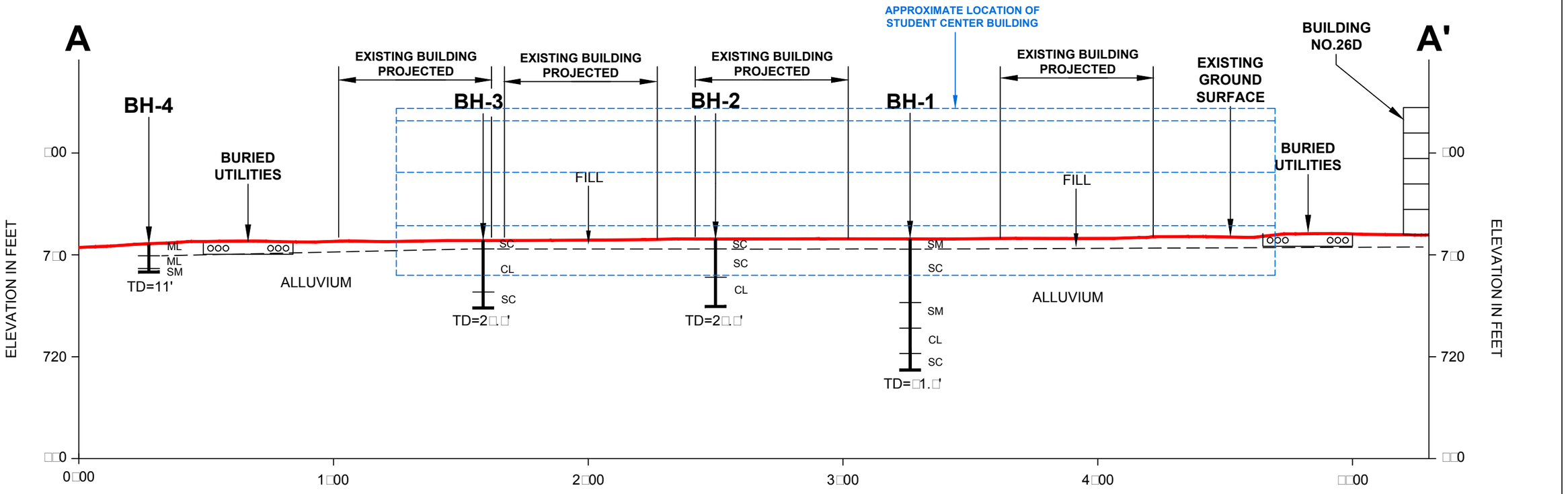
Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs. The regional groundwater table is not expected to be encountered during the planned construction. However, the possibility of perched groundwater encountered during future grading and excavation cannot be completely precluded.

In general, groundwater levels fluctuate with the seasons and from local recharge activities. Local zones of perched groundwater may be present within the near-surface deposits due to buried alluvial channel features and remnants, local recharge conditions or during rainy seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, storm water recharge and groundwater pumping, among other factors.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience, some variations in the continuity and nature of subsurface conditions within the project site should be anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth materials at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions differ significantly from those presented in this report, this office should be notified immediately so that recommendations can be modified, if necessary.

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□ROFILE
VERTICAL: 1"=40'
HORIZONTAL: 1"=40'

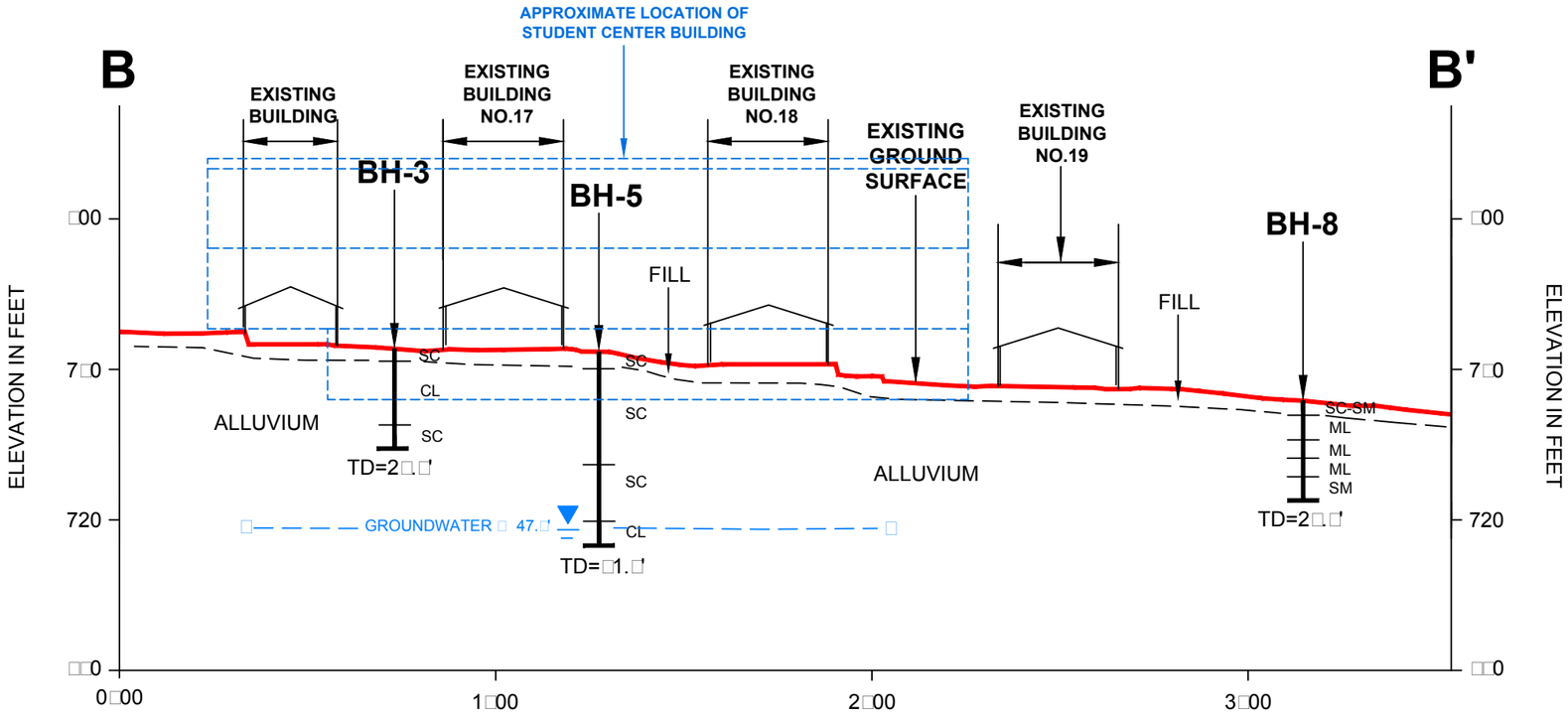
GEOLOGIC CROSS SECTION A-A'

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Drawing No. 4



□ROFILE
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HORIZONTAL: 1"=40'

GEOLOGIC CROSS SECTION B-B'

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Drawing No. 5

5.0 FAULTING AND SEISMIC HAZARDS

Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (located approximately 0.5 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (located approximately 6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults was included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local and regional active faults with respect to the project site are tabulated on Table No. 1, *Summary of Regional Faults,* and are shown in Drawing No. 3, *Regional Geologic Map*, and on Drawing No. 6, *Southern California Regional Fault Map*.

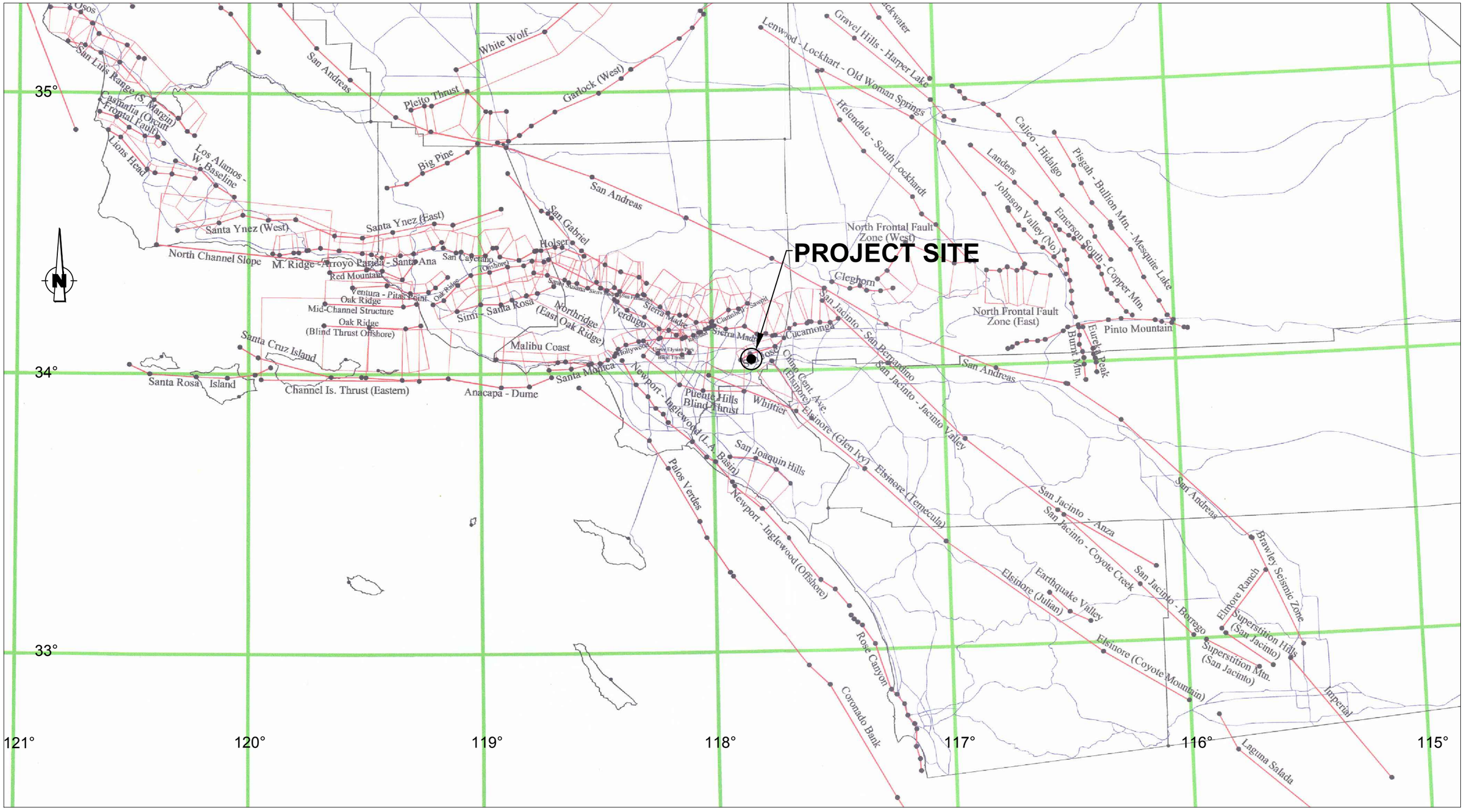
The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time (0-11,700 years before present) and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary age, having exhibited displacement and movement within the past 738,000 years.

5.1.1 San Jose Fault

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped surface trace of the San Jose Fault is located approximately 1,700 feet (0.5 kilometers) north of the project.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose fault is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating

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REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

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Drawing No.
6

of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

5.1.2 Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The faults lie along the northeast edge of the Puente Hills in the cities of Chino Hills and Chino. The Chino and Central Avenue faults are considered part of the Elsinore fault system which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits. The Chino and Central Avenue faults converge southward into the much larger Elsinore fault system.

The July 29, 2008 Chino Hills earthquake was a magnitude 5.5 earthquake event that caused moderate ground shaking and some minor damage to Mt. San Antonio College campus buildings. The earthquake epicenter was located approximately 15 miles southeast of the campus beneath the Chino Hills and at a depth of approximately 9.1 miles (14.6 km) below the ground surface.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 1, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 1, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.5	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00

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Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
Clamshell-Sawpit	19.5	6.5	0.50
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

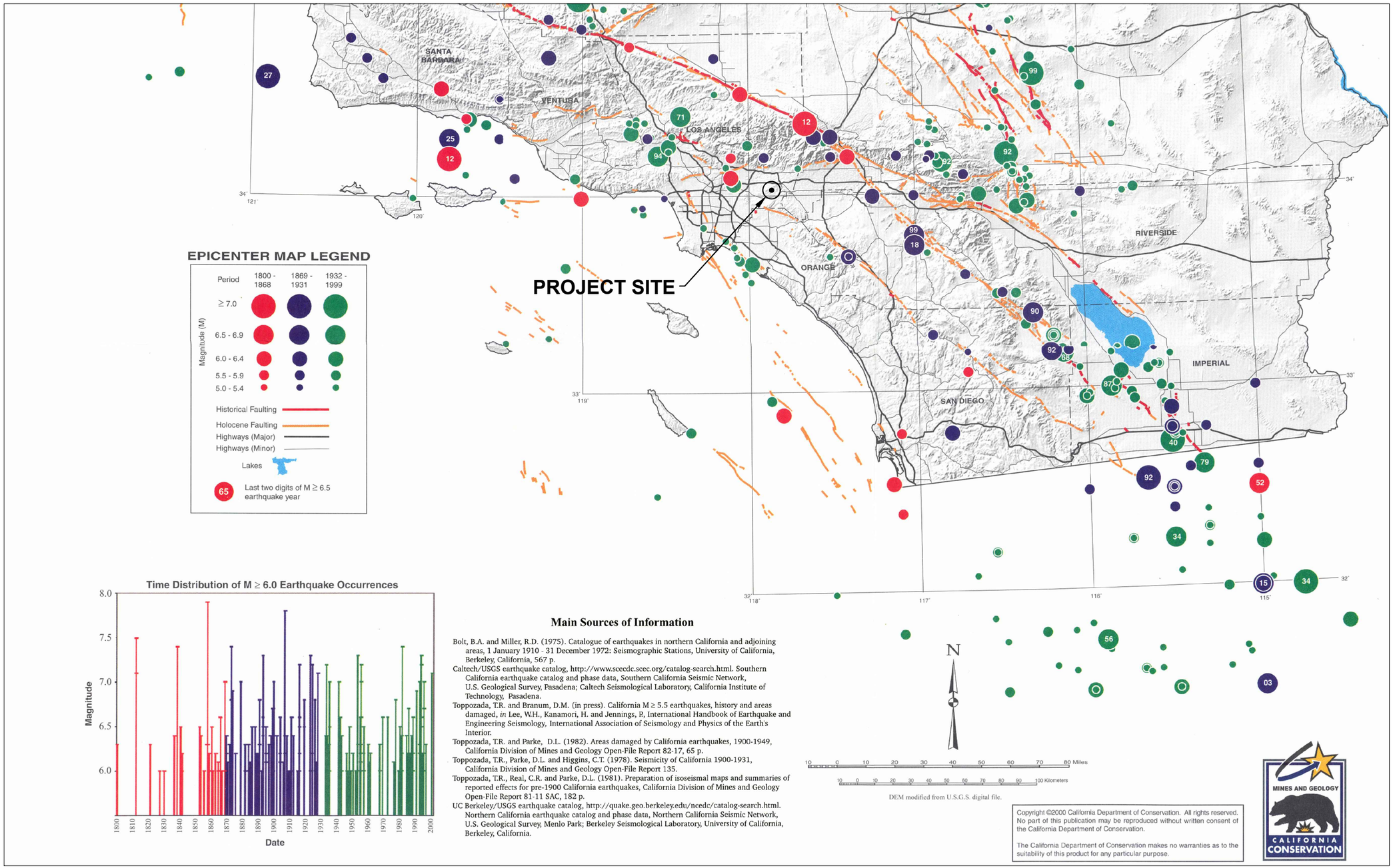
5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the heavily populated Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre, 1994 Northridge and July 2008 Chino Hills earthquakes. The epicenters for these earthquakes are shown in Drawing No. 7, *Epicenter Map of Southern California Earthquakes (1800-1999).*

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EPICENTER MAP LEGEND

Period	1800 - 1868	1869 - 1931	1932 - 1999
Magnitude (M) ≥ 7.0			
6.5 - 6.9			
6.0 - 6.4			
5.5 - 5.9			
5.0 - 5.4			

Historical Faulting
Holocene Faulting
Highways (Major)
Highways (Minor)
Lakes
65 Last two digits of M ≥ 6.5 earthquake year

Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P., International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

DEM modified from U.S.G.S. digital file.

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

REFERENCE: □ORTION OF E□ICENTERS AND AREAS DAMAGED BY M□□ CALIFORNIA EARTHQUAKES, 1□00-1999 CALIFORNIA DE□ARTMENT OF CONSERVATION, MA□ SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

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Drawing No. 7

5.3 Surface Fault Rupture

The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. An “active fault” has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault trace. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

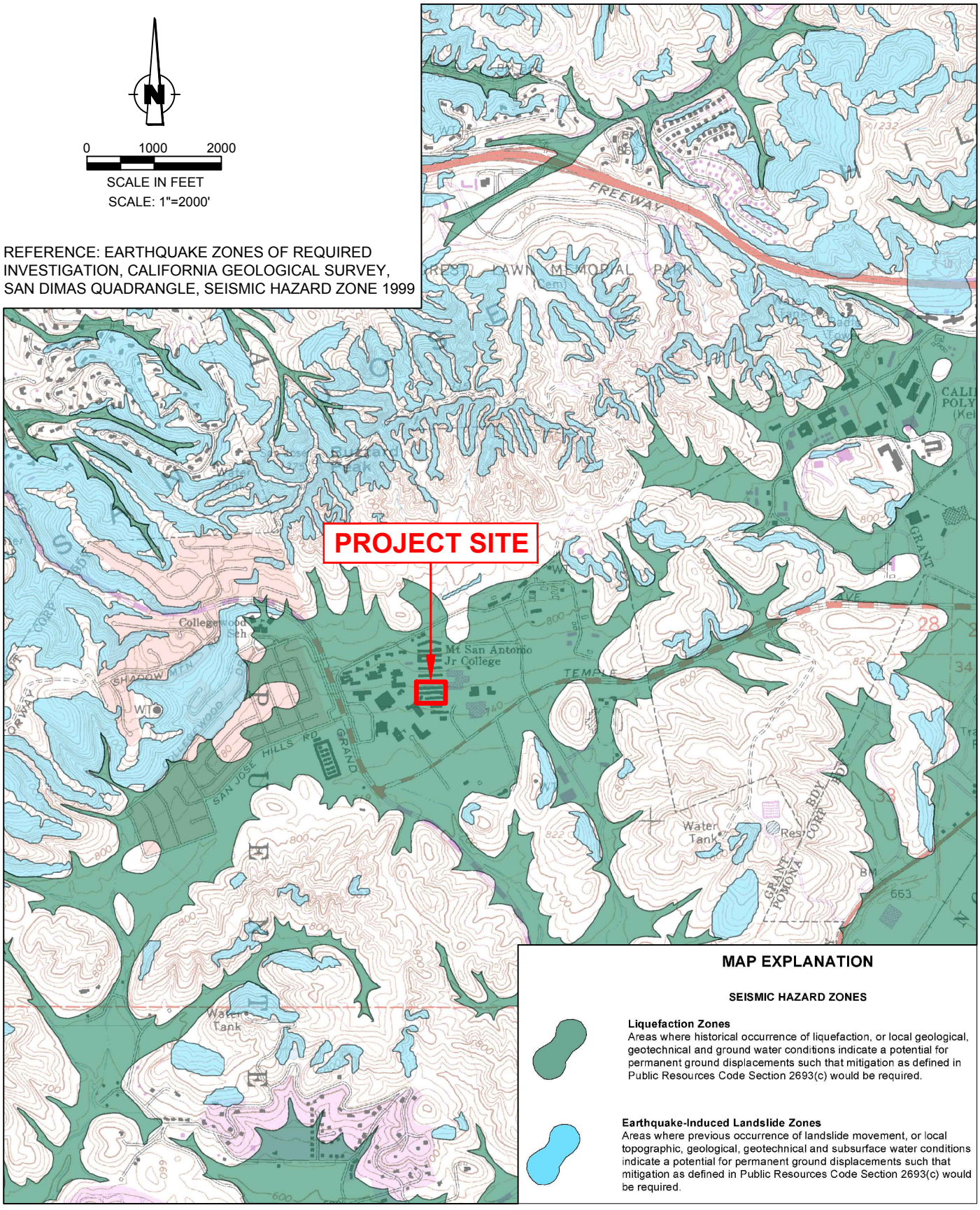
The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 8, *Seismic Hazard Zones Map*. Liquefaction analysis was performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software for the upper 50 feet below ground surface utilizing BH-1. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity of the site is gently sloping to the south, with no

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SEISMIC HAZARD ZONES MAP

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Drawing No.
8

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significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is not shown with any earthquake-induced landslide areas due to the gently, southward sloping ground condition of the site topography.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Map Number 0637C1725F, Panel 1725 of 2350, dated September 26, 2008, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote.

The potential of earthquake induced flooding of the subject site is considered to be remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 40 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard to the project site.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

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6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2016 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.04696 degrees North Latitude, -117.84507 degrees West Longitude). The seismic parameters are presented below:

Table No. 2, CBC Seismic Design Parameters

Seismic Parameters	2016 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.182 g
Mapped 1-second Spectral Response Acceleration, S_1	0.779
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.182 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.169 g
Design Spectral Response Acceleration for short period, S_{DS}	1.454 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.779 g

6.2 Site-Specific Response Spectra

A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years). The controlling source was determined to be the USGS 2008 California Gridded Source, with an MCE of Mw 7.0 and a deterministic peak ground acceleration (PGA) of 1.088g.

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

The 2016 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S. Seismic Design Maps* website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 3, 2016 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	D
S_s	2.184	C_{RS}	1.012
S_1	0.780	C_{R1}	1.022
F_a	1	**0.08 F_v/F_a**	0.120
F_v	1.5	**0.4 F_v/F_a**	0.600
S_{MS}	2.184	T_0	0.107
S_{M1}	1.170	T_S	0.536
S_{DS}	1.456	T_L	8
S_{D1}	0.780		

A Site-Specific response analysis, using faults within 200 kilometers of the sites, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 360 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

The probabilistic response spectrum results and peak ground acceleration for each attenuation relationship are presented in the following table.

Table No. 4, Probabilistic Response Spectrum Data

Attenuation Relationship	Boore-Atkinson (2008)	Campbell-Bozorgnia (2008)	Chiou-Youngs (2007)	Probabilistic Mean
Peak Ground Acceleration (g)	0.934	0.910	1.059	0.975

Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
0.03	1.012	0.974	1.139	1.047
0.05	1.119	1.119	1.308	1.187
0.10	1.598	1.605	1.869	1.696
0.20	2.025	2.051	2.313	2.135
0.30	2.000	1.916	2.213	2.053
0.40	1.932	1.796	2.032	1.925
0.50	1.830	1.711	1.870	1.804
0.75	1.506	1.392	1.487	1.463
1.00	1.202	1.159	1.242	1.201

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Spectral Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)			
2.00	0.639	0.608	0.571	0.608
3.00	0.426	0.398	0.356	0.395
4.00	0.305	0.304	0.253	0.290

Applicable response spectra data are presented in the table below and on Drawing No. 9, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.

Table No. 5, Site-Specific Response Spectrum Data

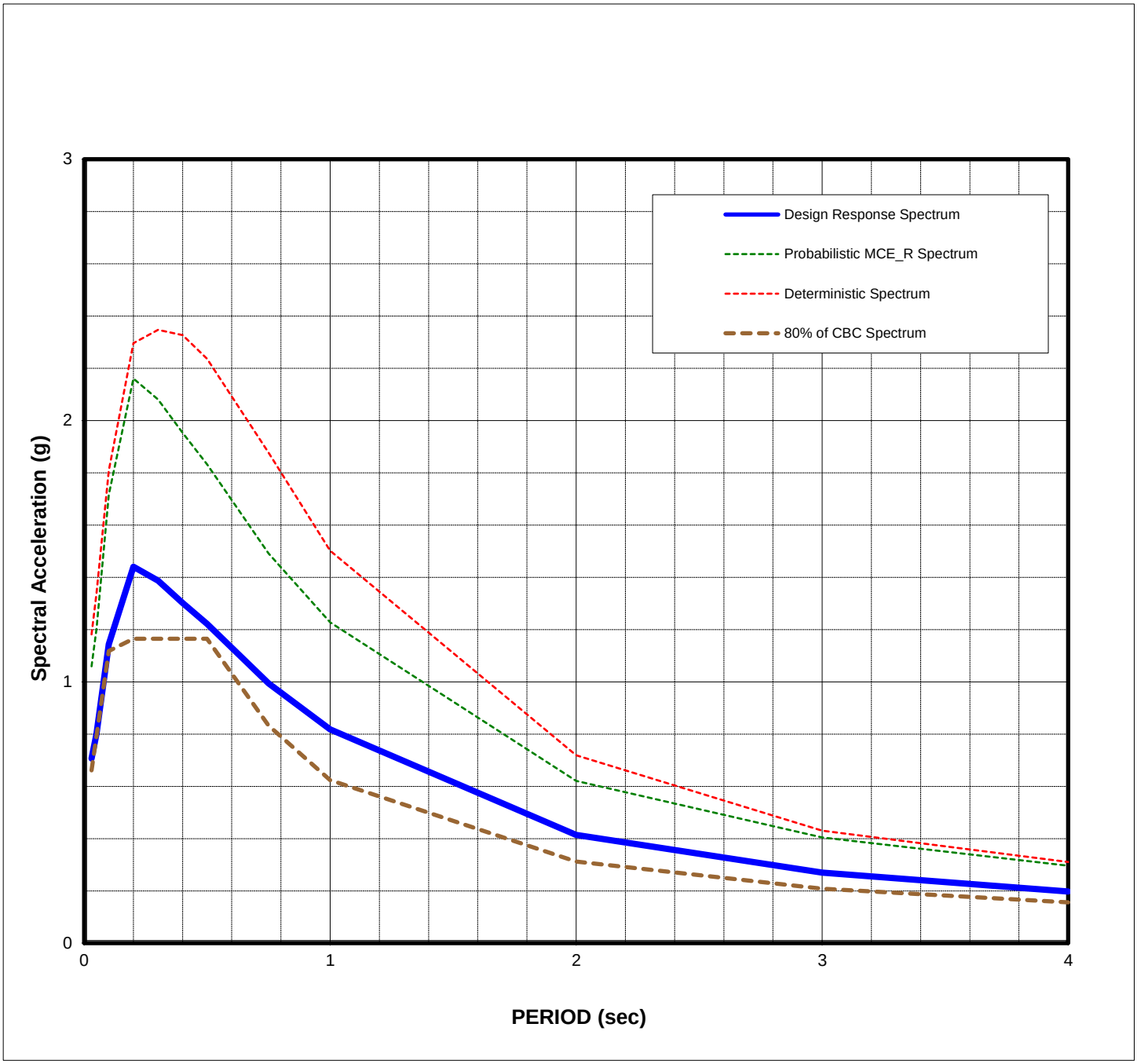
Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	1.047	1.012	1.060	1.181	0.225	*1.060*	*0.662*	***0.71***
0.05	1.187	1.012	1.201	1.338	0.375	*1.201*	*0.792*	***0.80***
0.10	1.696	1.012	1.716	1.808	0.750	*1.716*	*1.118*	***1.14***
0.20	2.135	1.012	2.161	2.296	1.500	*2.161*	*1.165*	***1.44***
0.30	2.053	1.013	2.080	2.347	1.500	*2.080*	*1.165*	***1.39***
0.40	1.925	1.015	1.953	2.327	1.500	*1.953*	*1.165*	***1.30***
0.50	1.804	1.016	1.832	2.236	1.500	*1.832*	*1.165*	***1.22***
0.75	1.463	1.019	1.491	1.877	1.200	*1.491*	*0.832*	***0.99***
1.00	1.201	1.022	1.227	1.502	0.900	*1.227*	*0.624*	***0.82***
2.00	0.608	1.022	0.621	0.719	0.450	*0.621*	*0.312*	***0.41***
3.00	0.395	1.022	0.404	0.431	0.300	*0.404*	*0.208*	***0.27***
4.00	0.290	1.022	0.296	0.310	0.225	*0.296*	*0.156*	***0.20***

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

Table No. 6, Site-Specific Seismic Design Parameters

Parameters	Value (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-second period Spectral Response Acceleration, S_{MS}	2.161	1.747
Site-Specific 0.1-second period Spectral Response Acceleration, S_{M1}	1.243	0.936
Site-Specific Design Spectral Response Acceleration for short period S_{DS}	1.440	1.165
Site-Specific Design Spectral Response Acceleration for 1-second period, S_{D1}	0.828	0.624

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Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE-SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Student Center

1100 N. Grand Avenue, Walnut, CA 91789

For : Mt. San Antonio College

Project Number:

17-31-234-01

Converse Consultants

Drawing No.

9

7.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- Undocumented fills, approximately three to five feet in thickness, were encountered in the borings. Deeper artificial fill may exist at the site. The fill encountered consists primarily of silty sand, clayey sand, sandy clay, and silty clayey sand. The natural alluvial soil deposits below the surface fills primarily consists of fine grained clays, clayey sand, silty sand, silt, and sandy silt.

- Groundwater was encountered during the time of drilling in Boring BH-5 at a depth of approximately 47.5 feet bgs.

- The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone “active faults” within the State of California. The site can be expected to receive moderate to strong ground shaking from earthquakes on local and regional faults.

- The site is located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle. The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction. The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively.

- Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential

- In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

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- Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The test resulted in an average percolation rate of 1.74 inches/hour and a lowest percolation rate of 1.35 inches/hour

- Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various TI conditions are presented in Table No. 11, *Flexible Pavement Structural Sections.*

- Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment

- We recommend the proposed new Student Center Building be supported on shallow spread foundations provided our earthwork recommendations are incorporated in the design and construction.

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8.0 DESIGN RECOMMENDATIONS

8.1 General Evaluation

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

8.2 Shallow Foundations

The proposed new student center building can be supported on shallow continuous and isolated spread foundations founded on compacted fill provided our recommendations and earthwork recommendations are incorporated in the design and construction. These foundations can be tied using grade beams to reduce the differential settlement, if needed.

8.2.1 Vertical Capacity

The proposed new Student Center Building can be supported by conventional shallow footings. We recommend continuous and square footings be founded at least 24 inches below lowest adjacent final grade entirely into compacted fill or into native soil. A minimum footing width of 24 inches is recommended for square footings and 18 inches for continuous footings. The allowable bearing value for footings with above minimum sizes founded on compacted fill and competent native soils may be designed for a net bearing pressure of 2,000 pounds per square foot (psf) for dead-plus-live-loads. The net allowable bearing pressure can be increased by 500 psf for each additional foot of excavation depth and by 250 psf for each additional foot of excavation width up to a maximum value of 4,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

8.2.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.30 may be assumed with normal dead load forces. An allowable passive earth pressure of 240 psf per foot of depth up to a maximum of 2,400 psf may be used for footings poured against properly compacted fill. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

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8.2.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than one (1) inch. Differential settlement is expected to be up to one-half of the total settlement over a 30-foot span.

The estimated potential seismically induced settlement for BH-1 and BH-5 are 1.55-inches and 1.67-inches, respectively. The estimated potential differential settlement for BH-1 and BH-5 are 0.78-inch and 0.84-inch, respectively. These foundations can be tied using grade beams to reduce the differential settlement, if needed.

8.2.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

8.3 Slabs-on-Grade

Slabs-on-grade should be supported on properly compacted fill. Compacted fill used to support slabs-on-grade should be placed and compacted in accordance with report Section 9.0, *Earthwork Recommendations*.

Slabs-on-grade should have a minimum thickness of five (5) inches nominal for support of normal ground-floor live loads. Minimum reinforcement for slabs-on-grade should be No. 4 reinforcing bars, spaced at 18 inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer. A static modulus of subgrade reaction equal to 150 pounds per square inch per inch may be used in structural design of concrete slabs-on-grade.

It is critical that the exposed subgrade soils should not be allowed to desiccate prior to the slab pour. Care should be taken during concrete placement to avoid slab curling. Slabs should be designed and constructed as promulgated by the ACI and Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted.

If moisture-sensitive floor coverings, such as vinyl tile, carpet, or wood floors, are used, slabs should be underlain by a minimum 10-mil thick moisture retarder/barrier in conformance with ASTM E 1745 Class A requirements.

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8.4 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

8.5 Lateral Earth Pressure

The following provisional design values may be used for any utility vaults and/or walls below grade that are less than six (6) feet high.

The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of soil behind the wall, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following earth pressures are recommended for vertical walls with no hydrostatic pressure.

Table No. 7, Lateral Earth Pressures for Retaining Wall Design

Backfill Slope (H:V)	Cantilever Wall Equivalent Fluid Pressure (pcf)	Restrained Wall Equivalent Fluid Pressure (psf)
Level	40 (triangular pressure distribution)	60 (triangular pressure distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Suitable subdrain systems should be installed around the perimeter of the subterranean walls enclosing interior spaces and moisture sensitive areas to provide adequate drainage and prevent water buildup behind the retaining walls and beneath the bottom floor level. Adequate drainage should be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by a minimum one (1) square foot per lineal feet of free draining, uniformly graded, ¾-inch washed, crushed aggregate, and wrapped in filter fabric such as Mirafi 140N or equivalent. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, rigid Schedule 40 PVC or ABS (SDR-35), with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to solid pipe outlets with glued manufactured pipe fittings, couplings and caps and sloped at a minimum 1-2% gradient to provide gravity flow to a suitable disposal point. The subdrain should be continuous around the perimeter of the wall footing and discharge into a suitable, non-erosive drain outlet with the maximum outlet spacing of 100 feet to a suitable disposal points. Subdrain systems and surface drains systems should be kept separate to prevent recharging of surface water behind the walls.

Subterranean walls and floor levels that retain earth and enclose interior spaces and floors should be waterproofed and dampproofed for moisture sensitive areas to mitigate

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potential moisture migration through the walls and floor slabs. Adequate ventilation of the subterranean floor levels should be provided. Waterproofing of the foundation walls and floor slabs should be performed in accordance with Chapter 18-Soils and Foundations, Section 1805-Damproofing and Waterproofing of the 2014 County of Los Angeles Building Code.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third (1/3) or one-half (1/2) the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Retaining walls taller than six (6) feet should be designed to resist additional earth pressure caused by seismic ground shaking based on Section 1615A.1.6 of CBC 2010. A seismic earth pressure 20H (psf), based on an inverted triangular distribution, can be used for design of wall.

Basement walls can be designed using at-rest pressures provided in Table No. 7, *Lateral Earth Pressures for Retaining Wall Design*. The seismic earth pressure does not need to be added to the at-rest pressures for the basement retaining wall design.

8.6 Soil Corrosivity Evaluation

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test two (2) samples taken in the general area of the proposed structure. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized in the following table:

Table No. 8, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) % by Weight	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-1	0-5.0	6.78	145	0.014	2,700
BH-9	0-5.0	7.16	240	0.019	2,200

In accordance with the Caltrans Corrosive Guidelines (2015), water soluble sulfates in the soil indicate that concrete exposed has no restrictions on cement type or water-cement ratio. The pH, chloride concentrations, resistivity, and sulfate concentrations fall in the “non-corrosive” range for structural elements.

In general, conventional corrosion mitigation measures may include the following:

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- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed.

- Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

The test results presented herein are considered preliminary. If advanced corrosivity study is desired by the design team, a corrosion engineer can be consulted for appropriate mitigation procedures and construction design.

8.7 Percolation Testing

Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The tests were performed using the falling head test method in accordance with Los Angeles County "Low Impact Development Best Management Practice Guideline for Design, Investigation, and Reporting".

The result of the percolation test can be seen below and in Appendix E, *Percolation Testing.*

Table No. 9, Boring Percolation Test Result

Boring No.	Depth of Test (feet)	Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-4	0.0-10.0	Silt (ML) over Sandy Silt (ML)	1.74	1.35

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.3 inch per hour. The project Civil Engineer shall review the data of percolation test presented in Appendix E to determine specific soil layers and percolation rates for design of the proposed infiltration system. Infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system. A proposed infiltration system must comply with the following setbacks in accordance with Los Angeles County guideline.

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Table No. 10, Infiltration Facility Setback Requirements per Los Angeles County

Setback from	Distance
Property lines and public right of way	5 feet
Any foundation	15 feet or within 1:1 plane drawn up from the bottom of foundation, whichever greater
Face of any slope	H/2, 5 feet minimum (H is height of slope)
Water wells used for drinking water	100 feet
Historically highest groundwater levels	10 feet above

8.8 Flexible Pavement Design

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 with a safety factor of 0.2 for asphalt concrete over aggregate base and 0.1 for a full depth asphalt concrete section. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values was evaluated. Thicknesses of flexible pavement structural sections were calculated using a laboratory obtained R-Value of 17. The recommended flexible pavement structural sections for various TI conditions are presented in the following table:

Table No. 11, Flexible Pavement Structural Sections

Design R-value	Design TI	AC over AB Structural Section		Full Section AC
		AC (inches)	AB (inches)	
17	4	4.0	4.0	5.0
	5	4.0	8.0	7.0
	6	5.0	9.5	8.5
	7	6.0	11.5	10.0
	8	7.0	13.0	11.5
	9	8.0	14.5	13.0

Actual traffic index and traffic load should be determined by either a Civil Engineer or Traffic Engineer. The above pavement sections are recommended as a guideline for basic usage of the indicated TI values, and may not be sufficient for actual traffic loading.

Base material shall conform to requirements for a Class 2 Aggregate Base (AB) or equivalent (such as crushed miscellaneous base (CMB)) and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, Latest Edition).

Asphaltic materials should conform to Section 203-1, "*Paving Asphalt*," and should be placed in accordance with Section 302-5, "*Asphalt Concrete Pavement*," of the SSPWC.

We recommend the subgrade pavement areas be over-excavated and recompacted at least 2 feet below existing soil subgrade where space and buried utility lines permit. If

loose, soft, yielding soil conditions are encountered at the excavation bottom, then additional mitigation measures should be considered including deeper removal and re-compaction of site soils, bridging soft bottoms with imported base materials and/or placement of a geofabric layer to reinforce the soil subgrade. The soil subgrade materials should be processed, mixed, moisture conditioned as needed to near optimum moisture content, and compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557). Imported base materials should be compacted to at least 95 percent relative compaction.

8.9 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the foundation shall have a minimum 2 percent slope away from the building per 2016 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils.

8.10 Slope Maintenance and Erosion Control

Existing slopes and landscaped areas require periodic inspections and maintenance for proper upkeep and to help assure their continued stability. Most soil erosion problems are associated with water and site drainage. Maintaining adequate positive drainage and slope planting is important for erosion control. Drainage related items requiring periodic inspection and maintenance include:

- Compacted earth berms, side swales, and non-erosive drainage devices should be installed to prevent water from flowing uncontrolled over the tops of slopes and walls. It is important that these devices be maintained and free of obstruction.

- Periodic inspections of the slope areas, interceptor drains, terrace drains and down drains should be performed to check for proper operation. These drainage devices should be checked before the winter rainy season and before and after major storms.

- Interceptor drains, terrace drains, down drains, drain pipes, catch basins and drainage devices should be kept clean of debris and maintained in good working order to provide adequate drainage for slope areas. Control joints and cracks in concrete or asphalt drainage devices should be sealed and/or resealed to prevent infiltration of water into slope soils. The drainage devices should be routinely checked for proper operation and cleared of silt and debris.

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- Rodent activity should be controlled to prevent loosening of soils and water penetration. Animal burrows should be filled with compacted soils since they may cause diversion of surface runoff, promote accelerated erosion, or cause shallow slope failures.

- Slope areas disturbed by foot traffic, trails, erosion and gullies should be repaired with compacted soils and re-planted to prevent slope erosion. Site users should be encouraged to use designated trails, pathways, stairways and service roads for access.

- Slope planting should be maintained for erosion control. Nylon and jute netting can be used to protect and maintain exposed slope surfaces until a dense growth of vegetation has been established. Graded slopes may require more time to establish plant growth. The optimal goal of planting is to achieve a dense growth of vegetation (which includes plants of varying root depths) requiring little watering. Bare spots, areas of little growth and areas with deteriorated mesh or plant cover, may have to re-seeded and/or replanted with new mesh and plants for erosion control. Loose soils, plant cuttings and debris should not be permitted to accumulate on the slopes.

- Landscape watering should be controlled and be just sufficient to sustain plant growth. Seasonal adjustments to the amount of watering should be performed prudently, with periodic monitoring and regulation. Slope areas should not be over-watered. Sprinkler and irrigation systems should be maintained and adjusted to prevent overwatering of slopes and landscaping. Irrigation leaks should be stopped and repaired as soon as possible to prevent wasting of water and soil erosion. Wet spots may indicate a leaking or broken water line or control valve.

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9.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

9.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading will be required to prepare the sites for support of the proposed structures that are constructed with conventional shallow spread footings. To reduce differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation.

Site preparation for the proposed structures will require removal of existing structures, footings, slabs, improvements, pavements, sidewalks, trees, grass and roots, organic rich top soils and other existing underground manmade structures and utilities. Top soils containing organic rich materials are not acceptable for reuse as compacted fill soils beneath the building pad and structures.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing. Rocks larger than three (3) inches in the largest dimension should not be placed as fill.

On-site clayey soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

9.2 Over-Excavation

Undocumented fill soils approximately three (3) to five (5) feet in thickness were encountered in the borings. All undocumented fill soils and unsuitable or disturbed on-site soils in the building structure area and to five (5) feet beyond the building limits and appendages should be removed and be recompacted to provide at least three (3) feet of properly compacted fill beneath the bottom of the building foundations. A minimum removal of 24 inches should be anticipated for all concrete flatwork and for minor non-load bearing and lightly loaded minor structures, the paving areas for parking and driveways. The actual depth of fill removal and re-compaction should be determined in the field during grading by the project geotechnical engineer or his representative.

The on-site soils and undocumented fill soils in the upper five (5) feet and five (5) beyond the building limits should be completely over-excavated and recompacted for building slab

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and foundation support. If loose, disturbed or otherwise unsuitable soil materials are encountered at the bottom of excavations, deeper removals will be required until firm and unyielding native soils are encountered. The final bottom surfaces of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing any compacted fill. The bottoms should be proof rolled with a loaded, heavy, rubber tired piece of grading equipment to identify loose or soft bottom areas. All fill soils should be placed on competent native materials or properly compacted fill as determined by the project geotechnical engineer or his representative. The excavations to remove undocumented fill soils and unsuitable soils should be extended to five (5) feet beyond the proposed structure limits where space is available. Localized deeper removal will be needed where firm native soils are not exposed on the excavation bottom. For pavement, flatwork and hardscape areas, the upper 24 inches of subgrade soils should be over-excavated and recompacted.

Existing foundations, footings and utilities that are to remain in place should not be undermined during grading and construction and shall be properly supported.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned to above three percent (3%) of the optimum moisture content for fine-grained soils and within three percent (3%) of the optimum moisture content for granular soils, mixed and compacted to at least 90 percent (90%) relative compaction (laboratory maximum density evaluated per ASTM D1577). Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Mirafi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 95% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading by the project geotechnical engineer or his representative. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

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9.3 Structural Fill

Following observation of the excavation bottom, subgrade soil surfaces should be scarified to a depth of at least six inches. The scarified soil should be moisture-conditioned within three (3) percent of optimum moisture for granular soils and to approximate three (3) percent above the optimum moisture for fine-grained soil. Scarified soil shall be compacted to a minimum 90 percent of the laboratory maximum dry density as determined by the ASTM Standard D1557 test method.

Any import fill should be tested and approved by project geotechnical engineer or his designated representative. The import fill should have an expansion potential less than 20. The imported materials should be thoroughly mixed and moisture conditioned within three (3) percent above the optimum moisture. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory maximum dry density in accordance with the ASTM Standard D1557 test method.

Where the fill is not within the areas specified above or is not to support any structures, excavated site soils, free of deleterious materials and rock particles larger than three inches in the largest dimension, should be suitable for placement as compacted fill. The site materials should be thoroughly processed, mixed and moisture conditioned to approximate three (3) percent above the optimum moisture for fine-grained soils and within three (3) percent of the optimum moisture content for granular soils, and then compacted to at least 90 percent of relative compaction.

9.4 Subgrade Preparation

Final subgrade soils for proposed structures and pavement should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed, moisture conditioned and uniformly compacted. The subgrade soils should be properly moisture conditioned before placing concrete.

9.5 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment.

9.6 Pipeline Subgrade Preparation

The final subgrade surface should be level, firm, uniform, and free of loose materials and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles, larger than three (3) inches in dimension, if any, should be removed from the trench bottom and replaced with compacted on-site materials.

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9.7 Pipe Bedding

Bedding is defined as the material supporting and surrounding the pipe, to 12 inches above the pipe.

The load on the rigid pipes and deflection of flexible pipes and, hence, the pipe design, depends on the type and the amount of bedding placed underneath and around the pipe. Care should be taken to densify the bedding material below the spring line of the pipe.

Bedding material for the pipes should be free from oversized particles (greater than 1-inch). One (1) Sand Equivalent (SE) test was conducted on a representative soil sample with a result of 15. Based on the SE test result, the site soils at the pipe invert depths has an SE value less than 30 and is not suitable to be used as pipe bedding. Pipe design generally requires a granular material with a Sand Equivalent (SE) greater than 30. To provide uniform and firm support for the pipe, compacted granular materials such as clean sand or crushed stone encasement may be used as pipe bedding material. For nominal pipe size, up to and including 15 inches, the crushed rock used as bedding should have a maximum size of ½ inch, whereas for pipe sizes over 15 inches, the maximum rock size should be ¾ inch.

Migration of fines from the surrounding soils must be considered in selecting the gradation of any imported bedding material. To avoid migration of fines, commercially available geofabric (used for filtration purposes) such as (i.e., Mirafi HP570, 140N, 180N or equivalent) may be used (wrapped around the bedding material encasing the pipe) to separate the bedding material from the surrounding native or fill soils.

9.8 Trench Zone Backfill

The trench zone is defined as the portion of the trench above the pipe bedding extending up to the final grade level of the trench surface.

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement. Excavated on-site soils free of oversize particles, defined as larger than one (1) inch in maximum dimension in the upper 12 inches of subgrade soils and larger than three (3) inches in the largest dimension in the trench backfill below, and deleterious matter after proper processing may be used to backfill the trench zone. Imported trench backfill, if used, should be approved by the project soils consultant prior to delivery at the site. No more than 30 percent of the backfill volume should be larger than ¾ inch in the largest dimension.

Trench backfill shall be compacted to 90 percent of the laboratory maximum dry density as per ASTM Standard D1557 test method. At least the upper twelve (12) inches of

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trench underlying pavements should be compacted to at least 95 percent of the laboratory maximum dry density.

Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content and then placed in horizontal layers if the expansion index is less than or equal to 20. Should the expansion index be greater than 20, backfill materials shall be brought to approximately 3 percent above optimum moisture content. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D6938 test methods or equivalent. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained. It should be the responsibility of the contractor to maintain safe conditions during cut and/or fill operations. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

9.8.1 Select Imported Fill Materials for Trench Zone Backfill

Imported soils, if any, used as compacted trench backfill should be predominantly granular and meet the following criteria:

- Expansion Index less than 20
- Free of all deleterious materials
- Contain no particles larger than 3 inches in the largest dimension
- Contain less than 30 percent by weight retained on ¾-inch sieve
- Contain at least 15 percent fines (passing #200 sieve)
- Have a Plasticity Index of 10 or less

Any import fill should be tested and approved by the geotechnical representative prior to delivery to the site.

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9.9 Expansive Soil Mitigation

Based on the field investigation, the near-surface earth materials are primarily silty sand, clayey sand, and silt. The site soils were tested for expansion potential per ASTM Standard D4829 and were found to have “very low” expansion potential. The on-site soil materials may be mixed during the grading and the expansion potential might change. Due to this, the expansion potential of site soils should be verified during and after site grading as needed for slabs, foundations and pavement placed directly on expansive subgrade soils will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. The extent of removal should be determined by the project geotechnical engineer or his representative based on soil observations made during grading.

9.10 Shrinkage and Subsidence

Soil shrinkage and/or bulking as a result of remedial grading depends on several factors including the depth of over-excavation, and the grading method and equipment utilized, and average relative compaction. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

The approximate shrinkage factor for the native alluvial soils is estimated to range from five (5) to fifteen (15) percent. For estimation purposes, ground subsidence may be taken as 0.15 feet as a result of remedial grading.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

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10.0 CONSTRUCTION CONSIDERATIONS

10.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 10.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required.

10.2 Temporary Excavations

Based on the sandy clay and silty sand materials encountered near surface in the exploratory borings, sloped temporary excavations (if necessary) may be constructed according to the slope ratios presented in the following table, *Slope Ratios for Temporary Excavations*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 12, Slope Ratios for Temporary Excavations

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 4	vertical
4 – 8	1:1
8+	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to minimize raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical engineer or engineering geologist. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

10.3 Geotechnical Services During Construction

This report has been prepared to aid in the site preparation and site grading plans and specifications, and to assist the architect, civil and structural engineers in the design of

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the proposed structure. It is recommended that this office be provided an opportunity to review final design drawings and specifications to verify that the recommendations of this report have been properly implemented.

Recommendations presented herein are based upon the assumption that adequate earthwork monitoring will be provided by Converse. Excavation bottoms should be observed by a Converse representative prior to the placement of compacted fill. Structural fill and backfill should be placed and compacted during continuous observation and testing by this office. Footing excavations should be observed by Converse prior to placement of steel and concrete so that footings are founded on satisfactory materials and excavations are free of loose and disturbed materials.

During construction, the geotechnical engineer and/or their authorized representatives should be present at the site to provide a source of advice to the client regarding the geotechnical aspects of the project and to observe and test the earthwork performed. Their presence should not be construed as an acceptance of responsibility for the performance of the completed work, since it is the sole responsibility of the contractor performing the work to ensure that it complies with all applicable plans, specifications, ordinances, etc.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any recommended actions presented herein to be unsafe.

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11.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

This report was prepared for Mt. San Antonio College for the subject project described herein. We are not responsible for technical interpretations made by others of our exploratory information. Specific questions or interpretations concerning our findings and conclusions may require a written clarification to avoid future misunderstandings.

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Appendix A

Field Exploration

APPENDIX A: FIELD EXPLORATION

Field exploration included an initial site reconnaissance, and subsurface drilling. During the site reconnaissance, surface conditions were noted and the locations of the test borings were determined. Borings were approximately located using existing features and GPS as a guide.

Prior to field exploration, Underground Service Alert (USA) was notified 48 hours in advance. The proposed boring sites were evaluated by Ground Penetrating Radar Systems, Inc. to check for buried utility lines. Any borings located within or near the utility markings was relocated to a different location within the local proximity. High concentrations of buried utility lines were located beneath planter areas and sidewalks on the east and west sides of the project site.

Eight (8) exploratory borings (BH-1 through BH-8) were advanced within the project site on August 14, 2017, August 15, 2017, and August 24, 2017. The borings were advanced using a truck mounted drill rig with an 8-inch diameter hollow stem auger to a maximum depth of 51.5 feet below the existing ground surface (bgs) or by hand auger methods (BH-4 and BH-6) in limited access areas. Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils, in accordance with the Unified Soil Classification System. Per the college's instruction, the top five feet of soil were advanced using a hand-auger to check for buried utility lines. Field descriptions have been modified, where appropriate, to reflect laboratory test results.

Relatively undisturbed ring and bulk samples of the subsurface soils were obtained at frequent intervals in the borings. The undisturbed samples were obtained using a California Steel Sampler (2.4 inches inside diameter and 3.0 inches outside diameter) lined with thin sample rings. The sampler was driven into the bottom of the boreholes with successive drops of a 140-pound hammer falling 30 inches by means of a mechanically driven automatic trip hammer. The number of successive drops of the driving weight ("blows") required for every 6-inch of penetration of the sampler are shown on the Logs of Borings in the "blows" column.

The soil was retained in brass rings (2.4 inches in diameter and one inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the laboratory. Bulk soil samples were also collected in plastic bags and brought to the laboratory.

Standard Penetration Tests (SPTs) were also performed. In this test, a standard split-spoon sampler (1.4 inches inside diameter and 2.0 inches outside diameter) was driven into the ground with successive drops of a 140-pound hammer falling 30 inches by means of an automatic hammer. The number of successive drops of the driving weight ("blows") required for every 6-inch of penetration of the sampler are shown on the Logs of Borings

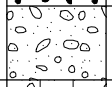
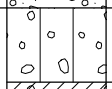
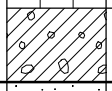
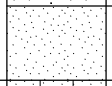
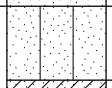
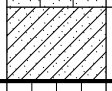
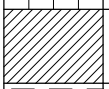
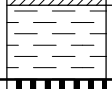
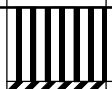
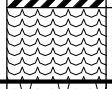
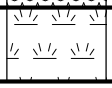
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in the "blows" column. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. A-2a through A-9, *Log of Borings.*

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SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE			GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE			SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method

DRIVE SAMPLE 2.42" I.D. sampler.

DRIVE SAMPLE No recovery

BULK SAMPLE

GRAB SAMPLE

GROUNDWATER WHILE DRILLING

GROUNDWATER AFTER DRILLING

BORING LOG SYMBOLS

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

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Project Name
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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-1**

Log of Boring No. BH-1

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 769 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to coarse-grained, few gravel, brown, grass and roots top 6-inches.		■				ca,er ma (fc=21.2%)
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to coarse-grained, reddish brown.	■		2/4/6	13	118	c
		-fine to coarse-grained, trace gravel up to 1" in maximum dimension, reddish brown						
10		-fine to coarse-grained, trace organics (roots), reddish brown	■		4/5/6	11	116	
15		-fine to coarse-grained, trace gravel up to 3/4" in maximum dimension, reddish brown	■		3/4/5	11	117	wa (fc=29%)
20			■		8/13/23	13	122	
25		**SILTY SAND (SM):** trace clay, reddish brown.	⊠		10/16/20			wa (fc=37%)
30		-fine to coarse-grained, trace clay, reddish brown	■		19/16/22	14	117	

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Project No. **17-31-234-01**

Figure No. **A-2a**

Log of Boring No. BH-1

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 769 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		SANDY CLAY (CL): fine to medium-grained, trace silt, reddish brown.	X		11/21/27			wa (fc=51%)
40			■		24/50(6")	12	126	
45		**CLAYEY SAND (SC):** fine to medium-grained, trace silt, reddish brown.	X		8/5/6			wa (fc=45%)
50			■		9/11/15	20	105	
		End of boring at 51.5 feet Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-2b**

Log of Boring No. BH-2

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 767 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine to coarse-grained, brown, grass and roots top 6-inches.						
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to coarse-grained, reddish brown.	■		6/9/11	11	122	
10		-trace gravel 1/2" in maximum dimension,	■		4/5/5	12	133	
15		**SANDY CLAY (CL):** fine to coarse-grained, brown.	⊠		3/3/3			
20		-light brown	■		10/21/26	11	122	
25		-fine to coarse-grained, reddish brown	⊠		11/8/11			
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17						

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-3**

Log of Boring No. BH-3

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 766 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, trace silt, brown, grass and roots top 6-inches.						max
		ALLUVIUM (Qal): **SANDY CLAY (CL):** fine to coarse-grained, trace silt, brown.						
5			■		10/12/10	8	122	ds
10			■		4/6/7	11	115	
15			⊠		2/3/8			
20		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, trace gravel, brown with white mottling.	■		9/20/30	13	112	
25			⊠		6/16/22			
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-4**

Log of Boring No. BH-4

Dates Drilled: 8/24/2017 Logged by: RAM Checked By: MBS

Equipment: Hand Auger Driving Weight and Drop: N/A

Ground Surface Elevation (ft): 762.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILT (ML):** dark brown, grass and roots top 6-inches.						
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** fine to coarse-grained, brown.	■			12	108	
10		**SILTY SAND (SM):** with gravel, brown.	■			10	110	
		End of hand auger boring at 11 feet. Groundwater not encountered during drilling. Performed field percolation test. Borehole backfilled with soil cuttings and tamped on 8-24-17.						

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-5**

Log of Boring No. BH-5

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): 47.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine-grained, some silt, brown, grass and roots top 6-inches.						ei
5		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine-grained, trace silt, reddish brown.	■		8/15/20	12	126	
10		-fine to coarse-grained, gravel up to 1/2" in maximum dimension, reddish brown	■		4/4/5	9	127	c
15		-fine to coarse-grained, reddish brown	■		11/21/31	16	118	
20			⊠		5/6/10			
25		fine to coarse-grained, reddish brown	■		11/16/19	11	123	
30		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, reddish brown.	⊠		5/14/16	15	116	

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-6a**

Log of Boring No. BH-5

Dates Drilled: 8/14/2017 Logged by: VN Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 764.5 Depth to Water (ft): 47.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		CLAYEY SAND (SC): fine to coarse-grained, reddish brown.	■		22/25/22	15	116	
40			☒		9/15/21			
45		**SANDY CLAY (CL):** fine to coarse-grained, reddish brown.	■		10/14/15	15	115	
50			☒		15/10/10			
		End of boring at 51.5 feet. Groundwater encountered at 47.5 feet. Borehole backfilled with soil cuttings and tamped on 8-14-17.						

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Project No. **17-31-234-01**

Figure No. **A-6b**

Log of Boring No. BH-6

Dates Drilled: 8/24/2017 Logged by: RAM Checked By: MBS

Equipment: Hand Auger Driving Weight and Drop: N/A

Ground Surface Elevation (ft): 763 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SANDY SILT (ML):** fine to coarse-grained, brown, grass to roots top 6-inches.						
5		**ALLUVIUM (Qal):** **SANDY SILT (ML):** fine to coarse-grained, light brown.				12	115	
10						14	117	
		End of hand auger boring at 11 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched on 8-24-17.						

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WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-7**

Log of Boring No. BH-7

Dates Drilled: 8/15/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 754.5 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILT (ML):** light brown, grass and roots top 6-inches.						r,ca,er
5		**ALLUVIUM (Qal):** **SILT (ML):** light brown.			7/10/14	8	117	
10		**CLAYEY SAND (SC):** fine to coarse-grained, with gravel, brown.			11/18/18	12	115	ds
15		-with gravel, reddish brown			10/19/24	12	117	
20		**SAND (SP):** fine to coarse-grained, with gravel, weathered rock, white.			26/16/30			
25		**SANDY SILT (ML):** with gravel, weathered rock particles, reddish brown.			11/30(4")	10	121	
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-15-17.						

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Project No. **17-31-234-01**

Figure No. **A-8**

Log of Boring No. BH-8

Dates Drilled: 8/15/2017 Logged by: RAM Checked By: MBS

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 752 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY CLAYEY SAND (SC-SM):** few gravel, brown, grass and roots top 6-inches.						ma,se (fc=38.9%)
5		**ALLUVIUM (Qal):** **SILT (ML):** brown.	■		17/21/17	14	120	
10		**SANDY SILT (ML):** fine coarse-grained, with gravels, brown.	■		5/7/9	13	118	
15		**SILT (ML):** with gravels.	■		13/25/30	14	120	
20		**SILTY SAND (SM):** fine to coarse-grained, light brown.	⊠		10/12/22			
25			■		20/30/35	10	124	
		End of boring at 26.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and tamped on 8-15-17.						

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STUDENT CENTER BUILDING
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **A-9**

Appendix B

Laboratory Testing Program

APPENDIX B: LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

B1.1 Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

B1.2 Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analysis was performed on two (2) selected samples. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

B1.3 Maximum Dry Density Test

A laboratory maximum dry density-moisture content relationship test was performed on one (1) representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented in Drawing No. B-2, *Moisture-Density Relationship Result*.

B1.4 Direct Shear

Direct shear tests were performed on two (2) relatively undisturbed soil sample. The test was performed at soaked moisture conditions. For this test the sample, contained in brass sampler rings, was placed directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The sample was then sheared at a constant strain rate of 0.004 inch/minute. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-3 and B-4, *Direct Shear Test Results,* and in the following table:

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Table No. B-1, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Ultimate Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-3	5.0	Clayey Sand (SC)	30	240
BH-7	10.0	Clayey Sand (SC)	32	530

B1.5 Consolidation Test

A Consolidation test was performed on two (2) relatively undisturbed samples. Data obtained from this test was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawing Nos. B-5 and B-6, *Consolidation Test Results*.

B1.6 Soil Corrosivity

Converse retained the Environmental Geotechnology Laboratory, Inc., located in Arcadia, California, to test two (2) bulk soil samples taken in the general area of the proposed structure. The tests included minimum resistivity, pH, soluble sulfates, and chloride content, with the results summarized in the following table:

Table No. B-2, Soil Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) % by Weight	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-1	0-5.0	6.78	145	0.014	2,700
BH-9	0-5.0	7.16	240	0.019	2,200

B1.7 Expansion Index

One (1) representative bulk sample was tested to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with ASTM D4829 Standard. Test results are presented in the following table:

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Table No. B-3, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-5	0-5.0	Sandy Silt (ML), trace clay	2.3	Very Low

B1.8 Sand Equivalent

One (1) representative soil sample were tested in accordance with the ASTM D2419 test method. The test result is presented in the following table.

Table No. B-4, Sand Equivalent Test Result

Boring No.	Depth (feet)	Soil Description	Sand Equivalent
BH-5	0-5.0	Silty Clayey Sand (SC-SM)	25

B1.9 R-value

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with State of California Standard Method 301. This test is designed to provide a relative measure of soil strength for use in pavement design. The test result is shown in the following table, *R-value Test Results*:

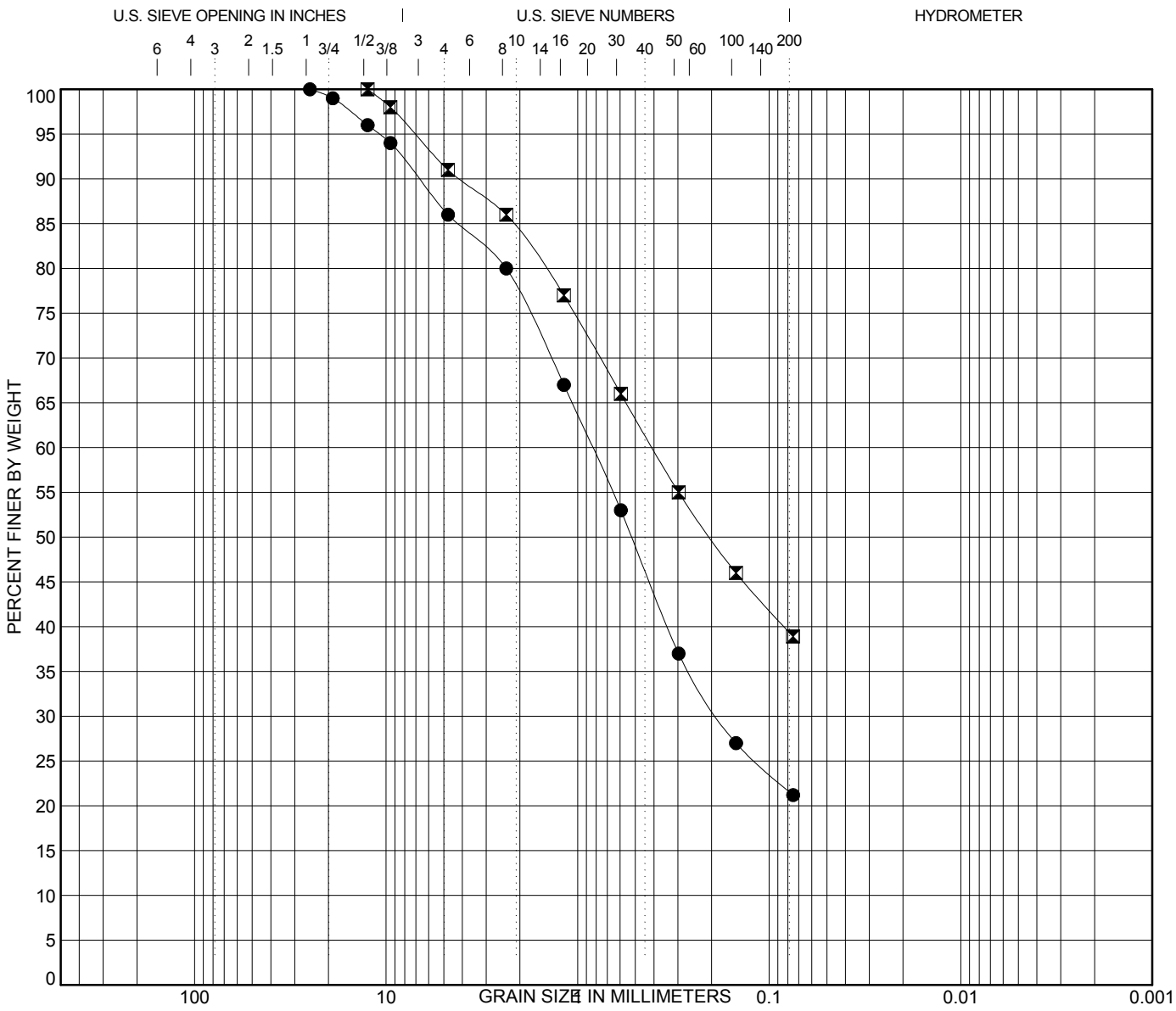
Table No. B-5, R-value Test Results

Boring No.	Depth (ft)	Soil Classification	Measured R-value
BH-7	0-5.0’	Silt (ML)	17

B1.10 Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-1**	**0-5**	**SILTY SAND (SM)**					
⊠	**BH-8**	**0-5**	**SILTY CLAYEY SAND (SC-SM)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-1**	**0-5**	**25**	**0.838**	**0.183**		**14.0**	**64.8**	**21.2**	
⊠	**BH-8**	**0-5**	**12.5**	**0.407**			**9.0**	**52.1**	**38.9**	

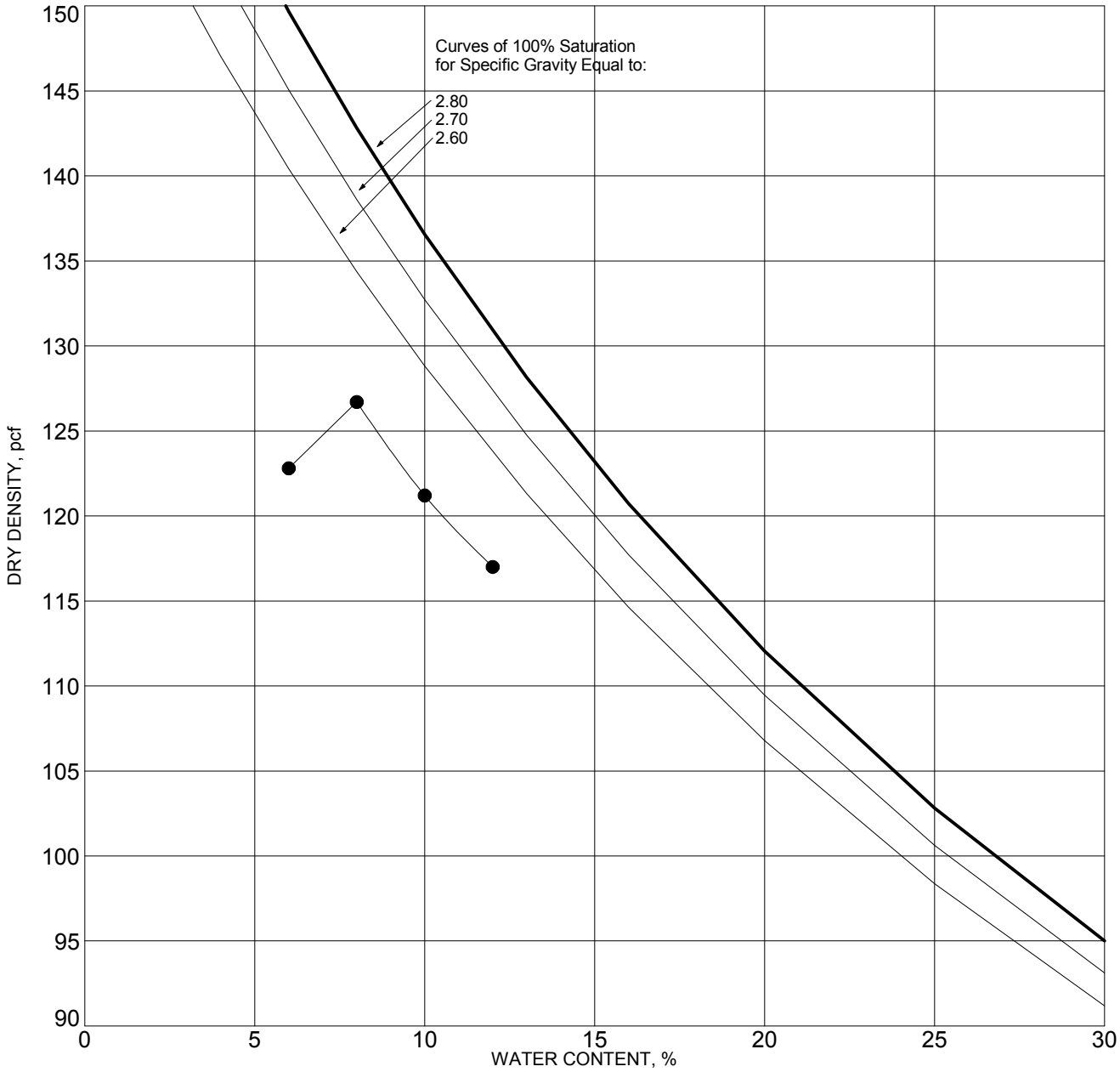
GRAIN SIZE DISTRIBUTION RESULTS

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MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

Project No.
17-31-234-01

Figure No.
B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-3	0-5.0	CLAYEY SAND (SC)	D1557 Method B	9	127

NOTE:

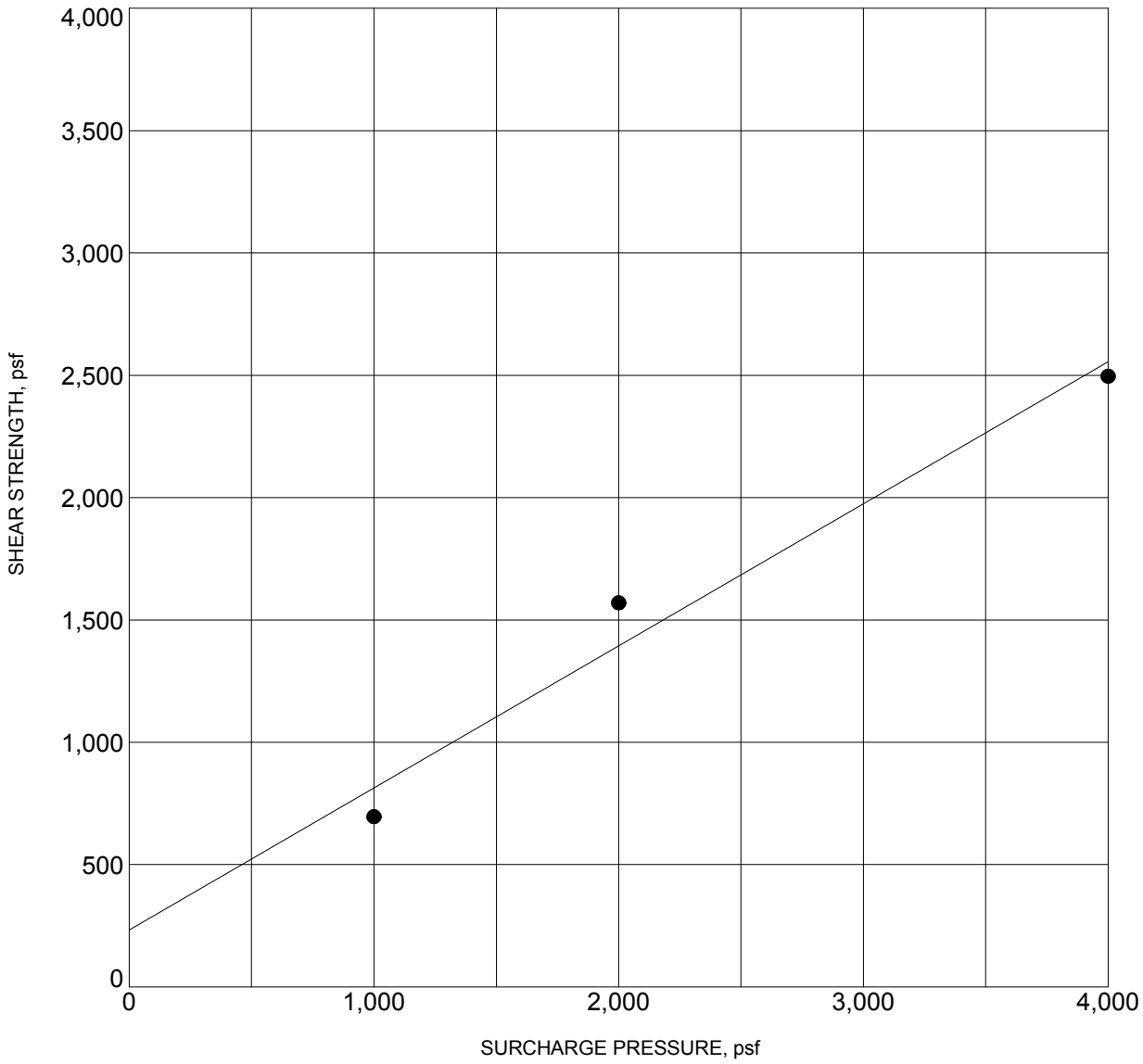
MOISTURE-DENSITY RELATIONSHIP RESULTS

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WALNUT, CALIFORNIA

Project No.
17-31-234-01

Figure No.
B-2



BORING NO.	:	**BH-3**	DEPTH (ft)	:	**0-5.0**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**230**	FRICTION ANGLE (degrees):		**30**
MOISTURE CONTENT (%)	:	**8.0**	DRY DENSITY (pcf)	:	**122.0**

NOTE: Ultimate Strength.

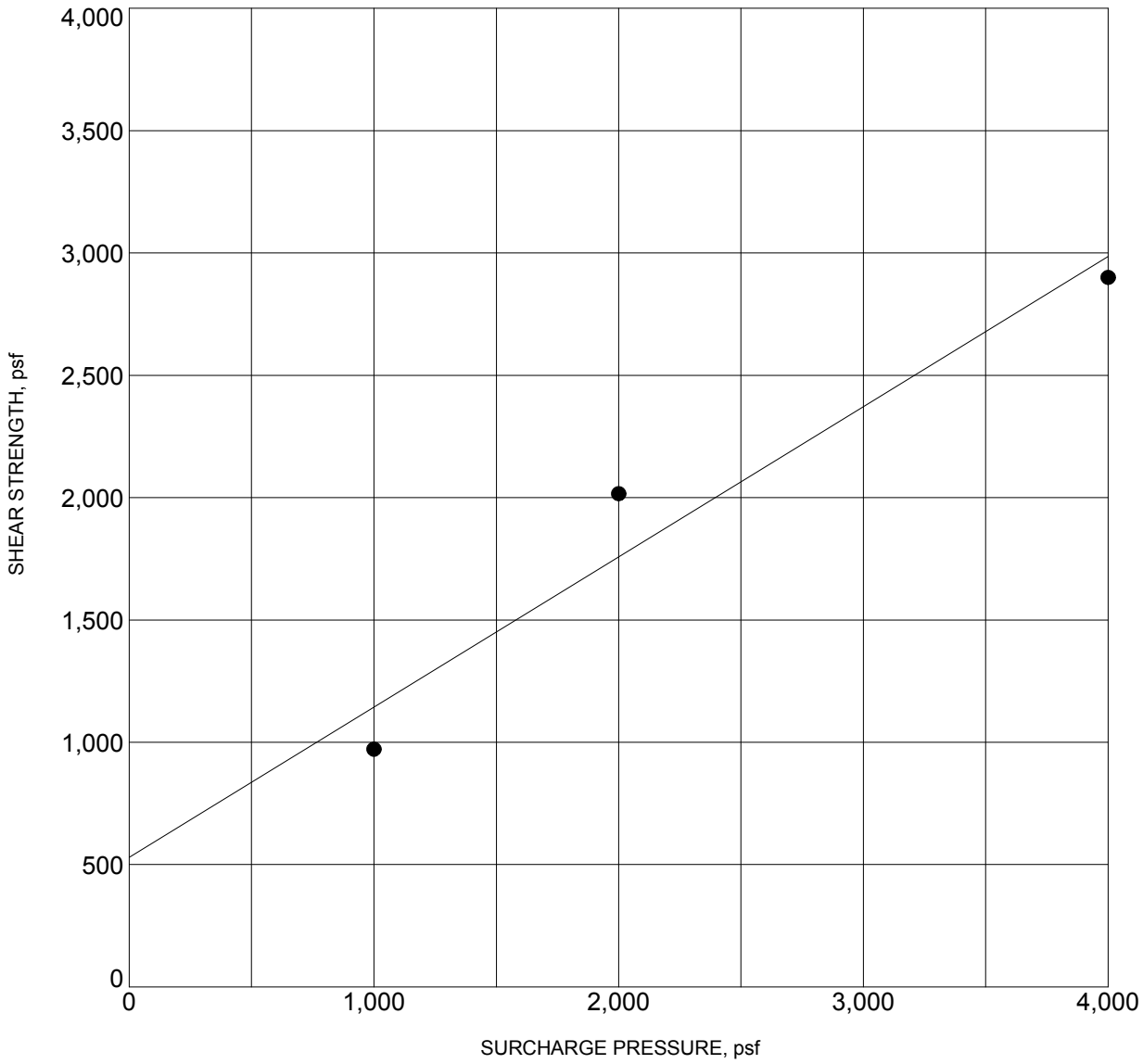
DIRECT SHEAR TEST RESULTS

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MT. SAN ANTONIO COLLEGE
STUDENT CENTER BUILDING
WALNUT, CALIFORNIA

Project No. **17-31-234-01**

Figure No. **B-3**



BORING NO.	:	**BH-7**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**530**	FRICTION ANGLE (degrees):		**32**
MOISTURE CONTENT (%)	:	**12.0**	DRY DENSITY (pcf)	:	**115.0**

NOTE: Ultimate Strength.

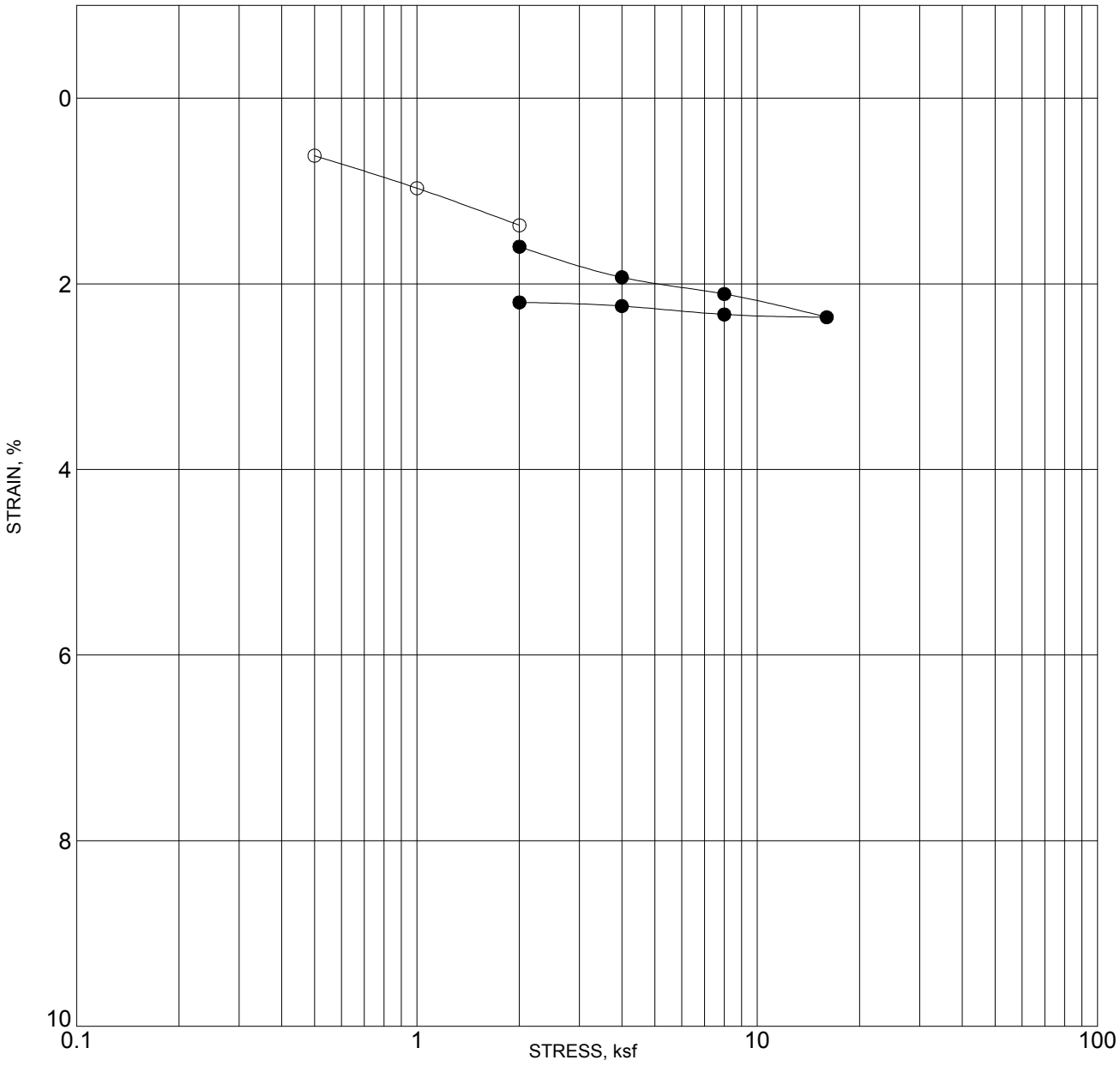
DIRECT SHEAR TEST RESULTS

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STUDENT CENTER BUILDING
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Figure No. **B-4**



BORING NO. :	**BH-1**	DEPTH (ft) :	**5**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**8**	**117**	**52**	**0.401**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

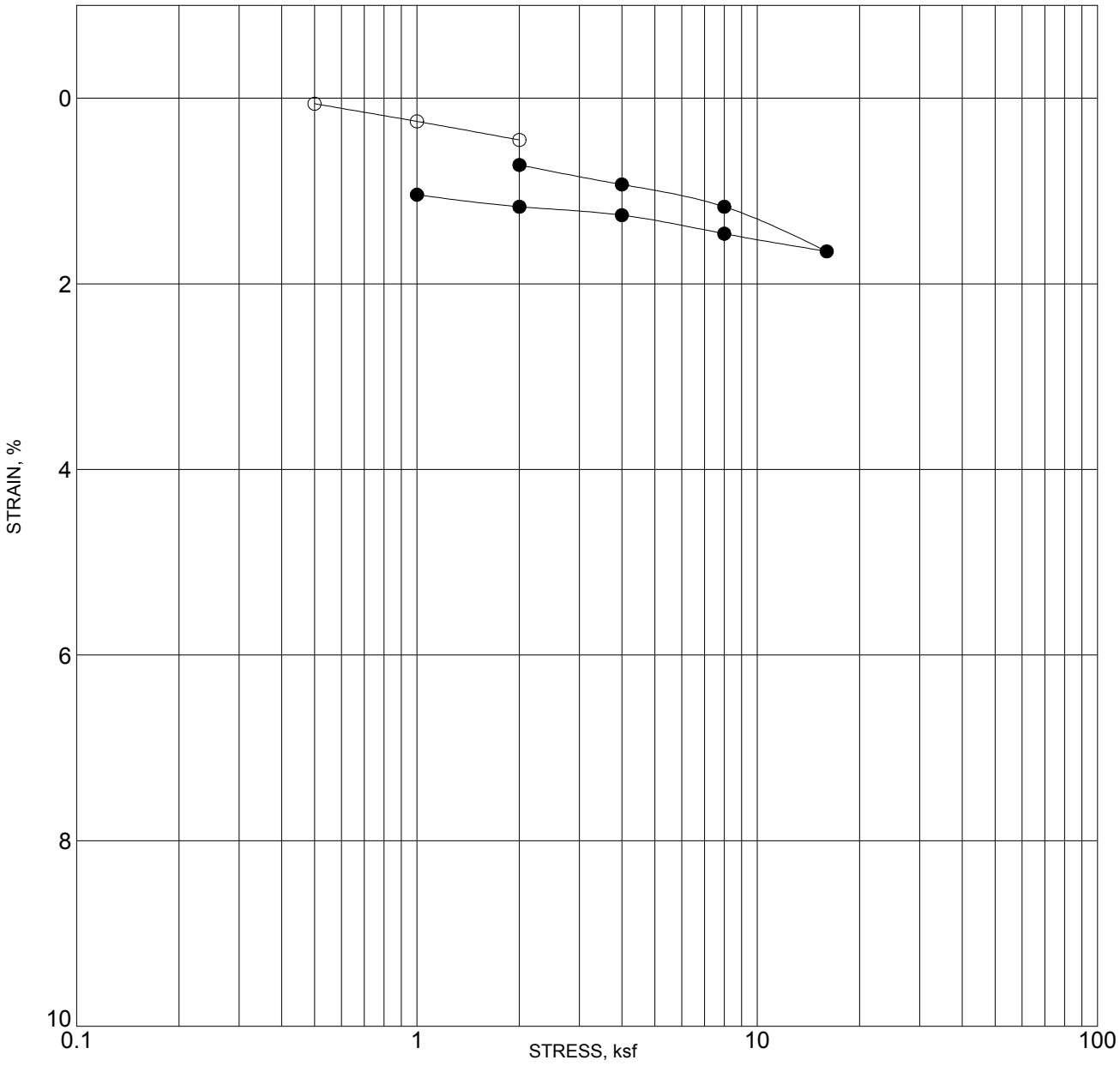
CONSOLIDATION TEST RESULTS

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STUDENT CENTER BUILDING
WALNUT, CALIFORNIA

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Figure No. **B-5**



BORING NO. :	**BH-5**	DEPTH (ft) :	**10**
DESCRIPTION :	**CLAYEY SAND (SC)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**9**	**117.2**	**59**	**0.406**
FINAL				

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

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WALNUT, CALIFORNIA

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Figure No. **B-6**

Appendix C

Liquefaction/Seismic Settlement Analysis

APPENDIX C: LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2016 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from BH-1 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1, Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** Mw	Peak Ground Acceleration** (g)
50	6.89	0.777

* Based on Seismic Hazard Zone Report for the San Dimas 7.5-Minute Quadrangle
** Based on results from site specific analysis using EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database

We understand that the proposed new student center building will be a single three-story structure. The existing topography shows that current elevation of the building footprint is from 757 feet to 771 feet. BH-1 is at an existing elevation of 769 feet and BH-5 is at an existing elevation of 764 feet.

The final grade will be at an approximate elevation of 757 feet. This implies that approximately 12 feet of soil will be excavated below BH-1 and an additional five feet of soil will be over-excavated and recompacted.

Similarly, BH-5 will have approximately seven feet of soil excavated beneath with an additional five feet of soil that will be over-excavated and recompacted to provide a firm bottom for the foundations.

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From this, we have assumed an SPT blow count of 50 for the top 15 feet of soil for BH-1 and the top 10 feet of soil for BH-5 for our analysis as there will be no settlement from this portion of soil, as it will either be removed, or recompacted. Please see the following table for the results of our liquefaction analysis.

Table No. C-2, Potential Seismic Settlement Results

Boring	Potential Dry Seismic Settlement (inch)	Potential Differential Settlement (inch)
BH-1	1.55	0.78
BH-5	1.67	0.84

The results of liquefaction analyses indicate the site soils are not susceptible to liquefaction.

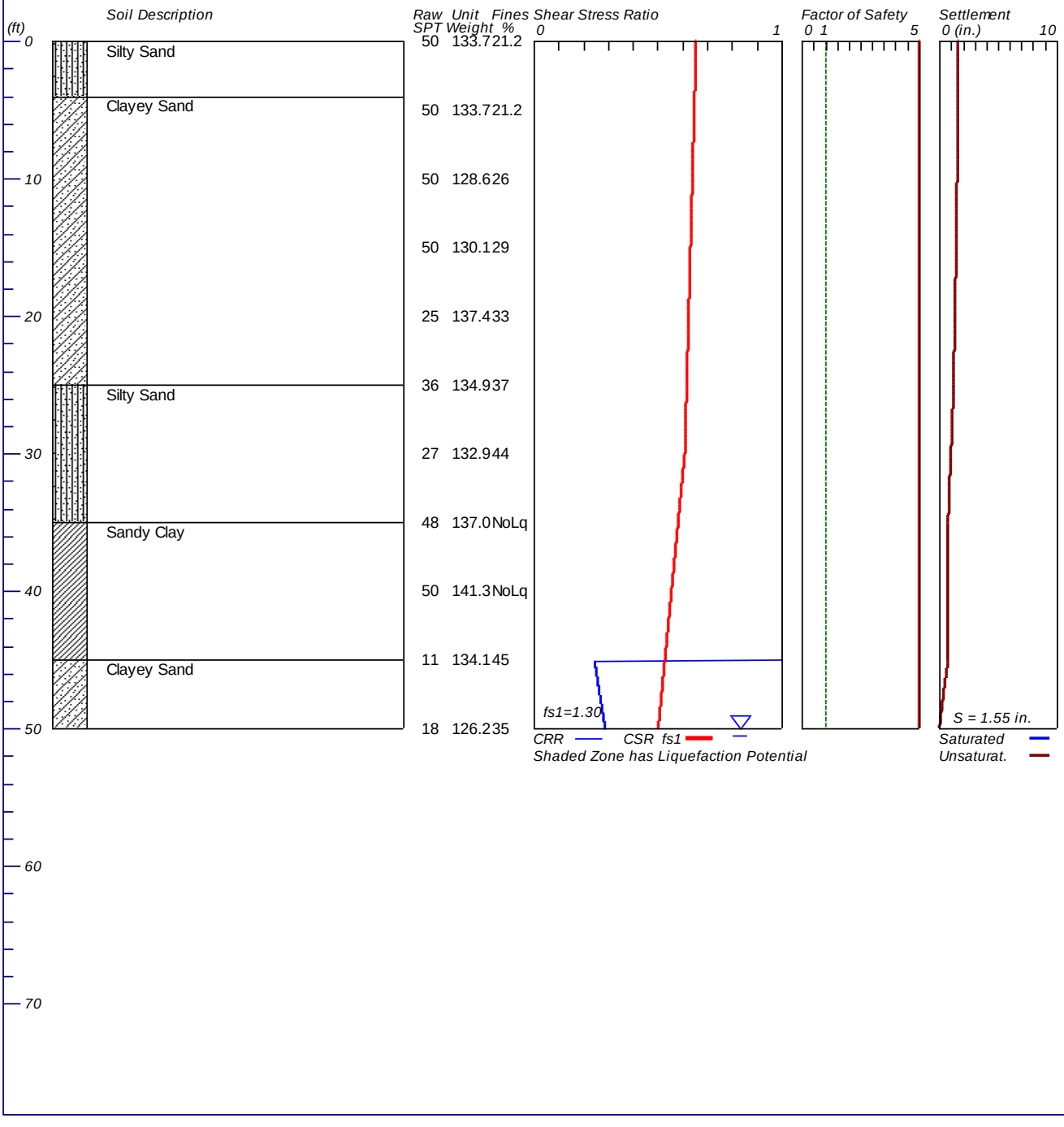
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LIQUEFACTION ANALYSIS

Mt. SAC Student Center Building

Hole No.=BH-1 Water Depth=50 ft

Magnitude=6.89
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 10/5/2017 1:19:49 PM

Input File Name: C:\Liquefy5\17-31-234-01 BH-1 Liq.liq
Title: Mt. SAC Student Center Building
Subtitle: 17-31-234-01

Surface Elev.=
Hole No.=BH-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=BH-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 50.00 ft
Water Table during In-Situ Testing= 50.00 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	133.70	21.20
5.00	50.00	133.70	21.20
10.00	50.00	128.60	26.00
15.00	50.00	130.10	29.00
20.00	25.00	137.40	33.00
25.00	36.00	134.90	37.00
30.00	27.00	132.90	44.00
35.00	48.00	137.00	NoLiq
40.00	50.00	141.30	NoLiq
45.00	11.00	134.10	45.00
50.00	18.00	126.20	35.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.55 in.
Total Settlement of Saturated and Unsaturated Sands=1.55 in.
Differential Settlement=0.776 to 1.025 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.48	0.66	5.00	0.00	1.55	1.55
0.50	2.48	0.66	5.00	0.00	1.55	1.55
1.00	2.48	0.66	5.00	0.00	1.55	1.55
1.50	2.48	0.65	5.00	0.00	1.55	1.55
2.00	2.48	0.65	5.00	0.00	1.55	1.55
2.50	2.48	0.65	5.00	0.00	1.55	1.55
3.00	2.48	0.65	5.00	0.00	1.55	1.55
3.50	2.48	0.65	5.00	0.00	1.55	1.55
4.00	2.48	0.65	5.00	0.00	1.55	1.55
4.50	2.48	0.65	5.00	0.00	1.54	1.54
5.00	2.48	0.65	5.00	0.00	1.54	1.54
5.50	2.48	0.65	5.00	0.00	1.54	1.54
6.00	2.48	0.65	5.00	0.00	1.54	1.54
6.50	2.48	0.65	5.00	0.00	1.54	1.54
7.00	2.48	0.65	5.00	0.00	1.53	1.53
7.50	2.48	0.65	5.00	0.00	1.53	1.53
8.00	2.48	0.64	5.00	0.00	1.52	1.52
8.50	2.48	0.64	5.00	0.00	1.52	1.52
9.00	2.48	0.64	5.00	0.00	1.52	1.52
9.50	2.48	0.64	5.00	0.00	1.51	1.51
10.00	2.48	0.64	5.00	0.00	1.51	1.51
10.50	2.48	0.64	5.00	0.00	1.51	1.51

11.00	2.48	0.64	5.00	0.00	1.50	1.50
11.50	2.48	0.64	5.00	0.00	1.50	1.50
12.00	2.48	0.64	5.00	0.00	1.49	1.49
12.50	2.48	0.64	5.00	0.00	1.49	1.49
13.00	2.48	0.64	5.00	0.00	1.48	1.48
13.50	2.48	0.64	5.00	0.00	1.47	1.47
14.00	2.48	0.64	5.00	0.00	1.46	1.46
14.50	2.48	0.63	5.00	0.00	1.46	1.46
15.00	2.48	0.63	5.00	0.00	1.45	1.45
15.50	2.48	0.63	5.00	0.00	1.44	1.44
16.00	2.48	0.63	5.00	0.00	1.43	1.43
16.50	2.48	0.63	5.00	0.00	1.41	1.41
17.00	2.48	0.63	5.00	0.00	1.39	1.39
17.50	2.48	0.63	5.00	0.00	1.37	1.37
18.00	2.48	0.63	5.00	0.00	1.36	1.36
18.50	2.48	0.63	5.00	0.00	1.36	1.36
19.00	2.48	0.63	5.00	0.00	1.35	1.35
19.50	2.48	0.63	5.00	0.00	1.34	1.34
20.00	2.48	0.63	5.00	0.00	1.33	1.33
20.50	2.48	0.63	5.00	0.00	1.31	1.31
21.00	2.48	0.62	5.00	0.00	1.30	1.30
21.50	2.48	0.62	5.00	0.00	1.29	1.29
22.00	2.48	0.62	5.00	0.00	1.28	1.28
22.50	2.48	0.62	5.00	0.00	1.26	1.26
23.00	2.48	0.62	5.00	0.00	1.25	1.25
23.50	2.49	0.62	5.00	0.00	1.24	1.24
24.00	2.49	0.62	5.00	0.00	1.22	1.22
24.50	2.48	0.62	5.00	0.00	1.21	1.21
25.00	2.47	0.62	5.00	0.00	1.19	1.19
25.50	2.46	0.62	5.00	0.00	1.18	1.18
26.00	2.45	0.62	5.00	0.00	1.16	1.16
26.50	2.44	0.62	5.00	0.00	1.15	1.15
27.00	2.44	0.62	5.00	0.00	1.13	1.13
27.50	2.43	0.61	5.00	0.00	1.11	1.11
28.00	2.42	0.61	5.00	0.00	1.09	1.09
28.50	2.41	0.61	5.00	0.00	1.06	1.06
29.00	2.40	0.61	5.00	0.00	1.04	1.04
29.50	2.40	0.61	5.00	0.00	1.01	1.01
30.00	2.39	0.61	5.00	0.00	0.98	0.98
30.50	2.38	0.61	5.00	0.00	0.95	0.95
31.00	2.37	0.61	5.00	0.00	0.92	0.92
31.50	2.36	0.60	5.00	0.00	0.90	0.90
32.00	2.36	0.60	5.00	0.00	0.87	0.87
32.50	2.35	0.60	5.00	0.00	0.85	0.85
33.00	2.34	0.59	5.00	0.00	0.83	0.83
33.50	2.33	0.59	5.00	0.00	0.81	0.81
34.00	2.33	0.59	5.00	0.00	0.79	0.79
34.50	2.32	0.59	5.00	0.00	0.77	0.77

35.00	2.31	0.58	5.00	0.00	0.76	0.76
35.50	2.00	0.58	5.00	0.00	0.76	0.76
36.00	2.00	0.58	5.00	0.00	0.76	0.76
36.50	2.00	0.58	5.00	0.00	0.76	0.76
37.00	2.00	0.57	5.00	0.00	0.76	0.76
37.50	2.00	0.57	5.00	0.00	0.76	0.76
38.00	2.00	0.57	5.00	0.00	0.76	0.76
38.50	2.00	0.57	5.00	0.00	0.76	0.76
39.00	2.00	0.56	5.00	0.00	0.76	0.76
39.50	2.00	0.56	5.00	0.00	0.76	0.76
40.00	2.00	0.56	5.00	0.00	0.76	0.76
40.50	2.00	0.55	5.00	0.00	0.76	0.76
41.00	2.00	0.55	5.00	0.00	0.76	0.76
41.50	2.00	0.55	5.00	0.00	0.76	0.76
42.00	2.00	0.55	5.00	0.00	0.76	0.76
42.50	2.00	0.54	5.00	0.00	0.76	0.76
43.00	2.00	0.54	5.00	0.00	0.76	0.76
43.50	2.00	0.54	5.00	0.00	0.76	0.76
44.00	2.00	0.54	5.00	0.00	0.76	0.76
44.50	2.00	0.53	5.00	0.00	0.76	0.76
45.00	2.00	0.53	5.00	0.00	0.76	0.76
45.50	0.25	0.53	5.00	0.00	0.67	0.67
46.00	0.25	0.53	5.00	0.00	0.58	0.58
46.50	0.25	0.52	5.00	0.00	0.50	0.50
47.00	0.26	0.52	5.00	0.00	0.42	0.42
47.50	0.26	0.52	5.00	0.00	0.34	0.34
48.00	0.27	0.51	5.00	0.00	0.27	0.27
48.50	0.27	0.51	5.00	0.00	0.20	0.20
49.00	0.28	0.51	5.00	0.00	0.13	0.13
49.50	0.28	0.51	5.00	0.00	0.06	0.06
50.00	0.29	0.50	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

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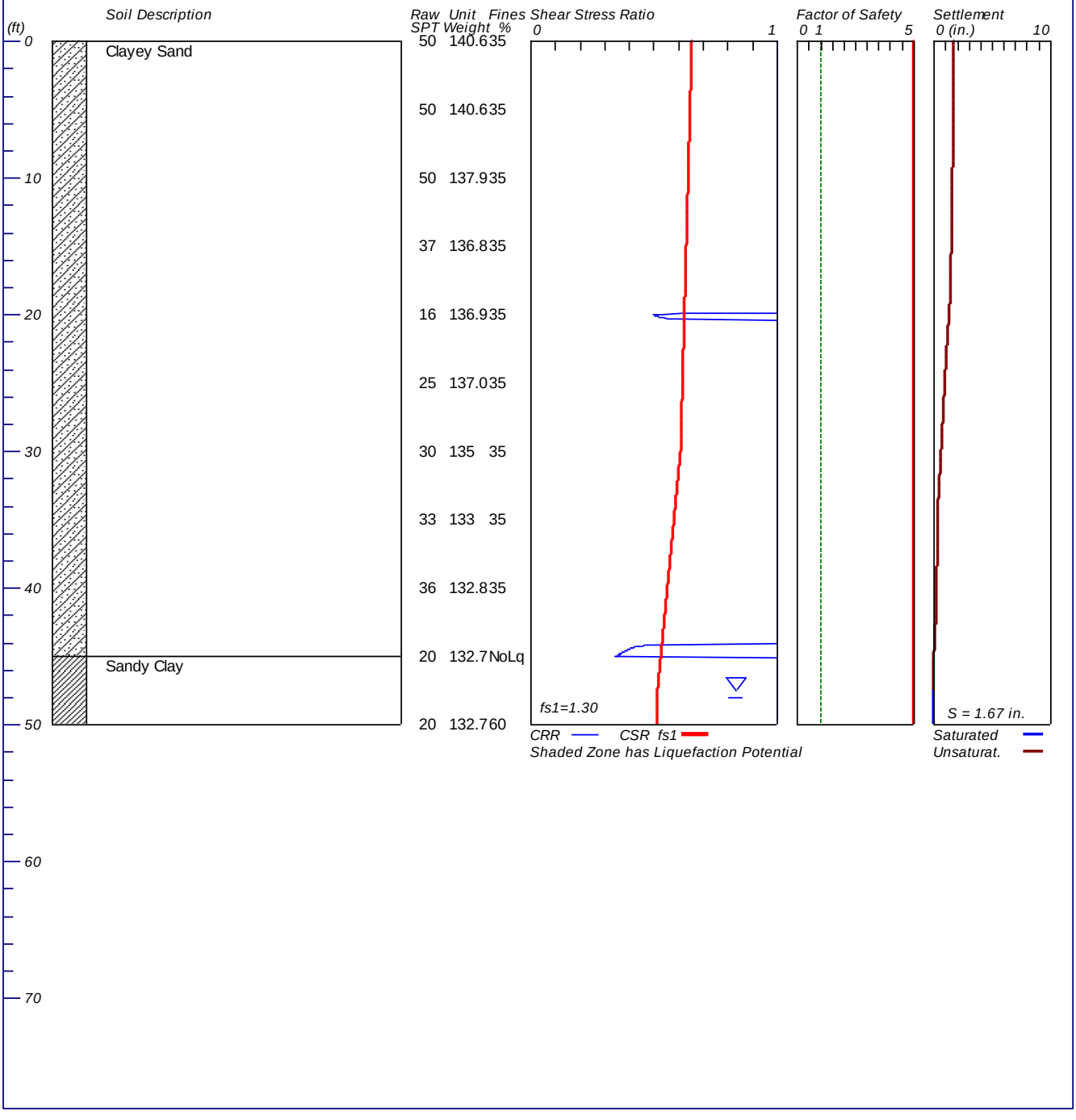
1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

LIQUEFACTION ANALYSIS

Mt. SAC Student Center Building

Hole No.=BH-5 Water Depth=47.5 ft

Magnitude=6.89
Acceleration=0.777g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: C:\Liquefy5\17-31-234-01 BH-5 Liq.liq
Title: Mt. SAC Student Center Building
Subtitle: 17-31-234-01

Surface Elev.=
Hole No.=BH-5
Depth of Hole= 50.00 ft
Water Table during Earthquake= 47.50 ft
Water Table during In-Situ Testing= 47.50 ft
Max. Acceleration= 0.78 g
Earthquake Magnitude= 6.89

Input Data:
Surface Elev.=
Hole No.=BH-5
Depth of Hole=50.00 ft
Water Table during Earthquake= 47.50 ft
Water Table during In-Situ Testing= 47.50 ft
Max. Acceleration=0.78 g
Earthquake Magnitude=6.89

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	50.00	140.60	35.00
5.00	50.00	140.60	35.00
10.00	50.00	137.90	35.00
15.00	37.00	136.80	35.00
20.00	16.00	136.90	35.00
25.00	25.00	137.00	35.00
30.00	30.00	135.00	35.00
35.00	33.00	133.00	35.00
40.00	36.00	132.80	35.00
45.00	20.00	132.70	NoLiq
50.00	20.00	132.70	60.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=1.67 in.
Total Settlement of Saturated and Unsaturated Sands=1.67 in.
Differential Settlement=0.834 to 1.101 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.48	0.66	5.00	0.00	1.67	1.67
0.50	2.48	0.66	5.00	0.00	1.67	1.67
1.00	2.48	0.66	5.00	0.00	1.67	1.67
1.50	2.48	0.65	5.00	0.00	1.67	1.67
2.00	2.48	0.65	5.00	0.00	1.67	1.67
2.50	2.48	0.65	5.00	0.00	1.66	1.66
3.00	2.48	0.65	5.00	0.00	1.66	1.66
3.50	2.48	0.65	5.00	0.00	1.66	1.66
4.00	2.48	0.65	5.00	0.00	1.66	1.66
4.50	2.48	0.65	5.00	0.00	1.66	1.66
5.00	2.48	0.65	5.00	0.00	1.66	1.66
5.50	2.48	0.65	5.00	0.00	1.66	1.66
6.00	2.48	0.65	5.00	0.00	1.65	1.65
6.50	2.48	0.65	5.00	0.00	1.65	1.65
7.00	2.48	0.65	5.00	0.00	1.65	1.65
7.50	2.48	0.65	5.00	0.00	1.64	1.64
8.00	2.48	0.64	5.00	0.00	1.64	1.64
8.50	2.48	0.64	5.00	0.00	1.63	1.63
9.00	2.48	0.64	5.00	0.00	1.63	1.63
9.50	2.48	0.64	5.00	0.00	1.63	1.63
10.00	2.48	0.64	5.00	0.00	1.62	1.62
10.50	2.48	0.64	5.00	0.00	1.62	1.62

11.00	2.48	0.64	5.00	0.00	1.61	1.61
11.50	2.48	0.64	5.00	0.00	1.61	1.61
12.00	2.48	0.64	5.00	0.00	1.60	1.60
12.50	2.48	0.64	5.00	0.00	1.59	1.59
13.00	2.48	0.64	5.00	0.00	1.59	1.59
13.50	2.48	0.64	5.00	0.00	1.57	1.57
14.00	2.48	0.64	5.00	0.00	1.56	1.56
14.50	2.48	0.63	5.00	0.00	1.55	1.55
15.00	2.48	0.63	5.00	0.00	1.53	1.53
15.50	2.48	0.63	5.00	0.00	1.51	1.51
16.00	2.48	0.63	5.00	0.00	1.49	1.49
16.50	2.48	0.63	5.00	0.00	1.46	1.46
17.00	2.48	0.63	5.00	0.00	1.44	1.44
17.50	2.48	0.63	5.00	0.00	1.43	1.43
18.00	2.48	0.63	5.00	0.00	1.42	1.42
18.50	2.48	0.63	5.00	0.00	1.41	1.41
19.00	2.48	0.63	5.00	0.00	1.40	1.40
19.50	2.48	0.63	5.00	0.00	1.37	1.37
20.00	0.50	0.63	5.00	0.00	1.33	1.33
20.50	2.48	0.63	5.00	0.00	1.29	1.29
21.00	2.48	0.62	5.00	0.00	1.24	1.24
21.50	2.48	0.62	5.00	0.00	1.20	1.20
22.00	2.48	0.62	5.00	0.00	1.16	1.16
22.50	2.50	0.62	5.00	0.00	1.12	1.12
23.00	2.49	0.62	5.00	0.00	1.09	1.09
23.50	2.48	0.62	5.00	0.00	1.05	1.05
24.00	2.47	0.62	5.00	0.00	1.02	1.02
24.50	2.46	0.62	5.00	0.00	0.99	0.99
25.00	2.45	0.62	5.00	0.00	0.95	0.95
25.50	2.44	0.62	5.00	0.00	0.92	0.92
26.00	2.43	0.62	5.00	0.00	0.89	0.89
26.50	2.43	0.62	5.00	0.00	0.86	0.86
27.00	2.42	0.62	5.00	0.00	0.83	0.83
27.50	2.41	0.61	5.00	0.00	0.80	0.80
28.00	2.40	0.61	5.00	0.00	0.77	0.77
28.50	2.39	0.61	5.00	0.00	0.74	0.74
29.00	2.39	0.61	5.00	0.00	0.71	0.71
29.50	2.38	0.61	5.00	0.00	0.67	0.67
30.00	2.37	0.61	5.00	0.00	0.64	0.64
30.50	2.36	0.61	5.00	0.00	0.61	0.61
31.00	2.36	0.61	5.00	0.00	0.57	0.57
31.50	2.35	0.60	5.00	0.00	0.54	0.54
32.00	2.34	0.60	5.00	0.00	0.51	0.51
32.50	2.33	0.60	5.00	0.00	0.47	0.47
33.00	2.33	0.59	5.00	0.00	0.44	0.44
33.50	2.32	0.59	5.00	0.00	0.40	0.40
34.00	2.31	0.59	5.00	0.00	0.39	0.39
34.50	2.30	0.59	5.00	0.00	0.38	0.38

35.00	2.30	0.58	5.00	0.00	0.36	0.36
35.50	2.29	0.58	5.00	0.00	0.35	0.35
36.00	2.28	0.58	5.00	0.00	0.34	0.34
36.50	2.28	0.58	5.00	0.00	0.33	0.33
37.00	2.27	0.57	5.00	0.00	0.32	0.32
37.50	2.26	0.57	5.00	0.00	0.30	0.30
38.00	2.26	0.57	5.00	0.00	0.29	0.29
38.50	2.25	0.57	5.00	0.00	0.28	0.28
39.00	2.24	0.56	5.00	0.00	0.27	0.27
39.50	2.24	0.56	5.00	0.00	0.26	0.26
40.00	2.23	0.56	5.00	0.00	0.24	0.24
40.50	2.22	0.55	5.00	0.00	0.23	0.23
41.00	2.22	0.55	5.00	0.00	0.22	0.22
41.50	2.21	0.55	5.00	0.00	0.20	0.20
42.00	2.20	0.55	5.00	0.00	0.19	0.19
42.50	2.20	0.54	5.00	0.00	0.17	0.17
43.00	2.19	0.54	5.00	0.00	0.14	0.14
43.50	2.19	0.54	5.00	0.00	0.12	0.12
44.00	2.18	0.54	5.00	0.00	0.09	0.09
44.50	0.39	0.53	5.00	0.00	0.05	0.05
45.00	0.34	0.53	5.00	0.00	0.00	0.00
45.50	2.00	0.53	5.00	0.00	0.00	0.00
46.00	2.00	0.53	5.00	0.00	0.00	0.00
46.50	2.00	0.52	5.00	0.00	0.00	0.00
47.00	2.00	0.52	5.00	0.00	0.00	0.00
47.50	2.00	0.52	5.00	0.00	0.00	0.00
48.00	2.00	0.52	5.00	0.00	0.00	0.00
48.50	2.00	0.52	5.00	0.00	0.00	0.00
49.00	2.00	0.52	5.00	0.00	0.00	0.00
49.50	2.00	0.52	5.00	0.00	0.00	0.00
50.00	2.00	0.52	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

Appendix D

Earthwork Specifications

APPENDIX D: EARTHWORK SPECIFICATIONS

D1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workman-like manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

D1.2 Site Inspection

- The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

- This *Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

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D1.3 Authority of the Geotechnical Engineer

- The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

- As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

- The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

D1.4 Site Clearing

- Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavements, utilities, trees, vegetation and roots.

- Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

D1.5 Excavations

- Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

D1.6 Preparation of Fill Areas

- All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

- In order to provide uniform support for the new structures, the minimum depth of over-excavation should be five (5) feet below the existing grade, or 36 inches below proposed bottom of foundations whichever is deeper. Deeper over-excavation will be needed if soft, yielding soils are exposed on the excavation bottom.

- The bottoms should be founded on firm and unyielding native soils or properly compacted fills. The final bottom surfaces of all excavations shall be observed and approved by the project geotechnical engineer or his representative prior to placing any compacted fill. All compacted fills should be placed on competent native

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materials or properly compacted fill as determined by the project geotechnical engineer or his representative. The actual depth of removal should be determined based on observations made during grading. Over-excavation and recompaction should extend a least five (5) feet beyond the limits of footings, or equal distance of over-excavation depth, whichever is greater, or as limited by the existing structures. Excavation activities should not disturb existing utilities, buildings, and remaining structures.

- Existing utilities should be removed and adequately capped at the project boundary line, or salvaged/rerouted as designed for sidewalks and flatwork area, at least the upper 24 inches of existing soils should be scarified and recompacted to at least 90 percent of compaction. Deeper over-excavation will be needed if soft, yielding soils are exposed on the excavation bottom. The excavation should be extended to at least 12 inches beyond the driveway and flatwork limit where space is permitted.

- The subgrade in all areas to receive fill shall be scarified to a minimum depth of six inches, the soil moisture adjusted to above three percent (3%) of the optimum moisture content for fine-grained soils and within three percent (3%) of the optimum moisture content for granular soils, mixed and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method.

- Compacted fill may be placed on native soils that have been properly scarified and re-compacted as discussed above.

- All areas to receive compacted fill will be observed and approved by the project Geotechnical Engineer or his designated representative before the placement of fill.

D1.7 Placement and Compaction of Fill

- Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

- Fill consisting of selected on-site earth materials or imported soils approved by the project Geotechnical Engineer or his designated representative shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    - All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

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Rocks larger than three (3) inches in size may be encountered during grading and should be anticipated in the underlying sediments.

- Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) within three (3) percent of the optimum moisture.

- Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

- All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned at approximate three (3) percent above the optimum moisture content for fine-grained soils and within three (3) percent of the optimum moisture content for coarse-grained soils.

- Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

- Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

- It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

D1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

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- Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

- Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

- Rocks larger than one inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension. Rocks shall be well mixed with finer soil.

- The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

- Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to between optimum and three percent above optimum, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

- The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

- The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D6938 test methods or equivalent.

- Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

- It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

- Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

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D1.9 Observation and Testing

- During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

- Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained

- A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

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Appendix E

Percolation Testing

APPENDIX E: PERCOLATION TESTING

Percolation testing was performed utilizing exploratory boring BH-4 on August 24, 2017. The continuous pre-soak falling-head test method for water percolation testing was utilized to evaluate soil infiltration rates of the existing and native soils encountered between depths of 0 to 10.0 feet below the ground surface at the respective boring location in accordance with LA County Low Impact Development, Best Management Practices Guidelines. The test location was prepared by placing a perforated 2-inch diameter PVC pipe surrounded by pea gravel after drilling and sampling. Water was filled to the ground surface to pre-soak prior to testing.

The boring was cased using a two-inch diameter perforated casing. Water was added to the bore hole until the water level was as near the ground surface as could be achieved, and allowed to pre-soak for at least 4 hours if the water did not drain entirely within 30 minutes after filling the boring two (2) consecutive times. After pre-soak, water was added to the bore hole until the water level was as near the ground surface as could be achieved. The water level was measured to the nearest 1/8-inch and recorded either every 10 or 30 minutes for three (3) consecutive readings depending on the soils encountered. There were at least four (4) sets of measurements taken for each test and each set consisted of at least three (3) measurements. The results of the percolation tests are tabulated below.

Table No. E-1, Percolation Testing Result

Boring No.	Depth of Test (feet)	Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-4	0.0-10.0	Silt (ML) over Sandy Silt (ML)	1.74	1.35

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.3 inch per hour. It should be noted that per LA County Low Impact Development, Best Management Practices Guidelines, any planned infiltration systems should be at least 10 feet above historically highest groundwater levels. The project Civil Engineer shall review the percolation rates presented for design of the proposed infiltration system. Infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system.

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Construction Generated Noise

Building Type	Office, Hotel, Hospital, School, Public Works		**Distance (ft)**	hard or soft
Construction Noise at 50 Feet (dBA Leq)			50	0

Construction Phase	All Applicable Equipment in Use[1]	Minimum Required Equipment in Use[1]
Ground Clearing/Demolition	84	84
Excavation	89	79
Foundation Construction	78	78
Building Construction	87	75
Finishing and Site Cleanup	89	75

Residential Use to the Northwest of the Project Site

Construction Noise (dBA Leq)	Distances to Offsite Receptors (ft)			
Construction Phase	to north	to east	to south	to west
Fine Arts	390	8,650	1,932	510
Ground Clearing/Demolition	66	39	52	64
Excavation (Site Preparation)	71	44	57	69
Foundation Construction	60	33	46	58
Building Construction	69	42	55	67
Paving	71	44	57	69
Student Services North	500	8,150	2,030	1,025
Ground Clearing/Demolition	64	40	52	58
Excavation (Site Preparation)	69	45	57	63
Foundation Construction	58	34	46	52
Building Construction	67	43	55	61
Paving	69	45	57	63
Student Center	1,060	7,500	1,780	1,340
Ground Clearing/Demolition	57	40	53	55
Excavation (Site Preparation)	62	45	58	60
Foundation Construction	51	34	47	49
Building Construction	60	43	56	58
Paving	62	45	58	60
Bookstore	1,360	7,500	1,712	1,370
Ground Clearing/Demolition	55	40	53	55
Excavation (Site Preparation)	60	45	58	60
Foundation Construction	49	34	47	49
Building Construction	58	43	56	58
Paving	60	45	58	60
Makerspace	1,340	7,250	1,950	1,620
Ground Clearing/Demolition	55	41	52	54
Excavation (Site Preparation)	60	46	57	59
Foundation Construction	49	35	46	48
Building Construction	58	44	55	57
Paving	60	46	57	59
Library/Learning Resources	1,470	7,270	1,770	1,550
Ground Clearing/Demolition	55	41	53	54
Excavation (Site Preparation)	60	46	58	59
Foundation Construction	49	35	47	48
Building Construction	58	44	56	57
Paving	60	46	58	59
Technical Education	1,360	6,770	2,210	1,960
Ground Clearing/Demolition	55	41	51	52
Excavation (Site Preparation)	60	46	56	57
Foundation Construction	49	35	45	46
Building Construction	58	44	54	55
Paving	60	46	56	57
Science	1,930	7,550	1,215	1,080
Ground Clearing/Demolition	52	40	56	57
Excavation (Site Preparation)	57	45	61	62
Foundation Construction	46	34	50	51
Building Construction	55	43	59	60
Paving	57	45	61	62
Auditorium	1,540	8,270	710	380
Ground Clearing/Demolition	54	40	61	66
Excavation (Site Preparation)	59	45	66	71
Foundation Construction	48	34	55	60
Building Construction	57	43	64	69
Paving	59	45	66	71
School of Continuing Education	150	7,000	3,350	560
Ground Clearing/Demolition	74	41	47	63
Excavation (Site Preparation)	79	46	52	68
Foundation Construction	68	35	41	57
Building Construction	77	44	50	66
Paving	79	46	52	68
Adult Education	120	6,730	3,780	500
Ground Clearing/Demolition	76	41	46	64
Excavation (Site Preparation)	81	46	51	69
Foundation Construction	70	35	40	58
Building Construction	79	44	49	67
Paving	81	46	51	69
Campus Safety	1,620	6,175	2,710	3,060
Ground Clearing/Demolition	54	42	49	48
Excavation (Site Preparation)	59	47	54	53
Foundation Construction	48	36	43	42
Building Construction	57	45	52	51
Paving	59	47	54	53

Physical Education Complex	2,080	5,480	2,160	3,020
Ground Clearing/Demolition	52	43	51	48
Excavation (Site Preparation)	57	48	56	53
Foundation Construction	46	37	45	42
Building Construction	55	46	54	51
Paving	57	48	56	53
Nature Center	3,680	6,950	410	1,530
Ground Clearing/Demolition	47	41	66	54
Excavation (Site Preparation)	52	46	71	59
Foundation Construction	41	35	60	48
Building Construction	50	44	69	57
Paving	52	46	71	59
Parking Structure B	1,200	8,440	940	535
Ground Clearing/Demolition	56	39	59	63
Excavation (Site Preparation)	61	44	64	68
Foundation Construction	50	33	53	57
Building Construction	59	42	62	66
Paving	61	44	64	68
Parking Structure F	1,390	5,800	2,660	3,020
Ground Clearing/Demolition	55	43	49	48
Excavation (Site Preparation)	60	48	54	53
Foundation Construction	49	37	43	42
Building Construction	58	46	52	51
Paving	60	48	54	53
Parking Structure S	2,040	6,150	2,010	2,440
Ground Clearing/Demolition	52	42	52	50
Excavation (Site Preparation)	57	47	57	55
Foundation Construction	46	36	46	44
Building Construction	55	45	55	53
Paving	57	47	57	55
Parking Structure R	2,510	5,480	1,400	3,060
Ground Clearing/Demolition	50	43	55	48
Excavation (Site Preparation)	55	48	60	53
Foundation Construction	44	37	49	42
Building Construction	53	46	58	51
Paving	55	48	60	53
Sand Volley Ball	2,680	7,060	1,390	1,210
Ground Clearing/Demolition	49	41	55	56
Excavation (Site Preparation)	54	46	60	61
Foundation Construction	43	35	49	50
Building Construction	52	44	58	59
Paving	54	46	60	61
Heritage Hall	2,440	5,275	2,000	3,630
Ground Clearing/Demolition	50	44	52	47
Excavation (Site Preparation)	55	49	57	52
Foundation Construction	44	38	46	41
Building Construction	53	47	55	50
Paving	55	49	57	52
Reused Depot	3,475	5,935	770	2,460
Ground Clearing/Demolition	47	43	60	50
Excavation (Site Preparation)	52	48	65	55
Foundation Construction	41	37	54	44
Building Construction	50	46	63	53
Paving	52	48	65	55

Construction Generated Vibration

		Closest Distance (feet):	120
Equipment	Approximate RMS a Velocity at 25 ft, inch/second	Approximate RMS Velocity Level, inch/second	
Vibratory roller	0.21	0.020	
Caisson Drill	0.089	0.008	
Large bulldozer	0.089	0.008	
Small bulldozer	0.003	0.000	
Jackhammer	0.035	0.003	
Loaded trucks	0.076	0.007	
	Criteria	0.040	

Based on distance to nearest structure

[1.] Determined based on use of jackhammers or pneumatic hammers that may be used for pavement demolition at a distance of 25 feet

Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

Assessment (2006).

Tennis Court Noise

			Distance (ft)	hard or soft
			3.28	0
Construction Phase	**Distance from Source**	**Average Noise Level (Leq)**	**Maximum Noise Level (Lmax)**	**Spectators**
Individual	3.28	72	84	
Crowd	3.28	99	111	500
Tennis Courts at Parking Structure R	1100	48	60	
Noise Threshold				
Day (7 am to 10 pm)		55	75	
Night (10 pm to 7 am)		50	70	
Exceeds Thresholds?		No	No	

Table 2. Equivalent sound levels of speakers at a distance of 1m from the speaker's mouth for indicated vocal efforts

Voice Effort	Average Speech Level (dB(A))
Whispering	36
Soft Speaking	42
Relaxed Speaking	48
Relaxed Normal Speaking	54
Raised Normal Speaking	60
Raised Speaking	66
Loud Speaking	72
Very Loud Speaking	78
Shouting	84
Maximal Shout	90
Maximal Shout (Individuals)	96

Source: (Lazarus (1986))

Mt SAC EFMP

Roadway Segment		Distance to CNEL from Roadway Centerline				Noise Level (CNEL or Ldn) at Distance from Roadway Centerline										
		Existing	e With P	Change	Change	Existing			Future No Proj			Future Plus Proj			Change	Change
		100.0	100.0	From	due to	100	100	100	100	100	100	100	100	100	From	due to
		Feet	Feet	Existing	Project	feet	feet	feet	feet	feet	feet	feet	feet	feet	Existing	Project
Amar Rd/Nogales St	East Leg	72.0	72.4	0	0	72.0	72.0	72.0	72.3	72.3	72.3	72.4	72.4	72.4	+0.4	+0.1
Amar Rd/Nogales St	West Leg	73.3	73.7	0	0	73.3	73.3	73.3	73.6	73.6	73.6	73.7	73.7	73.7	+0.4	+0.0
Amar Rd/Nogales St	North Leg	56.1	56.5	0	0	56.1	56.1	56.1	56.5	56.5	56.5	56.5	56.5	56.5	+0.4	---
Amar Rd/Nogales St	South Leg	70.1	70.5	0	0	70.1	70.1	70.1	70.5	70.5	70.5	70.5	70.5	70.5	+0.4	+0.0
Amar Rd/Lemon Ave	East Leg	71.1	71.4	0	0	71.1	71.1	71.1	71.4	71.4	71.4	71.4	71.4	71.4	+0.4	+0.1
Amar Rd/Lemon Ave	West Leg	71.7	72.1	0	0	71.7	71.7	71.7	72.0	72.0	72.0	72.1	72.1	72.1	+0.4	+0.1
Amar Rd/Lemon Ave	North Leg	58.5	58.9	0	0	58.5	58.5	58.5	58.9	58.9	58.9	58.9	58.9	58.9	+0.4	---
Amar Rd/Lemon Ave	South Leg	65.0	65.4	0	0	65.0	65.0	65.0	65.4	65.4	65.4	65.4	65.4	65.4	+0.4	+0.0
Amar Rd/Meadow Pa	East Leg	71.7	72.1	0	0	71.7	71.7	71.7	72.0	72.0	72.0	72.1	72.1	72.1	+0.4	+0.1
Amar Rd/Meadow Pa	West Leg	71.2	71.6	0	0	71.2	71.2	71.2	71.5	71.5	71.5	71.6	71.6	71.6	+0.4	+0.1
Amar Rd/Meadow Pa	North Leg	61.2	61.6	0	0	61.2	61.2	61.2	61.6	61.6	61.6	61.6	61.6	61.6	+0.4	---
Amar Rd/Meadow Pa	South Leg	63.7	64.1	0	0	63.7	63.7	63.7	64.1	64.1	64.1	64.1	64.1	64.1	+0.4	+0.0
Temple Ave/Grand A	East Leg	70.8	71.3	0	0	70.8	70.8	70.8	71.0	71.0	71.0	71.3	71.3	71.3	+0.4	+0.3
Temple Ave/Grand A	West Leg	70.7	71.1	0	0	70.7	70.7	70.7	71.0	71.0	71.0	71.1	71.1	71.1	+0.4	+0.1
Temple Ave/Grand A	North Leg	72.2	72.6	0	0	72.2	72.2	72.2	72.4	72.4	72.4	72.6	72.6	72.6	+0.4	+0.2
Temple Ave/Grand A	South Leg	74.0	74.3	0	0	74.0	74.0	74.0	74.2	74.2	74.2	74.3	74.3	74.3	+0.4	+0.2
Temple Ave/Mt SAC	East Leg	70.4	70.8	0	0	70.4	70.4	70.4	70.5	70.5	70.5	70.8	70.8	70.8	+0.4	+0.3
Temple Ave/Mt SAC	West Leg	70.8	71.2	0	0	70.8	70.8	70.8	71.0	71.0	71.0	71.2	71.2	71.2	+0.4	+0.3
Temple Ave/Mt SAC	North Leg	63.1	63.6	1	1	63.1	63.1	63.1	63.1	63.1	63.1	63.6	63.6	63.6	+0.5	+0.5
Temple Ave/Mt SAC	South Leg	58.2	58.6	0	0	58.2	58.2	58.2	58.4	58.4	58.4	58.6	58.6	58.6	+0.4	+0.2
Temple Ave/Transit C	East Leg	70.5	70.9	0	0	70.5	70.5	70.5	70.6	70.6	70.6	70.9	70.9	70.9	+0.4	+0.3
Temple Ave/Transit C	West Leg	70.3	70.7	0	0	70.3	70.3	70.3	70.5	70.5	70.5	70.7	70.7	70.7	+0.4	+0.3
Temple Ave/Transit C	North Leg	57.1	57.5	0	0	57.1	57.1	57.1	57.5	57.5	57.5	57.5	57.5	57.5	+0.4	---
Temple Ave/Transit C	South Leg	4.8	50.1	45	45	4.8	4.8	4.8	4.8	4.8	4.8	50.1	50.1	50.1	+45.4	+45.4
Temple Ave/Bonita D	East Leg	72.5	72.9	0	0	72.5	72.5	72.5	72.6	72.6	72.6	72.9	72.9	72.9	+0.5	+0.3
Temple Ave/Bonita D	West Leg	70.3	70.8	0	0	70.3	70.3	70.3	70.5	70.5	70.5	70.8	70.8	70.8	+0.5	+0.3
Temple Ave/Bonita D	North Leg	63.8	64.6	1	1	63.8	63.8	63.8	63.8	63.8	63.8	64.6	64.6	64.6	+0.8	+0.8
Temple Ave/Bonita D	South Leg	58.4	58.9	0	0	58.4	58.4	58.4	58.6	58.6	58.6	58.9	58.9	58.9	+0.4	+0.3
Temple Ave/Lot F En	East Leg	72.6	73.0	0	0	72.6	72.6	72.6	72.7	72.7	72.7	73.0	73.0	73.0	+0.4	+0.3
Temple Ave/Lot F En	West Leg	72.5	72.9	0	0	72.5	72.5	72.5	72.6	72.6	72.6	72.9	72.9	72.9	+0.4	+0.3
Temple Ave/Lot F En	North Leg	54.1	54.6	1	1	54.1	54.1	54.1	54.1	54.1	54.1	54.6	54.6	54.6	+0.6	+0.6
Temple Ave/Lot F En	South Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Temple Ave/Universi	East Leg	73.4	73.8	0	0	73.4	73.4	73.4	73.5	73.5	73.5	73.8	73.8	73.8	+0.4	+0.3
Temple Ave/Universi	West Leg	72.6	73.0	0	0	72.6	72.6	72.6	72.7	72.7	72.7	73.0	73.0	73.0	+0.4	+0.3
Temple Ave/Universi	North Leg	65.6	65.9	0	0	65.6	65.6	65.6	65.9	65.9	65.9	65.9	65.9	65.9	+0.4	---
Temple Ave/Universi	South Leg	47.3	47.4	0	0	47.3	47.3	47.3	47.4	47.4	47.4	47.4	47.4	47.4	+0.1	---
Temple Ave/Campus	East Leg	72.6	73.0	0	0	72.6	72.6	72.6	72.9	72.9	72.9	73.0	73.0	73.0	+0.4	+0.1
Temple Ave/Campus	West Leg	73.6	74.0	0	0	73.6	73.6	73.6	73.7	73.7	73.7	74.0	74.0	74.0	+0.4	+0.2
Temple Ave/Campus	North Leg	70.6	71.0	0	0	70.6	70.6	70.6	70.8	70.8	70.8	71.0	71.0	71.0	+0.4	+0.2
Temple Ave/Campus	South Leg	61.0	61.4	0	0	61.0	61.0	61.0	61.4	61.4	61.4	61.4	61.4	61.4	+0.4	---
Kellogg Dr/Campus D	East Leg	63.6	64.0	0	0	63.6	63.6	63.6	64.0	64.0	64.0	64.0	64.0	64.0	+0.4	---
Kellogg Dr/Campus D	West Leg	66.8	67.2	0	0	66.8	66.8	66.8	67.0	67.0	67.0	67.2	67.2	67.2	+0.4	+0.1
Kellogg Dr/Campus D	North Leg	68.6	69.0	0	0	68.6	68.6	68.6	68.8	68.8	68.8	69.0	69.0	69.0	+0.4	+0.2
Kellogg Dr/Campus D	South Leg	70.7	71.1	0	0	70.7	70.7	70.7	70.9	70.9	70.9	71.1	71.1	71.1	+0.4	+0.2
Temple Ave/Valley Bl	East Leg	71.8	72.1	0	0	71.8	71.8	71.8	72.0	72.0	72.0	72.1	72.1	72.1	+0.4	+0.1
Temple Ave/Valley Bl	West Leg	72.8	73.2	0	0	72.8	72.8	72.8	73.0	73.0	73.0	73.2	73.2	73.2	+0.4	+0.1
Temple Ave/Valley Bl	North Leg	71.1	71.5	0	0	71.1	71.1	71.1	71.5	71.5	71.5	71.5	71.5	71.5	+0.4	+0.0
Temple Ave/Valley Bl	South Leg	70.9	71.3	0	0	70.9	70.9	70.9	71.3	71.3	71.3	71.3	71.3	71.3	+0.4	---
Temple Ave/Pomona	East Leg	73.2	73.7	0	0	73.2	73.2	73.2	73.6	73.6	73.6	73.7	73.7	73.7	+0.4	+0.1
Temple Ave/Pomona	West Leg	71.7	72.1	0	0	71.7	71.7	71.7	71.9	71.9	71.9	72.1	72.1	72.1	+0.4	+0.1
Temple Ave/Pomona	North Leg	66.8	67.2	0	0	66.8	66.8	66.8	67.2	67.2	67.2	67.2	67.2	67.2	+0.4	---
Temple Ave/Pomona	South Leg	69.3	69.7	0	0	69.3	69.3	69.3	69.7	69.7	69.7	69.7	69.7	69.7	+0.4	---
Temple Ave/Shell Dri	East Leg	71.5	72.0	0	0	71.5	71.5	71.5	71.9	71.9	71.9	72.0	72.0	72.0	+0.4	+0.0
Temple Ave/Shell Dri	West Leg	73.8	74.2	0	0	73.8	73.8	73.8	74.1	74.1	74.1	74.2	74.2	74.2	+0.4	+0.1
Temple Ave/Shell Dri	North Leg	69.7	70.1	0	0	69.7	69.7	69.7	70.1	70.1	70.1	70.1	70.1	70.1	+0.4	+0.1
Temple Ave/Shell Dri	South Leg	47.6	48.0	0	0	47.6	47.6	47.6	48.0	48.0	48.0	48.0	48.0	48.0	+0.3	---
Temple Ave/SR-NB F	East Leg	73.7	74.1	0	0	73.7	73.7	73.7	74.1	74.1	74.1	74.1	74.1	74.1	+0.4	+0.0
Temple Ave/SR-NB F	West Leg	73.6	73.9	0	0	73.6	73.6	73.6	73.9	73.9	73.9	73.9	73.9	73.9	+0.4	+0.0
Temple Ave/SR-NB F	North Leg	62.2	62.6	0	0	62.2	62.2	62.2	62.6	62.6	62.6	62.6	62.6	62.6	+0.4	---
Temple Ave/SR-NB F	South Leg	66.0	66.4	0	0	66.0	66.0	66.0	66.3	66.3	66.3	66.4	66.4	66.4	+0.4	+0.1
I-10 WB Ramps/Grar	East Leg	55.6	55.9	0	0	55.6	55.6	55.6	55.9	55.9	55.9	55.9	55.9	55.9	+0.4	---
I-10 WB Ramps/Grar	West Leg	64.3	64.9	1	0	64.3	64.3	64.3	64.8	64.8	64.8	64.9	64.9	64.9	+0.6	+0.2
I-10 WB Ramps/Grar	North Leg	71.6	72.0	0	0	71.6	71.6	71.6	72.0	72.0	72.0	72.0	72.0	72.0	+0.4	+0.0
I-10 WB Ramps/Grar	South Leg	71.2	71.7	0	0	71.2	71.2	71.2	71.6	71.6	71.6	71.7	71.7	71.7	+0.5	+0.1
I-10 EB Ramps/Gran	East Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
I-10 EB Ramps/Gran	West Leg	65.0	65.6	1	0	65.0	65.0	65.0	65.4	65.4	65.4	65.6	65.6	65.6	+0.6	+0.3
I-10 EB Ramps/Gran	North Leg	71.2	71.6	0	0	71.2	71.2	71.2	71.5	71.5	71.5	71.6	71.6	71.6	+0.4	+0.1
I-10 EB Ramps/Gran	South Leg	70.9	71.4	0	0	70.9	70.9	70.9	71.2	71.2	71.2	71.4	71.4	71.4	+0.5	+0.3
Holt Ave/Grand Ave	East Leg	65.3	65.7	0	0	65.3	65.3	65.3	65.6	65.6	65.6	65.7	65.7	65.7	+0.4	+0.0
Holt Ave/Grand Ave	West Leg	61.4	61.8	0	0	61.4	61.4	61.4	61.8	61.8	61.8	61.8	61.8	61.8	+0.4	---
Holt Ave/Grand Ave	North Leg	70.9	71.3	0	0	70.9	70.9	70.9	71.0	71.0	71.0	71.3	71.3	71.3	+0.4	+0.3
Holt Ave/Grand Ave	South Leg	71.8	72.2	0	0	71.8	71.8	71.8	72.0	72.0	72.0	72.2	72.2	72.2	+0.4	+0.2

Cortez St/Grand Ave	East Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Cortez St/Grand Ave	West Leg	57.4	57.8	0	0	57.4	57.4	57.4	57.8	57.8	57.8	57.8	57.8	57.8	+0.4	---
Cortez St/Grand Ave	North Leg	71.8	72.2	0	0	71.8	71.8	71.8	71.9	71.9	71.9	72.2	72.2	72.2	+0.4	+0.2
Cortez St/Grand Ave	South Leg	71.7	72.1	0	0	71.7	71.7	71.7	71.9	71.9	71.9	72.1	72.1	72.1	+0.4	+0.2
Cameron Ave/Barran	East Leg	68.7	69.1	0	0	68.7	68.7	68.7	69.0	69.0	69.0	69.1	69.1	69.1	+0.4	+0.1
Cameron Ave/Barran	West Leg	69.7	70.1	0	0	69.7	69.7	69.7	70.0	70.0	70.0	70.1	70.1	70.1	+0.4	+0.1
Cameron Ave/Barran	North Leg	66.3	66.7	0	0	66.3	66.3	66.3	66.6	66.6	66.6	66.7	66.7	66.7	+0.4	+0.0
Cameron Ave/Barran	South Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Cameron Ave/Grand	East Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Cameron Ave/Grand	West Leg	65.7	66.1	0	0	65.7	65.7	65.7	66.0	66.0	66.0	66.1	66.1	66.1	+0.4	+0.1
Cameron Ave/Grand	North Leg	71.7	72.1	0	0	71.7	71.7	71.7	71.8	71.8	71.8	72.1	72.1	72.1	+0.4	+0.2
Cameron Ave/Grand	South Leg	72.9	73.3	0	0	72.9	72.9	72.9	73.0	73.0	73.0	73.3	73.3	73.3	+0.4	+0.2
Mountaineer Rd/Gran	East Leg	65.6	66.2	1	1	65.6	65.6	65.6	65.7	65.7	65.7	66.2	66.2	66.2	+0.5	+0.5
Mountaineer Rd/Gran	West Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Mountaineer Rd/Gran	North Leg	73.1	73.5	0	0	73.1	73.1	73.1	73.3	73.3	73.3	73.5	73.5	73.5	+0.4	+0.2
Mountaineer Rd/Gran	South Leg	72.1	72.5	0	0	72.1	72.1	72.1	72.3	72.3	72.3	72.5	72.5	72.5	+0.4	+0.2
San Jose Hills Rd/Gr	East Leg	62.5	63.2	1	1	62.5	62.5	62.5	62.5	62.5	62.5	63.2	63.2	63.2	+0.7	+0.7
San Jose Hills Rd/Gr	West Leg	63.2	63.6	0	0	63.2	63.2	63.2	63.6	63.6	63.6	63.6	63.6	63.6	+0.4	+0.0
San Jose Hills Rd/Gr	North Leg	72.1	72.5	0	0	72.1	72.1	72.1	72.3	72.3	72.3	72.5	72.5	72.5	+0.4	+0.2
San Jose Hills Rd/Gr	South Leg	72.2	72.6	0	0	72.2	72.2	72.2	72.4	72.4	72.4	72.6	72.6	72.6	+0.4	+0.2
La Puente Rd/Grand	East Leg	62.5	62.9	0	0	62.5	62.5	62.5	62.9	62.9	62.9	62.9	62.9	62.9	+0.4	---
La Puente Rd/Grand	West Leg	68.5	68.9	0	0	68.5	68.5	68.5	68.9	68.9	68.9	68.9	68.9	68.9	+0.4	+0.0
La Puente Rd/Grand	North Leg	74.0	74.4	0	0	74.0	74.0	74.0	74.2	74.2	74.2	74.4	74.4	74.4	+0.4	+0.2
La Puente Rd/Grand	South Leg	74.2	74.5	0	0	74.2	74.2	74.2	74.4	74.4	74.4	74.5	74.5	74.5	+0.4	+0.2
Valley Blvd/Grand Av	East Leg	73.5	74.0	0	0	73.5	73.5	73.5	74.0	74.0	74.0	74.0	74.0	74.0	+0.4	---
Valley Blvd/Grand Av	West Leg	74.3	74.7	0	0	74.3	74.3	74.3	74.7	74.7	74.7	74.7	74.7	74.7	+0.4	+0.0
Valley Blvd/Grand Av	North Leg	74.1	74.5	0	0	74.1	74.1	74.1	74.3	74.3	74.3	74.5	74.5	74.5	+0.4	+0.2
Valley Blvd/Grand Av	South Leg	73.4	73.8	0	0	73.4	73.4	73.4	73.6	73.6	73.6	73.8	73.8	73.8	+0.4	+0.2
Baker Pkwy/Grand A	East Leg	4.8	4.8	0	0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	---	---
Baker Pkwy/Grand A	West Leg	60.4	60.8	0	0	60.4	60.4	60.4	60.8	60.8	60.8	60.8	60.8	60.8	+0.4	---
Baker Pkwy/Grand A	North Leg	73.3	73.7	0	0	73.3	73.3	73.3	73.5	73.5	73.5	73.7	73.7	73.7	+0.4	+0.2
Baker Pkwy/Grand A	South Leg	73.4	73.8	0	0	73.4	73.4	73.4	73.6	73.6	73.6	73.8	73.8	73.8	+0.4	+0.2
Brea Canyon Rd/SR-	East Leg	63.6	64.1	0	0	63.6	63.6	63.6	63.7	63.7	63.7	64.1	64.1	64.1	+0.5	+0.4
Brea Canyon Rd/SR-	West Leg	58.5	59.3	1	0	58.5	58.5	58.5	59.2	59.2	59.2	59.3	59.3	59.3	+0.8	+0.1
Brea Canyon Rd/SR-	North Leg	73.4	73.9	0	0	73.4	73.4	73.4	73.7	73.7	73.7	73.9	73.9	73.9	+0.4	+0.2
Brea Canyon Rd/SR-	South Leg	73.0	73.4	0	0	73.0	73.0	73.0	73.3	73.3	73.3	73.4	73.4	73.4	+0.4	+0.1

Assumptions:

Fleet Mix

92%	Autos
3%	Medium Trucks
5%	Heavy Trucks

Simplified to 2 lanes

feet from centerline

future

feet from centerline

Time of Day:

70%	Day
15%	Evening
15%	Night

Noise path decay parameter for hard site

Calculations using methods of Federal Highway Administration *Highway Traffic Noise Prediction Model*, December, 1978. Baseline California vehicle noise levels from Caltrans, TAN 95-03, 1995

FIELD NOISE MEASUREMENT DATA

PROJECT: Mt SAC PROJ. #

SITE IDENTIFICATION: North Grand NM OBSERVER(S): Kassie Sugimoto
START DATE/TIME: 9:55 9/27 END DATE/TIME: 9/27 10:18
ADDRESS:

METEOROLOGICAL CONDITIONS:
TEMP: 85.4 °F HUMIDITY: 40.6 %R.H. WIND: ☒ CALM ☐ LIGHT ☐ MODERATE ☐ VARIABLE
WINDSPEED: 0.8 MPH DIR: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☒ W ☐ NW ☐ STEADY ☐ GUSTY
SKY: ☒ SUNNY ☐ CLEAR ☐ OVRCST ☐ PRTLY CLOUDY ☐ FOG ☐ RAIN ☐ OTHER:

ACOUSTIC INSTRUMENTS:
INSTRUMENT: Larson Davis 831 TYPE: ☐ 1 ☐ 2 SERIAL #: 1742
CALIBRATOR: Larson Davis Cal 200 SERIAL #: 6674
CALIBRATION CHECK: PRE-TEST 113.98 dBA SPL POST-TEST ____ dBA SPL WINDSCREEN Yes
SETTINGS: ☐ A-WEIGHTED ☐ SLOW ☐ FAST ☐ FRONTAL ☐ RANDOM ☐ ANSI ☐ OTHER: ____

REC #	START	END	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	OTHER:	(TYPE?)	
144	9:55	10:15	70.2	93.6							

COMMENTS:

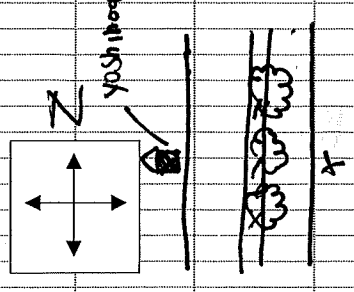
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: ☒ TRAFFIC ☐ AIRCRAFT ☐ RAIL ☐ INDUSTRIAL ☐ AMBIENT ☐ OTHER: ____
ROADWAY TYPE:
TRAFFIC COUNT DURATION: 321 -MIN 45 SPEED #2 COUNT ____ SPEED

	☒NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB
AUTOS						
MED. TRUCKS:	I					
HVY TRUCKS:	II					
BUSES:	III					
MOTORCYCLES:	I					

SPEED ESTIMATED BY: ☐ RADAR ☐ DRIVING ☐ OBSERVER

OTHER SOURCES: ☐ DIST. AIRCRAFT ☐ RUSTLING LEAVES ☐ DIST. BARKING DOGS ☐ BIRDS ☐ DIST. INDUSTRIAL ☐ DIST. CHILDREN PLAYING ☐ DIST. TRAFFIC ☐ DIST. LANDSCAPING ACTIVITIES ☒ OTHER: music from parked cars & birds

DESCRIPTION/SKETCH:
TERRAIN: ☐ HARD ☐ SOFT ☐ MIXED ☐ FLAT ☐ OTHER:
PHOTOS:
OTHER COMMENTS/SKETCH:



10:07 – traffic backed up on road.
10:10 – car horn from parking lot
10:12 – residents of apartment complex behind the Vishnoya making pounding noise like they are hammering
10:13 – pedestrian walked passed machine eating a bag of chips

Photos
1. North
2. North – pic of road
3 South
4 South – pic of road
5 West
6 East

FIELD NOISE MEASUREMENT DATA

PROJECT: Mt SAC PROJ. #

SITE IDENTIFICATION: Edinger NM OBSERVER(S): Kassie Sugimoto
START DATE/TIME: 9/27 12:24 END DATE/TIME: 9/27
ADDRESS:

METEOROLOGICAL CONDITIONS:
TEMP: 90.3 °F HUMIDITY: 55.4 %R.H. WIND: ☒ CALM ☒ LIGHT ☐ MODERATE ☐ VARIABLE
WINDSPEED: 1.5 MPH DIR: ☒ N ☐ NE ☐ E ☐ SE ☐ S ☐ W ☐ NW ☐ STEADY ☐ GUSTY
SKY: ☒ SUNNY ☐ CLEAR ☐ OVRCST ☐ PRTLY CLOUDY ☐ FOG ☐ RAIN ☐ OTHER:

ACOUSTIC INSTRUMENTS:
INSTRUMENT: Larson Davis 831 TYPE: ☐ 1 ☐ 2 SERIAL #: 1742
CALIBRATOR: Larson Davis Cal 200 SERIAL #: 6674
CALIBRATION CHECK: ~~PRE~~-TEST 114.04 dBA SPL POST-TEST ____ dBA SPL WINDSCREEN Yes
SETTINGS: ☐ A-WEIGHTED ☐ SLOW ☐ FAST ☐ FRONTAL ☐ RANDOM ☐ ANSI ☐ OTHER: ____

REC #	START	END	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	OTHER:	(TYPE?)	
140	12:29	12:44	62.3	80.9							

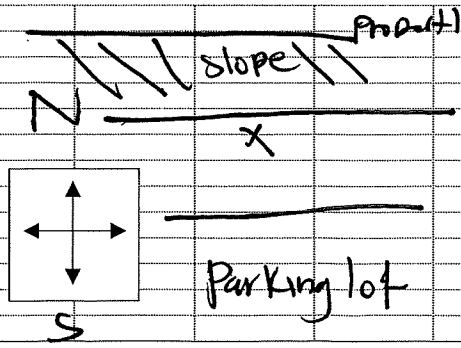
COMMENTS:

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: ☒ TRAFFIC ☐ AIRCRAFT ☐ RAIL ☐ INDUSTRIAL ☐ AMBIENT ☐ OTHER: ____
ROADWAY TYPE: Paved road
TRAFFIC COUNT DURATION: 116 -MIN 35 SPEED #2 COUNT ____ SPEED

	☐NB/☐EB	☐SB/☐WB	☐NB/☐EB	☐SB/☐WB	☐NB/☐EB	☐SB/☐WB	☐NB/☐EB	☐SB/☐WB
AUTOS	113							
MED. TRUCKS:	11							
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:	1							

SPEED ESTIMATED BY: ☐ RADAR ☐ DRIVING ☐ OBSERVER
OTHER SOURCES: ☐ DIST. AIRCRAFT ☒ RUSTLING LEAVES ☐ DIST. BARKING DOGS ☐ BIRDS ☐ DIST. INDUSTRIAL ☐ DIST. CHILDREN PLAYING ☐ DIST. TRAFFIC ☐ DIST. LANDSCAPING ACTIVITIES ☒ OTHER: pedestrians in parking lot & music from cars.

DESCRIPTION/SKETCH:
TERRAIN: ☒ HARD ☐ SOFT ☐ MIXED ☐ FLAT ☐ OTHER: paved road
PHOTOS:
OTHER COMMENTS/SKETCH:



Photos
1 West
2 East
3 East
4 East
5 South
6 North

FIELD NOISE MEASUREMENT DATA

PROJECT: Mt SAC PROJ. #

SITE IDENTIFICATION: South Grand OBSERVER(S): Kassie Sugimoto
START DATE/TIME: 10:45 9/27 END DATE/TIME: 9/27 11:06
ADDRESS:

METEOROLOGICAL CONDITIONS:
TEMP: 84.8 °F HUMIDITY: 48.1 %R.H. WIND: ☐ CALM ☒ LIGHT ☐ MODERATE ☐ VARIABLE
WINDSPEED: 1.2 MPH DIR: ☐ N ☐ NE ☐ E ☐ SE ☐ S ☒ W ☒ NW ☐ STEADY ☐ GUSTY
SKY: ☒ SUNNY ☐ CLEAR ☐ OVRCST ☐ PRTLY CLOUDY ☐ FOG ☐ RAIN ☐ OTHER:

ACOUSTIC INSTRUMENTS:
INSTRUMENT: Larson Davis 831 TYPE: ☐ 1 ☐ 2 SERIAL #: 1742
CALIBRATOR: Larson Davis Cal 200 SERIAL #: 6674
CALIBRATION CHECK: PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCREEN
SETTINGS: ☐ A-WEIGHTED ☐ SLOW ☐ FAST ☐ FRONTAL ☐ RANDOM ☐ ANSI ☐ OTHER:

REC #	START	END	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	OTHER:	(TYPE?)	
146	10:45	11:06	71.4	92.3							

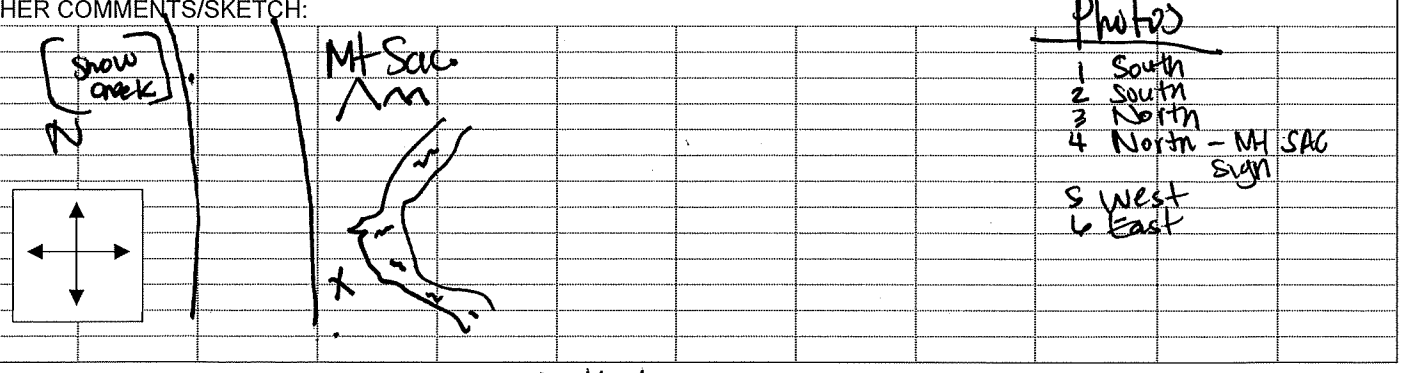
COMMENTS:

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: ☒ TRAFFIC ☐ AIRCRAFT ☐ RAIL ☐ INDUSTRIAL ☐ AMBIENT ☐ OTHER:
ROADWAY TYPE: paved road ~ 5mph
TRAFFIC COUNT DURATION: 411 -MIN 50 SPEED #2 COUNT SPEED

	☒NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB
AUTOS	399					
MED. TRUCKS:	𝍸 I					
HVY TRUCKS:	𝍸					
BUSES:	II					
MOTORCYCLES:						

bike 1 SPEED ESTIMATED BY: ☐ RADAR ☐ DRIVING ☐ OBSERVER
OTHER SOURCES: ☐ DIST. AIRCRAFT ☒ RUSTLING LEAVES ☐ DIST. BARKING DOGS ☒ BIRDS ☐ DIST. INDUSTRIAL
☐ DIST. CHILDREN PLAYING ☐ DIST. TRAFFIC ☐ DIST. LANDSCAPING ACTIVITIES ☐ OTHER:

DESCRIPTION/SKETCH:
TERRAIN: ☒ HARD ☐ SOFT ☐ MIXED ☐ FLAT ☐ OTHER:
PHOTOS:
OTHER COMMENTS/SKETCH:



Photos
1 South
2 South
3 North
4 North - MH SAC sign
5 West
6 East

Wind light

FIELD NOISE MEASUREMENT DATA

PROJECT: Mt SAC PROJ. #

SITE IDENTIFICATION: Temple NM OBSERVER(S): Kassie Sugimoto
START DATE/TIME: 11:34 9/27 END DATE/TIME: 11:55 9/27
ADDRESS:

METEOROLOGICAL CONDITIONS:
TEMP: 86 °F HUMIDITY: 44.1 %R.H. WIND: ☒ CALM ☐ LIGHT ☐ MODERATE ☐ VARIABLE
WINDSPEED: 2.5 MPH DIR: ☐ N ☒ NE ☒ E ☐ SE ☐ S ☐ W ☐ NW ☐ STEADY ☐ GUSTY
SKY: ☒ SUNNY ☐ CLEAR ☐ OVRCST ☐ PRTLY CLOUDY ☐ FOG ☐ RAIN ☐ OTHER:

ACOUSTIC INSTRUMENTS:
INSTRUMENT: Larson Davis 831 TYPE: ☐ 1 ☐ 2 SERIAL #: 1742
CALIBRATOR: Larson Davis Cal200 SERIAL #: 6674
CALIBRATION CHECK: PRE-TEST ____ dBA SPL POST-TEST ____ dBA SPL WINDSCREEN Yes
SETTINGS: ☐ A-WEIGHTED ☐ SLOW ☐ FAST ☐ FRONTAL ☐ RANDOM ☐ ANSI ☐ OTHER: ____

REC #	START	END	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	OTHER:	(TYPE?)	
147	11:34	11:55	67.3	83.5							

COMMENTS:

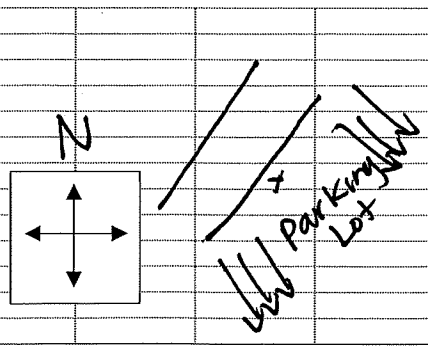
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: ☒ TRAFFIC ☐ AIRCRAFT ☐ RAIL ☐ INDUSTRIAL ☐ AMBIENT ☐ OTHER: ____
ROADWAY TYPE: Paved road near Parking lot
TRAFFIC COUNT DURATION: 20 -MIN 45 SPEED #2 COUNT SPEED

	☒NB/☒EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB	☐NB/☐EB ☐SB/☐WB
AUTOS	272			
MED. TRUCKS:	II			
HVY TRUCKS:	I			
BUSES:	III			
MOTORCYCLES:	I			

SPEED ESTIMATED BY: ☐ RADAR ☐ DRIVING ☐ OBSERVER

OTHER SOURCES: ☐ DIST. AIRCRAFT ☐ RUSTLING LEAVES ☐ DIST. BARKING DOGS ☐ BIRDS ☒ DIST. INDUSTRIAL ☐ DIST. CHILDREN PLAYING ☐ DIST. TRAFFIC ☐ DIST. LANDSCAPING ACTIVITIES ☐ OTHER: Welding? Sounds like metal banging. Construction near by also

DESCRIPTION/SKETCH:
TERRAIN: ☒ HARD ☐ SOFT ☐ MIXED ☐ FLAT ☐ OTHER: Paved
PHOTOS:
OTHER COMMENTS/SKETCH:



* traffic backup on both sides.

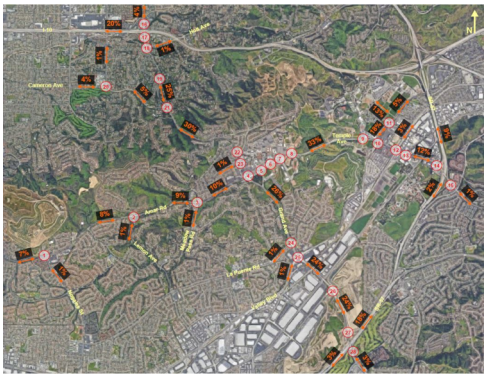
11:53 - pedestrian walked by mic

Photos
1 South
2 North
3 West
4 East

Traffic Impact Analysis for Mt. San Antonio College

Long Range Development Plan
2018 Educational and Facilities Master Plan







MT. SAC
Mt. San Antonio College

March 2019

Balancing the Natural and Built Environment

PSOMAS



TRAFFIC IMPACT ANALYSIS
FOR MT. SAN ANTONIO COLLEGE
LONG RANGE DEVELOPMENT PLAN
2018 EDUCATIONAL AND FACILITIES MASTER PLAN

Prepared For

MT. SAC
Mt. San Antonio College

Prepared By

PSOMAS

Psomas Project No. 3MTS010300

March 2019

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1. INTRODUCTION

This Traffic Impact Analysis (TIA) is part of the study to provide California Environmental Quality Act (CEQA) documentation for the Mt. San Antonio College (Mt. SAC) 2018 *Educational and Facilities Master Plan*[1] (EFMP) and associated 2017 *Parking and Circulation Master Plan*[2] (PCMP). Based on the EFMP (which is the Long Range Development Plan for the College), the construction of planned new buildings and parking structures, infrastructure facilities, site improvements, and renovation of existing buildings is expected to be completed in phases between 2019 and 2027. This study evaluates conditions at the completion of Phase 1A in 2021 and Phases 1B and 2 in 2027.

It should also be noted that certain projects included in the proposed EFMP have been evaluated in previous project-specific level environmental documents pursuant to CEQA, and do not require further approval from the Mt. San Antonio Community College District Board of Trustees. These projects include the following:

- Physical Education Project (Phase 1, 2)
    - Phase 1- Athletic Complex East, currently under construction
    - Phase 2- Physical Education Complex, included in this EFMP
    - Both phases were evaluated at a project-specific level in the *Physical Education Project (Phase 1, 2) Final Subsequent Project EIR to 2015 Facilities Master Plan Update and Physical Education Projects Final Program/Project EIR (SCH No. 2002041161)* certified by the Board of Trustees in August 2017
- West Parcel Site Improvements project
    - Currently under construction
    - Evaluated in the *West Parcel Solar Project Tiered Project EIR to the 2012 Facilities Master Plan Program EIR (SCH 2002041161*) and certified by the Board of Trustees in October 2017
- Additionally, project-specific level evaluation of the proposed Transit Center and associated circulation improvements has been conducted separately in coordination with Foothill Transit. On December 12, 2018, the Board of Trustees of the Mt. San Antonio Community College District adopted and certified the Final Initial Study/Mitigated Negative Declaration for the Mt. SAC Transit Center (SCH 2018091026) and approved the Transit Center project via Resolution No. 18-13.

These projects are addressed in this TIA to the extent that they are part of the larger "program" being evaluated.

Figure 1, taken from the EFMP, shows the planned facilities. Additional information about the specific buildings and parking structures can be found in the EFMP.

The estimation of project traffic generated by the implementation of the proposed EFMP and the associated traffic impact analysis in this study are based on student headcount. However, certain proposed facilities are relevant to the analysis of traffic conditions and potential project impacts. Notably, the new parking structures included with the project are considered in this traffic analysis because they are expected to influence the distribution of new trips around the campus.

With respect to headcount, the EFMP anticipates an increase in the campus headcount from 37,864 students in fall 2017 to between 40,802 and 42,745 students in fall 2027 (based on the estimated medium and high growth rates). To be conservative, this study considers the high growth rate of 1.22% (refer to the discussion provided in Section 4, Projected Traffic Volumes).

For this study, traffic impact analyses were conducted for existing conditions (2018), the interim Phase 1A (2021), and buildout (2027) to assess potential traffic impacts near Mt. SAC. In summary, the following scenarios were evaluated in this study:

- Existing Conditions
- Existing Plus Project (full EFMP buildout through Phase 2) Conditions
- 2021 Cumulative Conditions (Existing plus Related Projects)
- 2021 Cumulative Plus Project (Phase 1A) Conditions
- 2027 Cumulative Conditions
- 2027 Cumulative Plus Project (full EFMP buildout through Phase 2) Conditions

The project boundaries, the study area, and the traffic impact analysis methodology used in this study are described in the following sections, and Section 4 provides more information about the EFMP and the assumptions for each study scenario.

Figure 1. 2018 Facilities Master Plan



1.1. STUDY AREA

The 28 study intersections listed below were selected based on their inclusion in the 2015 Traffic Impact Study[3] and requests from the Cities of Walnut, Pomona, and West Covina. In addition, major intersections which directly serve Mt. SAC which were not included in the 2015 study were added. The jurisdiction in which each intersection is located is shown in parentheses, and Caltrans intersections are indicated as such.

1. Nogales Street and Amar Road (West Covina)
2. Lemon Avenue and Amar Road (Walnut)
3. Meadow Pass Road and Amar Road (Walnut)
4. Grand Avenue and Temple Avenue/Amar Road (Walnut) – will be referred to as Grand Avenue and Temple Avenue throughout this report
5. Mt. SAC Way and Temple Avenue (Walnut)
6. Proposed Transit Center Access and Temple Avenue (Walnut)
7. Bonita Drive and Temple Avenue (Walnut)
8. Lot F Entrance and Temple Avenue (Walnut)
9. University Drive and Temple Avenue (Pomona)
10. Campus Drive and Temple Avenue (Pomona)
11. Campus Drive and Kellogg Drive (Pomona)
12. Valley Boulevard and Temple Avenue (Pomona)
13. Pomona Boulevard and Temple Avenue (Pomona)
14. SR-57 SB Ramps and Temple Avenue (Pomona, Caltrans)
15. SR-57 NB Ramps and Temple Avenue (Pomona, Caltrans)
16. Grand Avenue and I-10 WB Ramp (West Covina, Caltrans)
17. Grand Avenue and I-10 EB Ramp (West Covina, Caltrans)
18. Grand Avenue and Holt Avenue (West Covina)
19. Grand Avenue and Cortez Street (West Covina)
20. Barranca Street and Cameron Avenue (West Covina)
21. Grand Avenue and Cameron Avenue (Los Angeles County)
22. Grand Avenue and Mountaineer Road (Walnut)
23. Grand Avenue and San Jose Hills Road (Walnut)
24. Grand Avenue and La Puente Road (Walnut)
25. Grand Avenue and Valley Boulevard (Walnut)

26. Grand Avenue and Baker Parkway (Industry)
27. Grand Avenue and SR-60 WB Ramps (Industry, Caltrans)
28. Grand Avenue and SR-60 EB Ramps (Diamond Bar, Caltrans)

After the initial draft of this study was completed, Mt. SAC was contacted by California State Polytechnic University, Pomona (Cal Poly Pomona) with a request to provide a preliminary discussion about a possible campus bypass which would include the following intersections:

29. I-10 eastbound off-ramp/East Campus Drive and Kellogg Drive (Los Angeles County, Caltrans)
30. East Campus Drive and South Campus Drive (Los Angeles County)

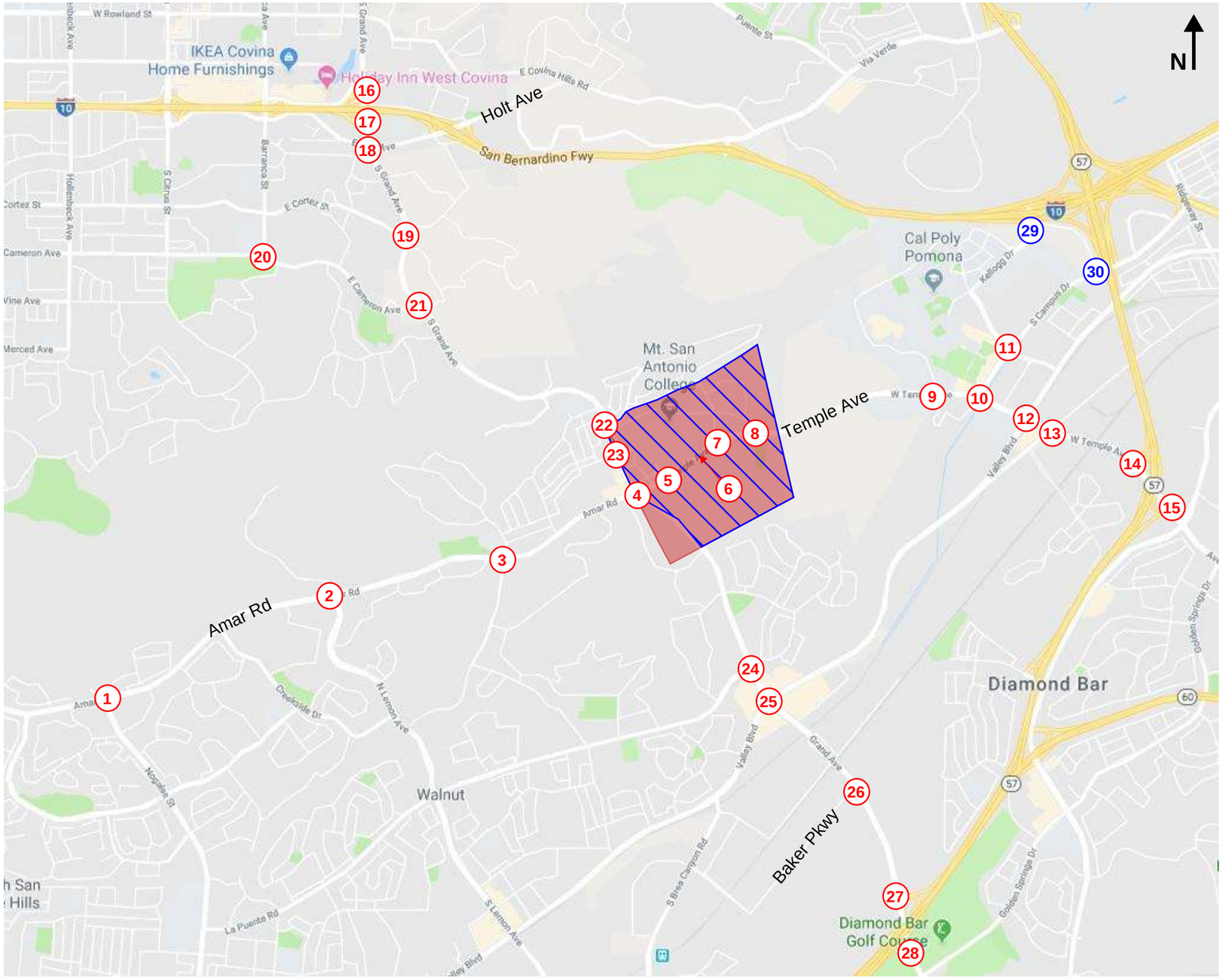
Although these two intersections are outside the study area for this document and were therefore not analyzed, traffic volume information for both (given the existing geometry and circulation) is provided throughout for reference. The potential plans for the area, along with the discussion and evaluation of these two intersections, are provided in Section 8 of this document.

In addition to the study intersections, the Caltrans facility segments listed below were analyzed because the project is expected to add 50 or more peak hour trips along each of the segments:

- I-10, Citrus Street to Holt Avenue
- SR-57, Grand Avenue to SR-60

The *2010 Congestion Management Program (CMP) for Los Angeles County*[4] provides guidelines to evaluate the potential impact of local growth on the regional transportation system. Although there are some CMP facilities in the project vicinity, the project trips are not expected to meet thresholds for analysis of any of the facilities and CMP analysis is therefore not required.

Figure 2 shows the project vicinity and the study intersections as well as the two intersections included for evaluation as requested by Cal Poly Pomona.



1. Nogales Street and Amar Road
2. Lemon Avenue and Amar Road
3. Meadow Pass Road and Amar Road
4. 4.Grand Avenue and Temple Avenue/Amar Road – will be referred to as Grand Avenue and Temple Avenue throughout this report
5. Mt. SAC Way and Temple Avenue
6. Proposed Transit Center Access and Temple Avenue
7. Bonita Drive and Temple Avenue
8. Lot F Entrance and Temple Avenue
9. University Drive and Temple Avenue
10. Campus Drive and Temple Avenue
11. Campus Drive and Kellogg Drive
12. Valley Boulevard and Temple Avenue
13. Pomona Boulevard and Temple Avenue
14. SR-57 SB Ramps and Temple Avenue
15. SR-57 NB Ramps and Temple Avenue
16. Grand Avenue and I-10 WB Ramp
17. Grand Avenue and I-10 EB Ramp
18. Grand Avenue and Holt Avenue
19. Grand Avenue and Cortez Street
20. Barranca Street and Cameron Avenue
21. Grand Avenue and Cameron Avenue
22. Grand Avenue and Mountaineer Road
23. Grand Avenue and San Jose Hills Road
24. Grand Avenue and La Puente Road
25. Grand Avenue and Valley Boulevard
26. Grand Avenue and Baker Parkway
27. Grand Avenue and SR-60 WB Ramps
28. Grand Avenue and SR-60 EB Ramps
29. I-10 eastbound off-ramp/East Campus Drive and Kellogg Drive
30. East Campus Drive and South Campus Drive

LEGEND

- XX Study Intersection
- XX Additional Intersection (Reference Only)
- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 2.
Project Location and Study Intersections

PSOMAS
March 2019

1.2. ANALYSIS METHODOLOGY

Level of Service (LOS) is the typical measure used to characterize the quality of traffic operations at an intersection or roadway segment. LOS A represents relatively free operating conditions, whereas LOS F has unstable flow and congestion with volumes at or near the capacity of the facility. Excessive delays and queues can occur when the LOS is not acceptable.

The traffic generated by the project or by the project in combination with other projects in the area could worsen the LOS of a facility. To assess the potential traffic impacts due to the growth of the student population and the addition of new parking structures, and due to background traffic growth and related projects, the following scenarios were evaluated:

- Existing Conditions
- Existing Plus Project (full EFMP buildout through Phase 2) Conditions
- 2021 Cumulative Conditions (Existing plus Related Projects)
- 2021 Cumulative Plus Project (Phase 1A) Conditions
- 2027 Cumulative Conditions
- 2027 Cumulative Plus Project (full EFMP buildout through Phase 2) Conditions

This TIA follows the *Los Angeles County Traffic Impact Analysis Report Guidelines*[5]. Non-freeway ramp intersections were evaluated based on the LA County guidelines, which apply the Intersection Capacity Utilization (ICU) methodology at signalized intersections and the Highway Capacity Manual (HCM) methodology at unsignalized intersections. For the intersections operated under Caltrans' jurisdiction, operational analyses were based on the HCM methodology. The methodologies and significance thresholds are discussed further in the following sections.

1.2.1. Intersection Capacity Utilization (ICU)

The ICU methodology is used to determine the operating LOS of signalized intersections. This methodology requires the calculation of the intersection volume/capacity (V/C) ratio, which is the summation of critical lane group flow ratios with a yellow clearance adjustment. The LOS estimated by the ICU methodology is directly related to the intersection V/C ratio.

Per the LA County guidelines, a maximum of 2,880 vehicles per hour per lane should be used in the ICU method for dual left-turn lanes, and a maximum of 1,600 vehicles per hour per lane should be used for the remaining lane configurations. A ten percent yellow clearance time (i.e. lost time) should be included in the calculations.

The impact related to the project is considered significant if the increase in the volume to capacity (V/C) ratio with the project equals or exceeds the values shown in Table 1.

Table 1. Significant Impact Thresholds – ICU Methodology

Intersection Conditions Pre-Project		Project V/C Increase
LOS	V/C	
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E/F	0.91 or more	0.01 or more

1.2.2. Highway Capacity Manual (HCM)

The LA County guidelines do not refer to significant impacts at unsignalized intersections. However, this study applied the *HCM*[6] methodology to evaluate unsignalized intersections, which defines LOS based on delay. The analyses for the unsignalized intersections were conducted using the software *Synchro*.

Although no thresholds are available for significant impacts at unsignalized intersections, several jurisdictions recommend evaluation methodologies. For example, the LADOT guidelines[7] recommend that if an unsignalized intersection has a LOS E or F in the "future with project" scenario, a signal warrant analysis should be conducted.

For this study, the LOS for unsignalized intersections is shown for each scenario. For intersections with LOS E or F, a preliminary peak hour signal warrant evaluation was conducted. However, the construction of a signal is not considered a mitigation measure, and the preliminary warrant analysis is provided for information only. Further, it is recommended that a full signal warrant analysis be conducted before a new traffic signal is installed at any location.

1.2.3. Caltrans Guidelines

The LOS at the intersections operating under Caltrans' jurisdiction is based on measures of effectiveness defined in the *HCM*. Caltrans aims to have facilities operate at the transition between LOS C and LOS D.

There are no formal thresholds from Caltrans to determine significant impacts. To be consistent with previous studies conducted for Mt. SAC and considering that Caltrans wants to maintain facilities operating at LOS D or better, this study assumed that a project-related impact is considered significant if the LOS changes from D or better to E or F. Further, a significant impact occurs if the facility operates at LOS E or F during existing conditions and the project-related traffic results in an increase in delay.

For freeway facilities, Caltrans uses the segment flow rates shown in Table 2, listed in passenger cars per hour per lane.

Table 2. Freeway Segment Capacity

LOS	Maximum Flow Rate (pc/hr/ln)
A	710
B	1,170
C	1,680
D	2,090
E	2,350

2. EXISTING STUDY AREA CONDITIONS

2.1. ROADWAY NETWORK

There are several existing roadways in the project traffic study area, as discussed below:

Grand Avenue is an existing four-lane divided roadway in the project vicinity, widening to six lanes further south in the study area. There are bike lanes along some portions of the roadway, and on-street parking is prohibited. The roadway is classified as a major arterial by the City of Walnut[8], and has a posted speed limit of 40 mph in the campus vicinity, increasing to 45 mph north of campus and 50 mph south of Temple Avenue.

Amar Road/Temple Avenue is a four-lane divided roadway through the campus area, widening to a six-lane facility to the east. On-street parking is generally prohibited along the roadway, except for the segment between Mt. SAC Way and Bonita Drive. The roadway is classified by the City of Walnut as a major arterial east of Grand Avenue and as a minor arterial west of Grand Avenue with a posted speed limit of 40 mph in the campus vicinity, increasing to 45 mph west of Heidelberg Avenue and 50 mph east of Bonita Drive.

Mountaineer Road is a two-lane divided roadway located on the northern boundary of the campus between Grand Avenue and Edinger Way and is classified as an important local street by the City of Walnut. Near the Grand Avenue intersection, the roadway is wider, providing four turn lanes onto Grand Avenue and two egress lanes from Grand Avenue. Mountaineer Road provides direct access to campus parking and facilities via Edinger Way. On-street parking is prohibited in this segment, and the posted speed limit is 30 mph.

Cameron Avenue is a four-lane undivided roadway with bike lanes which provides access to the area between I-10 and Grand Avenue via Citrus Street and Barranca Street. The roadway is classified as a principal arterial by the City of West Covina and has a posted speed limit of 45 mph.

La Puente Road is a four-lane divided roadway west of Grand Avenue; east of Grand Avenue, the roadway narrows to a two-lane undivided roadway and serves a large residential area. West of Grand Avenue, the roadway is classified as a secondary street by the City of Walnut and has a posted speed limit of 40 mph.

Valley Boulevard is a four- to six-lane divided roadway and is classified as a major arterial by the City of Walnut. South of Pomona Boulevard, the roadway has a raised median, and north of Pomona Boulevard, there is a two-way left turn lane. On-street parking is prohibited in the study area, and the roadway has a posted speed limit of 50 mph.

Nogales Street is a four-lane divided roadway with bike lanes south of Amar Road, and becomes the two-lane undivided Walnut Vista Way north of Amar Road. The portion of the roadway south of Amar Road is classified as a minor arterial by the City of Walnut and has a posted speed limit of 45 mph.

Lemon Avenue is a four-lane divided roadway south of Amar Road, narrowing to a two-lane undivided roadway north of Amar Road. The southern portion of the roadway is classified as a minor arterial by the City of Walnut and has a posted speed limit of 35 mph.

Meadow Pass Road is a two-lane divided roadway with a separate multi-use path south of Amar Road, and becomes the two-lane undivided Country Hollow Drive north of Amar Road. The portion of the roadway south of Amar Road is classified as an important local street by the City of Walnut and has a posted speed limit of 30 mph.

Campus Drive is a four-lane generally undivided roadway that passes through the Cal Poly Pomona campus, but also provides access between Temple Avenue and I-10 via Ridgeway Street. Between Temple Avenue and Kellogg Drive, the roadway is divided by either a raised median or left turn lanes. The roadway is classified as a collector by the City of Pomona[9] and has a posted speed limit of 45 mph.

2.2. PUBLIC TRANSIT

The Mt. SAC campus is currently served by five Foothill Transit routes, all of which travel along Temple Avenue from Grand Avenue to the east[10]. Routes 190 and 480 travel to/from the north along Grand Avenue, route 486 travels to/from the west on Amar Road, and routes 194 and 289 travel to/from the south along Grand Avenue. Figure 3 shows the existing routes as of December 2018 in a regional context and along the Mt. SAC frontage.

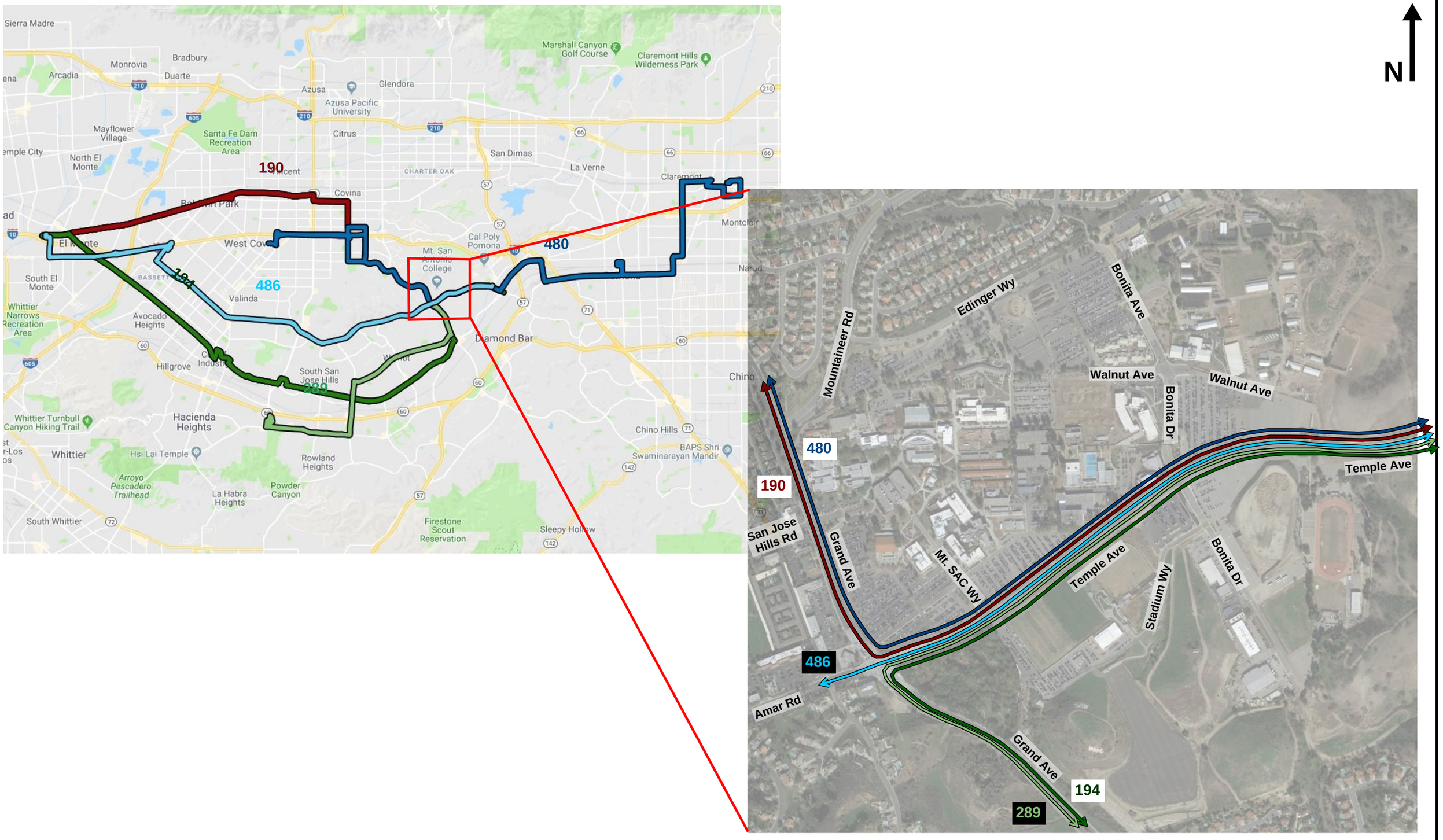
Further, on December 12, 2018, the Board of Trustees of the Mt. San Antonio Community College District adopted and certified the Final Initial Study/Negative Declaration for the Mt. San Antonio College Transit Center (SCH 2018091026) and approved the Transit Center project via Resolution No. 18-13. The proposed transit center will be located on the north side of Temple Avenue, just west of Bonita Drive.

2.3. TRAFFIC VOLUMES

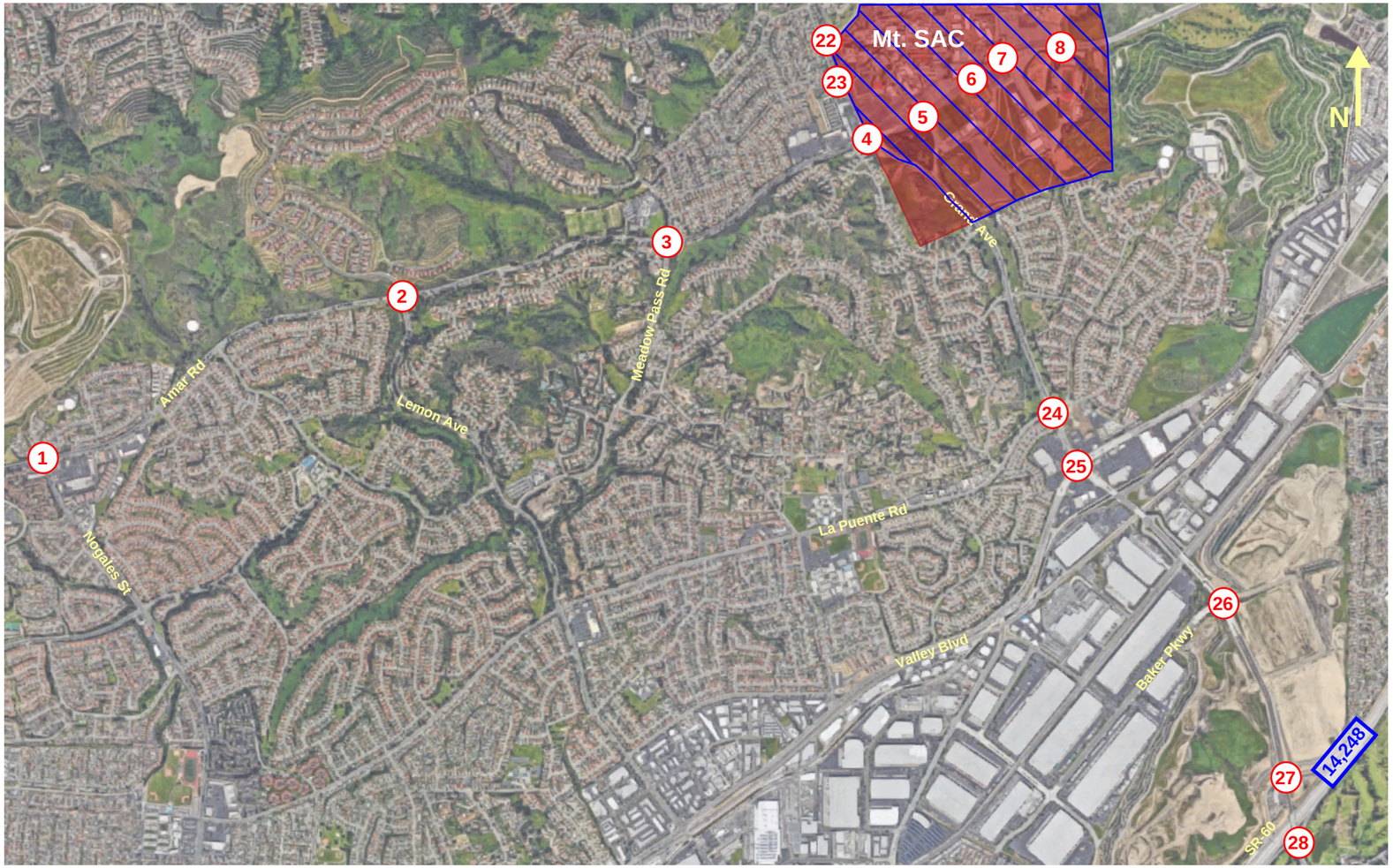
Traffic volume data was collected at most study intersections in May 2018 by National Data & Surveying Services for Psomas from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Traffic volume data at the Proposed Transit Center Access and Temple Avenue intersection was also collected in March 2018 for a 24-hour period. The overall peak hours for the study area were found to be from 7:15 to 8:15 AM and from 5:00 to 6:00 PM.

The volumes along I-10 and SR-57 are from 2016 Caltrans data[11]. Traffic volume data for the two intersections added after the initial draft of this report (I-10 eastbound off ramp/East Campus Drive/Kellogg Drive and East Campus Drive/South Campus Drive) was collected in October 2018. Recall that these two intersections (numbers 29 and 30 in the figures) are not part of the study area and are not included in the detailed traffic analysis for this project; however, the volumes will be shown throughout for reference.

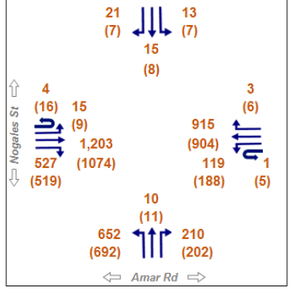
Figures 4A and 4B show the peak hour traffic volumes. All collected traffic volume data is included in Appendix A.



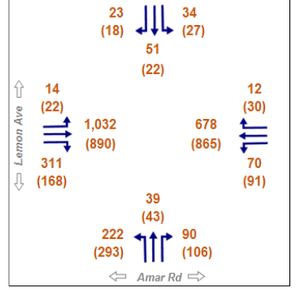
Traffic Impact Analysis Mt. San Antonio College 2018 EFMP	*Figure 3.* *Existing Foothill Transit Routes*	P S O M A S March 2019



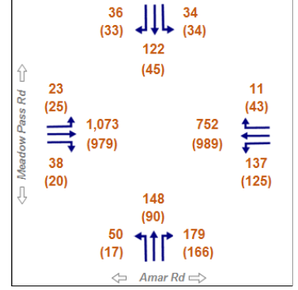
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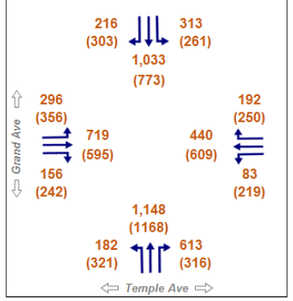
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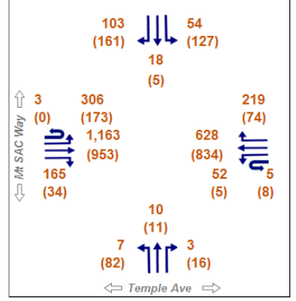
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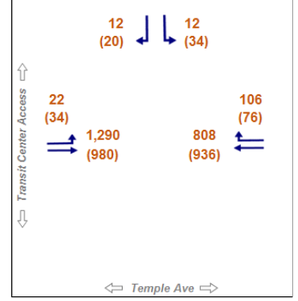
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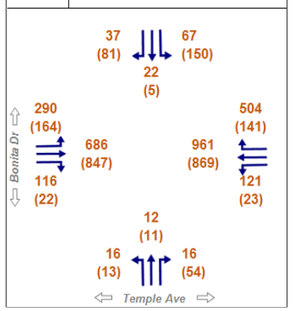
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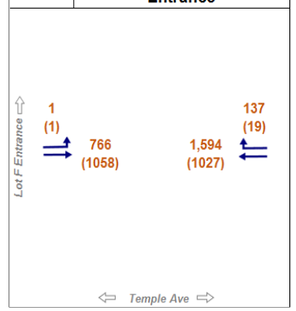
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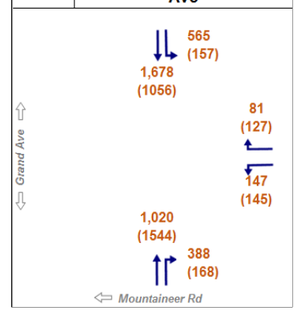
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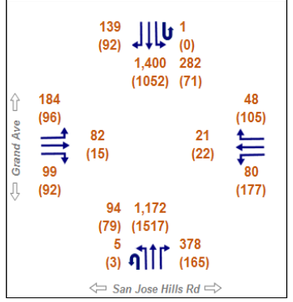
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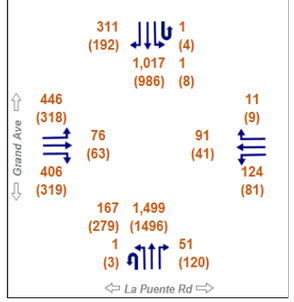
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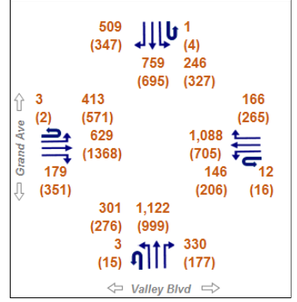
23 San Jose Hills Rd / Grand Ave



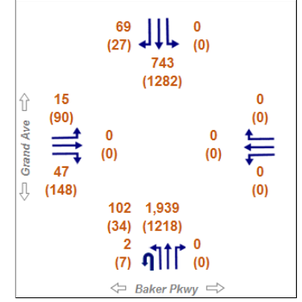
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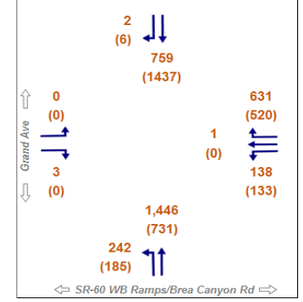
25 Valley Blvd / Grand Ave



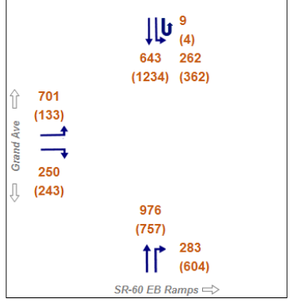
26 Baker Pkwy / Grand Ave



27 SR-60 WB Ramps / Grand Ave



28 SR-60 EB Ramps / Grand Ave



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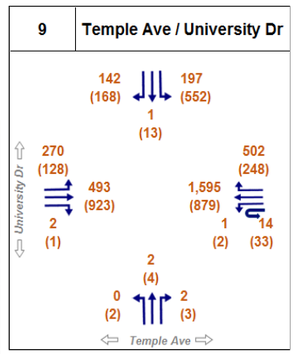
- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

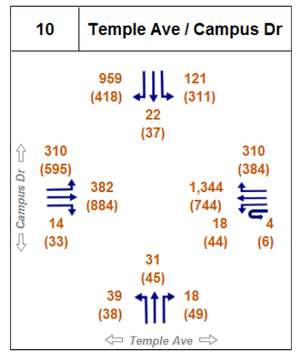
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

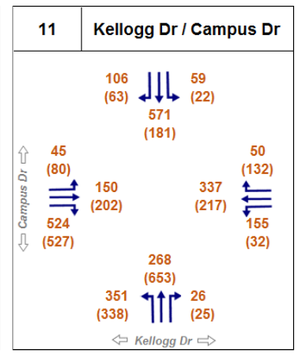
Figure 4A.
Existing Traffic Volumes (Intersections 1-8, 22-28)

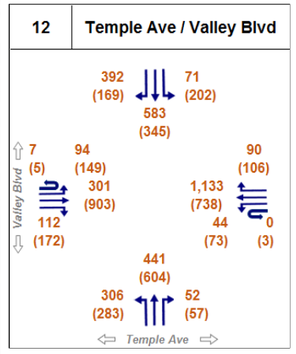
PSOMAS
March 2019

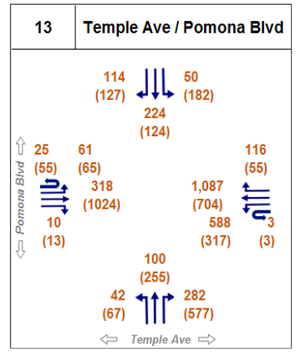


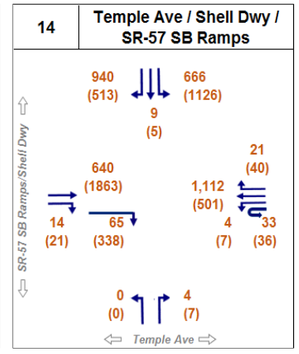


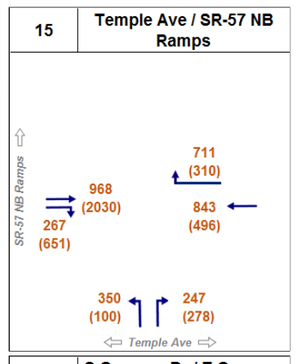


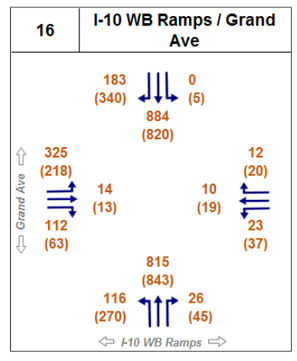


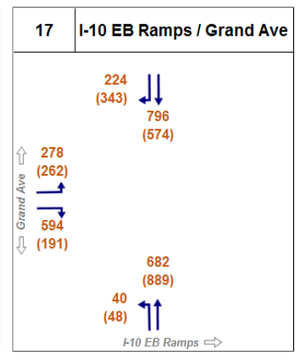


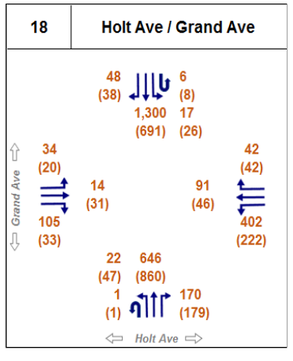


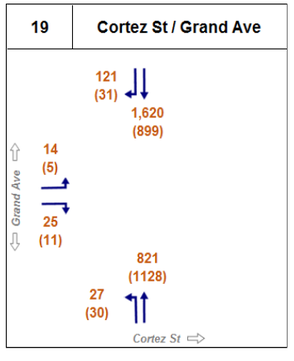


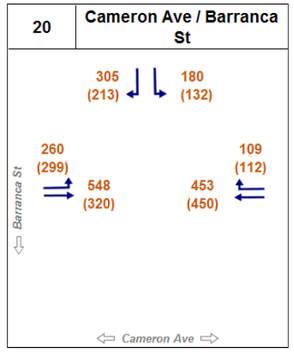


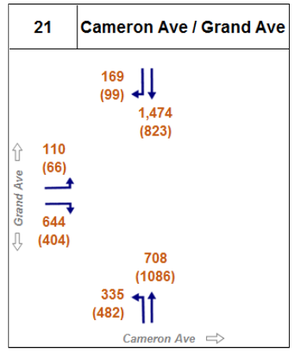


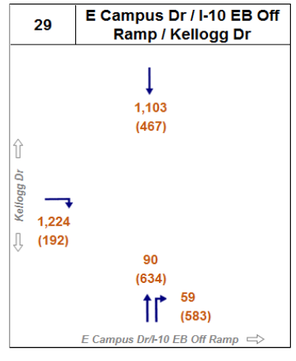


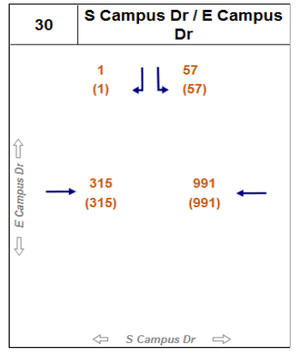












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- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 4B.
Existing Traffic Volumes (Intersections 9-21, 29-30)

PSOMAS
March 2019

3. PROJECT DESCRIPTION

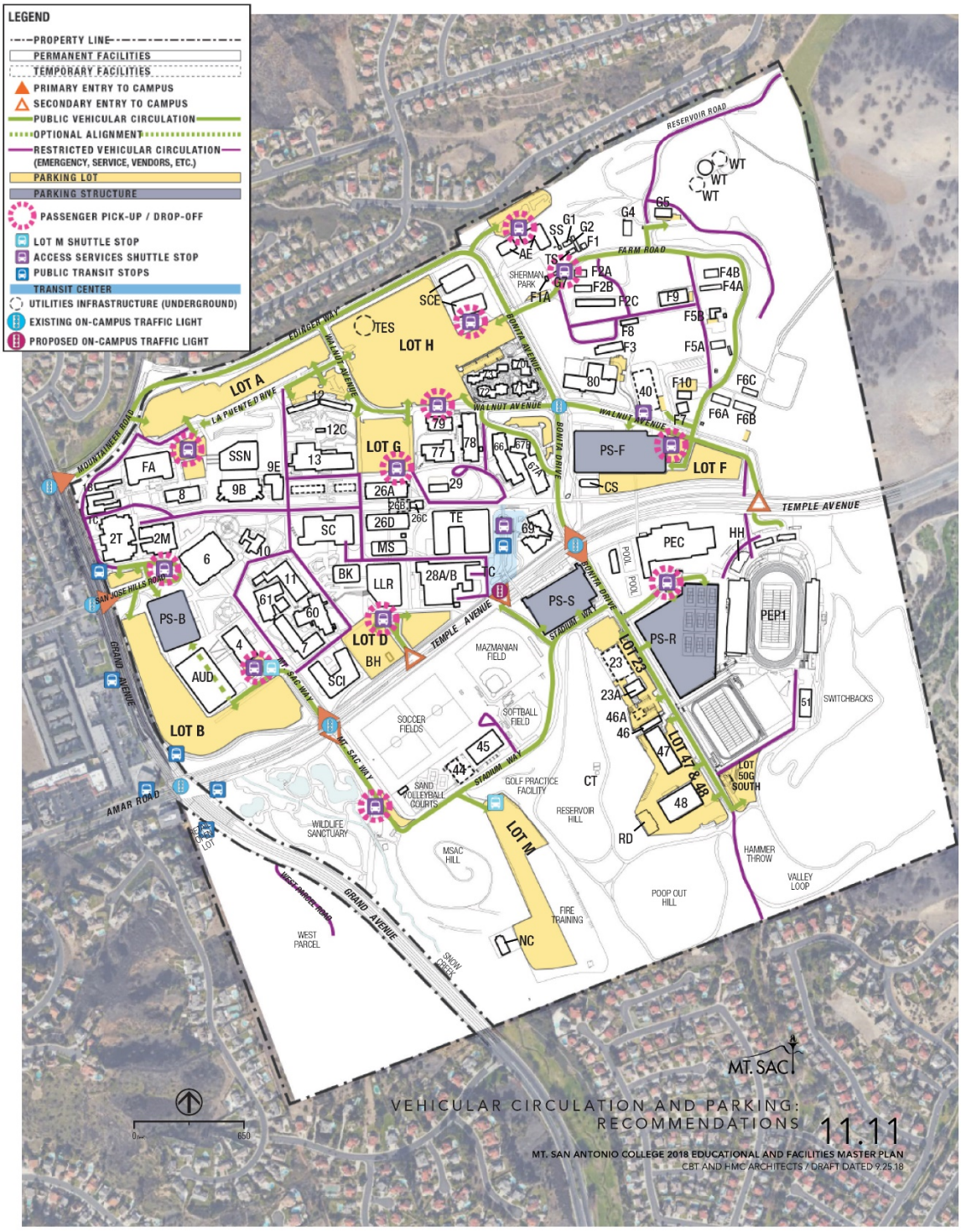
The *2018 Educational and Facilities Master Plan* (EFMP) is the subject of this TIA. Prior to the EFMP, the *2017 Parking and Circulation Master Plan* (PCMP) for Mt. SAC was completed in November 2017 and included recommendations for providing parking through the 2025-2026 school year. The projections were based on an annual increase in the student headcount of 0.75%, with an additional 5% buffer included in each year to ensure adequate parking was provided. The PCMP included distribution of new trips generated by the growth at the College and provided recommendations for the construction of four new parking structures by 2026. The final recommended parking improvements are shown in Figure 5 (taken from the EFMP).

The EFMP considers the assumptions in the PCMP, but also provides a higher potential student growth rate of 1.22% per year to be conservative. Per the EFMP, the parking structures recommended in the PCMP for lots R and S should be constructed with Phase 1A. The recommended parking structures in Lot B and Lot F are assumed to be constructed in Phase 2, with Lot B assumed to be constructed first. The plan also includes recommendations for numerous new educational buildings, with a 10-year horizon period. The overall master plan is shown in Figure 1 (page 3, taken from the EFMP).

The PCMP also introduced the proposed Transit Center to be constructed on campus by Foothill Transit (shown in Figure 5 across Temple Avenue from the parking structure in Lot S). The Final Initial Study/Mitigated Negative Declaration for the Transit Center was adopted and certified on December 12, 2018. Mt. SAC is committed to continuing its Class Pass program, which provides students with unlimited access to Foothill Transit buses as part of their student fees to help encourage more students and employees to commute to campus by bus. Mt. SAC also hopes to encourage transit agencies to expand their service to the campus. Lastly, the Transit Center will help prepare for possible bus connections to Los Angeles County's planned Metro Gold Line stations in La Verne and Pomona. The Gold Line connects Los Angeles Union Station to Azusa, and is planned to extend through Glendora, San Dimas, La Verne, Pomona, Claremont, and Montclair.

The focus on transit as well as the commitment to bicycle and pedestrian facilities all serve as Travel Demand Management (TDM) strategies which are part of the project.

Figure 5. 2018 EFMP Parking and Circulation Recommendations



Recommendations to improve bicycle, pedestrian, and transit facilities are also included in the EFMP. The complete details can be found in Chapter 11 of the EFMP, but the major ideas are listed below:

- Bicycle Circulation (see Figure 6, from the EFMP)
    - Provide safe access to campus
        - Includes continuous, protected bike lanes along Temple Avenue and Grand Avenue to provide a direct connection between Mt. SAC and two potential Class I greenway paths (one along Walnut Creek and one along San Jose Creek)
    - Provide service and convenient bicycle storage
        - Ensure adequate lighting and visibility
    - Encourage bicycle commuting by participating in and supporting a regional bicycle network
    - Provide bike share services on campus
- Pedestrian Circulation (see Figure 7, from the EFMP)
    - Connect all points of arrival and departure with campus destinations and nearby residential communities and businesses
    - Provide universally accessible circulation routes whenever possible
    - Complete and reinforce Miracle Mile as the primary east/west pedestrian route on campus
    - Provide enhanced pedestrian facilities along Mt. SAC Way and Bonita Drive (including wide pedestrian walkways, shade trees, seating, lighting, waste receptacles, and electrical outlets)
    - Replace the Bonita Drive Pedestrian Bridge
    - Develop the Healthy Living Loop as a publicly-accessible route around campus to encourage walking, jogging, and cycling
    - Provide sidewalks along both sides of Temple Avenue along the entire Mt. SAC frontage as part of the Temple Avenue Green Corridor
    - Complete the Grand Avenue sidewalk between San Jose Hills Road and Mountaineer Road
    - Reinforce pedestrian circulation hierarchy

Figure 6. 2018 EFMP Bicycle Circulation Recommendations

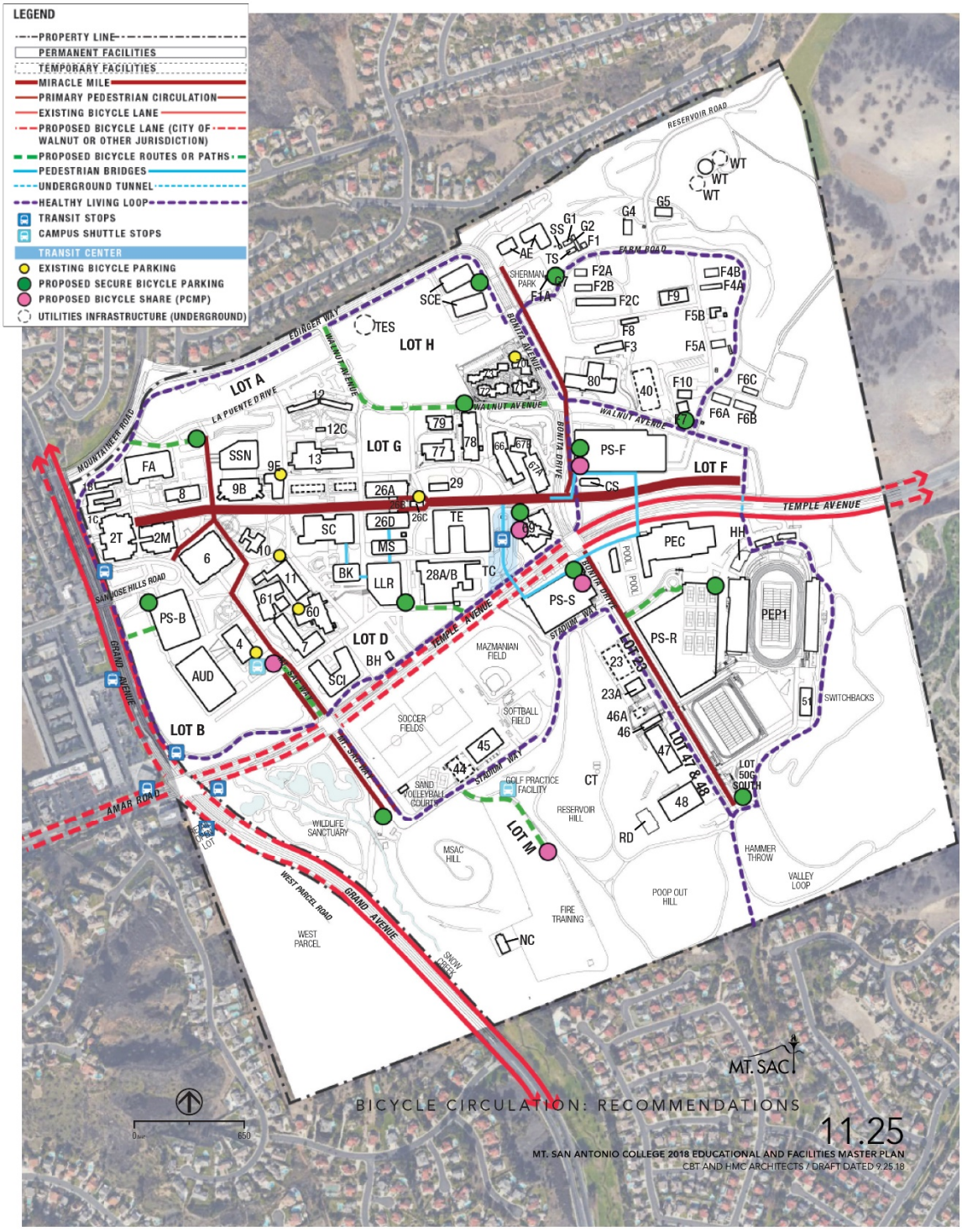
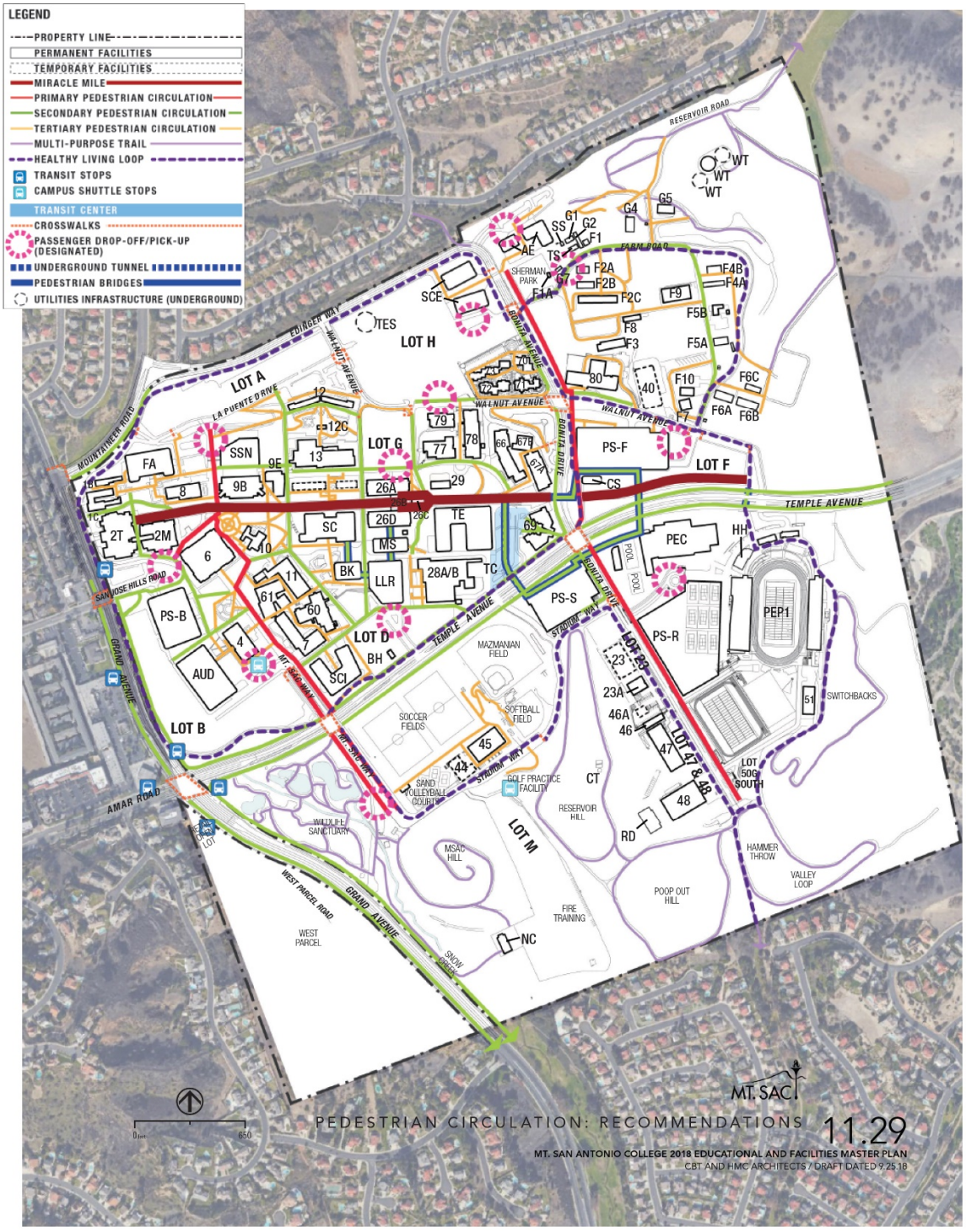


Figure 7. 2018 EFMP Pedestrian Circulation Recommendations



3.1. ASSUMPTIONS FOR THE TRAFFIC IMPACT ANALYSIS

The anticipated growth for this study was assumed to be 1.22% per year, which is the most conservative growth rate presented in the EFMP. The interim study year is at the completion of Phase 1A (assumed to be in 2021) and the buildout year is 2027, which is consistent with the 10-year horizon for buildout of Phase 2 of the EFMP.

Because parking needs may change over time due to the construction of the Transit Center and the general shift of trips away from personal vehicles, the structure in Lot F may not be needed when initially indicated, if at all. Therefore, it is recommended that parking demand data be collected in the third week (census week) of the fall semester on a regular basis (i.e. every year, every other year). A parking generation rate should be calculated as the total demand divided by the total number of students, and the rate should be compared to previous years to determine how the parking rate per student is changing over time.

Along with the EFMP growth, other ongoing development and roadway improvement projects (which have been previously approved and studied) must be accounted for in the appropriate study years. While specific educational facilities, the Physical Education Project (Phase 1,2), and the Transit Center (among others) are specified developments in the EFMP, this traffic study provided analyses based on the anticipated number of new students. The number of students is not necessarily tied to specific new buildings on campus; instead, the campus population is anticipated to grow as it has in the past, being served by the planned new and improved facilities. Therefore, the physical projects listed in the assumptions below are only those which influence traffic, such as new parking structures.

The project assumptions for each analysis scenario are listed below:

- Existing Conditions
    - Existing geometry at all intersections, including recently completed construction on Grand Avenue at Baker Parkway and at the SR-60 WB Ramps

- Existing + Project
    - School population increase of 4,881 students (42,745 total students, buildout conditions)
    - New developments include Transit Center and parking structures in Lots R, S, B, and F (buildout conditions)
    - Roadway geometry changes include:
        - New exclusive eastbound and westbound right turn lanes at Temple Avenue/Bonita Drive associated with the Physical Education Project (Phase 1,2)
        - New traffic signal at Temple Avenue/Transit Center access
        - New south leg (for parking structure S) at Temple Avenue/Transit Center access
        - Exclusive eastbound and westbound right turn lanes at Temple Avenue/Transit Center access
    - An additional possible improvement includes extending the existing westbound left turn lane storage length at the intersection of Temple Avenue and Bonita Drive
        - Mt. SAC and the City of Walnut are discussing this potential construction
        - The possible extension of the left turn lane does not have any effect on the analyses in this report
- Phase 1A (2021) Cumulative Conditions
    - Includes Transit Center
    - Roadway geometry changes include:
        - New exclusive eastbound right turn lane at Temple Avenue/Bonita Drive associated with the Physical Education Project (Phase 1,2)
        - New traffic signal at Temple Avenue/Transit Center access
        - New south leg at Temple Avenue/Transit Center access
        - Exclusive eastbound and westbound right turn lanes at Temple Avenue/Transit Center access
- Phase 1A (2021) Cumulative Conditions Plus Project
    - School population increase of 1,882 students (39,746 total students)
    - In addition to 2021 Cumulative Conditions, includes parking structures in Lots R and S

- Buildout (2027) Cumulative Conditions
    - Includes Transit Center
    - Roadway geometry changes include:
        - New exclusive eastbound right turn lane at Temple Avenue/Bonita Drive associated with the Physical Education Project (Phase 1,2)
        - New traffic signal at Temple Avenue/Transit Center access
        - New south leg at Temple Avenue/Transit Center access
        - Exclusive eastbound and westbound right turn lanes at Temple Avenue/Transit Center access
- Buildout (2027) Cumulative Conditions Plus Project
    - School population increase of 4,881 students (42,745 total students)
    - In addition to 2027 Cumulative Conditions, includes parking structures in Lots R, S, B, and F

4. PROJECTED TRAFFIC VOLUMES

4.1. INTERIM YEAR (2021) – PHASE 1A

4.1.1. Project Trip Generation

The EFMP provides low, medium, and high approximations for student population growth at Mt. SAC. To be conservative, the high annual growth rate (1.22% per year) was assumed in this study. Based on that growth rate, the student population is expected to grow from 37,864 students in the fall of 2017 to 39,746 students in 2021, a growth of 1,882 students.

The trip generation for the project was calculated using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*[12]. The resulting trip generation is shown in Table 3. As seen in the table, the project is expected to generate 2,164 new daily trips at the completion of Phase 1A, including 207 peak hour trips in each of the AM and PM peak hours.

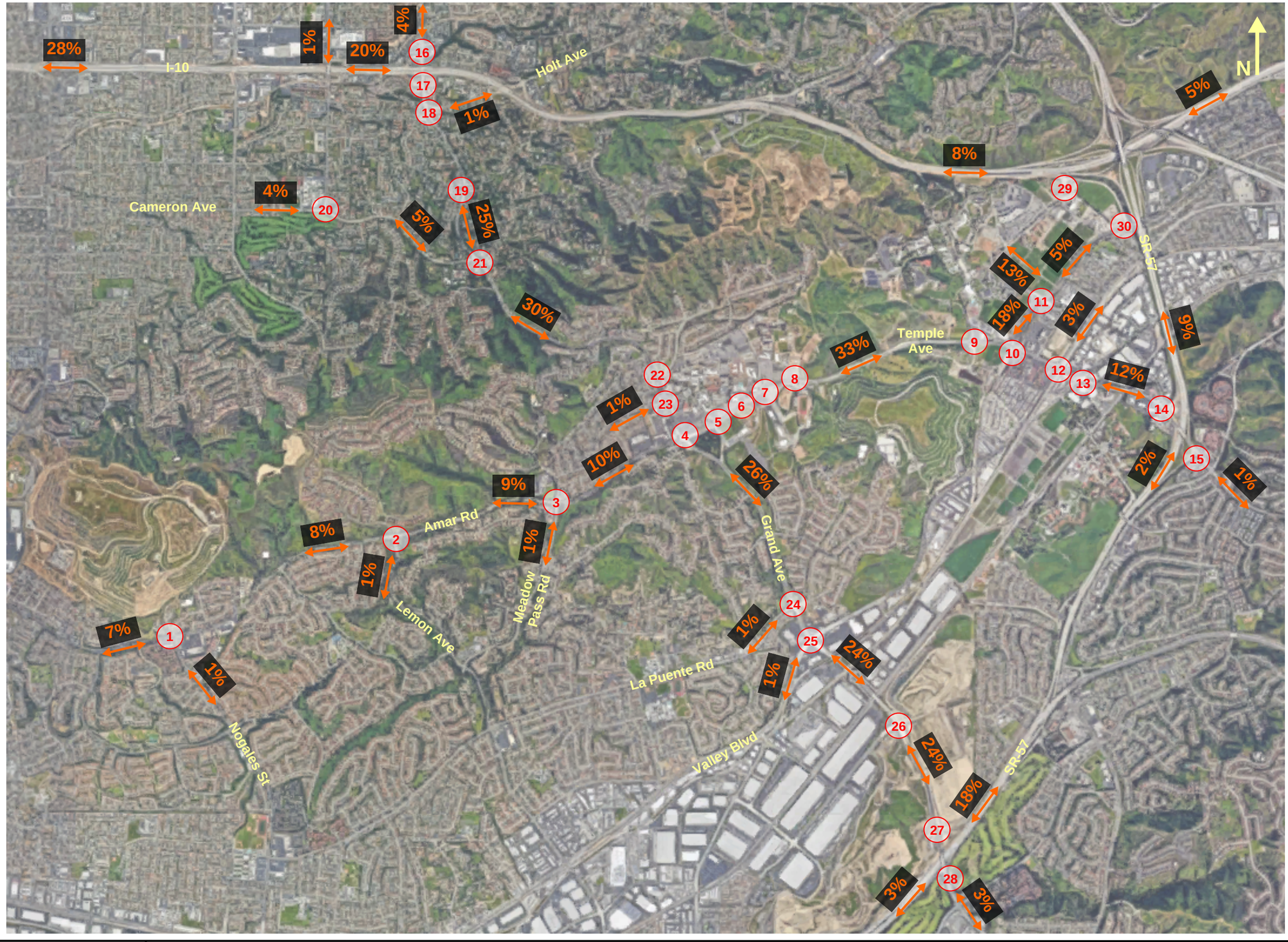
Table 3. Interim (2021) Project Trip Generation

ITE LU 540 (10th Edition) - Junior/Community College						
Students			1,882			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	0.11	207	81%	19%	168	39
PM Peak	0.11	207	56%	44%	116	91
Daily	1.15	2,164	50%	50%	1,082	1,082

4.1.2. Project Trip Distribution

The project trip distribution was estimated as shown in Figures 8 and 9. Figure 8 shows the distribution for the outlying intersections, while Figure 9 shows the inbound distribution at the campus access points.

Note that the distribution of traffic exiting campus is expected to be the same as the inbound percentages shown in Figure 9 with the exceptions of intersections 7 and 8; traffic which enters Lot F at intersection 8 is assumed to exit campus from Bonita Drive at intersection 7.



Traffic Impact Analysis Mt. San Antonio College 2018 EFMP	*Figure 8.* *Project Trip Distribution*	PSOMAS March 2019



Traffic Impact Analysis Mt. San Antonio College 2018 EFMP	*Figure 9.* *Project Trip Distribution (Inbound) - Campus Area*	PSOMAS March 2019

4.1.3. Project Traffic Volumes

Using the project trip generation and trip distribution, the project traffic volumes at each of the study intersections were calculated and are shown in Figures 10A and 10B.

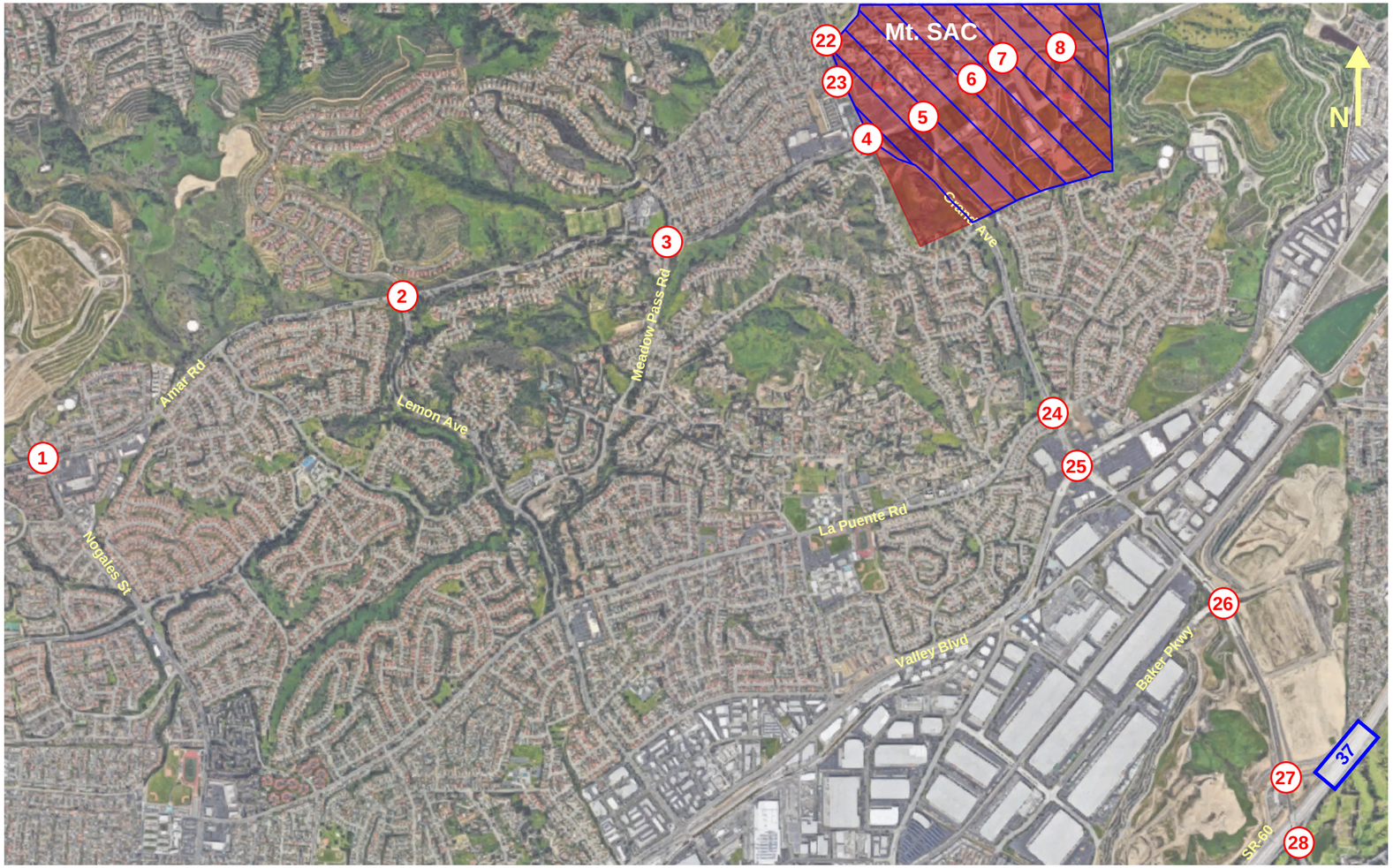
4.1.4. Related Project Traffic Volumes

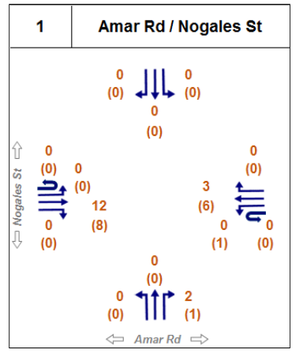
The Cities of Walnut, Pomona, Diamond Bar, Industry, and West Covina were contacted about any potential development projects located in the region of influence, which is bounded by I-10 to the north, State Route 60 to the south, State Route 71 to the east, and Azusa Avenue to the west. Note that this region is somewhat larger than the overall study area because trips generated outside the study area may still travel through the study intersections.

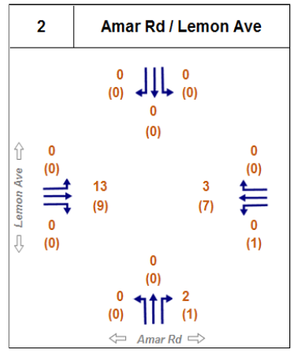
West Covina stated that they did not have any upcoming development projects in the study area. In addition, the City of Industry provided a land use plan for a large development north of Valley Boulevard on either side of Grand Avenue; however, the project is not expected to start construction until 2020 at the earliest. Therefore, that project was not included in this analysis for the interim year of 2021. A total of 13 related projects were included for consideration in this study, as listed in Table 4 and as shown in Figure 11. The figure also shows the study corridors for reference.

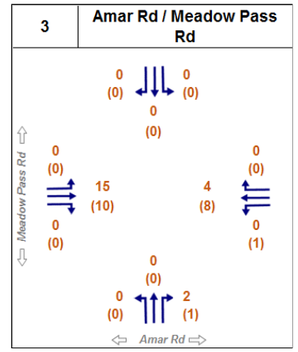
Trip generation for the related projects was based on the ITE *Trip Generation Manual*, and the trip distribution was estimated separately for each project based on their location and type of project (i.e. residential, commercial, etc.). No project-specific TIAs were provided. Where applicable, pass-by trips and internal capture trips were subtracted from the total. Further, if the project was replacing an existing active use, the existing trips were estimated using the *Trip Generation* Manual and were subtracted from the total.

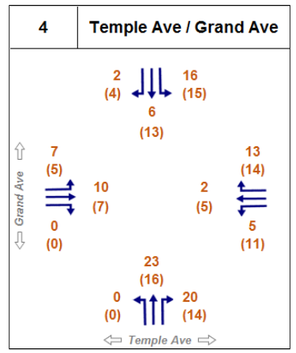
Table 5 shows the related project gross trips, pass-by and internal capture trips, replaced trips from existing developments, and the total new trips expected to be generated by the related projects in 2021. As seen in the table, the related projects are expected to generate nearly 3,000 new daily trips, including 340 trips in the AM peak hour and 211 trips in the PM peak hour. Based on the trip generation and trip distribution for each of the projects, the resulting peak hour traffic volumes at each of the study intersections was calculated and are shown in Figures 12A and 12B.

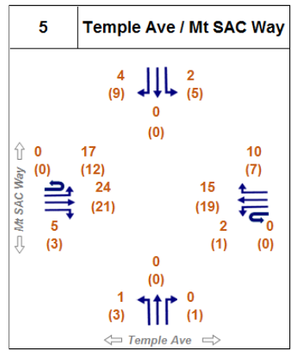


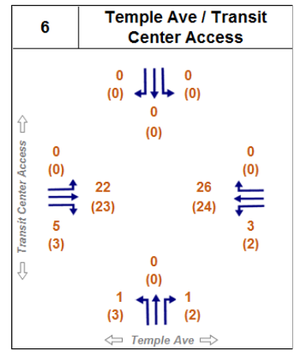


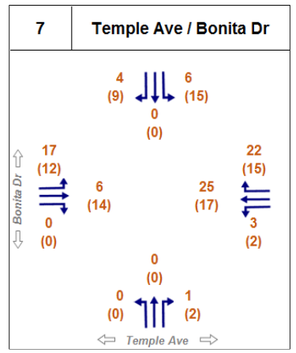


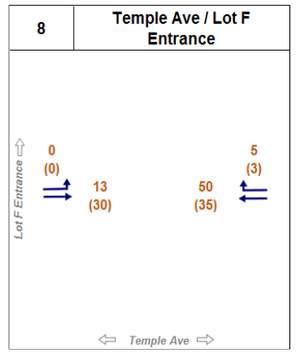


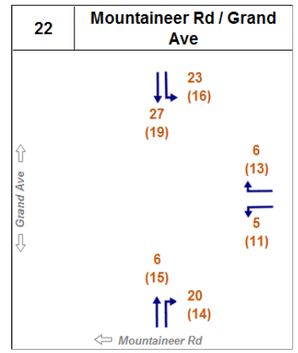


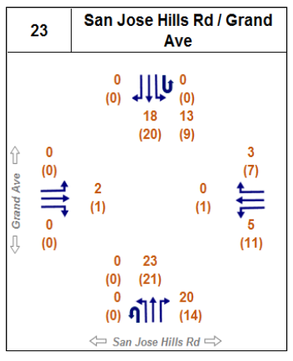


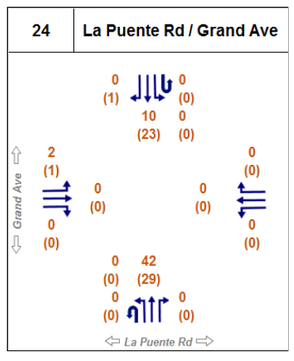


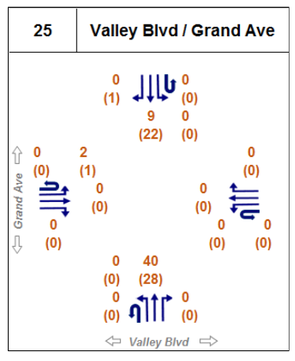


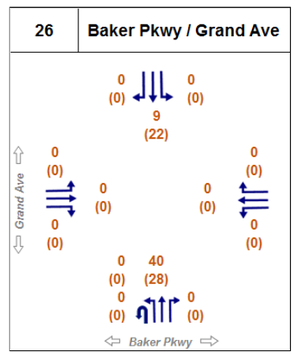


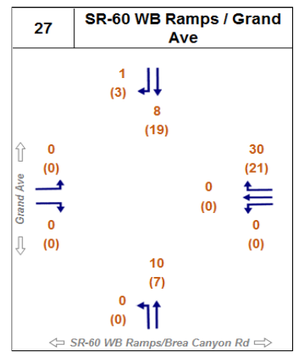


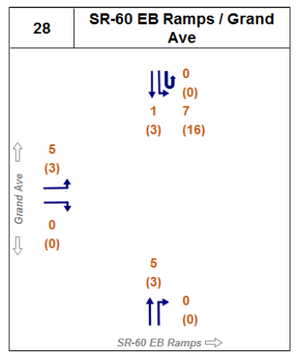












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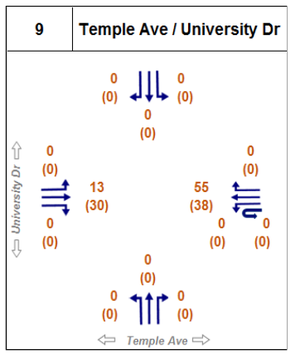
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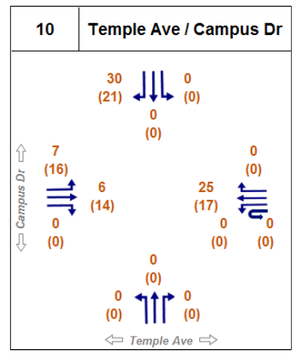
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

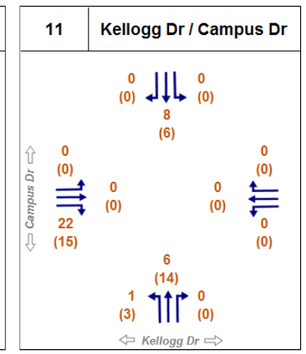
Figure 10A.
Interim (2021) Project Traffic Volumes (Intersections 1-8, 22-28)

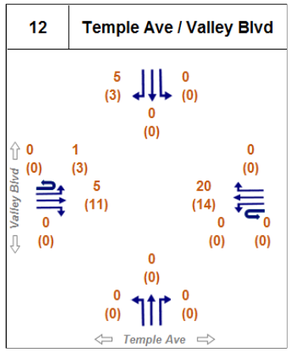
PSOMAS
March 2019

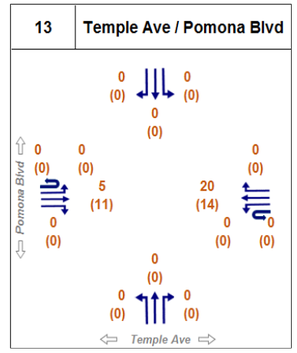


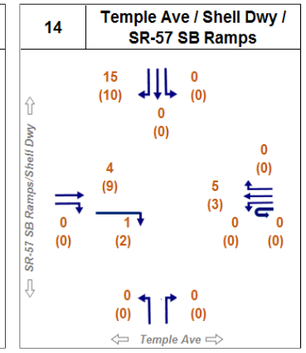


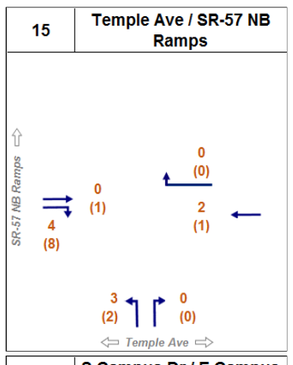


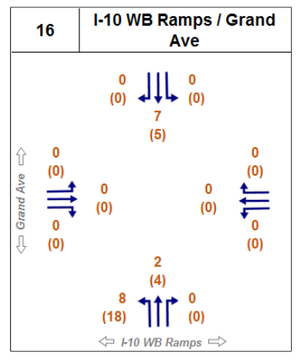


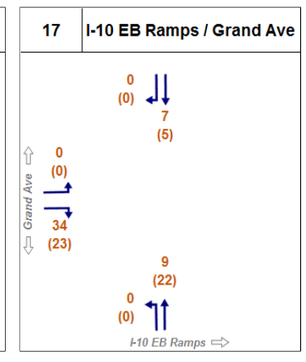


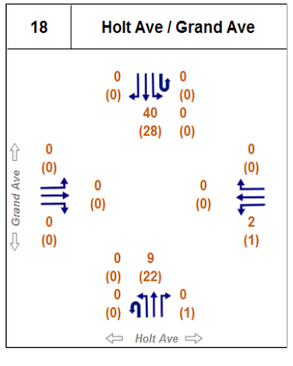


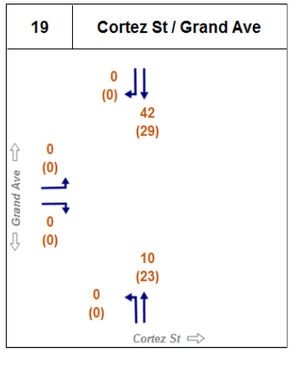


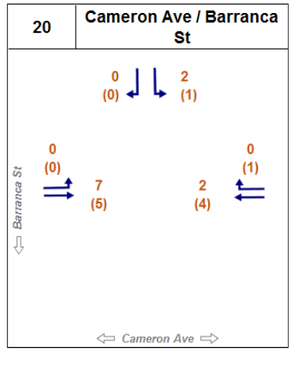


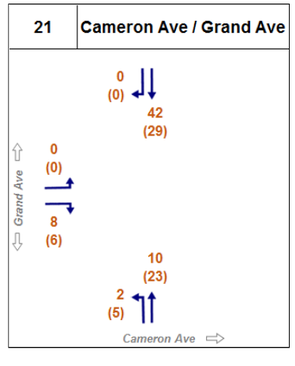


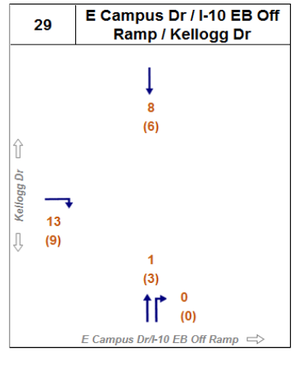


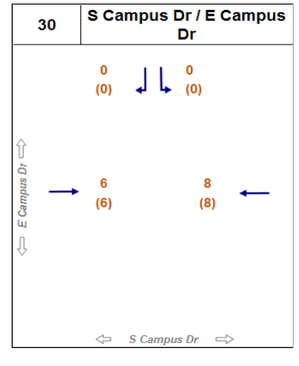












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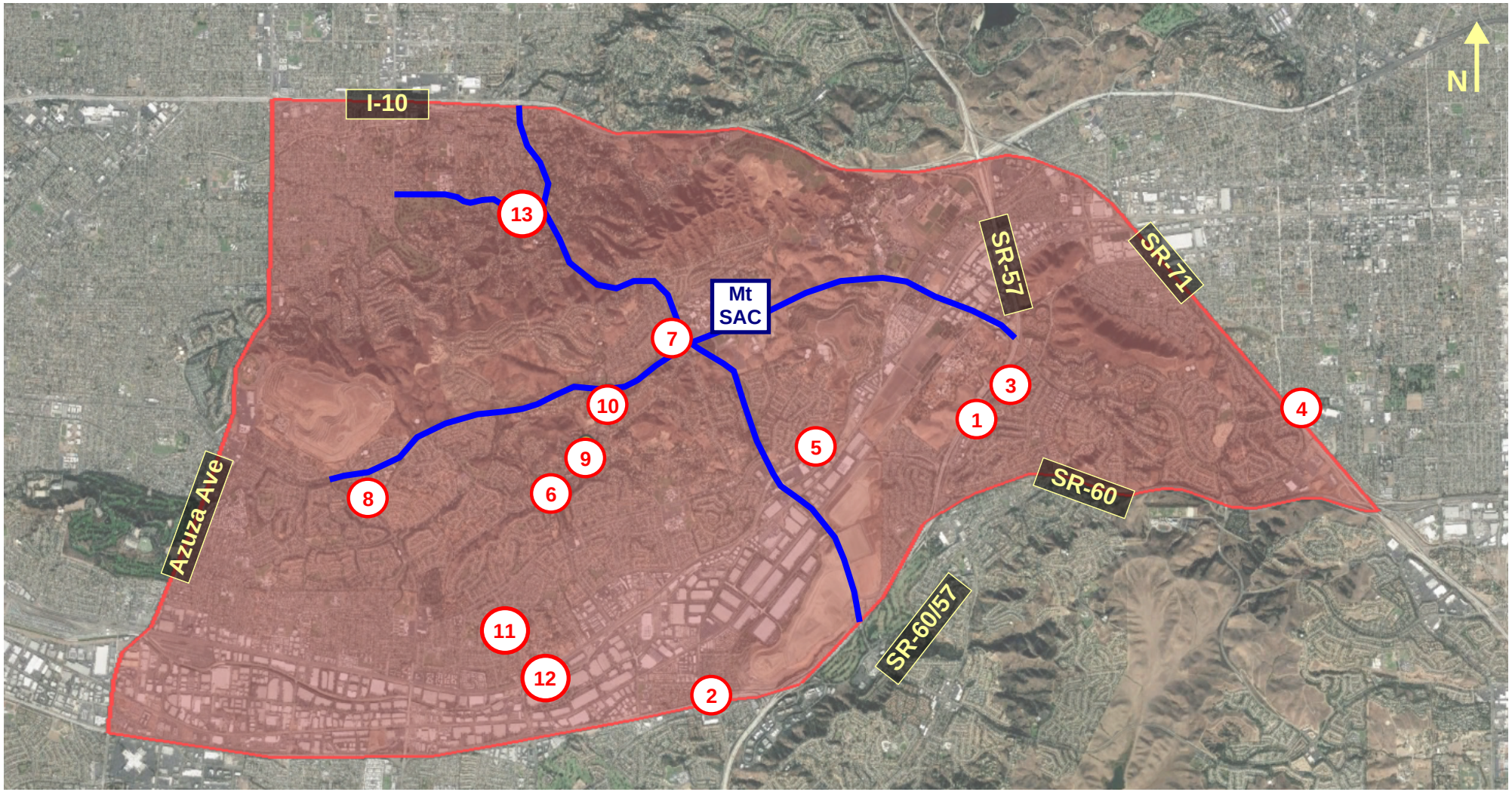
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 10B.
Interim (2021) Project Traffic Volumes (Intersections 9-21, 29-30)

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March 2019

Table 4. Related Projects

Project	City	Project	
		Location	Description
1	Diamond Bar	888 Diamond Bar	Demolition of two neighborhood commercial centers (Oak Tree Plaza and Ranch Center), construction of 146 condos and 4,300 sq.ft. of commercial retail
2	Diamond Bar	850 Brea Canyon Road (Brea Canyon Road, north of 60 freeway)	Redevelopment of boat and RV storage to include 109-room hotel, 48,000 sq.ft. of office, and 9,500 sq.ft. of retail
3	Diamond Bar	1111 N. Diamond Bar (north side between Soltaire Street and Highland Valley Road)	Single-family residence on vacant lot, approximately 4,000 sq.ft.
4	Pomona	SW Corner of White Ave and Lexington Ave	110 single-family residential units
5	Walnut	1,300 feet east of Valley/Grand intersection	Specific Plan. Single-family residences (12 units), low-rise multifamily housing (277 units), public park (17 acres), shopping center (50,000 sq.ft.)
6	Walnut	800 Meadow Pass Road	28 single-family residential units
7	Walnut	20650 San Jose Hills Road	22 single-family homes
8	Walnut	Francesca Drive, east of Nogales St	36 low-rise multifamily housing units
9	Walnut	Pierre and Meadow Pass	6 single-family homes
10	Walnut	1521 Meadow Pass Road	13 single-family homes
11	Walnut	360 Camino de Teordoro	4 single-family homes
12	Walnut	19901 Valley Boulevard	Two buildings - one with 2 residential units, one with approximately 1,000 sq.ft. commercial on 1st floor and residence on second floor
13	West Covina	3501 E. Cameron Avenue	2 single-family homes



LEGEND

1. Mixed-Use (Residential and Commercial)
2. Business Park (Hotel, Office, and Retail)
3. Single-Family Housing
4. Single-Family Housing
5. Specific Plan (Residential, Park, Retail)
6. Single-Family Housing
7. Single-Family Housing
8. Multifamily Housing
9. Single-Family Housing
10. Single-Family Housing
11. Single-Family Housing
12. Mixed-Use (Residential and Commercial)
13. Single-Family Housing

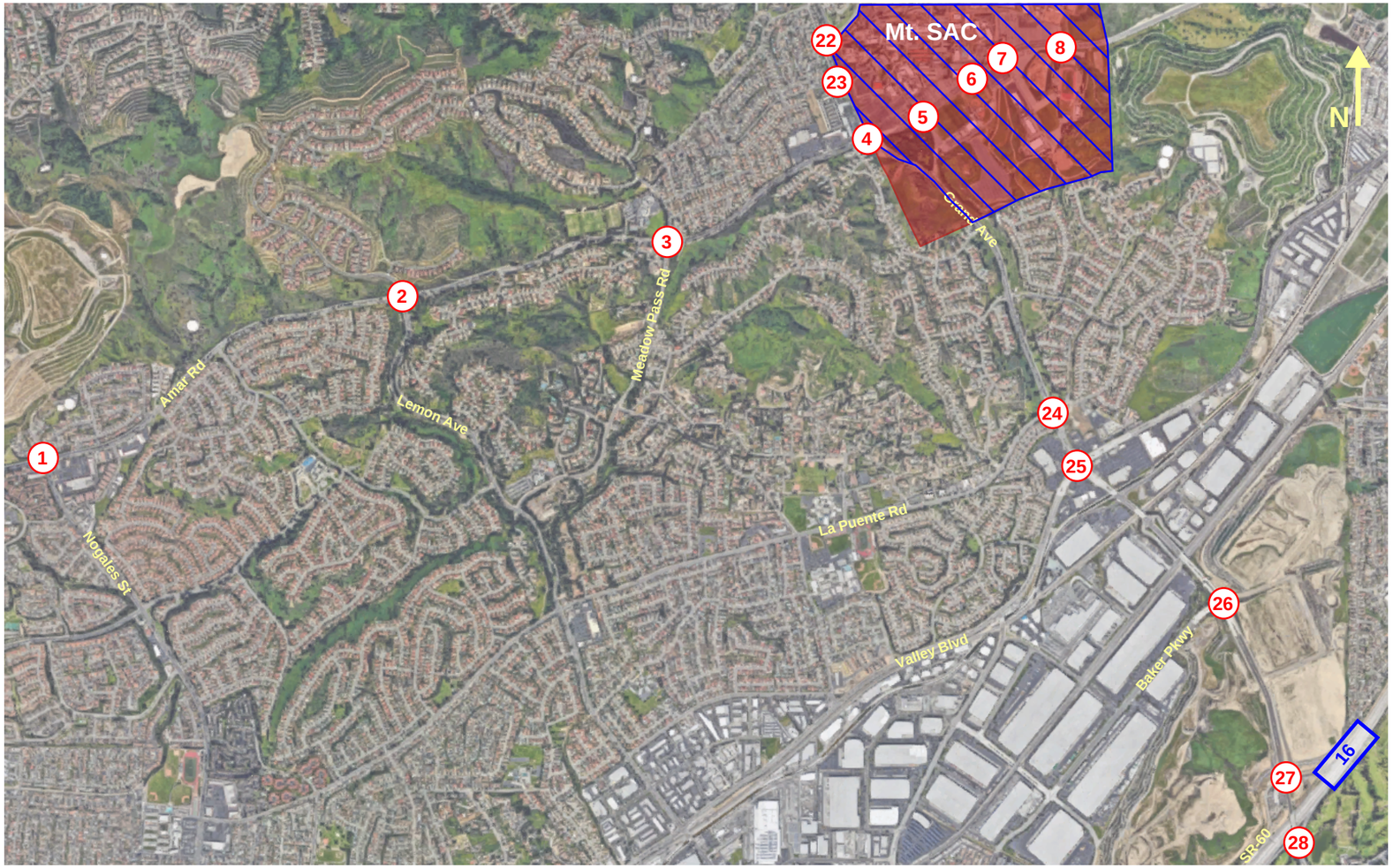
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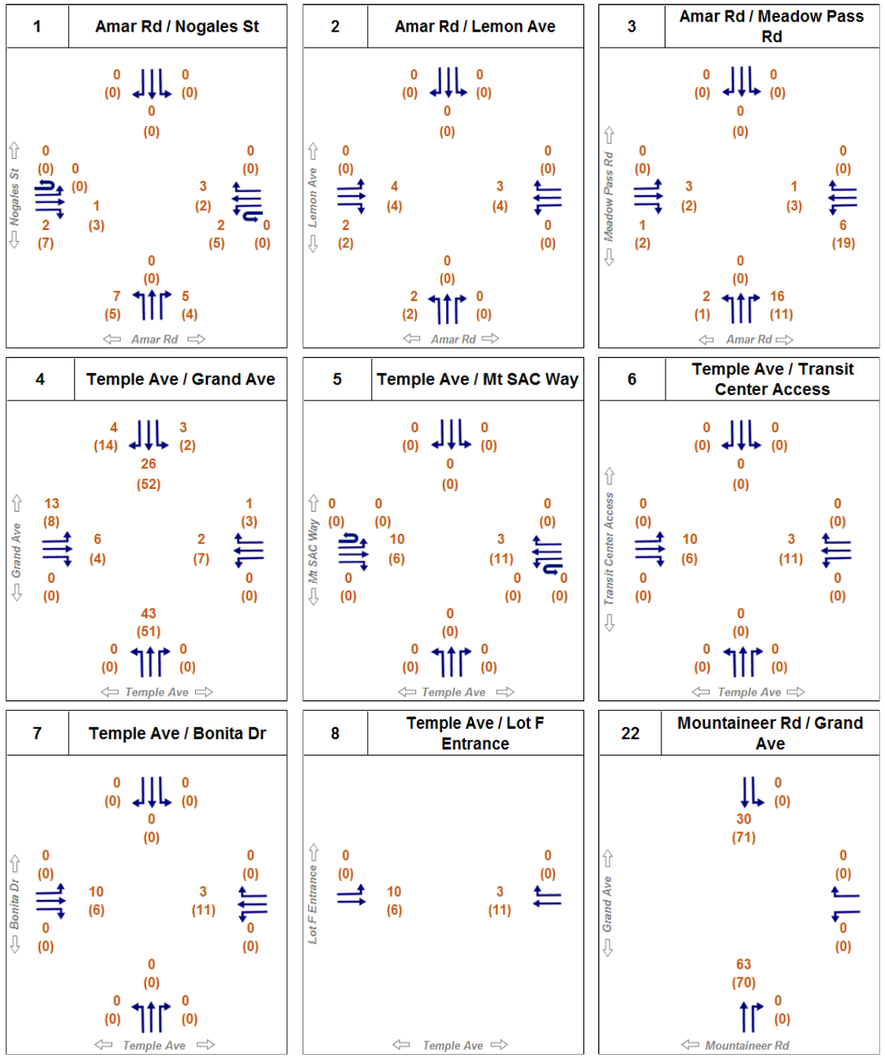
Study Corridors

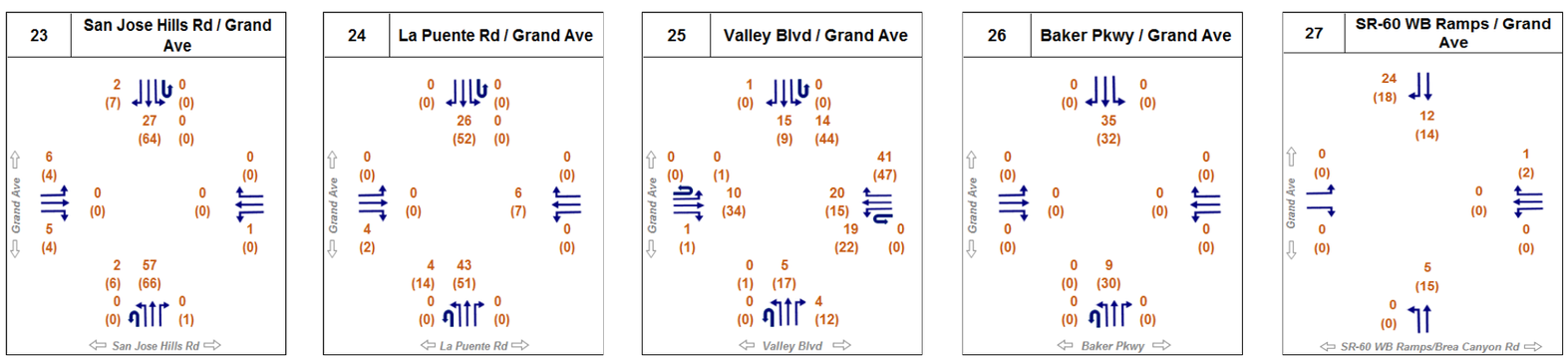
Traffic Impact Analysis Mt. San Antonio College 2018 EFMP	*Figure 11.* *Related Project Locations*	PSOMAS March 2019

Table 5. Related Projects Trip Generation

Related Projects Gross Trips			
Period	**Total Trips**	**Trips In**	**Trips Out**
AM Peak	527	202	326
PM Peak	825	449	376
Daily	9,096	4,548	4,548
Pass-By/Internal Capture Trips			
Period	**Total Trips**	**Trips In**	**Trips Out**
AM Peak	-49	-22	-28
PM Peak	-113	-58	-55
Daily	-1,247	-624	-624
Trips from Existing/Replaced Developments			
Period	**Total Trips**	**Trips In**	**Trips Out**
AM Peak	-139	-41	-97
PM Peak	-501	-309	-192
Daily	-4,917	-2,458	-2,458
Total Related Project New Trips			
Period	**Total Trips**	**Trips In**	**Trips Out**
AM Peak	**340**	**139**	**201**
PM Peak	**211**	**82**	**129**
Daily	**2,931**	**1,466**	**1,466**







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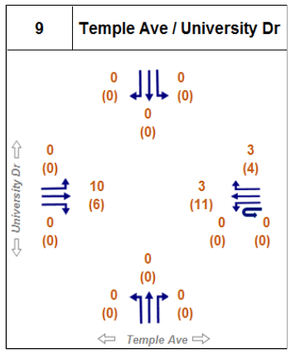
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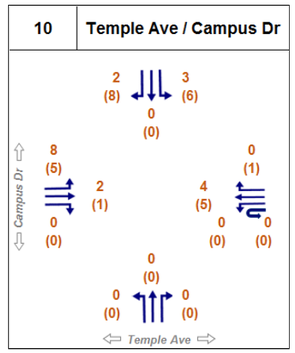
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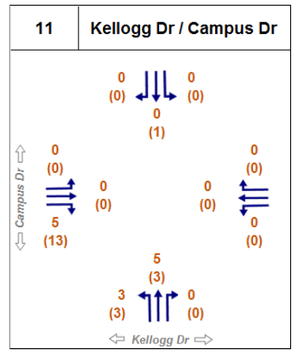
Figure 12A.
Related Projects Traffic Volumes (Intersections 1-8, 22-28)

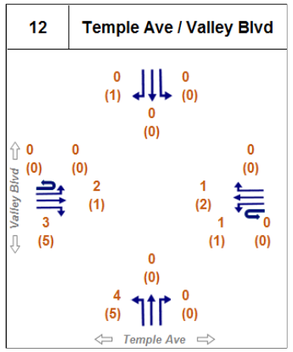
PSOMAS
March 2019

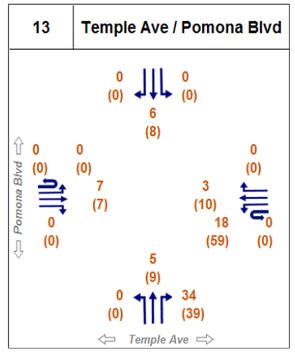


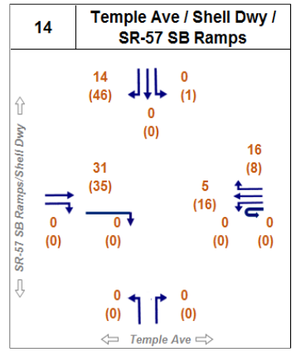


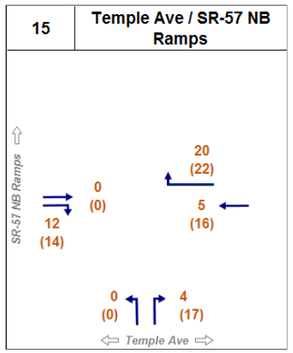


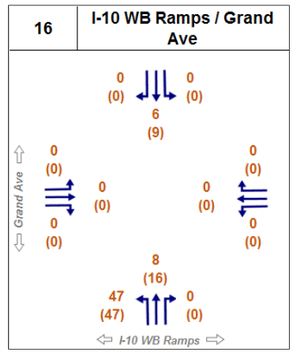


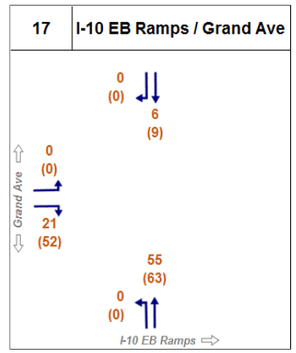


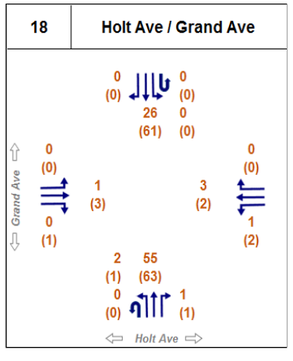


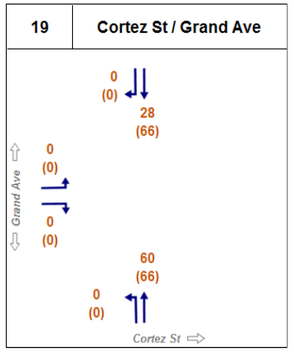


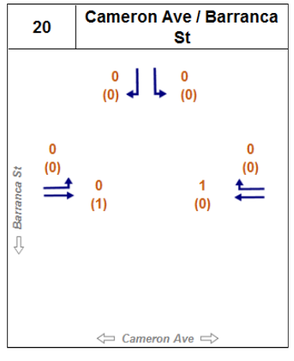


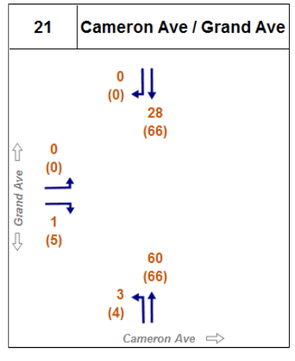


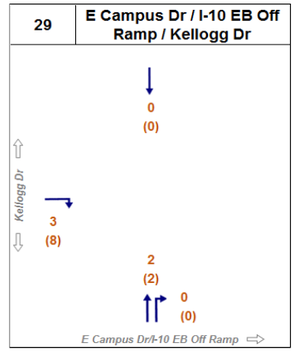


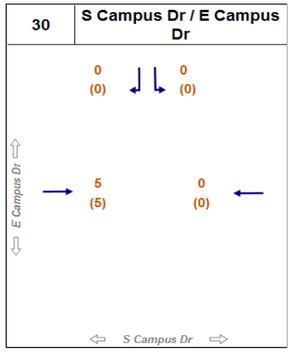












LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 12B.
Related Projects Traffic Volumes (Intersections 9-21, 29-30)

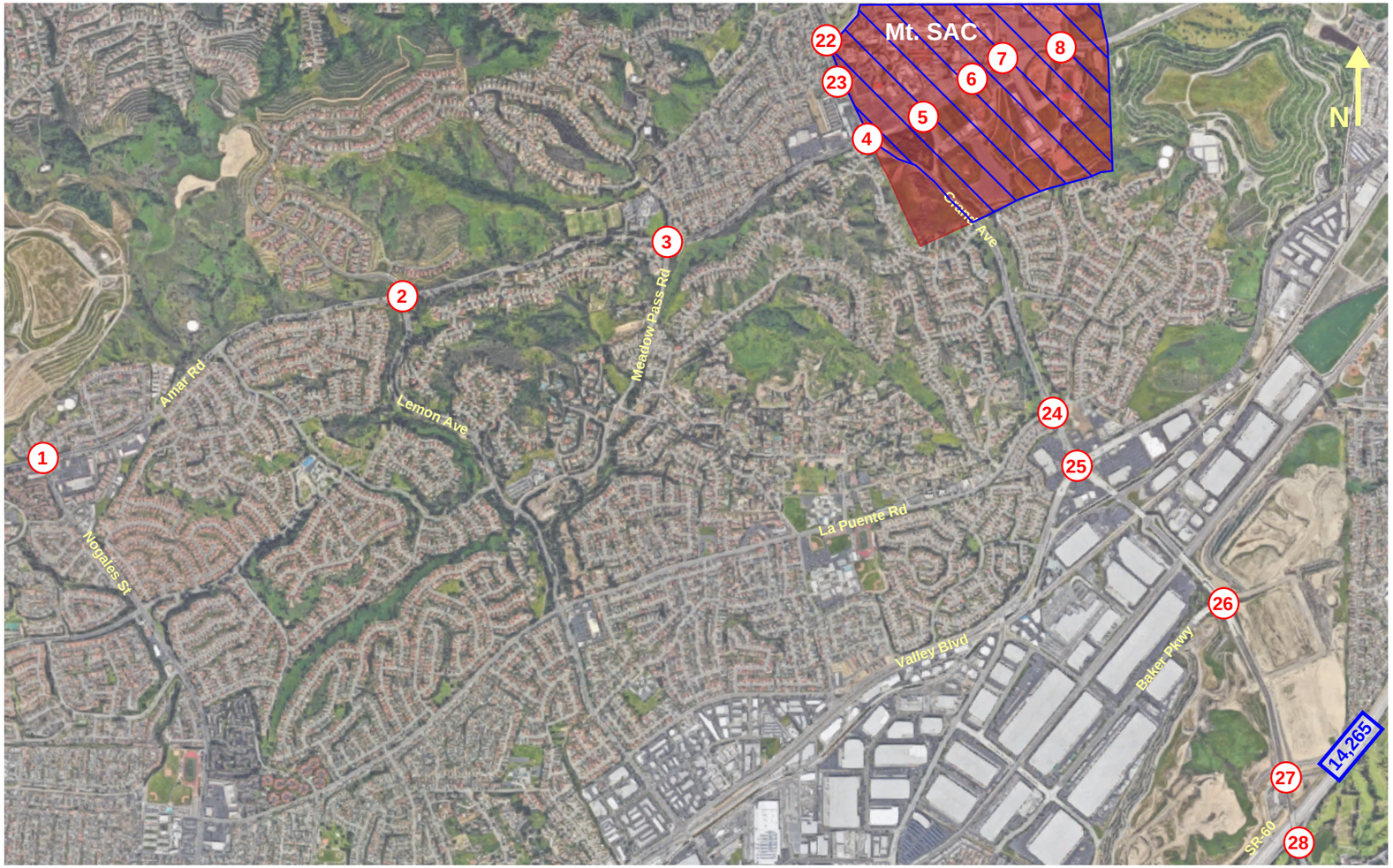
PSOMAS
March 2019

4.1.5. Cumulative Traffic Volumes

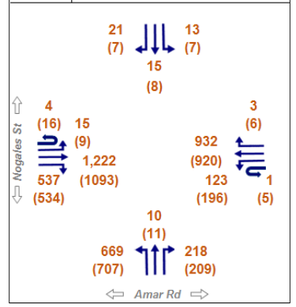
The cumulative traffic volumes are the anticipated traffic volumes in 2021 without the project, which include the existing traffic volumes and the related project volumes. In addition to the related project-specific volumes, a 0.5% annual growth rate was applied to existing traffic volumes to account for any additional growth not generated by the provided related projects (i.e. traffic from projects which are not yet in the planning process, but which would be constructed by 2021). The cumulative traffic volumes are shown in Figures 13A and 13B.

4.1.6. Cumulative Plus Project Traffic Volumes

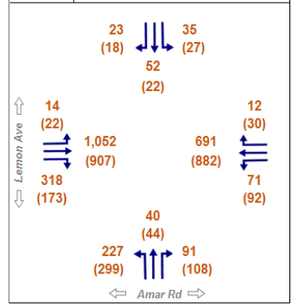
Figures 14A and 14B show the cumulative plus project traffic volumes in 2021 at each of the study intersections.



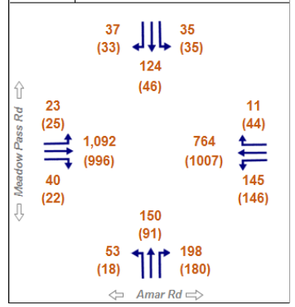
1	Amar Rd / Nogales St



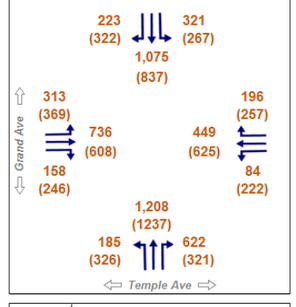
2	Amar Rd / Lemon Ave



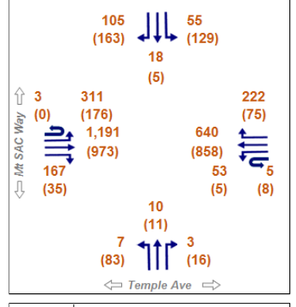
3	Amar Rd / Meadow Pass Rd



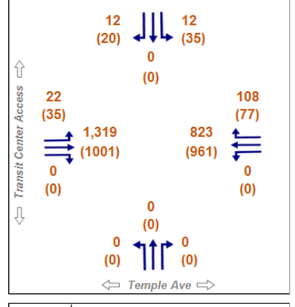
4	Temple Ave / Grand Ave



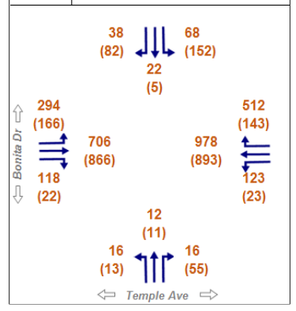
5	Temple Ave / Mt SAC Way



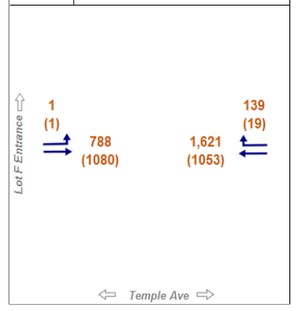
6	Temple Ave / Transit Center Access



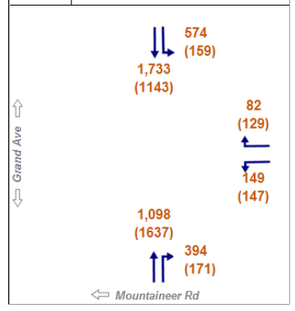
7	Temple Ave / Bonita Dr



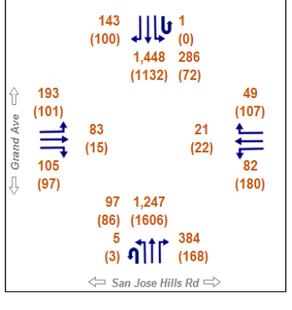
8	Temple Ave / Lot F Entrance



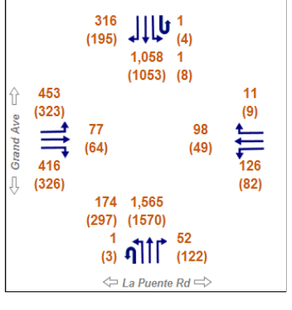
22	Mountaineer Rd / Grand Ave



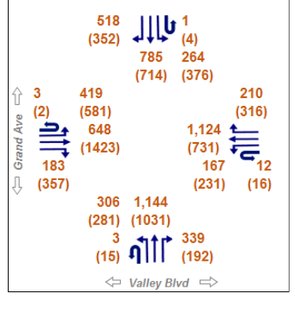
23	San Jose Hills Rd / Grand Ave



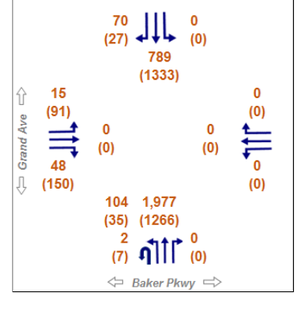
24	La Puente Rd / Grand Ave



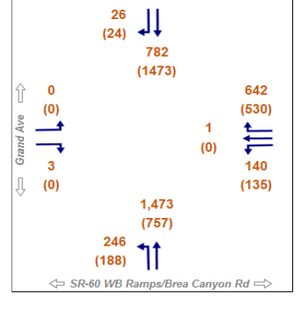
25	Valley Blvd / Grand Ave



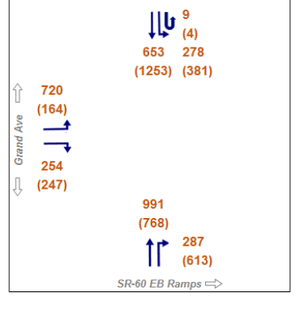
26	Baker Pkwy / Grand Ave



27	SR-60 WB Ramps / Grand Ave



28	SR-60 EB Ramps / Grand Ave



LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

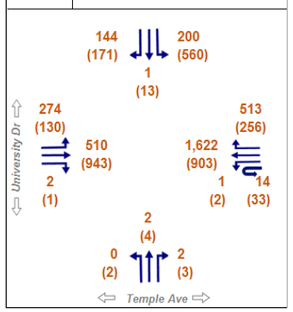
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 13A.
Interim (2021) Cumulative Traffic Volumes (Intersections 1-8, 22-28)

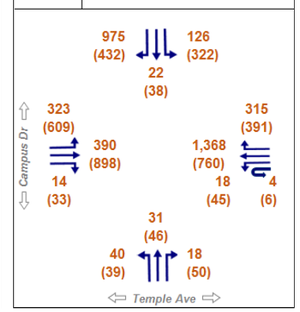
PSOMAS
March 2019



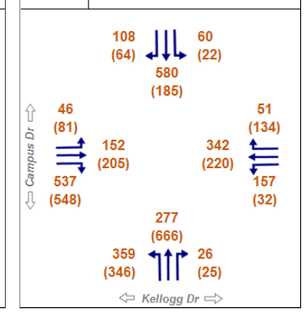
9	Temple Ave / University Dr



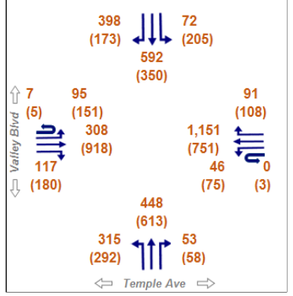
10	Temple Ave / Campus Dr



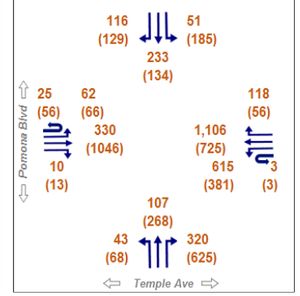
11	Kellogg Dr / Campus Dr



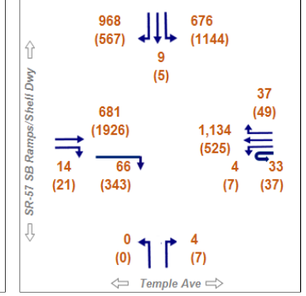
12	Temple Ave / Valley Blvd



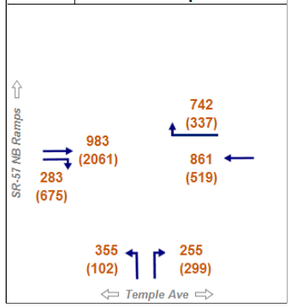
13	Temple Ave / Pomona Blvd



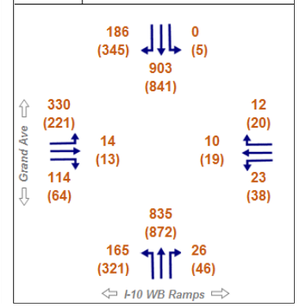
14	Temple Ave / Shell Dwy / SR-57 SB Ramps



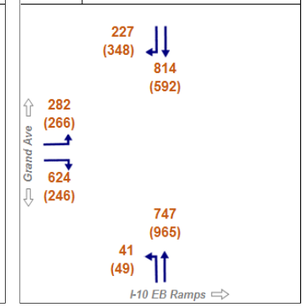
15	Temple Ave / SR-57 NB Ramps



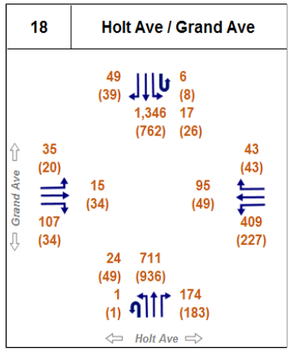
16	I-10 WB Ramps / Grand Ave



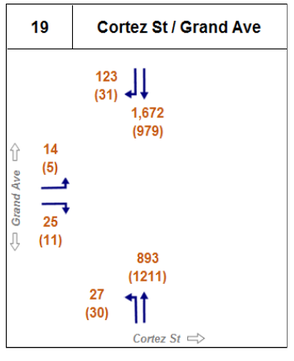
17	I-10 EB Ramps / Grand Ave



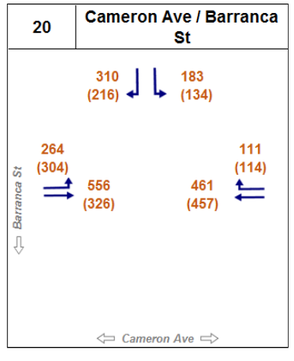
18	Holt Ave / Grand Ave



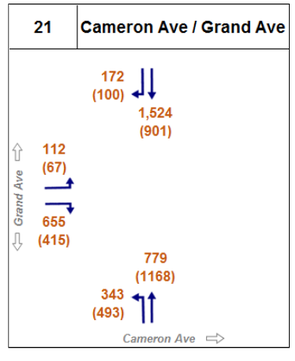
19	Cortez St / Grand Ave



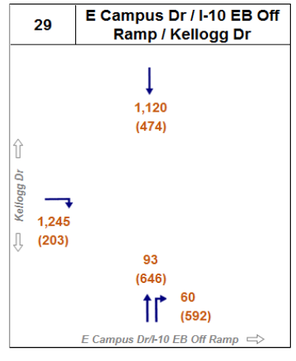
20	Cameron Ave / Barranca St



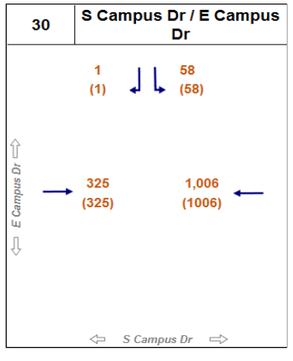
21	Cameron Ave / Grand Ave



29	E Campus Dr / I-10 EB Off Ramp / Kellogg Dr



30	S Campus Dr / E Campus Dr



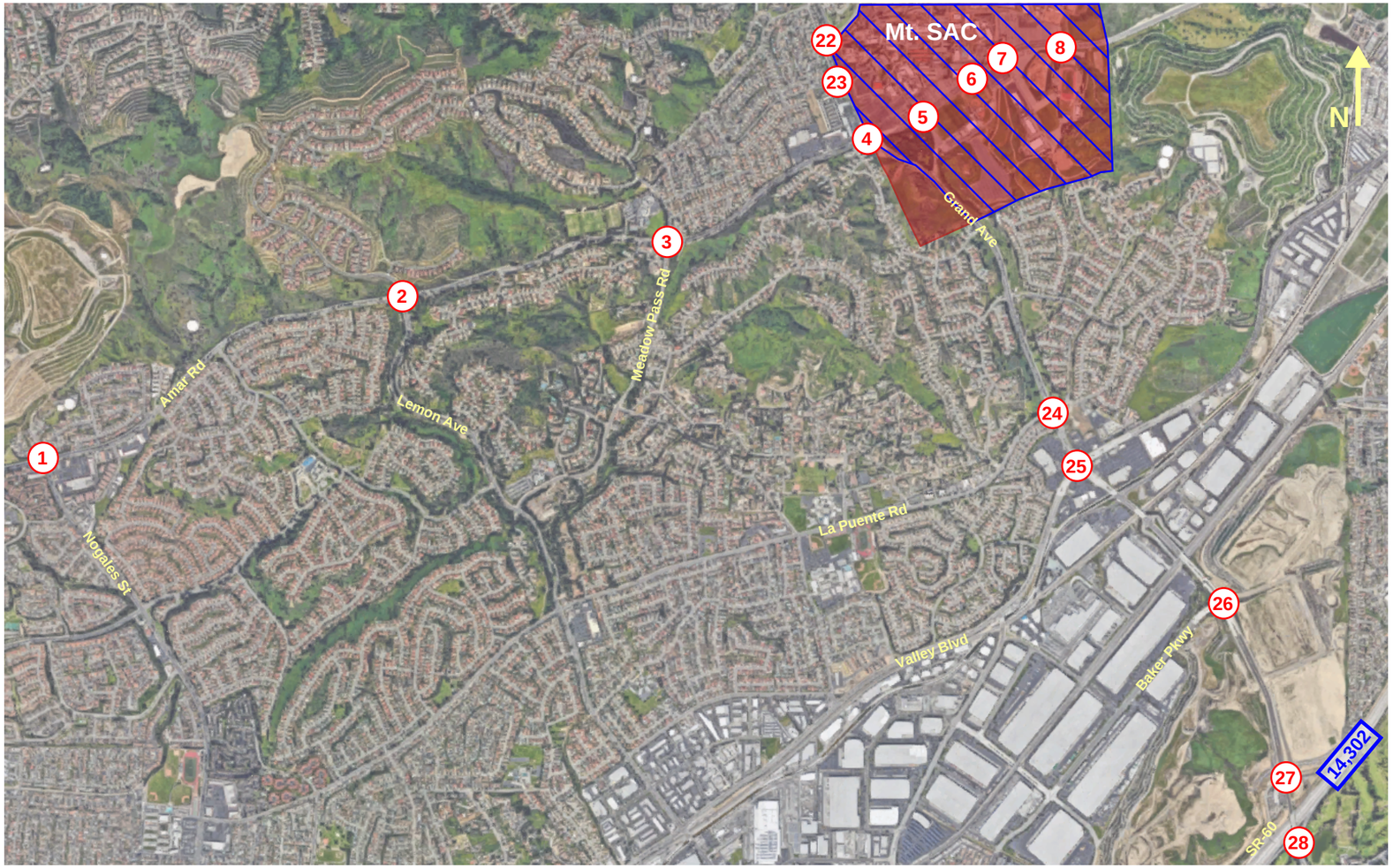
LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

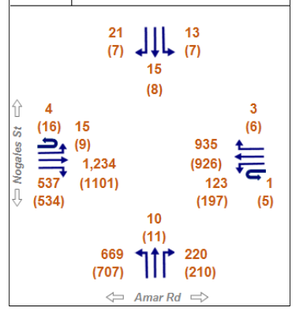
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 13B.
Interim (2021) Cumulative Traffic Volumes (Intersections 9-21, 29-30)

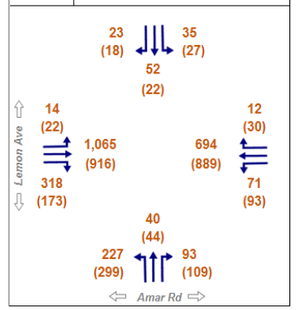
PSOMAS
March 2019



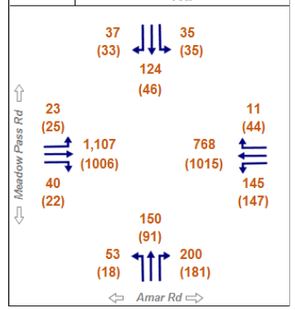
1	Amar Rd / Nogales St



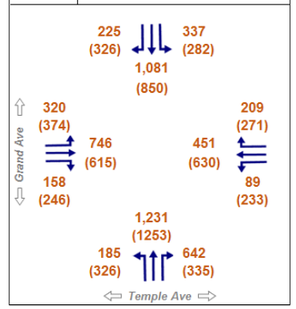
2	Amar Rd / Lemon Ave



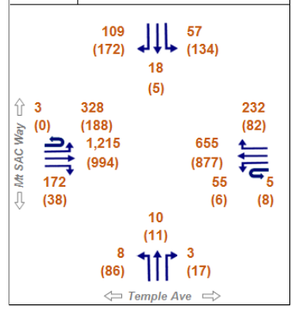
3	Amar Rd / Meadow Pass Rd



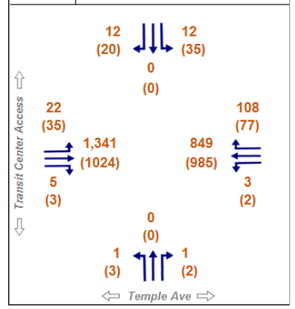
4	Temple Ave / Grand Ave



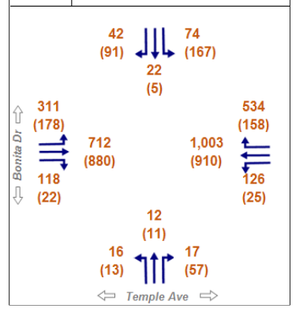
5	Temple Ave / Mt SAC Way



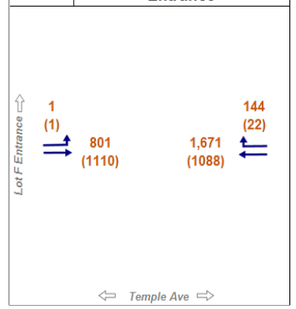
6	Temple Ave / Transit Center Access



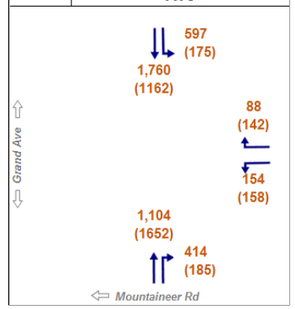
7	Temple Ave / Bonita Dr



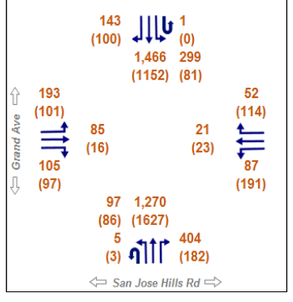
8	Temple Ave / Lot F Entrance



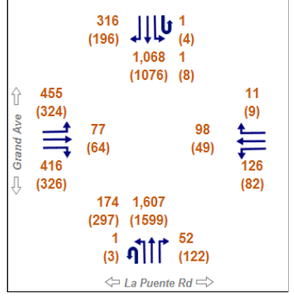
22	Mountaineer Rd / Grand Ave



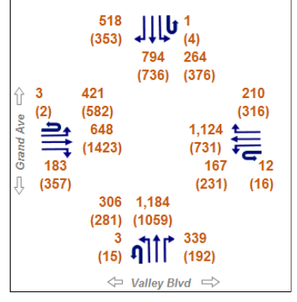
23	San Jose Hills Rd / Grand Ave



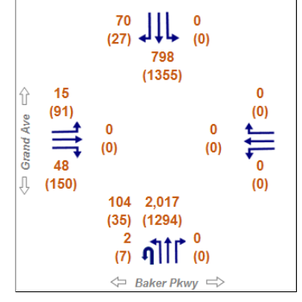
24	La Puente Rd / Grand Ave



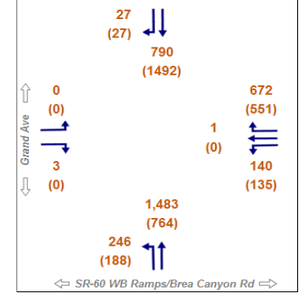
25	Valley Blvd / Grand Ave



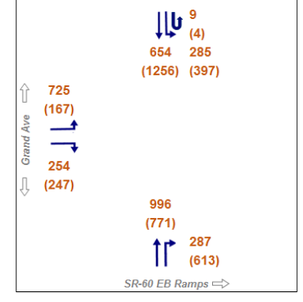
26	Baker Pkwy / Grand Ave



27	SR-60 WB Ramps / Grand Ave



28	SR-60 EB Ramps / Grand Ave



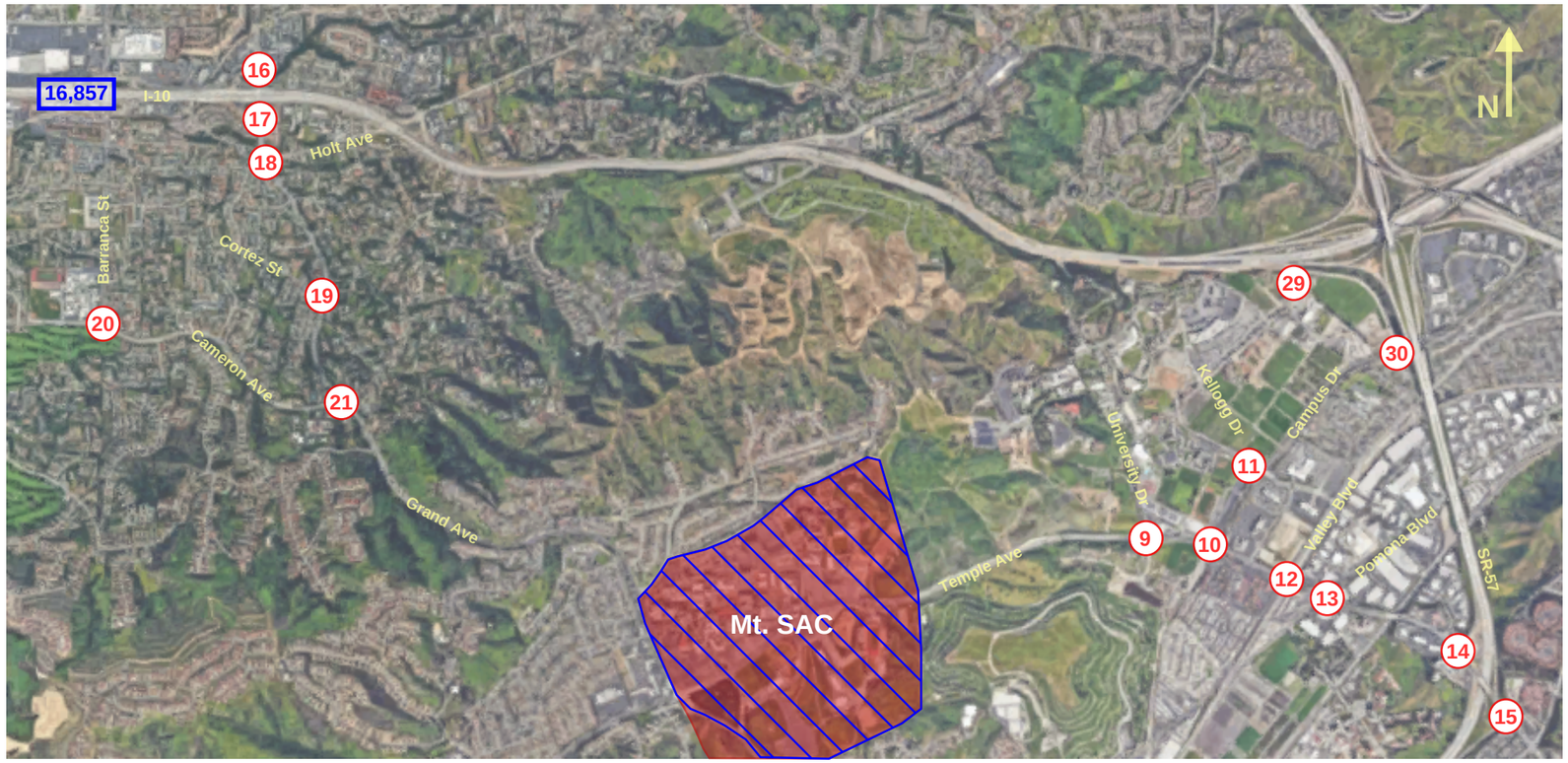
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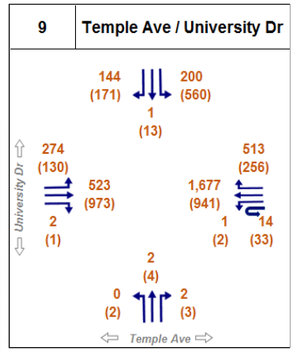
- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
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- Mt. SAC Campus
- Project Area (2018 EFMP)

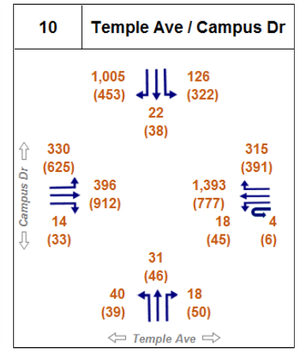
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

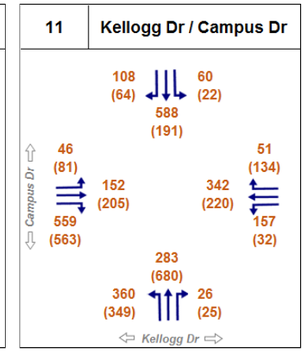
Figure 14A.
Interim (2021) Cumulative Plus Project Traffic Volumes (Intersections 1-8, 22-28)

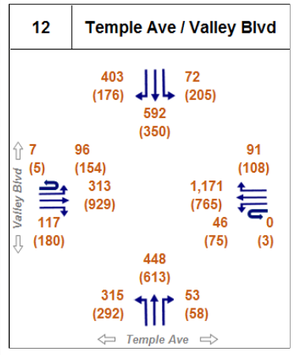
PSOMAS
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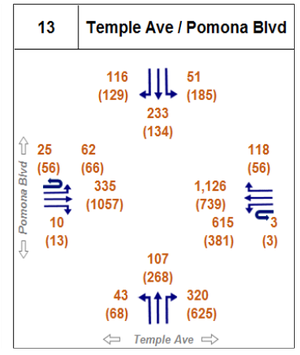


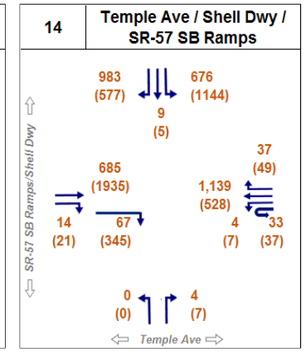


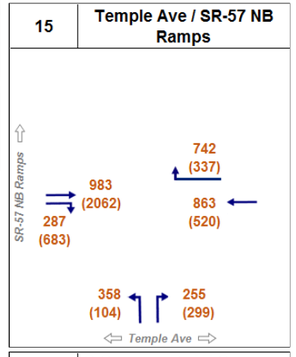


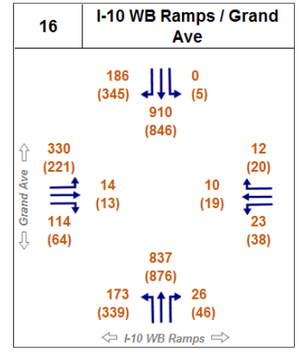


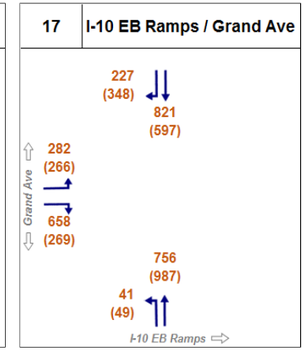


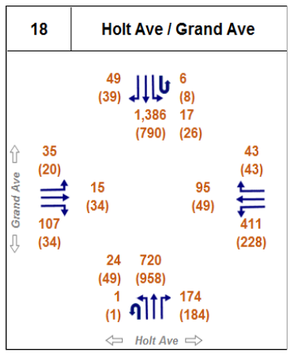


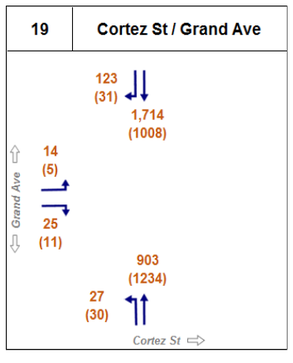


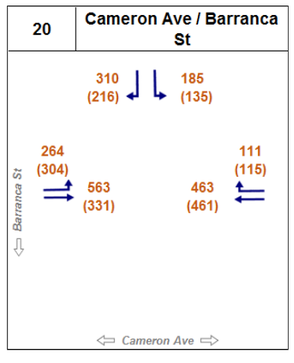


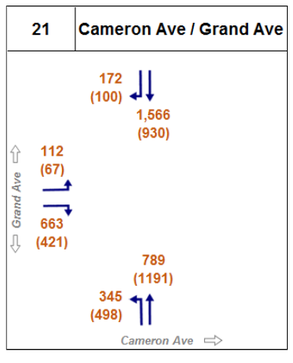


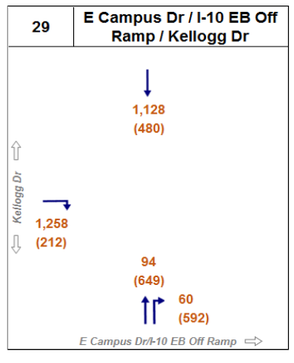


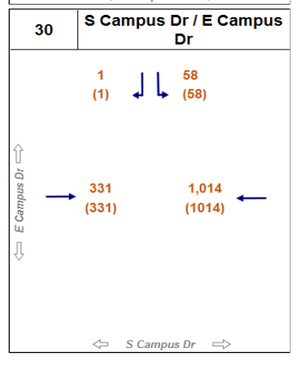












LEGEND

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- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
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Figure 14B.
Interim (2021) Cumulative Plus Project Traffic Volumes (Intersections 9-21, 29-30)

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4.2. BUILDOUT YEAR (2027)

4.2.1. Project Trip Generation

As with Phase 1A conditions, the trip generation for the project was calculated based on the anticipated daily student headcount in the horizon year of the EFMP (2027). The student population is expected to grow from the fall 2017 count of 37,864 to 42,745 students in 2027, an increase of 4,881 students. Table 6 shows the trip generation for the 2027 horizon year for the new students. As shown in the table, 5,613 new daily trips are anticipated in the buildout year due to the project, including 537 trips in each peak hour.

Table 6. Buildout (2027) Project Trip Generation

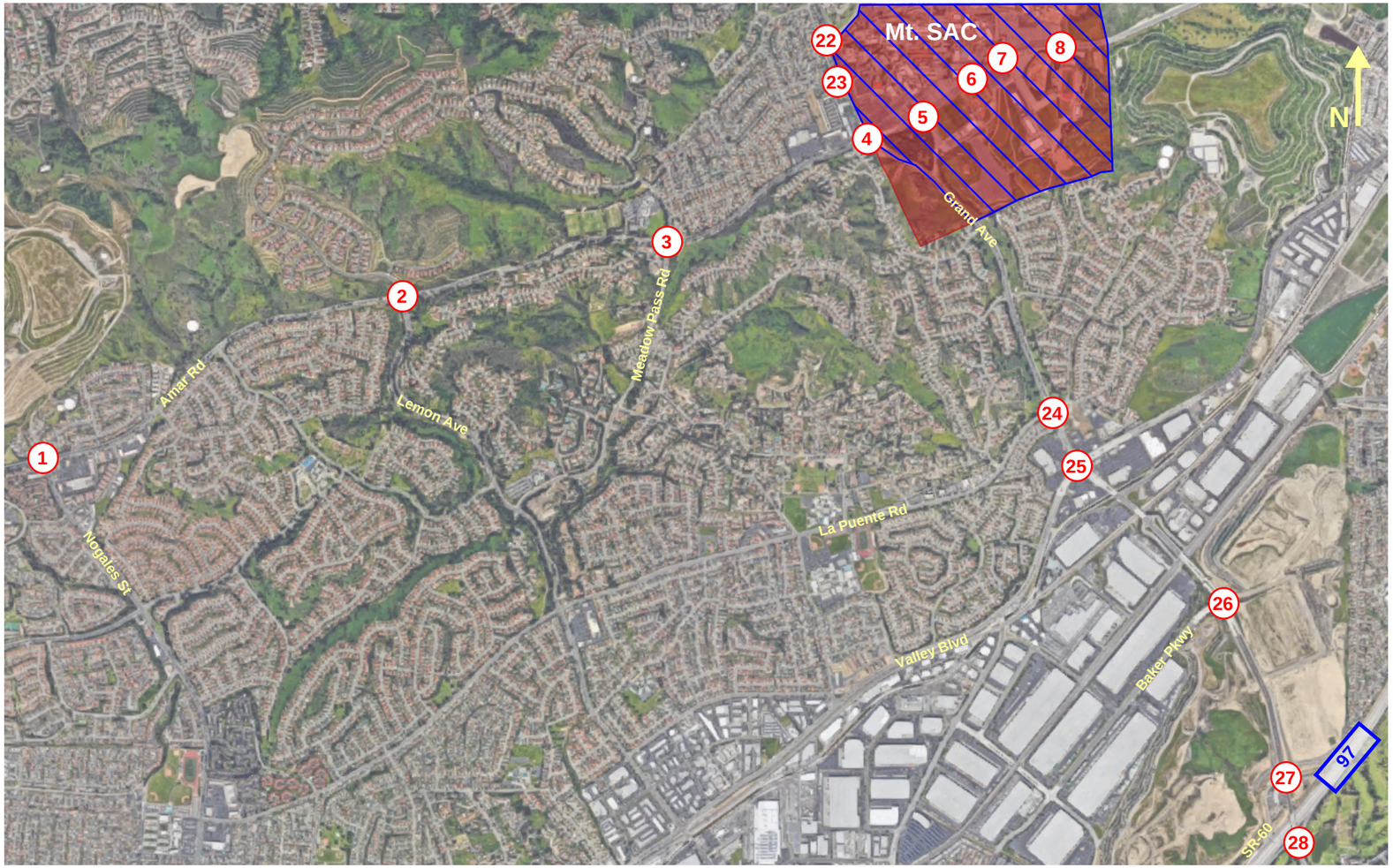
ITE LU 540 (10th Edition) - Junior/Community College						
Students			4,881			
Period	Trips/Unit	Trips	% In	% Out	Trips In	Trips Out
AM Peak	0.11	537	81%	19%	435	102
PM Peak	0.11	537	56%	44%	301	236
Daily	1.15	5,613	50%	50%	2,807	2,807

4.2.2. Project Trip Distribution

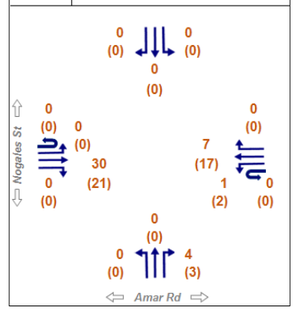
The distribution of project trips is shown in Figures 8 and 9 (Section 3.2.2). As seen in Figure 9, the distribution is expected to shift slightly between Phase 1A and the buildout year (2027). The shift is due to the anticipated construction of the parking structures in Lots B and F during that time. This is a conservative analysis and, as noted previously, parking needs may change over time due to the construction of the Transit Center and the general shift away from personal vehicles. The structure in Lot F may not be needed when initially indicated, if at all.

4.2.3. Project Traffic Volumes

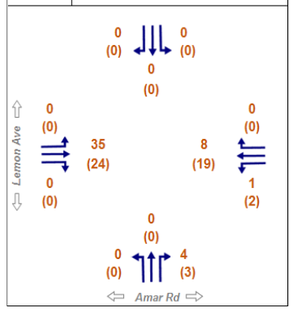
Based on the project trip generation and trip distribution, the project traffic volumes were calculated for each of the study intersections and are shown in Figures 15A and 15B.



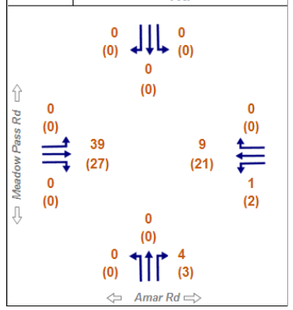
1	Amar Rd / Nogales St



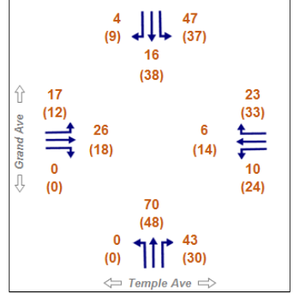
2	Amar Rd / Lemon Ave



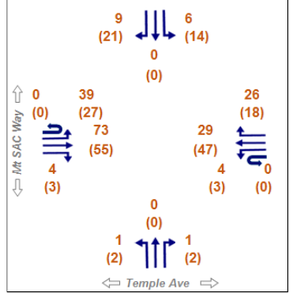
3	Amar Rd / Meadow Pass Rd



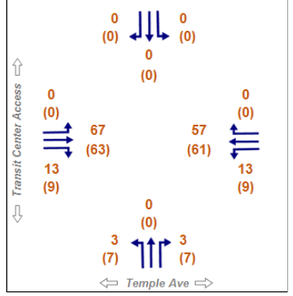
4	Temple Ave / Grand Ave



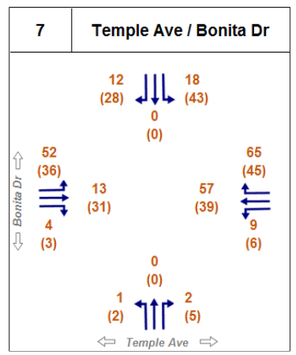
5	Temple Ave / Mt SAC Way



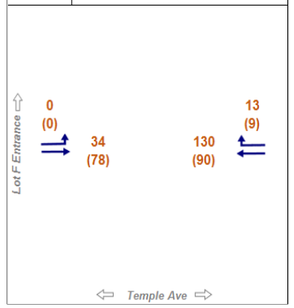
6	Temple Ave / Transit Center Access



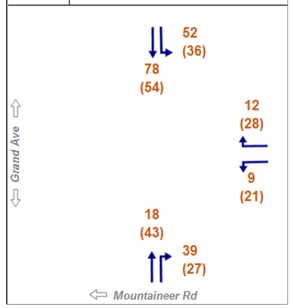
7	Temple Ave / Bonita Dr



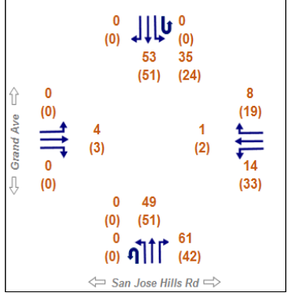
8	Temple Ave / Lot F Entrance



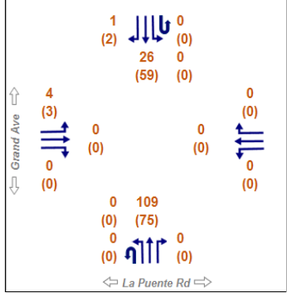
22	Mountaineer Rd / Grand Ave



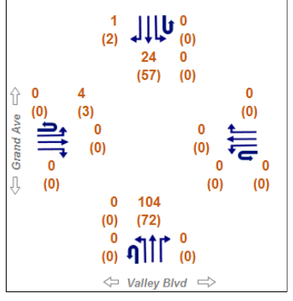
23	San Jose Hills Rd / Grand Ave



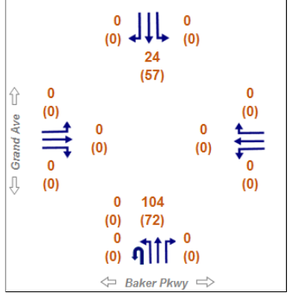
24	La Puente Rd / Grand Ave



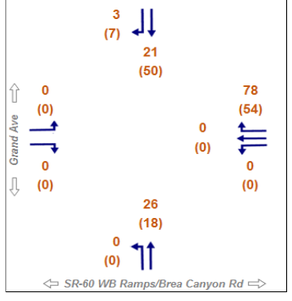
25	Valley Blvd / Grand Ave



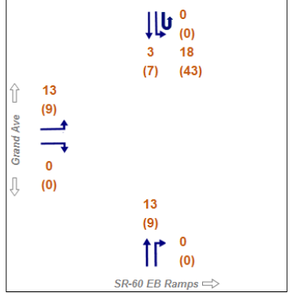
26	Baker Pkwy / Grand Ave



27	SR-60 WB Ramps / Grand Ave



28	SR-60 EB Ramps / Grand Ave



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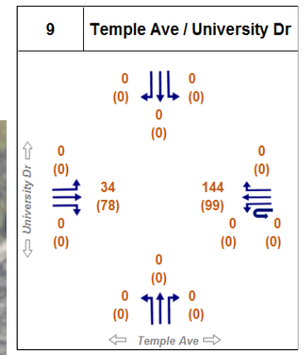
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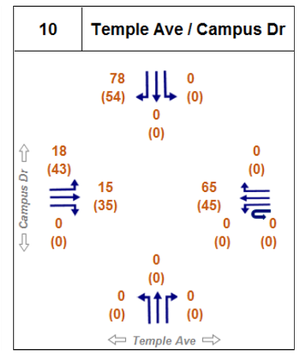
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

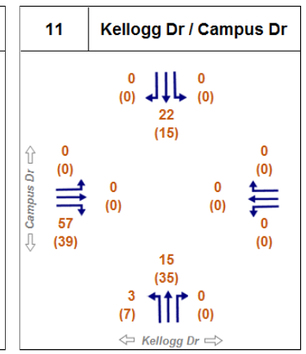
Figure 15A.
Buildout (2027) Project Traffic Volumes (Intersections 1-8, 22-28)

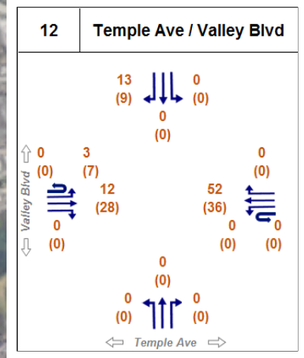
PSOMAS
March 2019

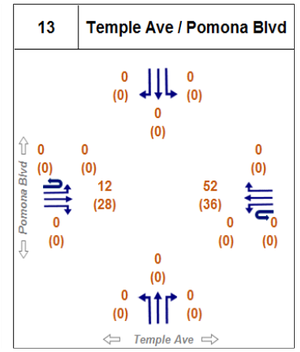


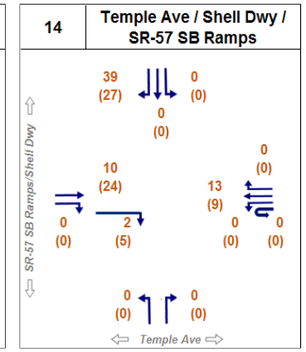


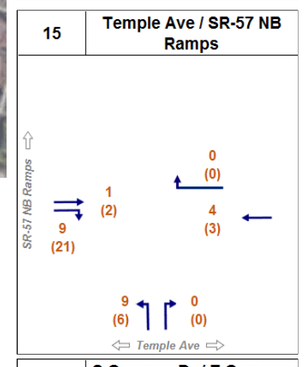


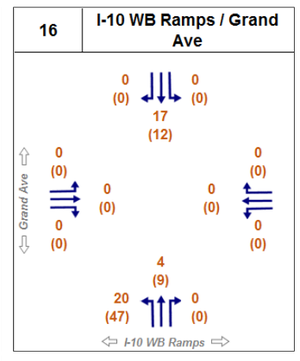


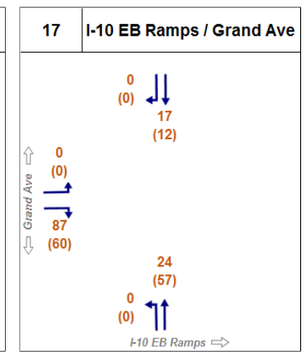


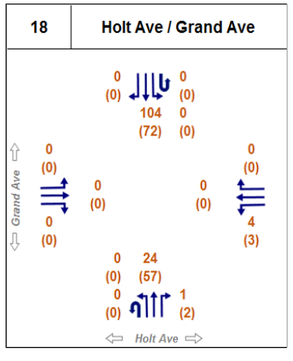


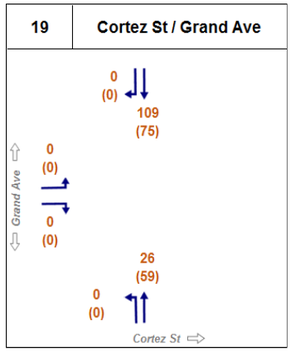


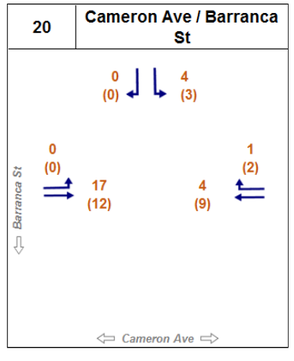


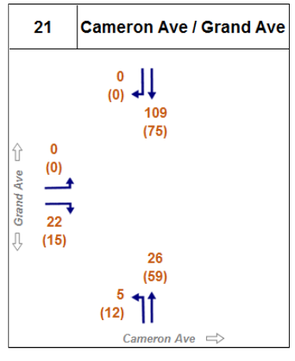


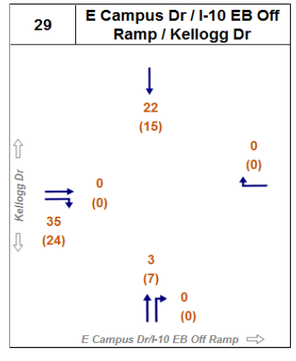


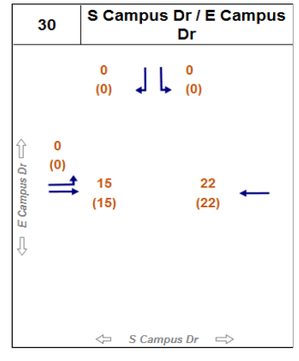












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Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 15B.
Buildout (2027) Project Traffic Volumes (Intersections 9-21, 29-30)

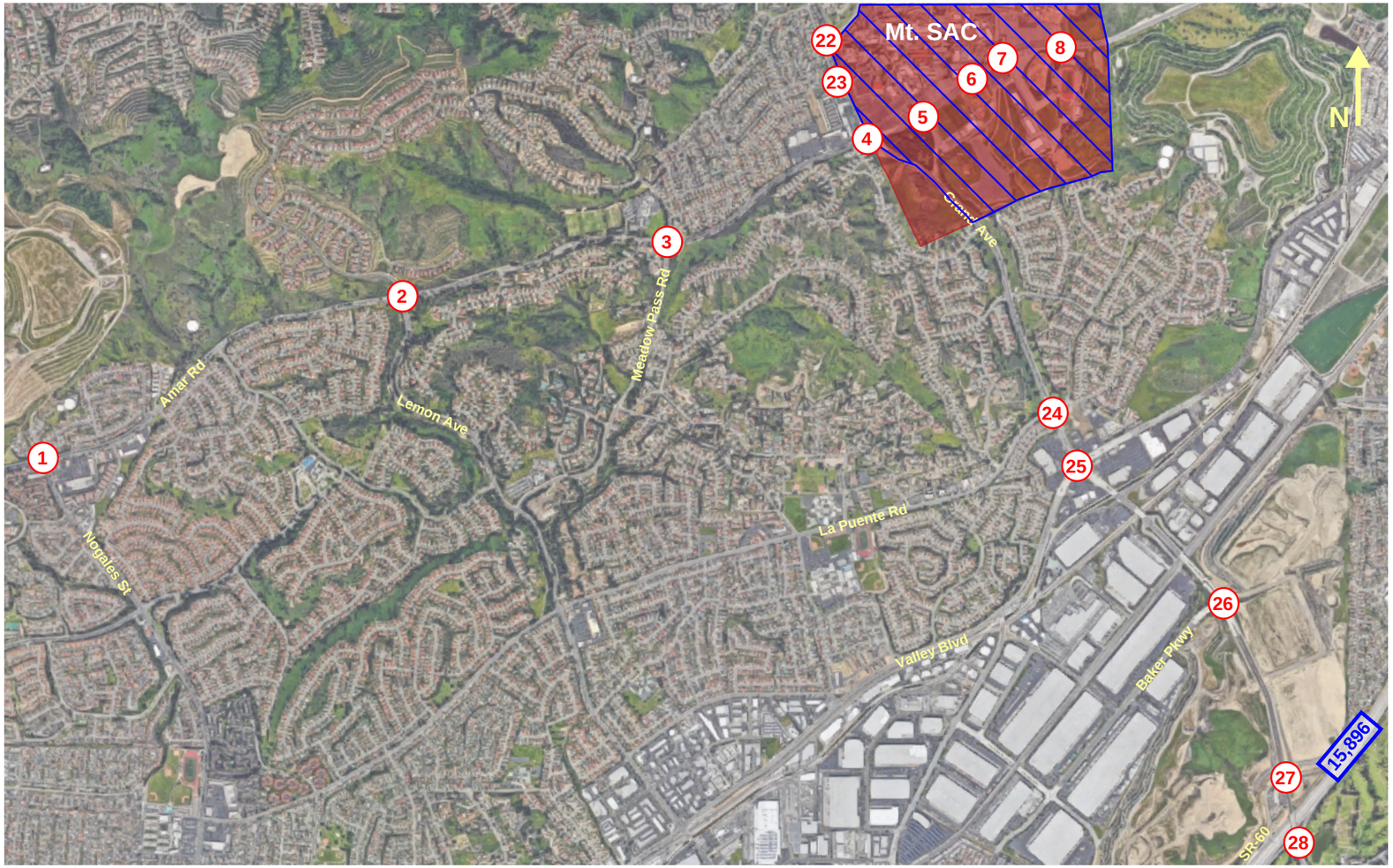
PSOMAS
March 2019

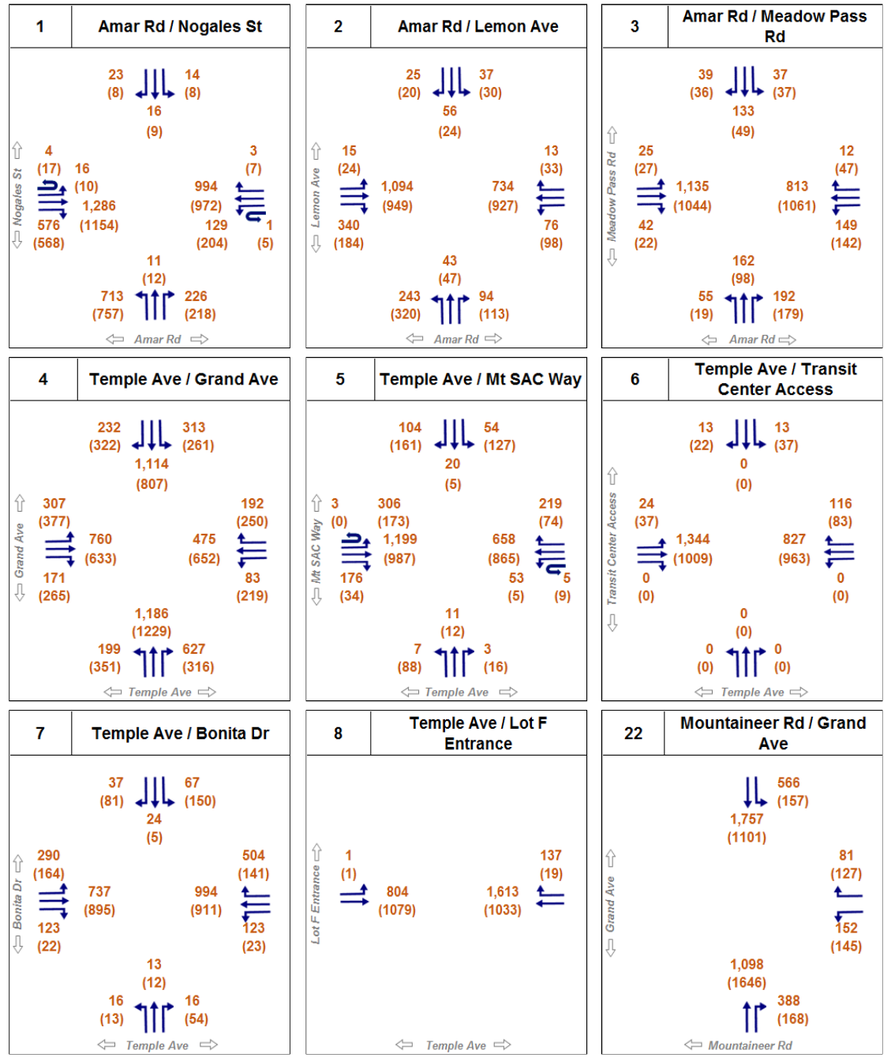
4.2.4. Cumulative Growth

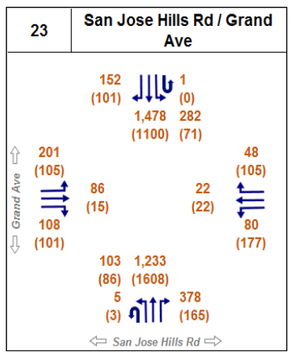
Originally, traffic volumes for 2027 were to be estimated based on information provided by the Southern California Association of Governments (SCAG), who maintains a long-term traffic model. However, the model showed 2035 traffic volumes which were lower than the existing traffic volumes in the project area.

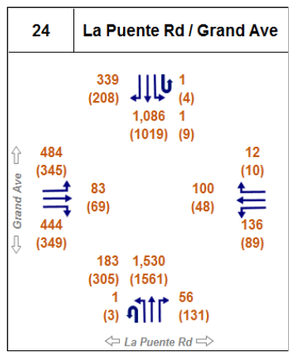
The project area is included in the *2010 Congestion Management Program (CMP) for Los Angeles County*, which includes estimated growth for various areas in the county. Based on the CMP, the annual growth rates from 2017 and 2027 are estimated to be 0.4% per year for West Covina and 0.8% per year for Pomona. The CMP does not explicitly provide growth projections for the City of Walnut, where Mt. SAC is located. Therefore, based on discussions with the City of Walnut traffic engineer, it was determined that 1.0% per year growth rate be used to calculate the projected traffic volumes for 2027 for this study. Based on the CMP, the 1.0% per year growth is conservative for the neighboring cities and was therefore used to calculate background growth for all the study intersections. By using this conservative growth rate, the traffic volume projections in this report are more likely to account for shorter periods of growth which may exceed the CMP projections due to fluctuations in the economy and development community.

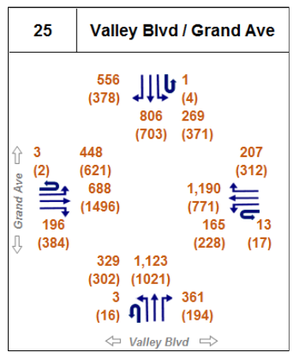
However, the project traffic volumes were assumed to be included within the 1.0% per year growth rate, so those volumes were subtracted to obtain 2027 traffic volumes without the project. In a few cases, generally near Mt. SAC, the project traffic growth was calculated to be greater than the growth calculated based on the annual growth rate. These differences are likely due to the anticipated redistribution of traffic near the campus due to the project. To be conservative, for movements where the project traffic resulted a larger increase than was generated by the assumed growth rate, the additional project traffic volume was added to the movement for conditions with the project. Figures 16A and 16B show the 2027 cumulative traffic volumes (without the project), and Figures 17A and 17B show the 2027 cumulative plus project traffic volumes.

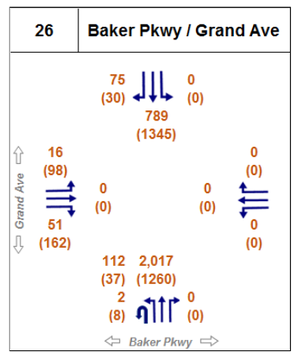


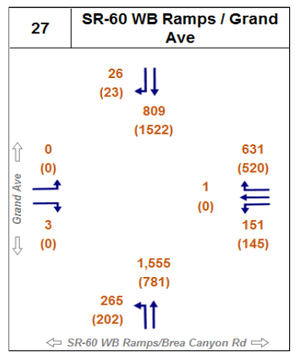


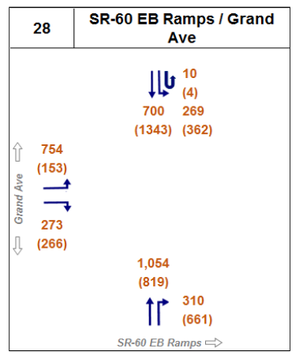












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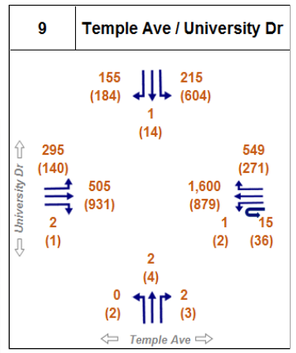
- XX — Intersection Number
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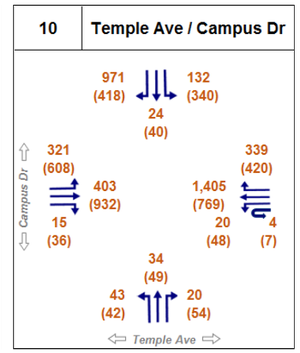
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

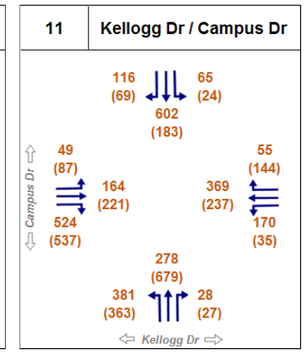
Figure 16A.
Buildout (2027) Cumulative Traffic Volumes (Intersections 1-8, 22-28)

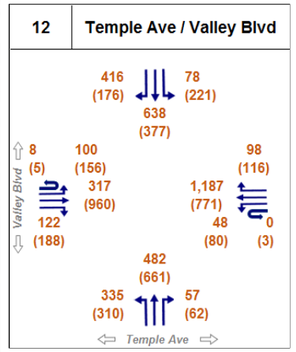
PSOMAS
March 2019

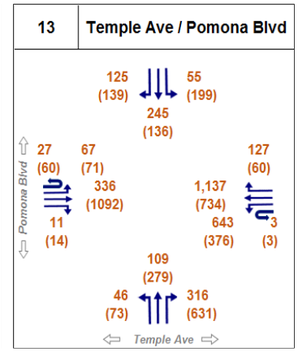


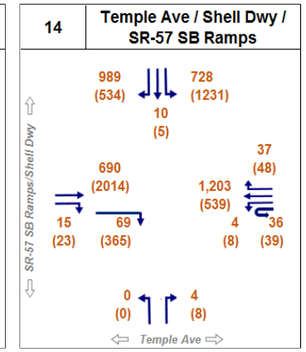


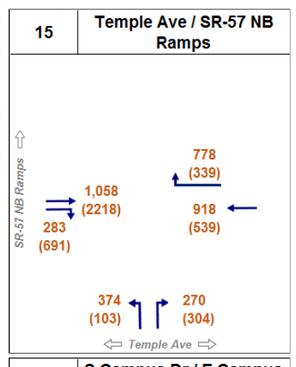


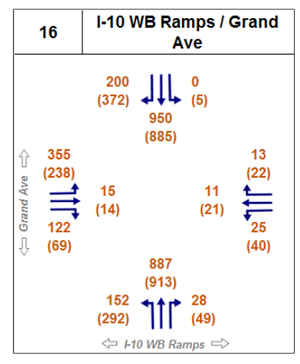


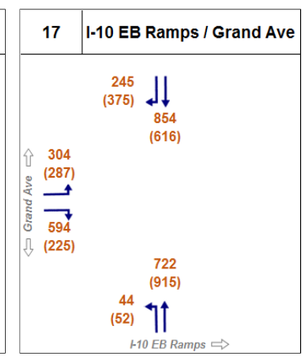


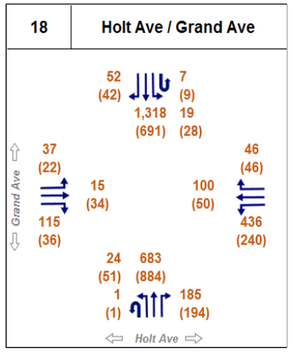


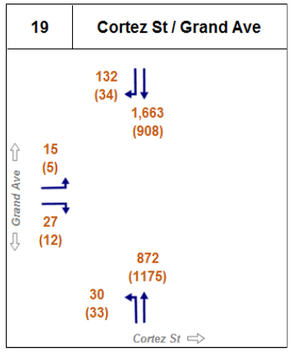


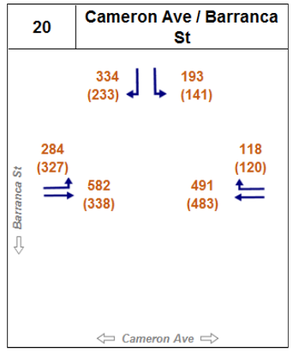


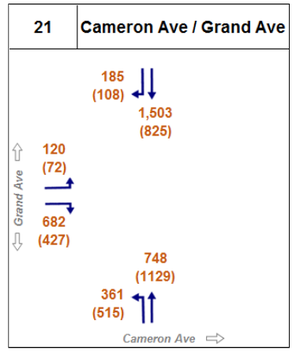


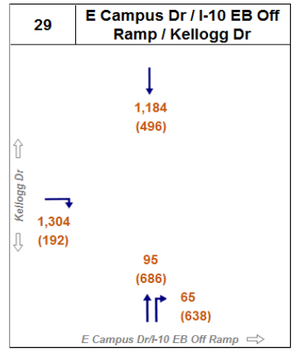


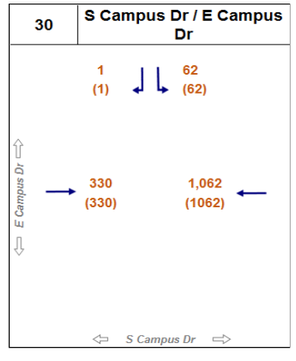












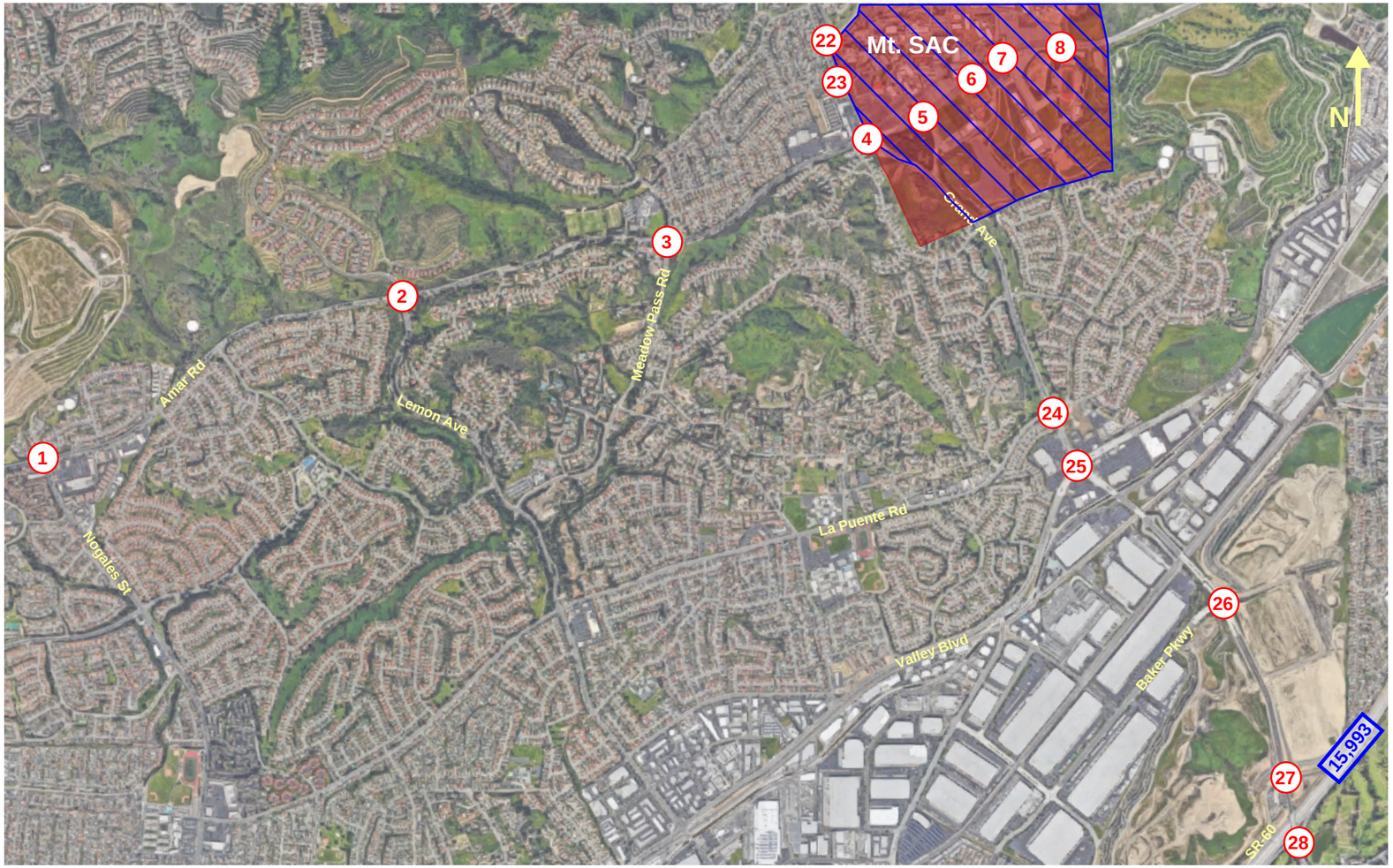
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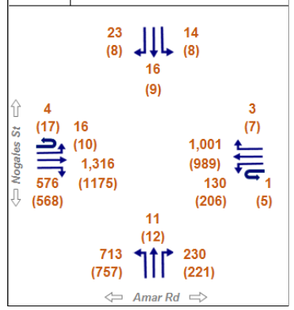
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 16B.
Buildout (2027) Cumulative Traffic Volumes (Intersections 9-21, 29-30)

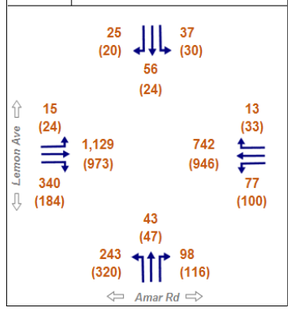
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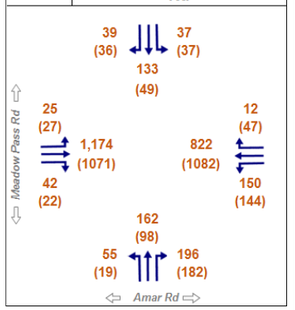
1 Amar Rd / Nogales St



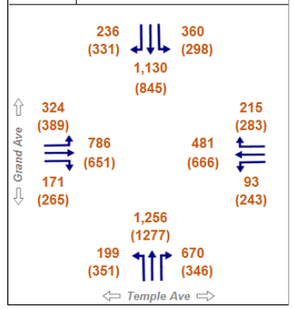
2 Amar Rd / Lemon Ave



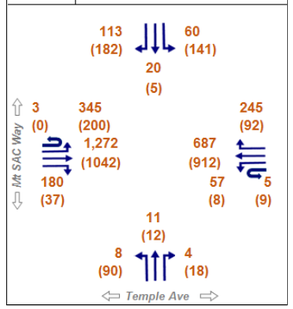
3 Amar Rd / Meadow Pass Rd



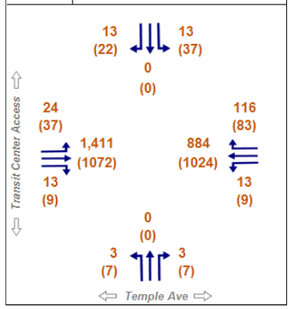
4 Temple Ave / Grand Ave



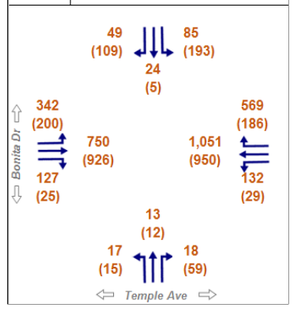
5 Temple Ave / Mt SAC Way



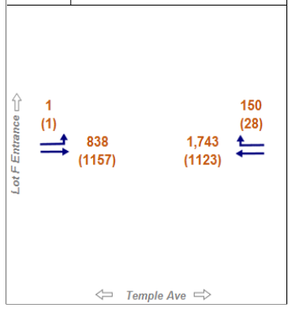
6 Temple Ave / Transit Center Access



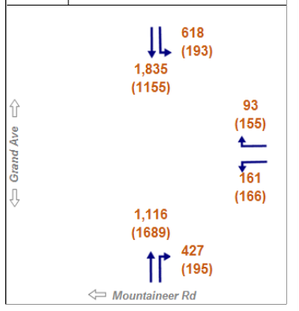
7 Temple Ave / Bonita Dr



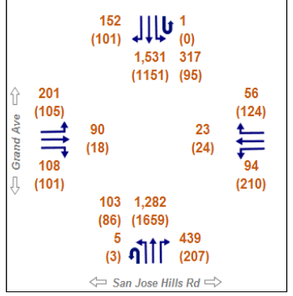
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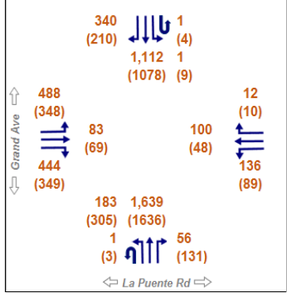
22 Mountaineer Rd / Grand Ave



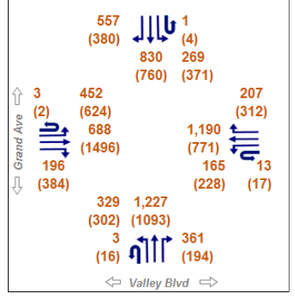
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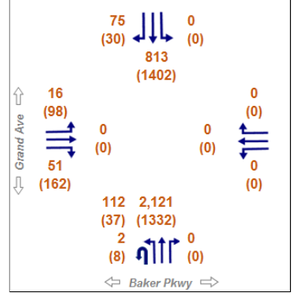
24 La Puente Rd / Grand Ave



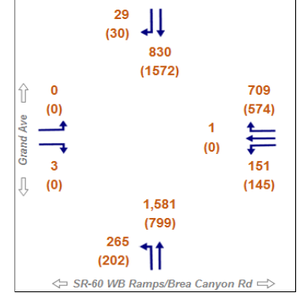
25 Valley Blvd / Grand Ave



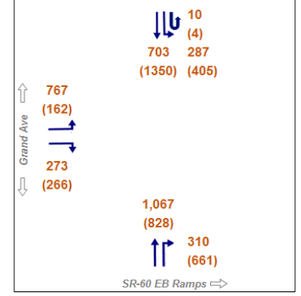
26 Baker Pkwy / Grand Ave



27 SR-60 WB Ramps / Grand Ave



28 SR-60 EB Ramps / Grand Ave



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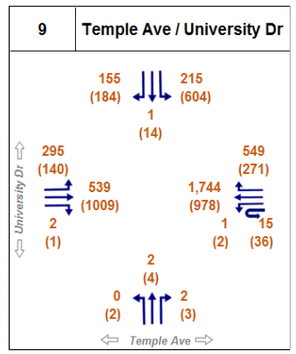
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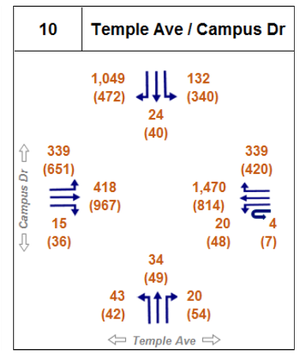
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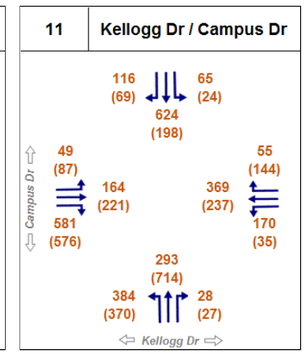
Figure 17A.
Buildout (2027) Cumulative Plus Project Traffic Volumes (Intersections 1-8, 22-28)

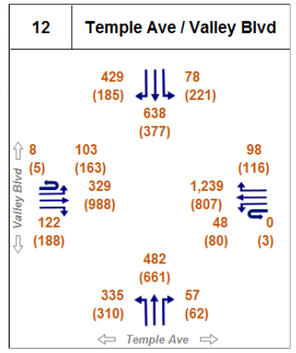
PSOMAS
March 2019

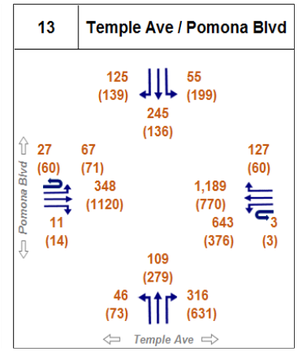


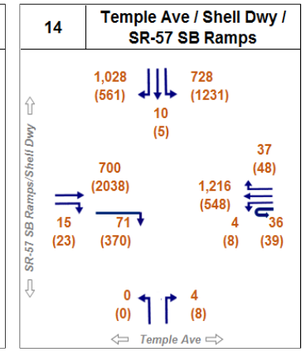


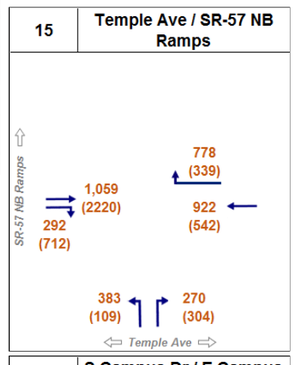


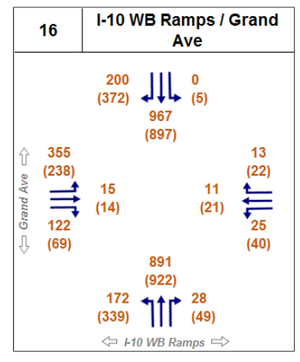


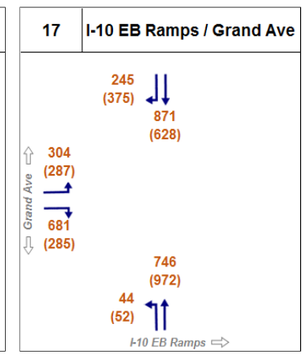


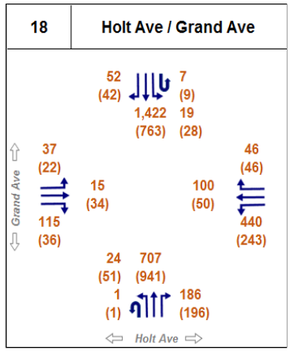


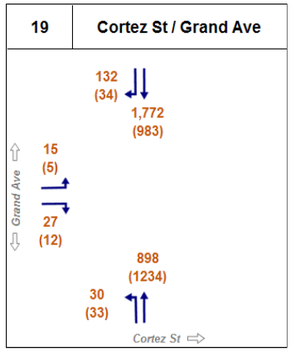


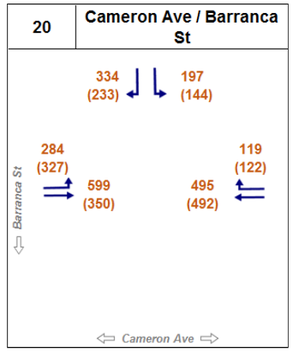


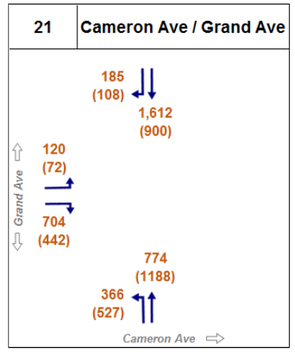


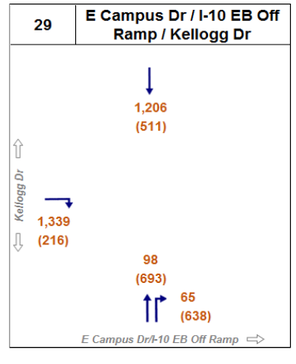


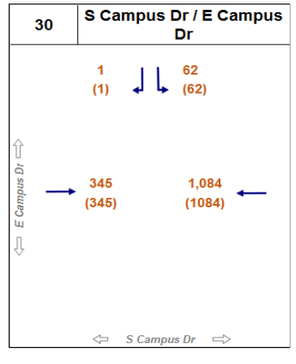












LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 17B.
Buildout (2027) Cumulative Plus Project Traffic Volumes (Intersections 9-21, 29-30)

PSOMAS
March 2019

5. OPERATIONAL ANALYSIS – EXISTING YEAR (2018)

5.1. EXISTING CONDITIONS

As previously discussed, the non-Caltrans signalized intersections were evaluated using the ICU methodology, and the unsignalized intersections and Caltrans signalized intersections were evaluated using the HCM methodology. For existing conditions, the ICU spreadsheets and HCM reports are included in Appendix B.

Table 7 in Section 5.3 shows the resulting LOS for each of the study intersections under existing conditions, with any unacceptable LOS highlighted in red.

As seen in the table, nine signalized intersections currently operate at LOS E or worse in one or both peak hours, including the following:

4. Temple Avenue/Grand Avenue (AM peak hour)
10. Temple Avenue/Campus Drive (AM peak hour)
12. Temple Avenue/Valley Boulevard (AM peak hour)
13. Temple Avenue/Pomona Boulevard (AM and PM peak hours)
18. Holt Avenue/Grand Avenue (AM peak hour)
21. Cameron Avenue/Grand Avenue (AM peak hour)
23. San Jose Hills Road/Grand Avenue (AM peak hour)
24. La Puente Road/Grand Avenue (AM peak hour)
25. Valley Boulevard/Grand Avenue (AM peak hour)

In addition, the worst minor-street (stop controlled) movement at the intersection of Cortez Street and Grand Avenue (#19) operates at LOS E or worse in both peak hours as well as at the intersection of Cameron Avenue and Barranca Street (#20) in the AM peak hour. Recall that for two-way stop-controlled intersections (such as Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street), there is no defined intersection LOS.

In addition to the study intersections, the two study Caltrans segments were evaluated for existing conditions, as shown below:

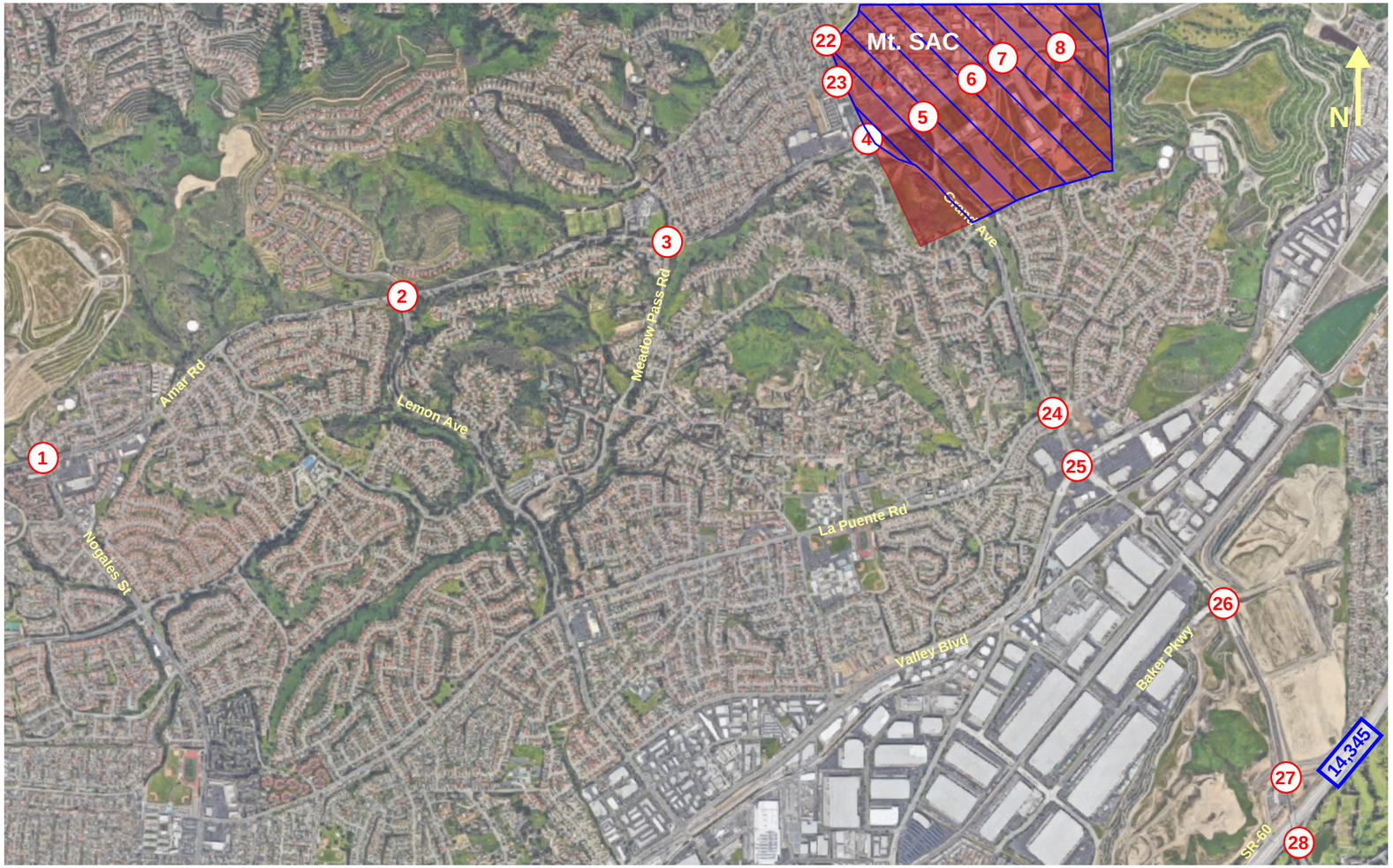
- I-10, Citrus Street to Holt Avenue
    - 1,857 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 792 pc/hr/ln, LOS B

5.2. EXISTING PLUS PROJECT CONDITIONS

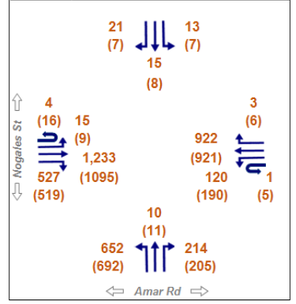
The same approach was used to evaluate existing conditions plus the project; the full buildout (2027) version of the project was assumed in this analysis. The purpose of the Existing Plus Project analysis is to provide the baseline for assessing environmental impacts, which is generally the existing conditions at the time that the environmental document for the project is prepared. The analysis assesses the transportation and circulation impacts of the proposed project against existing present-day traffic conditions, irrespective of the proposed project's horizon year. While a requirement of CEQA, a comparative traffic analysis of the impacts associated with implementation of the proposed project, and in this case realization of the full estimated student headcount in the year 2027, as assessed against existing traffic conditions, is an unrealistic, hypothetical scenario for the following reasons:

- Implementation of the proposed project is not an immediate-term construction project (the horizon year is 2027)
- This scenario does not account for future population and development growth in the City and surrounding areas with or without the proposed project
- This scenario does not account for other projected land use projects that should provide for, or contribute to, needed traffic improvements to the circulation system in the study area
- The circulation system is projected to change over time with or without the proposed project

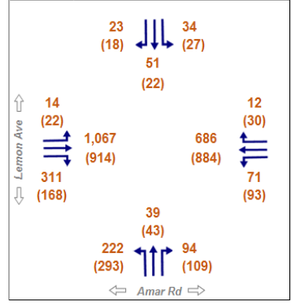
Figures 18A and 18B show the existing plus project traffic volumes. The ICU and HCM reports for existing conditions plus the project are included in Appendix B. The resulting level of service for each of the study intersections for existing plus project conditions is also shown in Table 7 in Section 5.3.



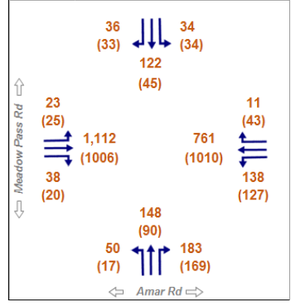
1 Amar Rd / Nogales St



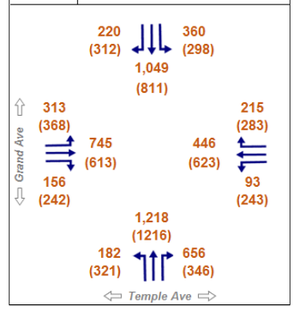
2 Amar Rd / Lemon Ave



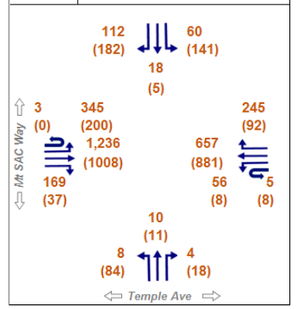
3 Amar Rd / Meadow Pass Rd



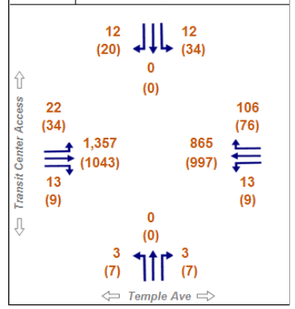
4 Temple Ave / Grand Ave



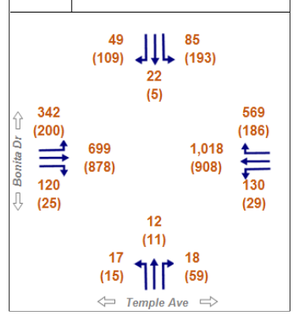
5 Temple Ave / Mt SAC Way



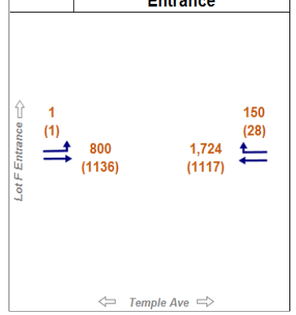
6 Temple Ave / Transit Center Access



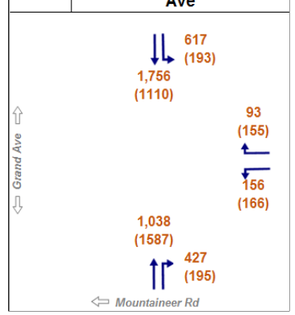
7 Temple Ave / Bonita Dr



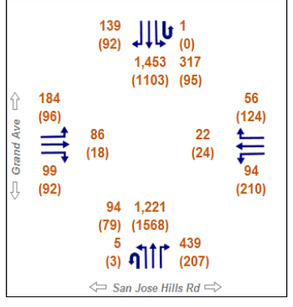
8 Temple Ave / Lot F Entrance



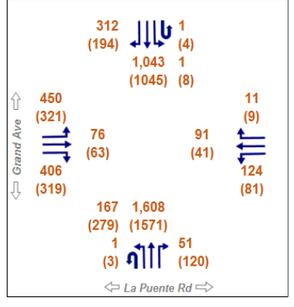
22 Mountaineer Rd / Grand Ave



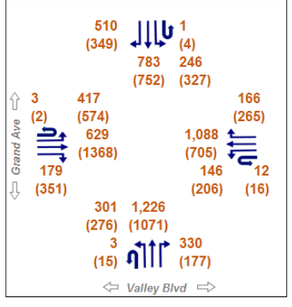
23 San Jose Hills Rd / Grand Ave



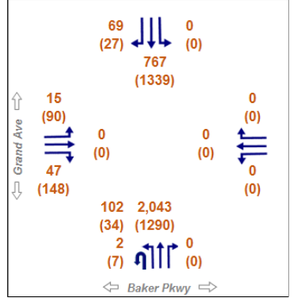
24 La Puente Rd / Grand Ave



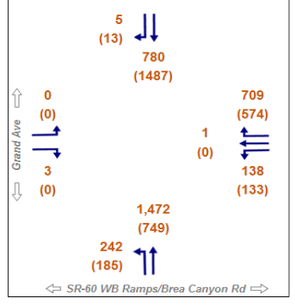
25 Valley Blvd / Grand Ave



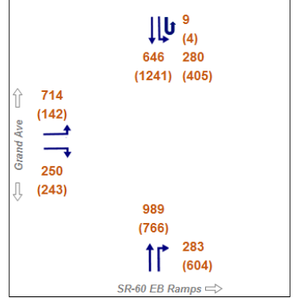
26 Baker Pkwy / Grand Ave



27 SR-60 WB Ramps / Grand Ave



28 SR-60 EB Ramps / Grand Ave



LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

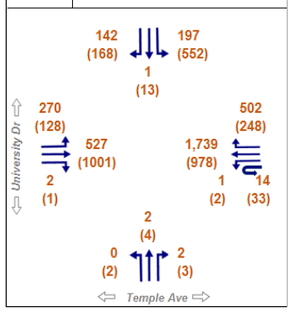
Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 18A.
Existing Plus Project Traffic Volumes (Intersections 1-8, 22-28)

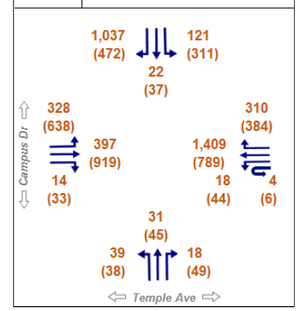
PSOMAS
March 2019



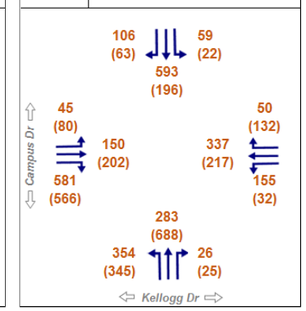
9 Temple Ave / University Dr



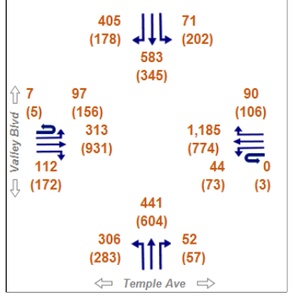
10 Temple Ave / Campus Dr



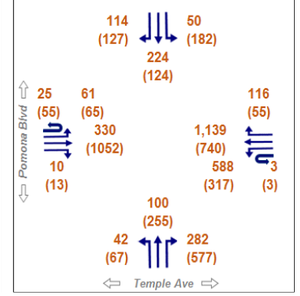
11 Kellogg Dr / Campus Dr



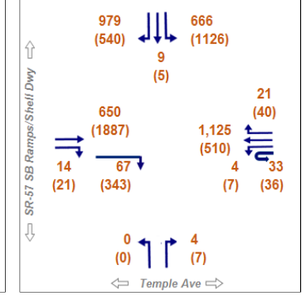
12 Temple Ave / Valley Blvd



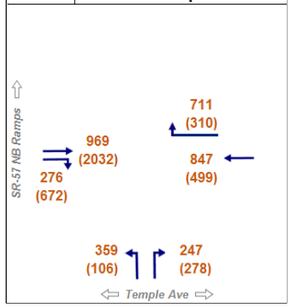
13 Temple Ave / Pomona Blvd



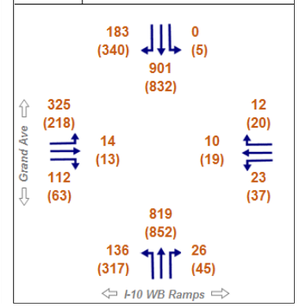
14 Temple Ave / Shell Dwy / SR-57 SB Ramps



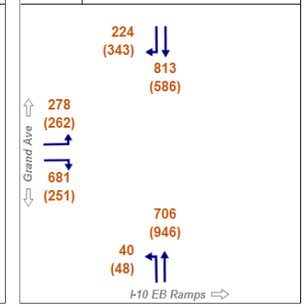
15 Temple Ave / SR-57 NB Ramps



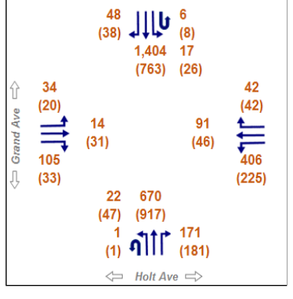
16 I-10 WB Ramps / Grand Ave



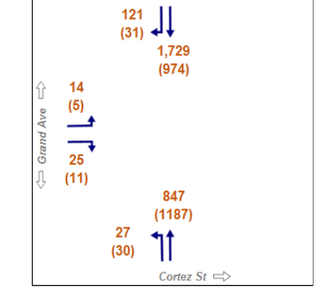
17 I-10 EB Ramps / Grand Ave



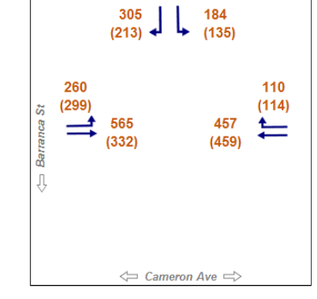
18 Holt Ave / Grand Ave



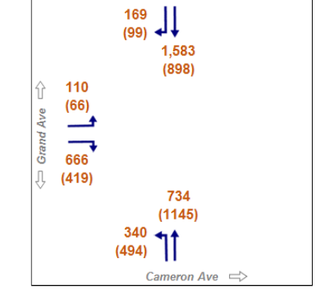
19 Cortez St / Grand Ave



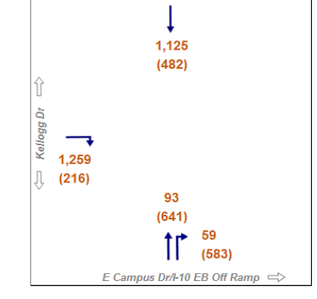
20 Cameron Ave / Barranca St



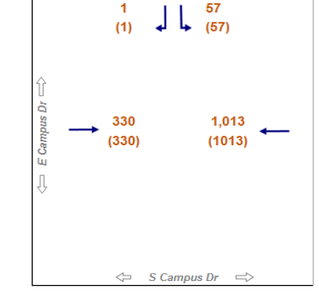
21 Cameron Ave / Grand Ave



29 E Campus Dr / I-10 EB Off Ramp / Kellogg Dr



30 S Campus Dr / E Campus Dr



LEGEND

- XX — Intersection Number
- XX — AM Peak Hour Traffic Volume (veh/hr)
- (XX) — PM Peak Hour Traffic Volume (veh/hr)
- XX,XXX — Segment Peak Hour Traffic Volume (pc/hr)
- Mt. SAC Campus
- Project Area (2018 EFMP)

Traffic Impact Analysis
Mt. San Antonio College
2018 EFMP

Figure 18B.
Existing Plus Project Traffic Volumes (Intersections 9-21, 29-30)

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The intersections which would operate at LOS E or worse are the same as those listed in Section 5.1, Existing Conditions; further, the intersection of San Jose Hills Road and Grand Avenue, already operating at LOS E in the AM peak hour, would deteriorate from LOS D to LOS E in the PM peak hour.

For existing conditions plus project, the volumes and LOS on the Caltrans study segments are as listed below:

- I-10, Citrus Street to Holt Avenue
    - 1,869 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 797 pc/hr/ln, LOS B

5.3. EXISTING PLUS PROJECT SIGNIFICANT IMPACT EVALUATION

Table 7 shows the LOS for existing and existing plus project conditions as well as the increase in ICU for the non-Caltrans intersections with the project. For the Caltrans intersections, a significant impact can only occur if the intersection is operating at LOS E or F. As shown in the table, 12 intersections would have a significant impact for the hypothetical existing plus project condition.

Recall that although operational information is provided for unsignalized intersections, projects are not considered to have a significant impact on any unsignalized intersections. However, as previously discussed, a preliminary peak hour signal warrant evaluation was conducted for unsignalized intersections which are expected to operate at LOS E or F. Two unsignalized intersections are shown to operate at LOS E or F under existing and existing plus project conditions; the preliminary peak hour signal warrant evaluation is included in Section 5.4.

For the Caltrans study segments, both are expected to operate at LOS D or better with the project; therefore, no mitigation is required.

Table 7. Existing Plus Project Impacts Analysis

	Intersection	Intersection Control	Location of Intersection	Existing						Existing Plus Project						Increase in Delay (Caltrans E or F only)		Increase in V/C		Significant Impact?	
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	AM	PM	AM	PM	AM	PM
1	Amar Rd/Nogales St	Signalized	West Covina		0.862	D		0.829	D		0.874	D		0.838	D			0.01	0.01	NO	NO
2	Amar Rd/Lemon Ave	Signalized	Walnut		0.792	C		0.652	B		0.805	D		0.661	B			0.01	0.01	NO	NO
3	Amar Rd/Meadow Pass Rd	Signalized	Walnut		0.773	C		0.699	B		0.791	C		0.713	C			0.02	0.01	NO	NO
4	Temple Ave/Grand Ave	Signalized	Walnut		0.932	E		0.813	D		0.993	E		0.847	D			0.06	0.03	YES	YES
5	Temple Ave/Mt. SAC Way	Signalized	Walnut		0.625	B		0.687	B		0.664	B		0.738	C			0.04	0.05	NO	NO
6	Temple Ave/Transit Center	Signalized	Walnut		0.589	A		0.478	A		0.625	B		0.511	A			0.04	0.03	NO	NO
7	Temple Ave/Bonita Dr	Signalized	Walnut		0.602	B		0.571	A		0.677	B		0.621	B			0.07	0.05	NO	NO
8	Temple Ave/Lot F	Unsignalized	Walnut	27.2		D	18.7		C	32.0		D	20.6		C	N/A	N/A			N/A	N/A
9	Temple Ave/University Dr	Signalized	Pomona		0.839	D		0.688	B		0.885	D		0.722	C			0.05	0.03	YES	NO
10	Temple Ave/Campus Dr	Signalized	Pomona		1.003	F		0.759	C		1.056	F		0.783	C			0.05	0.02	YES	NO
11	Kellogg Dr/Campus Dr	Signalized	Pomona		0.828	D		0.579	A		0.853	D		0.601	B			0.03	0.02	YES	NO
12	Temple Ave/Valley Blvd	Signalized	Pomona		0.919	E		0.763	C		0.936	E		0.776	C			0.02	0.01	YES	NO
13	Temple Ave/Pomona Blvd	Signalized	Pomona		0.971	E		1.071	F		0.974	E		1.077	F			0.00	0.01	NO	YES
14	Temple Ave/SR-57 SB Ramps	Signalized*	Pomona	23.7		C	42.8		D	24.2		C	43.6		D	N/A	N/A			NO	NO
15	Temple Ave/SR-57 NB Ramps	Signalized*	Pomona	9.8		A	8.5		A	10.0		A	8.5		A	N/A	N/A			NO	NO
16	I-10 WB Ramps/Grand Ave	Signalized*	West Covina	21.8		C	20.6		C	23.8		C	22.1		C	N/A	N/A			NO	NO
17	I-10 EB Ramps/Grand Ave	Signalized*	West Covina	23.2		C	13.8		B	27.7		C	13.7		B	N/A	N/A			NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina		1.019	F		0.617	B		1.057	F		0.638	B			0.04	0.02	YES	NO
19	Cortez St/Grand Ave	Unsignalized**	West Covina	207.5		F	49.7		E	278.2		F	60.7		F	N/A	N/A			N/A	N/A
20	Cameron Ave/Barranca St	Unsignalized	West Covina	48.2		E	29.1		D	51.4		F	30.6		D	N/A	N/A			N/A	N/A
21	Cameron Ave/Grand Ave	Signalized	LA County		1.131	F		0.771	C		1.184	F		0.809	D			0.05	0.04	YES	YES
22	Mountaineer Rd/Grand Ave	Signalized	Walnut		0.719	C		0.753	C		0.748	C		0.790	C			0.03	0.04	NO	YES
23	San Jose Hills Rd/Grand Ave	Signalized	Walnut		0.934	E		0.897	D		0.992	E		0.960	E			0.06	0.06	YES	YES
24	La Puente Rd/Grand Ave	Signalized	Walnut		1.028	F		0.875	D		1.063	F		0.895	D			0.04	0.02	YES	YES
25	Valley Blvd/Grand Ave	Signalized	Walnut		0.907	E		0.824	D		0.933	E		0.841	D			0.03	0.02	YES	YES
26	Baker Pkwy/Grand Ave	Signalized	Industry		0.581	A		0.534	A		0.604	B		0.547	A			0.02	0.01	NO	NO
27	SR-60 WB Ramps/Grand Ave	Signalized*	Industry	24.2		C	15.2		B	26.7		C	15.9		B	N/A	N/A			NO	NO
28	SR-60 EB Ramps/Grand Ave	Signalized*	Diamond Bar	22.7		C	13.9		B	23.7		C	15.0		B	N/A	N/A			NO	NO

*Caltrans Intersection

**TWSC (delay shows highest lane delay)

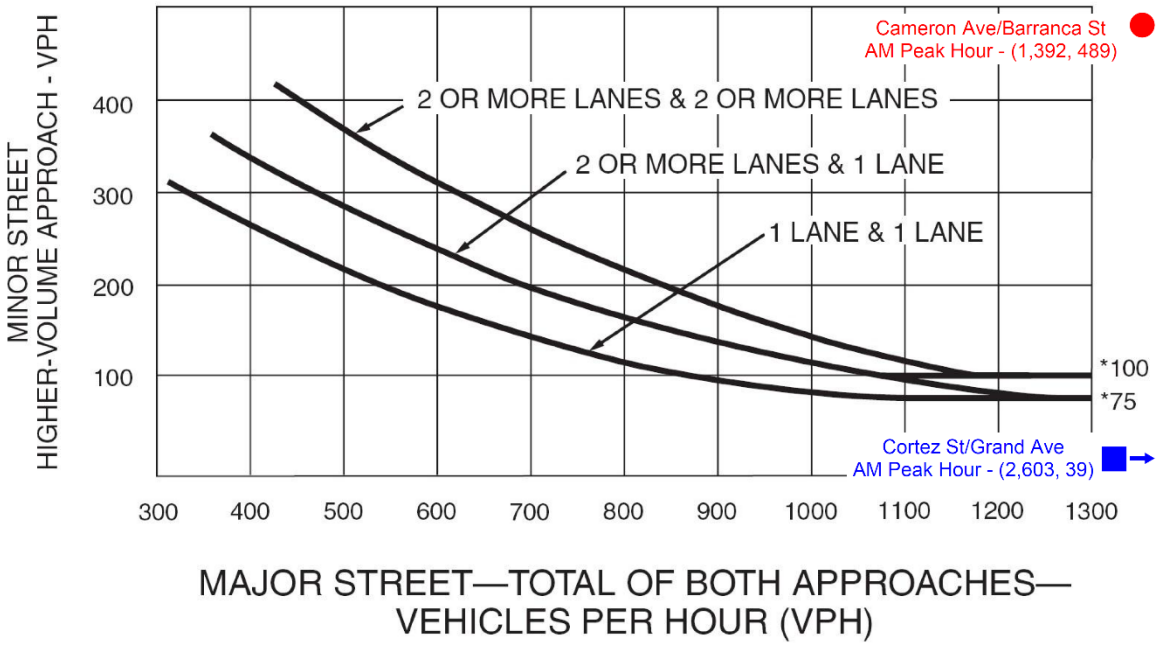
Highlighted cells indicate LOS E or F OR indicate significant impact

5.4. EXISITNG PLUS PROJECT PRELIMINARY SIGNAL WARRANT ANALYSIS

As seen in Table 7, the intersections of Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street are expected to operate at LOS E or F under existing and existing plus project conditions. Therefore, the peak hour signal warrant (warrant 3 of the MUTCD) was evaluated for both intersections for conditions with the project. Because of the existing southbound right turn lane on Grand Avenue at Cortez Street, the right turn volume was not included in the total volume at that intersection.

As shown in Figure 19, the intersection of Cameron Avenue and Barranca Street is expected to meet the peak hour signal warrant, while the intersection of Cortez Street and Grand Avenue is not (due to the low volumes on Cortez Street).

Figure 19. Existing Plus Project Peak Hour Signal Warrant



5.5. MITIGATION MEASURES

The following list includes the recommended improvements for each of the intersections with a significant project impact under the Existing Plus Project scenario. These recommendations are also applicable to future year traffic analysis scenarios as noted:

4. Temple Avenue and Grand Avenue
    - Convert the eastbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third eastbound thru lane on the east leg of the intersection.
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
    - These mitigation measures will reduce the project impact, but the impact is still considered to be significant. To fully mitigate the impacts, a second northbound right turn lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. Therefore, this impact would be **significant and unavoidable** and a statement of overriding considerations is required.
    - ***The recommendations will fully mitigate the impacts in 2021. The recommendations are also applicable in 2027 but will not fully mitigate the impacts.***

9. Temple Avenue and University Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***

10. Temple Avenue and Campus Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***

11. Kellogg Drive and Campus Drive
    - Convert the shared eastbound thru-right turn lane to an exclusive right turn lane. This will only require restriping on the eastbound approach.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2027.***
12. Temple Avenue and Valley Boulevard
    - Add a second northbound left turn lane. This will require restriping of both the north and south legs of the intersection (no physical reconstruction) and may result in the loss of some parking spaces along Valley Boulevard, south of Temple Avenue.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***
13. Temple Avenue and Pomona Boulevard
    - Convert the southbound lanes to provide two exclusive left turn lanes and a shared thru-right turn lane. This will require restriping on the southbound approach and the removal of the existing "right lane must turn right" and "right turn only" signs.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2027.***
18. Holt Avenue and Grand Avenue
    - Convert the southbound right turn lane to a shared thru-right turn lane. This will require additional striping on the south leg to either extend the right turn lane at Virginia Avenue north to Holt Avenue to act as a trap right turn lane (where drivers in that lane will be forced to turn right at Virginia Avenue), or to convert the lane to a shared thru-right turn lane at Virginia Avenue. Some physical improvements, including the removal of the existing raised median island and relocation of the signal pole, will also be needed for the northwest corner of the Holt Avenue/Grand Avenue intersection.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***

21. Cameron Avenue and Grand Avenue
    - Add a second eastbound right turn lane. This will only require restriping and will not require any physical improvements.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***
22. Mountaineer Road and Grand Avenue
    - This intersection already includes dual southbound and westbound left turn lanes, dual westbound right turn lanes, and a northbound (de-facto) right turn lane. To mitigate the impacts, a northbound through lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. This impact would be **significant and unavoidable** and a statement of overriding considerations is required.
23. San Jose Hills Road and Grand Avenue
    - Convert the westbound thru lane to a shared thru-left turn lane. This will only require striping, no physical reconstruction.
    - Convert the northbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third northbound thru lane on the north leg of the intersection.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***
24. La Puente Road and Grand Avenue
    - Modify the signal phasing to include an eastbound right turn overlap.
    - ***These recommendations are also applicable to impacts that occur at this intersection in 2021 and 2027.***
25. Valley Boulevard and Grand Avenue
    - Because this intersection includes dual left turn lanes in all directions and free right turn lanes in three directions, the intersection is considered to be built out. To mitigate the impact, a northbound through lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. This impact would be **significant and unavoidable** and a statement of overriding considerations is required.

Table 8 shows the significant impact evaluation with the recommended mitigation measures in place. As shown, the mitigation measures reduce the project impact to a less than significant level for 9 of the 12 intersections. However, the implementation of the identified improvements is subject to the approval of the cities of Walnut, Pomona, and West Covina as well as the County of Los Angeles. While Mt. SAC would work with these jurisdictions to implement the recommended improvements, Mt. SAC does not have the legal ability to compel these agencies to implement the improvements needed to mitigate this impact to a level of insignificance. As such, the impacts would be **significant and unavoidable** and a statement of overriding considerations is needed.

It should be noted that implementation of travel demand management (TDM) strategies included as part of the proposed EFMP may help reduce the project traffic overall and therefore further reduce the project impacts at study area intersections. For example, the construction of the Transit Center on campus, along with complementary programs (i.e. bike storage, bike share, etc.), may help shift student, staff, and faculty trips from personal vehicles to transit, therefore reducing campus vehicular traffic and reducing the severity of project impacts. However, even with implementation of TDM strategies, the project impacts at study area intersections would be **significant and unavoidable.**

Table 8. Existing Plus Mitigated Project Impacts Analysis

Intersection		Intersection Control	Location of Intersection	Existing				Existing + Project w/Mitigation				Increase in ICU		Significant Impact?	
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
				V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	AM	PM	AM	PM
4	Temple Ave/ Grand Ave	Signalized	Walnut	0.932	E	0.813	D	0.962	E	0.841	D	0.03	0.03	YES	YES
9	Temple Ave/ University Dr	Signalized	Pomona	0.839	D	0.688	B	0.807	D	0.709	C	-0.03	0.02	NO	NO
10	Temple Ave/ Campus Dr	Signalized	Pomona	1.003	F	0.759	C	0.973	E	0.780	C	-0.03	0.02	NO	NO
11	Kellogg Dr/ Campus Dr	Signalized	Pomona	0.828	D	0.579	A	0.802	D	0.530	A	-0.03	-0.05	NO	NO
12	Temple Ave/ Valley Blvd	Signalized	Pomona	0.919	E	0.763	C	0.832	D	0.776	C	-0.09	0.01	NO	NO
13	Temple Ave/ Pomona Blvd	Signalized	Pomona	0.971	E	1.071	F	0.936	E	1.034	F	-0.03	-0.04	NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina	1.019	F	0.617	B	0.911	E	0.638	B	-0.11	0.02	NO	NO
21	Cameron Ave/ Grand Ave	Signalized	LA County	1.131	F	0.771	C	0.985	E	0.702	C	-0.15	-0.07	NO	NO
22	Mountaineer Rd/ Grand Ave	Signalized	Walnut	0.719	C	0.753	C	0.748	C	0.790	C	0.03	0.04	NO	YES
23	San Jose Hills Rd/ Grand Ave	Signalized	Walnut	0.934	E	0.897	D	0.920	E	0.749	C	-0.01	-0.15	NO	NO
24	La Puente Rd/ Grand Ave	Signalized	Walnut	1.028	F	0.875	D	1.030	F	0.874	D	0.00	0.00	NO	NO
25	Valley Blvd/ Grand Ave	Signalized	Walnut	0.907	E	0.824	D	0.933	E	0.841	D	0.03	0.02	YES	YES

Highlighted cells indicate LOS E or F OR indicate significant impact

6. OPERATIONAL ANALYSIS – INTERIM YEAR (2021)

6.1. 2021 CUMULATIVE CONDITIONS WITHOUT THE PROJECT

As for existing conditions, the non-Caltrans signalized intersections were evaluated using the ICU methodology, and the unsignalized intersections and Caltrans signalized intersections were evaluated using the HCM methodology. Appendix C shows the ICU and HCM reports for 2021 cumulative conditions.

Table 9 in Section 6.3 shows the resulting LOS for each of the study intersections under 2021 cumulative conditions without the project.

As seen in the table, nine intersections would operate at LOS E or worse for 2021 cumulative conditions in one or both peak hours without the proposed project, including the following:

4. Temple Avenue/Grand Avenue (AM peak hour)
10. Temple Avenue/Campus Drive (AM peak hour)
12. Temple Avenue/Valley Boulevard (AM peak hour)
13. Temple Avenue/Pomona Boulevard (AM and PM peak hours)
18. Holt Avenue/Grand Avenue (AM peak hour)
21. Cameron Avenue/Grand Avenue (AM peak hour)
23. San Jose Hills Road/Grand Avenue (AM and PM peak hours)
24. La Puente Road/Grand Avenue (AM and PM peak hours)
25. Valley Boulevard/Grand Avenue (AM peak hour)

In addition, the worst minor-street (stop controlled) movement at the intersection of Cortez Street and Grand Avenue (#19) would operate at LOS E or worse in both peak hours as well as at the intersection of Cameron Avenue and Barranca Street (#20) in the AM peak hour. Recall that for two-way stop-controlled intersections (such as Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street), there is no defined intersection LOS.

In addition to the study intersections, the two study Caltrans segments were evaluated for 2021 cumulative conditions, as shown below:

- I-10, Citrus Street to Holt Avenue
    - 1,868 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 792 pc/hr/ln, LOS B

6.2. 2021 CUMULATIVE PLUS PROJECT CONDITIONS

The same approach was used to evaluate 2021 cumulative conditions plus the project; the interim year (2021) version of the project was assumed in this analysis. The ICU and HCM reports for 2021 cumulative plus project conditions are included in Appendix C.

Table 9 in Section 6.3 shows the resulting level of service for each of the study intersections for 2021 cumulative plus project conditions. The intersections which would operate at LOS E or worse are the same as those listed in Section 6.1.

The two study Caltrans segments were also evaluated for 2021 cumulative plus project conditions and would operate at the same LOS as without the project, as shown below:

- I-10, Citrus Street to Holt Avenue
    - 1,873 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 795 pc/hr/ln, LOS B

6.3. 2021 CUMULATIVE PLUS PROJECT SIGNIFICANT IMPACT EVALUATION

The increase in ICU for the non-Caltrans intersections due to the project traffic is shown in Table 9. For the Caltrans intersections, a significant impact can only occur if the intersection operates at LOS E or F prior to adding project traffic. As shown in the table, nine intersections have a significant impact for 2021 cumulative plus project conditions.

For the Caltrans study segments, both are expected to operate at LOS D or better with the project; therefore, no mitigation is required.

Table 9. Interim (2021) Cumulative Plus Project Impacts Analysis

	Intersection	Intersection Control	Location of Intersection	2021 Cumulative						2021 Cumulative Plus Project						Increase in Delay (Caltrans E or F only)		Increase in V/C		Significant Impact?	
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	AM	PM	AM	PM	AM	PM
1	Amar Rd/Nogales St	Signalized	West Covina		0.877	D		0.846	D		0.882	D		0.849	D			0.00	0.00	NO	NO
2	Amar Rd/Lemon Ave	Signalized	Walnut		0.806	D		0.662	B		0.810	D		0.665	B			0.00	0.00	NO	NO
3	Amar Rd/Meadow Pass Rd	Signalized	Walnut		0.803	D		0.730	C		0.810	D		0.736	C			0.01	0.01	NO	NO
4	Temple Ave/Grand Ave	Signalized	Walnut		0.948	E		0.842	D		0.974	E		0.855	D			0.03	0.01	YES	NO
5	Temple Ave/Mt. SAC Way	Signalized	Walnut		0.637	B		0.699	B		0.650	B		0.722	C			0.01	0.02	NO	NO
6	Temple Ave/Transit Center	Signalized	Walnut		0.600	B		0.486	A		0.611	B		0.498	A			0.01	0.01	NO	NO
7	Temple Ave/Bonita Dr	Signalized	Walnut		0.610	B		0.582	A		0.635	B		0.601	B			0.03	0.02	NO	NO
8	Temple Ave/Lot F	Unsignalized	Walnut	28.2		D	19.2		C	29.9		D	20.0		C	N/A	N/A			N/A	N/A
9	Temple Ave/University Dr	Signalized	Pomona		0.851	D		0.700	C		0.868	D		0.713	C			0.02	0.01	YES	NO
10	Temple Ave/Campus Dr	Signalized	Pomona		1.021	F		0.774	C		1.042	F		0.781	C			0.02	0.01	YES	NO
11	Kellogg Dr/Campus Dr	Signalized	Pomona		0.841	D		0.590	A		0.851	D		0.598	A			0.01	0.01	NO	NO
12	Temple Ave/Valley Blvd	Signalized	Pomona		0.934	E		0.773	C		0.941	E		0.778	C			0.01	0.01	YES	NO
13	Temple Ave/Pomona Blvd	Signalized	Pomona		1.030	F		1.158	F		1.031	F		1.160	F			0.00	0.00	NO	NO
14	Temple Ave/SR-57 SB Ramps	Signalized*	Pomona	24.3		C	45.6		D	24.5		C	45.9		D	N/A	N/A			NO	NO
15	Temple Ave/SR-57 NB Ramps	Signalized*	Pomona	10.1		B	8.9		A	10.1		B	8.9		A	N/A	N/A			NO	NO
16	I-10 WB Ramps/Grand Ave	Signalized*	West Covina	24.9		C	22.5		C	25.4		C	23.4		C	N/A	N/A			NO	NO
17	I-10 EB Ramps/Grand Ave	Signalized*	West Covina	24.8		C	13.8		B	26.6		C	13.8		B	N/A	N/A			NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina		1.045	F		0.648	B		1.060	F		0.656	B			0.02	0.01	YES	NO
19	Cortez St/Grand Ave	Unsignalized**	West Covina	248.6		F	62.5		F	278.2		F	66.4		F	N/A	N/A			N/A	N/A
20	Cameron Ave/Barranca St	Unsignalized	West Covina	51.6		F	31.1		D	53.1		F	31.7		D	N/A	N/A			N/A	N/A
21	Cameron Ave/Grand Ave	Signalized	LA County		1.158	F		0.808	D		1.178	F		0.823	D			0.02	0.01	YES	NO
22	Mountaineer Rd/Grand Ave	Signalized	Walnut		0.750	C		0.786	C		0.763	C		0.802	D			0.01	0.02	NO	NO
23	San Jose Hills Rd/Grand Ave	Signalized	Walnut		0.972	E		0.934	E		0.995	E		0.957	E			0.02	0.02	YES	YES
24	La Puente Rd/Grand Ave	Signalized	Walnut		1.062	F		0.918	E		1.076	F		0.926	E			0.01	0.01	YES	YES
25	Valley Blvd/Grand Ave	Signalized	Walnut		0.931	E		0.888	D		0.941	E		0.894	D			0.01	0.01	YES	NO
26	Baker Pkwy/Grand Ave	Signalized	Industry		0.590	A		0.548	A		0.599	A		0.553	A			0.01	0.01	NO	NO
27	SR-60 WB Ramps/Grand Ave	Signalized*	Industry	24.8		C	15.4		B	25.7		C	15.8		B	N/A	N/A			NO	NO
28	SR-60 EB Ramps/Grand Ave	Signalized*	Diamond Bar	23.8		C	14.7		B	24.2		C	15.1		B	N/A	N/A			NO	NO

*Caltrans Intersection

**TWSC (delay shows highest lane delay)

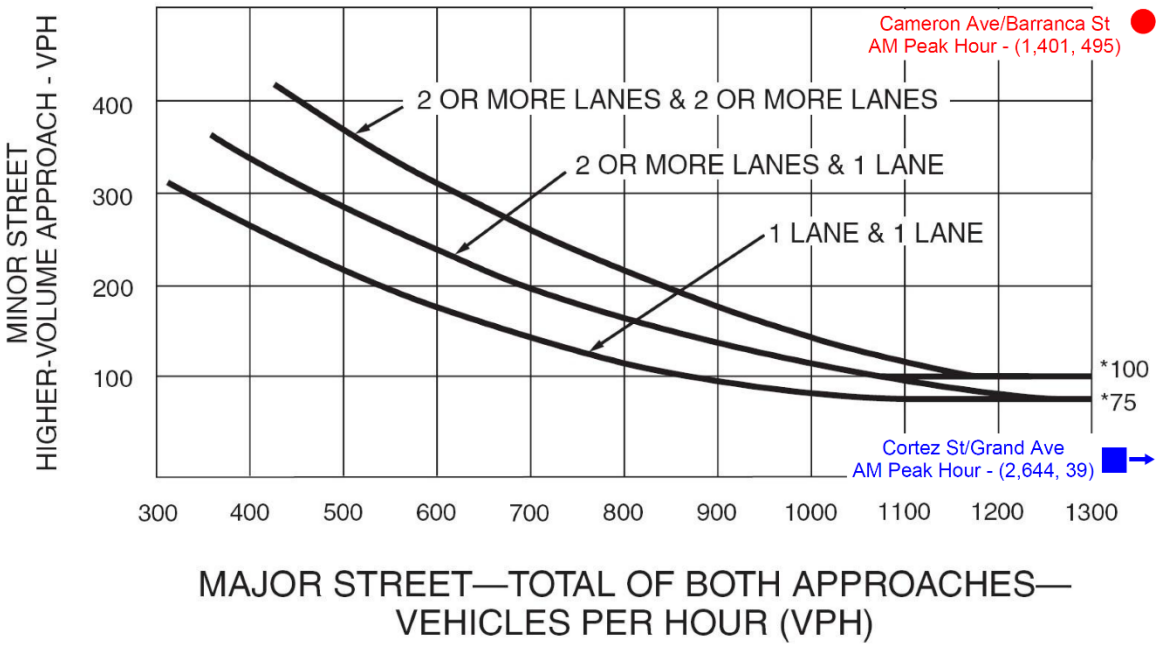
Highlighted cells indicate LOS E or F OR indicate significant impact

6.4. 2021 WITH PROJECT PRELIMINARY SIGNAL WARRANT ANALYSIS

As seen in Table 9, the intersections of Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street are expected to operate at LOS E or F under existing and existing plus project conditions. Therefore, the peak hour signal warrant (warrant 3 of the MUTCD) was evaluated.

As seen in Figure 20, the Cameron Avenue/Barranca Street intersection is expected to meet the signal warrant, while the intersection of Cortez Street and Grand Avenue is still not expected to meet the signal warrant due to the low volumes on Cortez Street.

Figure 20. Interim (2021) Cumulative Plus Project Peak Hour Signal Warrant



6.5. MITIGATION MEASURES

As for existing conditions, mitigations were developed to reduce traffic impacts to a level considered to be less than significant for eight of the nine intersections with significant impacts for the 2021 cumulative plus project conditions. Note that each of the improvements are also included in the improvements listed in Section 5.3 for existing plus project conditions.

For the 2021 cumulative plus project scenario, the following improvements are recommended at each of the intersections with a significant project impact:

4. Temple Avenue and Grand Avenue
    - Convert the eastbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third eastbound thru lane on the east leg of the intersection.
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
9. Temple Avenue and University Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
10. Temple Avenue and Campus Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
12. Temple Avenue and Valley Boulevard
    - Add a second northbound left turn lane. This will require restriping of both the north and south legs of the intersection (no physical reconstruction) and may result in the loss of some parking spaces along Valley Boulevard, south of Temple Avenue.
18. Holt Avenue and Grand Avenue
    - Convert the southbound right turn lane to a shared thru-right turn lane. This will require additional striping on the south leg to either extend the right turn lane at Virginia Avenue north to Holt Avenue to act as a trap right turn lane (where drivers in that lane will be forced to turn right at Virginia Avenue), or to convert the lane to a shared thru-right turn lane at Virginia Avenue.

Some physical improvements, including the removal of the existing raised median island and relocation of the signal pole, will also be needed for the northwest corner of the Holt Avenue/Grand Avenue intersection.

21. Cameron Avenue and Grand Avenue
    - Add a second eastbound right turn lane. This will only require restriping and will not require any physical improvements.
23. San Jose Hills Road and Grand Avenue
    - Convert the westbound thru lane to a shared thru-left turn lane. This will only require striping, no physical reconstruction.
    - Convert the northbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third northbound thru lane on the north leg of the intersection.
24. La Puente Road and Grand Avenue
    - Modify the signal phasing to include an eastbound right turn overlap.
25. Valley Boulevard and Grand Avenue
    - Because this intersection includes dual left turn lanes in all directions and free right turn lanes in three directions, the intersection is considered to be built out. To mitigate the impact, a northbound through lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. This impact would be **significant and unavoidable** and a statement of overriding considerations is required.

Table 10 shows the significant impact evaluation with the listed mitigation measures in place. As seen in the table, the mitigation measures reduce the project impact to a less than significant level for eight of the nine intersections. However, the implementation of the identified improvements is subject to the approval of the cities of Walnut, Pomona, and West Covina as well as the County of Los Angeles. While Mt. SAC would work with these jurisdictions to implement the recommended improvements, Mt. SAC does not have the legal ability to compel these agencies to implement the improvements needed to mitigate this impact to a level of insignificance. As such, the impacts would be **significant and unavoidable** and a statement of overriding considerations is needed.

It should be noted that implementation of travel demand management (TDM) strategies included as part of the proposed EFMP may help reduce the project traffic overall and therefore further reduce the project impacts at study area intersections. For example, the construction of the Transit Center on campus, along with complementary programs (i.e. bike storage, bike share, etc.), may help shift student, staff, and faculty trips from personal vehicles to transit, therefore reducing campus vehicular traffic and reducing the severity of project impacts. However, even with implementation of TDM strategies, the project impacts at study area intersections would be **significant and unavoidable.**

Table 10. Interim (2021) Cumulative Plus Mitigated Project Impacts Analysis

Intersection		Intersection Control	Location of Intersection	2021 Cumulative				2021 Cumulative + Project w/Mitigation				Increase in ICU		Significant Impact?	
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
				V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	AM	PM	AM	PM
4	Temple Ave/ Grand Ave	Signalized	Walnut	0.948	E	0.842	D	0.946	E	0.845	D	0.00	0.00	NO	NO
9	Temple Ave/ University Dr	Signalized	Pomona	0.851	D	0.700	C	0.800	C	0.702	C	-0.05	0.00	NO	NO
10	Temple Ave/ Campus Dr	Signalized	Pomona	1.021	F	0.774	C	0.962	E	0.779	C	-0.06	0.00	NO	NO
12	Temple Ave/ Valley Blvd	Signalized	Pomona	0.934	E	0.773	C	0.833	D	0.778	C	-0.10	0.01	NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina	1.045	F	0.648	B	0.916	E	0.656	B	-0.13	0.01	NO	NO
21	Cameron Ave/ Grand Ave	Signalized	LA County	1.158	F	0.808	D	0.980	E	0.715	C	-0.18	-0.09	NO	NO
23	San Jose Hills Rd/ Grand Ave	Signalized	Walnut	0.972	E	0.934	E	0.914	E	0.742	C	-0.06	-0.19	NO	NO
24	La Puente Rd/ Grand Ave	Signalized	Walnut	1.062	F	0.918	E	1.041	F	0.904	E	-0.02	-0.01	NO	NO
25	Valley Blvd/ Grand Ave	Signalized	Walnut	0.931	E	0.888	D	0.941	E	0.894	D	0.01	0.01	YES	NO

Highlighted cells indicate LOS E or F OR indicate significant impact

7. OPERATIONAL ANALYSIS – BUILDOUT YEAR (2027)

7.1. 2027 CUMULATIVE CONDITIONS

As previously discussed, the non-Caltrans signalized intersections were evaluated using the ICU methodology, and the unsignalized intersections and Caltrans signalized intersections were evaluated using the HCM methodology. The ICU and HCM reports for 2027 cumulative conditions are included in Appendix D, and the level of service for each of the study intersections for the 2027 cumulative conditions is shown in Table 11 in Section 7.3.

As seen in the table, 10 intersections operate at LOS E or worse for 2027 cumulative conditions without the project in one or both peak hours, including the following:

1. Amar Road/Nogales Street (AM peak hour)
4. Temple Avenue/Grand Avenue (AM peak hour)
10. Temple Avenue/Campus Drive (AM peak hour)
12. Temple Avenue/Valley Boulevard (AM peak hour)
13. Temple Avenue/Pomona Boulevard (AM and PM peak hours)
18. Holt Avenue/Grand Avenue (AM peak hour)
21. Cameron Avenue/Grand Avenue (AM peak hour)
23. San Jose Hills Road/Grand Avenue (AM and PM peak hours)
24. La Puente Road/Grand Avenue (AM and PM peak hours)
25. Valley Boulevard/Grand Avenue (AM peak hour)

In addition, the worst minor-street (stop controlled) movement at the intersection of Cortez Street and Grand Avenue (#19) would operate at LOS F in both peak hours, and the worse minor-street movement at the intersection of Cameron Avenue and Barranca Street (#20) would operate at LOS E or worse in both peak hours. Recall that for two-way stop-controlled intersections (such as Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street), there is no defined intersection LOS.

In addition to the study intersections, the two study Caltrans segments were evaluated for 2027 cumulative conditions:

- I-10, Citrus Street to Holt Avenue
    - 1,695 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 883 pc/hr/ln, LOS B

7.2. 2027 CUMULATIVE PLUS PROJECT CONDITIONS

For 2027 cumulative plus project conditions, the same approach was used to evaluate the study intersections and segments, assuming full buildout of the project. The ICU and HCM reports for 2027 cumulative plus project conditions are included in Appendix D. Table 11 in Section 7.3 shows the resulting level of service for each of the study intersections for 2027 cumulative plus project conditions.

The intersections which would operate at LOS E or worse listed in Section 7.1 also operate at LOS E or worse for 2027 cumulative plus project conditions. Further, Temple Avenue/Grand Avenue and San Jose Hills/Grand Avenue intersections will deteriorate from LOS E to LOS F in the AM peak hour. In addition to those, the intersection of Temple Avenue and University Drive deteriorates from LOS D to LOS E in the AM peak hour.

The two study Caltrans segments were also evaluated for 2027 cumulative plus project conditions, as shown below:

- I-10, Citrus Street to Holt Avenue
    - 1,705 passenger cars per hour per lane (pc/hr/ln), LOS D
- SR-57, Grand Avenue to SR-60
    - 889 pc/hr/ln, LOS B

7.3. 2027 CUMULATIVE PLUS PROJECT SIGNIFICANT IMPACT EVALUATION

Table 11 shows the increase in ICU for the non-Caltrans intersections with the project. For the Caltrans intersections, a significant impact can only occur if the intersection is operating at LOS E or F without project traffic. As shown in the table, 15 intersections have a significant impact for 2027 cumulative plus project conditions. For the Caltrans study segments, both are expected to operate at LOS D or better with the project; therefore, no mitigation is required.

Table 11. Buildout (2027) Cumulative Plus Project Impacts Analysis

	Intersection	Intersection Control	Location of Intersection	2027 Cumulative						2027 Cumulative Plus Project						Increase in Delay (E or F only)		Increase in V/C		Significant Impact?	
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour								
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	AM	PM	AM	PM	AM	PM
1	Amar Rd/Nogales St	Signalized	West Covina		0.922	E		0.890	D		0.933	E		0.899	D			0.01	0.01	YES	NO
2	Amar Rd/Lemon Ave	Signalized	Walnut		0.843	D		0.695	B		0.857	D		0.704	C			0.01	0.01	NO	NO
3	Amar Rd/Meadow Pass Rd	Signalized	Walnut		0.818	D		0.747	C		0.836	D		0.761	C			0.02	0.01	YES	NO
4	Temple Ave/Grand Ave	Signalized	Walnut		0.957	E		0.852	D		1.018	F		0.884	D			0.06	0.03	YES	YES
5	Temple Ave/Mt. SAC Way	Signalized	Walnut		0.639	B		0.703	C		0.676	B		0.754	C			0.04	0.05	NO	YES
6	Temple Ave/Transit Center	Signalized	Walnut		0.611	B		0.492	A		0.647	B		0.525	A			0.04	0.03	NO	NO
7	Temple Ave/Bonita Dr	Signalized	Walnut		0.602	B		0.586	A		0.677	B		0.636	B			0.07	0.05	NO	NO
8	Temple Ave/Lot F	Unsignalized	Walnut	27.8		D	19.200		C	32.9		D	21.200		C	N/A	N/A			N/A	N/A
9	Temple Ave/University Dr	Signalized	Pomona		0.862	D		0.714	C		0.908	E		0.748	C			0.05	0.03	YES	NO
10	Temple Ave/Campus Dr	Signalized	Pomona		1.034	F		0.804	D		1.087	F		0.821	D			0.05	0.02	YES	YES
11	Kellogg Dr/Campus Dr	Signalized	Pomona		0.873	D		0.601	B		0.899	D		0.623	B			0.03	0.02	YES	NO
12	Temple Ave/Valley Blvd	Signalized	Pomona		0.979	E		0.811	D		0.996	E		0.825	D			0.02	0.01	YES	NO
13	Temple Ave/Pomona Blvd	Signalized	Pomona		1.055	F		1.176	F		1.059	F		1.182	F			0.00	0.01	NO	YES
14	Temple Ave/SR-57 SB Ramps	Signalized*	Pomona	25.6		C	53.4		D	26.2		C	54.6		D	N/A	N/A			NO	NO
15	Temple Ave/SR-57 NB Ramps	Signalized*	Pomona	10.9		B	9.5		A	11.0		B	9.5		A	N/A	N/A			NO	NO
16	I-10 WB Ramps/Grand Ave	Signalized*	West Covina	27.4		C	23.1		C	28.9		C	25.2		C	N/A	N/A			NO	NO
17	I-10 EB Ramps/Grand Ave	Signalized*	West Covina	24.8		C	14.6		B	30.1		C	14.7		B	N/A	N/A			NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina		1.066	F		0.644	B		1.105	F		0.665	B			0.04	0.02	YES	NO
19	Cortez St/Grand Ave	Unsignalized**	West Covina	259.4		F	53.900		F	376.0		F	64.400		F	N/A	N/A			N/A	N/A
20	Cameron Ave/Barranca St	Unsignalized	West Covina	67.9		F	39.800		E	72.4		F	40.900		E	N/A	N/A			N/A	N/A
21	Cameron Ave/Grand Ave	Signalized	LA County		1.174	F		0.796	C		1.227	F		0.834	D			0.05	0.04	YES	YES
22	Mountaineer Rd/Grand Ave	Signalized	Walnut		0.748	C		0.788	C		0.777	C		0.825	D			0.03	0.04	NO	YES
23	San Jose Hills Rd/Grand Ave	Signalized	Walnut		0.967	E		0.935	E		1.024	F		0.998	E			0.06	0.06	YES	YES
24	La Puente Rd/Grand Ave	Signalized	Walnut		1.080	F		0.929	E		1.115	F		0.949	E			0.04	0.02	YES	YES
25	Valley Blvd/Grand Ave	Signalized	Walnut		0.957	E		0.895	D		0.983	E		0.912	E			0.03	0.02	YES	YES
26	Baker Pkwy/Grand Ave	Signalized	Industry		0.602	B		0.561	A		0.625	B		0.574	A			0.02	0.01	NO	NO
27	SR-60 WB Ramps/Grand Ave	Signalized*	Industry	25.8		C	16.1		B	28.9		C	17.3		B	N/A	N/A			NO	NO
28	SR-60 EB Ramps/Grand Ave	Signalized*	Diamond Bar	25.2		C	15.8		B	26.4		C	17.0		B	N/A	N/A			NO	NO

*Caltrans Intersection

**TWSC (delay shows highest lane delay)

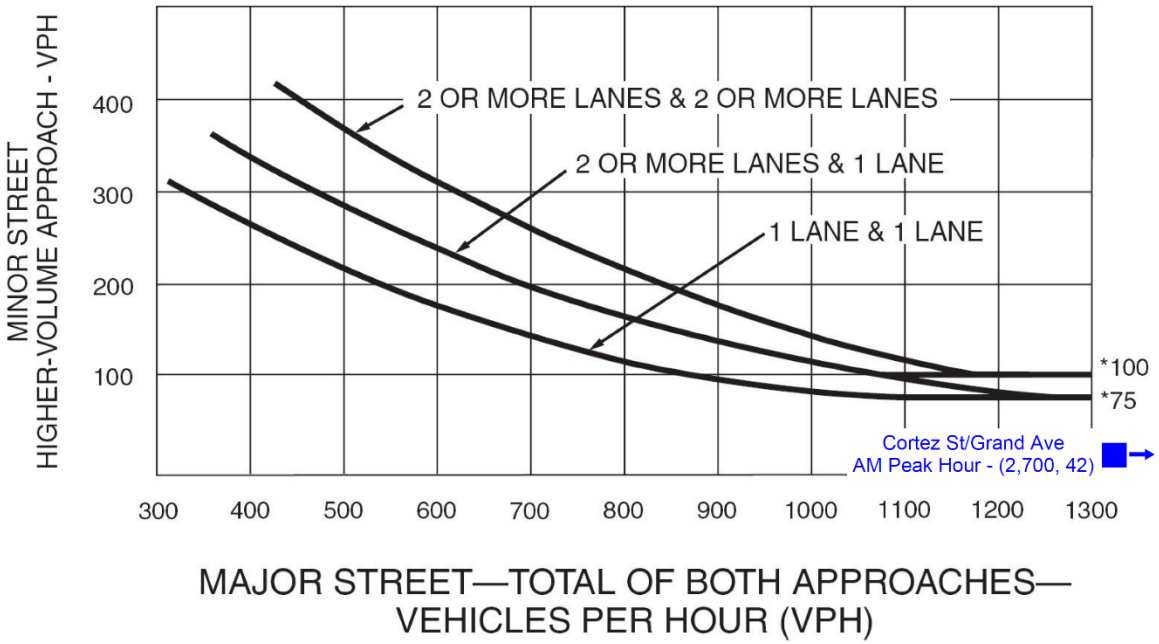
Highlighted cells indicate LOS E or F OR indicate significant impact

7.4. 2027 WITH PROJECT PRELIMINARY SIGNAL WARRANT ANALYSIS

As seen in Table 11, the intersections of Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street are expected to operate at LOS E or F under buildout (2027) cumulative conditions, with and without the project. Therefore, the peak hour signal warrant (warrant 3 of the MUTCD) was evaluated.

Because the Cameron Avenue/Barranca Street intersection met the warrant for existing plus project conditions, it was not reevaluated for this condition. As seen in Figure 21, the intersection of Cortez Street and Grand Avenue is still not expected to meet the signal warrant due to the low volumes on Cortez Street.

Figure 21. Buildout (2027) Cumulative Plus Project Peak Hour Signal Warrant



7.5. MITIGATION MEASURES

To reduce significant traffic impacts to a level considered to be less than significant for the 2027 cumulative plus project conditions, several mitigation measures were recommended. Note that most of the improvements listed below were also included in the existing plus project mitigation.

The following list includes the improvements at each of the intersections with a significant project impact:

1. Amar Road and Nogales Street
    - Convert the eastbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third eastbound thru lane on the east leg of the intersection.
3. Amar Road and Meadow Pass Road
    - To mitigate the impacts, the eastbound right turn lane would have to be converted to a shared thru-right turn lane, and there would also be additional striping needs on the east leg to provide a third eastbound through lane. However, this would either require physical reconstruction or removal of the bike lane, neither of which are feasible. This impact would be **significant and unavoidable** and a statement of overriding considerations is required.
4. Temple Avenue and Grand Avenue
    - Convert the eastbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third eastbound thru lane on the east leg of the intersection.
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.
    - These mitigation measures will reduce the project impact, but the impact is still considered to be significant. To fully mitigate the impacts, a second northbound right turn lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. Therefore, this impact would be **significant and unavoidable** and a statement of overriding considerations is required.

5. Temple Avenue and Mt. SAC Way
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.

9. Temple Avenue and University Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.

10. Temple Avenue and Campus Drive
    - Convert the westbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third westbound thru lane on the west leg of the intersection.

11. Kellogg Drive and Campus Drive
    - Convert the shared eastbound thru-right turn lane to an exclusive right turn lane. This will only require restriping on the eastbound approach.

12. Temple Avenue and Valley Boulevard
    - Add a second northbound left turn lane. This will require restriping of both the north and south legs of the intersection (no physical reconstruction) and may result in the loss of some parking spaces along Valley Boulevard, south of Temple Avenue.

13. Temple Avenue and Pomona Boulevard
    - Convert the southbound lanes to provide two exclusive left turn lanes and a shared thru-right turn lane. This will require restriping on the southbound approach and the removal of the existing “right lane must turn right” and “right turn only” signs.

18. Holt Avenue and Grand Avenue
    - Convert the southbound right turn lane to a shared thru-right turn lane. This will require additional striping on the south leg to either extend the right turn lane at Virginia Avenue north to Holt Avenue to act as a trap right turn lane (where drivers in that lane will be forced to turn right at Virginia Avenue), or

to convert the lane to a shared thru-right turn lane at Virginia Avenue. Some physical improvements, including the removal of the existing raised median island and relocation of the signal pole, will also be needed for the northwest corner of the Holt Avenue/Grand Avenue intersection.

21. Cameron Avenue and Grand Avenue
    - Add a second eastbound right turn lane. This will only require restriping and will not require any physical improvements.
22. Mountaineer Road and Grand Avenue
    - This intersection already includes dual southbound and westbound left turn lanes, dual westbound right turn lanes, and a northbound (de-facto) right turn lane. To mitigate the impacts, a northbound through lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. Therefore, this impact would be **significant and unavoidable** and a statement of overriding considerations is required.
23. San Jose Hills Road and Grand Avenue
    - Convert the westbound thru lane to a shared thru-left turn lane. This will only require striping, no physical reconstruction.
    - Convert the northbound right turn lane to a shared thru-right turn lane. This will not require any physical reconstruction but will require additional striping to provide a third northbound thru lane on the north leg of the intersection.
24. La Puente Road and Grand Avenue
    - Modify the signal phasing to include an eastbound right turn overlap.
25. Valley Boulevard and Grand Avenue
    - Because this intersection includes dual left turn lanes in all directions and free right turn lanes in three directions, the intersection is considered to be built out. To mitigate the impact, a northbound through lane would need to be added on Grand Avenue, which is not feasible due to right-of-way constraints. This impact would be **significant and unavoidable** and a statement of overriding considerations is required.

Table 12 shows the significant impact evaluation with the recommended mitigation measures in place. As shown, the mitigation measures reduce the project impact to a less than significant level for 11 of the 15 intersections.

Table 12. Buildout (2027) Cumulative Plus Mitigated Project Impacts Analysis

	Intersection	Intersection Control	Location of Intersection	2027 Cumulative				2027 Cumulative + Project w/Mitigation				Increase in ICU		Significant Impact?	
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour					
				ICU or V/C	LOS	ICU or V/C	LOS	ICU or V/C	LOS	ICU or V/C	LOS	AM	PM	AM	PM
1	Amar Rd/ Nogales St	Signalized	West Covina	0.922	E	0.890	D	0.914	E	0.894	D	-0.01	0.00	NO	NO
3	Amar Rd/Meadow Pass Rd	Signalized	Walnut	0.818	D	0.747	C	0.836	D	0.761	C	0.02	0.01	YES	NO
4	Temple Ave/ Grand Ave	Signalized	Walnut	0.957	E	0.852	D	0.984	E	0.873	D	0.03	0.02	YES	YES
5	Temple Ave/Mt. SAC Way	Signalized	Walnut	0.639	B	0.703	C	0.675	B	0.689	B	0.04	-0.01	NO	NO
9	Temple Ave/ University Dr	Signalized	Pomona	0.862	D	0.714	C	0.839	D	0.735	C	-0.02	0.02	NO	NO
10	Temple Ave/ Campus Dr	Signalized	Pomona	1.034	F	0.804	D	1.004	F	0.815	D	-0.03	0.01	NO	NO
11	Kellogg Dr/ Campus Dr	Signalized	Pomona	0.873	D	0.601	B	0.843	D	0.549	A	-0.03	-0.05	NO	NO
12	Temple Ave/ Valley Blvd	Signalized	Pomona	0.979	E	0.811	D	0.882	D	0.825	D	-0.10	0.01	NO	NO
13	Temple Ave/ Pomona Blvd	Signalized	Pomona	1.055	F	1.176	F	1.011	F	1.135	F	-0.04	-0.04	NO	NO
18	Holt Ave/Grand Ave	Signalized	West Covina	1.066	F	0.644	B	0.958	E	0.665	B	-0.11	0.02	NO	NO
21	Cameron Ave/ Grand Ave	Signalized	LA County	1.174	F	0.796	C	1.017	F	0.721	C	-0.16	-0.07	NO	NO
22	Mountaineer Rd/ Grand Ave	Signalized	Walnut	0.748	C	0.788	C	0.777	C	0.825	D	0.03	0.04	NO	YES
23	San Jose Hills Rd/ Grand Ave	Signalized	Walnut	0.967	E	0.935	E	0.948	E	0.777	C	-0.02	-0.16	NO	NO
24	La Puente Rd/ Grand Ave	Signalized	Walnut	1.080	F	0.929	E	1.079	F	0.926	E	0.00	0.00	NO	NO
25	Valley Blvd/ Grand Ave	Signalized	Walnut	0.957	E	0.895	D	0.983	E	0.912	E	0.03	0.02	YES	YES

Highlighted cells indicate LOS E or F OR indicate significant impact

However, the implementation of the identified improvements is subject to the approval of the cities of Walnut, Pomona, and West Covina as well as the County of Los Angeles. While Mt. SAC would work with these jurisdictions to implement the recommended improvements, Mt. SAC does not have the legal ability to compel these agencies to implement the improvements needed to mitigate this impact to a level of insignificance. As such, the impacts would be **significant and unavoidable** and a statement of overriding considerations is needed.

Travel demand management (TDM) strategies included as part of the proposed EFMP may help reduce the project traffic overall and therefore further reduce the project impacts at study area intersections. For example, the construction of the Transit Center on campus, along with complementary programs (i.e. bike storage, bike share, etc.), may help shift student, staff, and faculty trips from personal vehicles to transit, therefore reducing campus vehicular traffic and reducing the severity of project impacts. However, even with implementation of TDM strategies, the project impacts at study area intersections would be **significant and unavoidable.**

8. CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

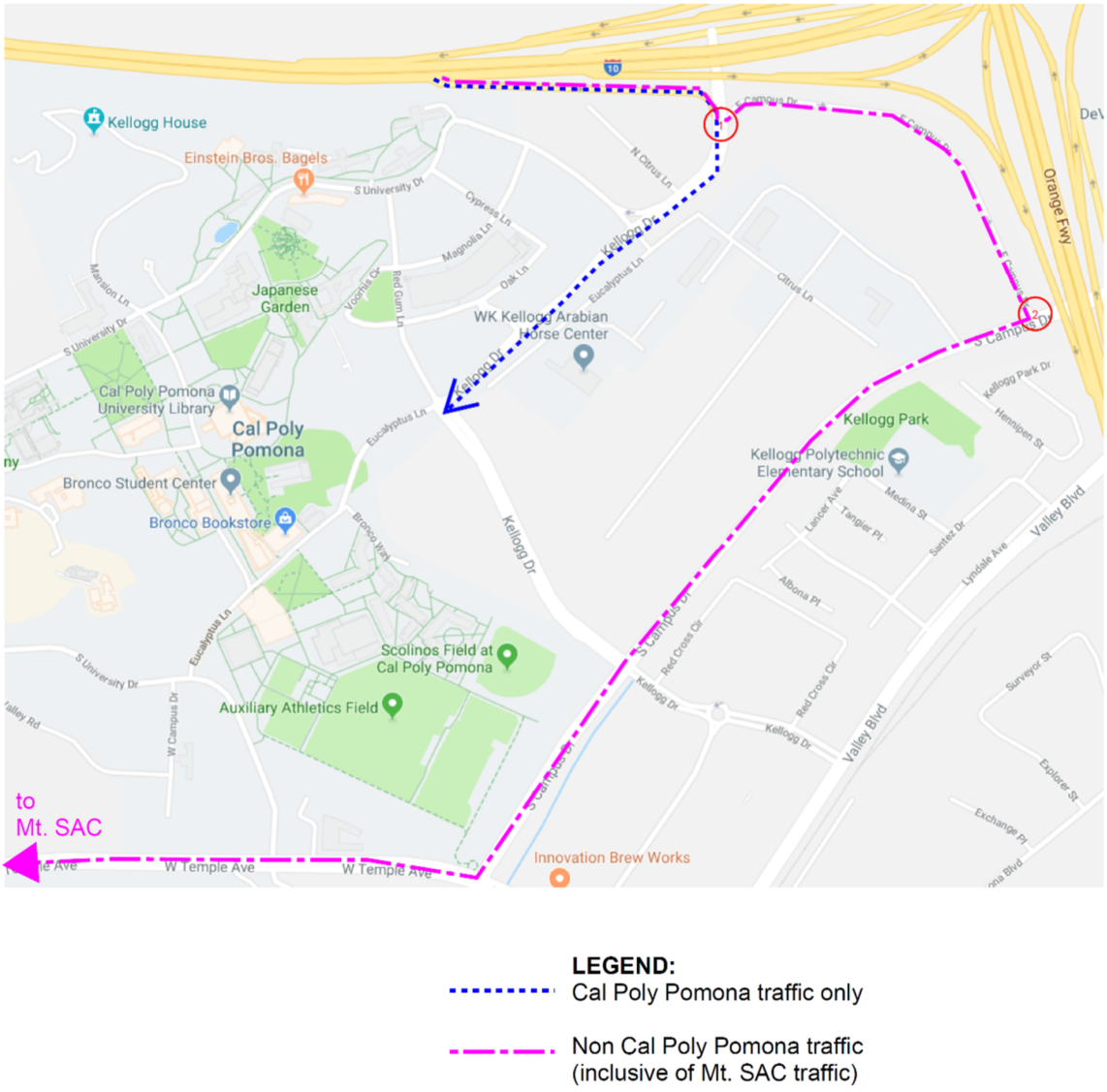
After the initial draft of this document was prepared, Mt. SAC was approached by officials involved in the master planning effort currently underway at California State Polytechnic University, Pomona (Cal Poly Pomona) regarding a traffic concern on the Cal Poly Pomona campus. Given the existing roadway network, drivers traveling eastbound along I-10 wishing to reach Mt. SAC or other areas in the vicinity can exit the freeway at Grand Avenue or at Kellogg Drive. If choosing to use the Kellogg Drive exit, the design of the interchange forces drivers to travel through the Cal Poly Pomona campus to South Campus Drive, and eventually to Temple Avenue or Valley Boulevard. This cut-through traffic is a concern for Cal Poly Pomona, both due to operations and due to the potential additional conflicts with the added non-campus traffic traveling through the area.

Although there is no available data to support the theory, it is likely that a considerable portion of the cut-through traffic which eventually reaches Temple Avenue is traveling to Mt. SAC. When approached by Cal Poly Pomona, Mt. SAC agreed that the presence of cut-through traffic on a campus can create concerns. Further, although the I-10 eastbound off-ramp/Kellogg Drive/East Campus Drive and East Campus Drive/South Campus Drive intersections are outside the study area for this analysis, Mt. SAC also agreed that a qualitative discussion of the issue and potential recommendations could be provided in this document as a precursor to future analyses.

To help reduce and potentially eliminate cut-through traffic, the I-10 eastbound off-ramp/Kellogg Drive/East Campus Drive intersection would need to be reconstructed. If the intersection allowed for a through movement from the off-ramp to East Campus Drive, the East Campus Drive segment between Kellogg Drive and South Campus Drive (see Figure 22) could serve as a bypass of the central portion of the Cal Poly Pomona campus. Drivers would then use South Campus Drive to access Temple Avenue. Cal Poly Pomona traffic would continue to turn right when exiting I-10 at Kellogg Drive, traveling into the center of campus.

This potential realignment and redistribution of traffic will need to be studied in detail to determine what changes and/or improvements would be feasible, and what improvements would be needed (i.e. traffic control).

Figure 22. Cal Poly Pomona Potential Bypass



It is recommended that Cal Poly Pomona conduct the analysis in conjunction with their ongoing master planning process. Further, Caltrans should be included in the discussion and development of recommendations.

9. FAIR SHARE CONTRIBUTION

It is anticipated that the project will contribute its fair share towards the cost of the mitigation measures listed in Sections 6.5 and 7.5. The project fair share (where applicable) was calculated for each of the intersections requiring mitigation based on the Caltrans methodology, which indicates that the fair share percentage is equal to the percentage of the total new trips which are generated by the project.

Table 13 shows the project fair share contribution; for instances where an intersection has impacts in both peak hours, the fair share is assumed to be an average of the two peak hour calculations. If the significant impact is only in one peak hour, the fair share contribution for the intersection is equal to the percentage calculated for the affected peak hour.

Table 13. Project Fair Share Contribution

Intersection		2021 Cumulative Plus Project			2027 Cumulative Plus Project		
		AM Peak Hour	PM Peak Hour	Fair Share	AM Peak Hour	PM Peak Hour	Fair Share
1	Amar Rd/Nogales St	N/A			12%	N/A	**12%**
3	Amar Rd/Meadow Pass Rd	N/A			Impact is significant and unavoidable.		
4	Temple Ave/Grand Ave	Impact is significant and unavoidable.					
5	Temple Ave/Mt. SAC Way	N/A			N/A	72%	**72%**
9	Temple Ave/University Dr	52%	N/A	**52%**	60%	N/A	**60%**
10	Temple Ave/Campus Dr	49%	N/A	**49%**	53%	50%	**51%**
11	Kellogg Dr/Campus Dr	N/A			38%	N/A	**38%**
12	Temple Ave/Valley Blvd	30%	N/A	**30%**	22%	N/A	**22%**
13	Temple Ave/Pomona Blvd	N/A			N/A	18%	**18%**
18	Holt Ave/Grand Ave	28%	N/A	**28%**	49%	N/A	**49%**
21	Cameron Ave/Grand Ave	30%	N/A	**30%**	50%	58%	**54%**
22	Mountaineer Rd/Grand Ave	N/A			Impact is significant and unavoidable.		
23	San Jose Hills Rd/Grand Ave	35%	29%	**32%**	54%	57%	**55%**
24	La Puente Rd/Grand Ave	27%	23%	**25%**	36%	38%	**37%**
25	Valley Blvd/Grand Ave	Impact is significant and unavoidable.					

N/A - No impact during the listed time period and/or analysis year

10. CONGESTION MANAGEMENT PROGRAM (CMP) ANALYSIS

The Congestion Management Program (CMP) has been implemented by the Los Angeles County Metropolitan Transportation Authority (Metro). The CMP for Los Angeles County requires that the potential regional traffic impact for development projects be analyzed. According to the CMP traffic impact analysis guidelines, a CMP traffic analysis is required for the following locations:

- CMP arterial monitoring intersections where the proposed project would add 50 or more trips during either the AM or PM weekday peak hours
- CMP freeway monitoring segments where the proposed project would add 150 or more trips in either direction during either the AM or PM weekday peak hours

The project is not expected to add 50 or more peak hour trips to any CMP intersections and is not expected to add 150 or more peak hour trips in either direction to any of the CMP freeway segments. Therefore, no CMP analysis for arterial monitoring intersections or freeway monitoring segments is required.

10.1. TRANSIT IMPACT ANALYSIS

The CMP also includes methodology for estimating the number of transit trips expected to be generated by the proposed project. The methodology assumes a factor of 1.4 person-trips for each trip generated by the project and assigns 3.5% of total person trips to the transit network. Using these guidelines, the project is expected to generate 10 new peak hour trips in the interim year of 2021 and 26 new peak hour trips at buildout (2027).

It is not expected that this increase in peak hour trips would result in a significant impact on transit operations, particularly given that the campus is currently served by five Foothill Transit routes.

11. SUMMARY

This traffic study provided an evaluation of the potential traffic impacts from the anticipated growth at Mt. San Antonio College, which is based on assumptions in the EFMP. The EFMP documents include recommendations for constructing new buildings and new parking structures on campus to serve the anticipated population growth of the College; based on the high growth rate in the EFMP, nearly 4,900 new students are expected by 2027. With input from Mt. SAC and the Cities of Walnut, Pomona, West Covina, Diamond Bar, and Industry, 28 intersections were evaluated in this study along with two segments of Caltrans facilities.

Under existing conditions, the following nine intersections are operating at LOS E or worse in either the AM or PM peak hour:

4. Temple Avenue/Grand Avenue (AM peak hour)
10. Temple Avenue/Campus Drive (AM peak hour)
12. Temple Avenue/Valley Boulevard (AM peak hour)
13. Temple Avenue/Pomona Boulevard (AM and PM peak hours)
18. Holt Avenue/Grand Avenue (AM peak hour)
21. Cameron Avenue/Grand Avenue (AM peak hour)
23. San Jose Hills Road/Grand Avenue (AM peak hour)
24. La Puente Road/Grand Avenue (AM peak hour)
25. Valley Boulevard/Grand Avenue (AM peak hour)

In addition, the worst minor-street (stop controlled) movement at the intersections of Cortez Street and Grand Avenue (#19, both peak hours) and Cameron Avenue and Barranca Street (#20, AM peak hour) operate at LOS E or worse. Recall that for two-way stop-controlled intersections (such as Cortez Street/Grand Avenue and Cameron Avenue/Barranca Street), there is no defined intersection LOS.

In the interim analysis year of 2021, the project is expected to generate 2,164 new daily trips, including 207 trips in each peak hour. In 2027, the project is expected to generate 5,613 daily trips, including 537 in each peak hour. Based on the anticipated project traffic and other cumulative traffic volume increases, the project is anticipated to have a significant impact at 15 of the study intersections in at least one of the analysis years.

Table 14 shows the mitigation measures at each of the intersections in each scenario. As seen in the table, the mitigation measure(s) listed under the existing plus project scenario would also be effective in mitigating the impacts to a less-than-significant impact in the interim and buildout study years except for the mitigation measures at Temple Avenue and Grand Avenue. Note that any mitigation listed in the existing plus project condition is the full responsibility of the project.

Many of the mitigation measures consist of relatively simple striping and/or signal phasing changes at the intersection. Mitigation measures at the intersection of Cameron Avenue and Grand Avenue will require some physical reconstruction. At locations where a right turn lane is converted to a shared thru-right turn lane, striping will also be required on the downstream leg of the intersection.

The four intersections of Amar Road/Meadow Pass Road, Temple Avenue/Grand Avenue, Mountaineer Road/Grand Avenue and Valley Boulevard/Grand Avenue will have **significant and unavoidable** impacts. The impacts at the Temple Avenue/Grand Avenue intersection can be partially mitigated with the measures listed above for existing and 2027 conditions and will be fully mitigated in 2021. Therefore, a statement of overriding considerations is required for these four intersections.

In addition, the implementation of the identified improvements is subject to the approval of the cities of Walnut, Pomona, and West Covina as well as the County of Los Angeles. While Mt. SAC would work with these jurisdictions to implement the recommended improvements, Mt. SAC does not have the legal ability to compel these agencies to implement the improvements needed to mitigate this impact to a level of insignificance. Therefore, the impacts would be **significant and unavoidable** and a statement of overriding considerations is needed.

However, travel demand management strategies, such as the addition of a Transit Center on campus or improved bicycle facilities and access, may help reduce overall project traffic and therefore further reduce the project impact on the listed intersections. Additionally, increasing the cost of parking on campus and/or providing incentives for carpooling may further reduce demand. For purposes of this analysis, however, impacts would remain **significant and unavoidable** and would require a statement of overriding considerations.

Table 14. Summary of Mitigation Measures

Intersection			Mitigation Measures		
			Existing + Project	2021 + Project	2027 + Project
1	Amar Rd	Nogales St	N/A	N/A	**Convert EB right turn lane to shared thru-right turn lane (striping only)**
3	Amar Rd	Meadow Pass Rd	N/A	N/A	No improvements are feasible due to ROW constraints
4*	Temple Ave	Grand Ave	**Convert EB right turn lane to shared thru-right turn lane (striping only)**	Same as Existing	Same as Existing
			Convert WB right turn lane to shared thru-right turn lane (striping only)	Same as Existing	Same as Existing
5	Temple Ave	Mt SAC Way	N/A	N/A	**Convert WB right turn lane to shared thru-right turn lane (striping only)**
9	Temple Ave	University Dr	**Convert WB right turn lane to shared thru-right turn lane (striping only)**	Same as Existing	Same as Existing
10	Temple Ave	Campus Dr	**Convert WB right turn lane to shared thru-right turn lane (striping only)**	Same as Existing	Same as Existing
11	Kellogg Dr	Campus Dr	**Convert shared EB thru-right turn lane to exclusive right turn lane (striping only)**	N/A	Same as Existing
12	Temple Ave	Valley Blvd	**Add second NB left turn lane (striping only)**	Same as Existing	Same as Existing
13	Temple Ave	Pomona Blvd	**Convert SB to two left turn lanes and shared thru-right turn lane (striping and sign removal only)**	N/A	Same as Existing
18	Holt Ave	Grand Ave	**Covert SB right turn lane to shared thru-right turn lane**	Same as Existing	Same as Existing
21	Cameron Ave	Grand Ave	**Add second EB right turn lane (striping only)**	Same as Existing	Same as Existing
22	Mountaineer Rd	Grand Ave	No improvements are feasible due to ROW constraints		
23	San Jose Hills Rd	Grand Ave	**Convert WB thru lane to shared thru-left turn lane (striping only)**	Same as Existing	Same as Existing
			Convert NB right turn lane to shared thru-right turn lane (striping only)	Same as Existing	Same as Existing
24	La Puente Rd	Grand Ave	**Modify the signal to include an EB right turn overlap**	Same as Existing	Same as Existing
25	Valley Blvd	Grand Ave	Intersection is built out and no improvements are feasible due to ROW constraints		

N/A - No impact during the listed time period and/or analysis year

*Recommendations will fully mitigate project impact for 2021, but not for existing or 2027 conditions.

Indicates intersection where no improvements are feasible

Lastly, because parking needs may change over time due to the construction of the Transit Center and the general shift of trips away from personal vehicles, the structure in Lot F may not be needed when initially indicated, if at all. Although the EFMP and PCMP both include a recommendation to build a parking structure in Lot F, the demand management strategies previously discussed and the general changing nature of how people travel may delay or eliminate the need for a structure in Lot F. Further, the projected traffic volumes in this study are not contingent on the construction of the structure, and it is not expected that there would be any additional impacts to the study intersections if the structure was not constructed by 2027.

Estimates in the PCMP show that the structure in Lot F will eliminate approximately 800 parking spaces during construction, and that construction will take approximately 18 months. It is recommended that parking demand data be collected in the third week (census week) of the fall semester on a regular basis (i.e. every year, every other year). A parking generation rate should be calculated as the total demand divided by the total number of students, and the rate should be compared to previous years to determine how the parking rate per student is changing over time. (Note that traffic volume counts may not be directly related to parking demand; students who are dropped off and/or picked up on campus contribute to the overall trip generation, but not to the parking needs.)

The student growth rate and parking generation rate can then be used to estimate future parking demand for the future school years; if the estimated demand two years in the future from the current year of data collection would result in fewer than 1,000 surplus parking spaces, the College should move forward with the construction of a parking structure in Lot F. Otherwise, it is expected that the campus will continue to have sufficient parking until the next data collection period.

12. REFERENCES

[1] *Mt. San Antonio College Draft 2018 Educational and Facilities Master Plan*. http://www.mtsac.edu/efmp/Draft_EFMP.html, accessed August 2018, dated May 9, 2018.

[2] *Mt. San Antonio College 2017 Parking and Circulation Master Plan*. Psomas, November 2017.

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[4] *2010 Congestion Management Program.* Los Angeles County Metropolitan Transportation Authority, 2010.

[5] *Traffic Impact Analysis Report Guidelines*. Los Angeles County, December 2013 (Draft Update).

[6] *Highway Capacity Manual, 6th Edition*. Transportation Research Board, October 2016.

[7] Transportation Impact Study Guidelines. City of Los Angeles Department of Transportation (LADOT), 2016

[8] City of Walnut General Plan, City of Walnut, 2018.

[9] City of Pomona General Plan Update. City of Pomona, 2014.

[10] Foothill Transit, system map. http://foothilltransit.org/wp-content/uploads/2018/06/system-map-20180624-la.pdf, accessed September 2018.

[11] Caltrans Traffic Volumes. http://www.dot.ca.gov/trafficops/census/, accessed September 2018.

[12] *Trip Generation Manual 10th Edition*. Institute of Transportation Engineers, Washington D.C., 2017.

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Appendix A – Traffic Volume Data

National Data & Surveying Services

Intersection Turning Movement Count

Location: Nogales St & Amar Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-001
Date: 5/9/2018

Total

NS/EW Streets:	Nogales St				Nogales St				Amar Rd				Amar Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	138	1	24	2	4	3	6	0	1	210	81	3	17	211	2	0	703
7:15 AM	159	2	52	0	2	4	5	0	5	300	120	1	29	255	2	0	936
7:30 AM	167	4	42	0	2	3	5	0	3	337	157	1	29	240	0	1	991
7:45 AM	152	1	65	0	6	3	5	0	3	301	128	2	31	212	1	0	910
8:00 AM	174	3	51	0	3	5	6	0	4	265	122	0	30	208	0	0	871
8:15 AM	170	3	47	0	3	1	6	0	1	182	127	1	28	233	1	0	803
8:30 AM	147	0	42	0	0	5	2	0	2	171	131	1	46	191	1	0	739
8:45 AM	128	1	39	0	1	2	7	0	4	176	112	2	42	147	1	0	662
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1235	15	362	2	21	26	42	0	23	1942	978	11	252	1697	8	1	6615
APPROACH %'s :	76.52%	0.93%	22.43%	0.12%	23.60%	29.21%	47.19%	0.00%	0.78%	65.74%	33.11%	0.37%	12.87%	86.67%	0.41%	0.05%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	652	10	210	0	13	15	21	0	15	1203	527	4	119	915	3	1	3708
PEAK HR FACTOR :	0.937	0.625	0.808	0.000	0.542	0.750	0.875	0.000	0.750	0.892	0.839	0.500	0.960	0.897	0.375	0.250	0.935
	0.956				0.875				0.878				0.907				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0	1	0	0	1	2	1	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	182	5	75	0	1	4	0	0	3	213	116	6	37	189	0	1	832
4:15 PM	187	2	48	0	5	1	1	0	1	219	105	3	45	182	1	0	800
4:30 PM	206	5	47	1	0	1	3	0	1	215	100	2	51	204	1	0	837
4:45 PM	165	4	53	0	4	1	2	0	3	244	123	5	38	185	4	1	832
5:00 PM	173	1	54	0	1	4	1	0	2	253	127	4	50	216	1	2	889
5:15 PM	175	3	52	0	3	0	0	0	0	280	140	3	51	215	0	0	922
5:30 PM	175	3	55	0	1	2	4	0	4	250	135	6	51	255	1	1	943
5:45 PM	169	4	41	0	2	2	2	0	3	291	117	3	36	218	4	2	894
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1432	27	425	1	17	15	13	0	17	1965	963	32	359	1664	12	7	6949
APPROACH %'s :	75.97%	1.43%	22.55%	0.05%	37.78%	33.33%	28.89%	0.00%	0.57%	66.01%	32.35%	1.07%	17.58%	81.49%	0.59%	0.34%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	692	11	202	0	7	8	7	0	9	1074	519	16	188	904	6	5	3648
PEAK HR FACTOR :	0.989	0.688	0.918	0.000	0.583	0.500	0.438	0.000	0.563	0.923	0.927	0.667	0.922	0.886	0.375	0.625	0.967
	0.971				0.786				0.956				0.895				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Lemon Ave & Amar Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-002
Date: 5/9/2018

Total

NS/EW Streets:	Lemon Ave				Lemon Ave				Amar Rd				Amar Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0.5	0.5	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	31	6	15	0	1	6	0	0	4	150	53	0	5	203	4	0	478
7:15 AM	51	12	20	2	9	16	3	0	3	230	90	1	15	175	3	0	630
7:30 AM	61	9	28	0	12	18	3	0	7	299	91	0	15	167	3	0	713
7:45 AM	63	12	23	0	5	6	6	0	0	263	72	0	24	168	3	0	645
8:00 AM	47	6	19	0	8	11	11	0	4	240	58	1	16	168	3	0	592
8:15 AM	46	6	39	0	19	12	13	0	6	222	37	0	18	160	3	0	581
8:30 AM	24	4	27	0	6	11	7	0	1	168	34	0	29	208	10	0	529
8:45 AM	38	4	10	2	4	6	6	0	5	167	45	0	29	137	3	0	456
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	361	59	181	4	64	86	49	0	30	1739	480	2	151	1386	32	0	4624
APPROACH %'s :	59.67%	9.75%	29.92%	0.66%	32.16%	43.22%	24.62%	0.00%	1.33%	77.25%	21.32%	0.09%	9.62%	88.34%	2.04%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	222	39	90	2	34	51	23	0	14	1032	311	2	70	678	12	0	2580
PEAK HR FACTOR :	0.881	0.813	0.804	0.250	0.708	0.708	0.523	0.000	0.500	0.863	0.854	0.500	0.729	0.969	1.000	0.000	0.905
		0.901				0.818				0.856				0.974			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0.5	1	0	0.5	0.5	1	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	51	2	22	1	6	11	6	0	8	201	30	1	11	185	2	0	537
4:15 PM	41	9	25	0	11	9	8	0	8	240	30	0	19	184	6	0	590
4:30 PM	47	8	20	0	4	4	6	0	7	199	31	1	28	213	5	0	573
4:45 PM	42	4	21	1	8	4	2	0	5	239	49	0	12	204	6	0	597
5:00 PM	71	11	22	1	4	4	8	0	5	215	59	0	18	190	10	0	618
5:15 PM	67	12	28	0	7	5	0	0	3	220	38	0	16	238	3	0	637
5:30 PM	75	14	29	1	5	8	6	0	7	219	38	0	28	224	9	0	663
5:45 PM	80	6	27	0	11	5	4	0	7	236	33	0	29	213	8	0	659
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	474	66	194	4	56	50	40	0	50	1769	308	2	161	1651	49	0	4874
APPROACH %'s :	64.23%	8.94%	26.29%	0.54%	38.36%	34.25%	27.40%	0.00%	2.35%	83.09%	14.47%	0.09%	8.65%	88.72%	2.63%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	293	43	106	2	27	22	18	0	22	890	168	0	91	865	30	0	2577
PEAK HR FACTOR :	0.916	0.768	0.914	0.500	0.614	0.688	0.563	0.000	0.786	0.943	0.712	0.000	0.784	0.909	0.750	0.000	0.972
		0.933				0.838				0.968				0.944			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Meadow Pass Rd & Amar Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-003
Date: 5/9/2018

Total

NS/EW Streets:	Meadow Pass Rd				Meadow Pass Rd				Amar Rd				Amar Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	7	7	19	0	8	18	7	0	1	164	8	0	19	192	3	0	453
7:15 AM	10	20	28	0	9	50	7	0	0	238	22	0	53	199	0	1	637
7:30 AM	18	59	56	0	9	45	9	0	6	275	11	0	45	150	2	0	685
7:45 AM	13	42	59	0	12	19	12	0	7	318	4	0	18	188	3	0	695
8:00 AM	9	27	36	0	4	8	8	0	10	242	1	0	21	215	6	0	587
8:15 AM	29	34	40	0	31	31	31	0	9	223	6	4	38	222	7	0	705
8:30 AM	24	18	39	0	66	67	39	0	8	174	2	2	31	212	12	0	694
8:45 AM	3	6	32	0	20	19	8	0	5	175	6	0	15	126	4	0	419
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	113	213	309	0	159	257	121	0	46	1809	60	6	240	1504	37	1	4875
APPROACH %'s :	17.80%	33.54%	48.66%	0.00%	29.61%	47.86%	22.53%	0.00%	2.39%	94.17%	3.12%	0.31%	13.47%	84.40%	2.08%	0.06%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	75	121	174	0	113	125	90	0	34	957	13	6	108	837	28	0	2681
PEAK HR FACTOR :	0.647	0.720	0.737	0.000	0.428	0.466	0.577	0.000	0.850	0.752	0.542	0.375	0.711	0.943	0.583	0.000	0.951
			0.811				0.477				0.767				0.911		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	14	37	0	8	9	5	0	7	232	2	0	24	210	3	0	554
4:15 PM	3	17	38	0	9	11	5	0	8	236	4	0	21	209	3	1	565
4:30 PM	7	11	25	0	8	15	4	0	5	208	5	0	34	224	6	0	552
4:45 PM	2	15	48	0	4	8	7	0	7	247	4	0	29	218	7	1	597
5:00 PM	3	21	42	0	7	12	12	0	5	217	4	0	31	218	13	1	586
5:15 PM	2	22	36	0	11	14	11	0	8	251	8	0	32	258	7	1	661
5:30 PM	6	27	37	0	7	5	4	0	6	213	2	1	28	252	12	0	600
5:45 PM	6	20	51	1	9	14	6	0	6	298	6	0	34	261	11	0	723
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	32	147	314	1	63	88	54	0	52	1902	35	1	233	1850	62	4	4838
APPROACH %'s :	6.48%	29.76%	63.56%	0.20%	30.73%	42.93%	26.34%	0.00%	2.61%	95.58%	1.76%	0.05%	10.84%	86.09%	2.89%	0.19%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	17	90	166	1	34	45	33	0	25	979	20	1	125	989	43	2	2570
PEAK HR FACTOR :	0.708	0.833	0.814	0.250	0.773	0.804	0.688	0.000	0.781	0.821	0.625	0.250	0.919	0.947	0.827	0.500	0.889
			0.878				0.778				0.827				0.947		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-004
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	24	184	97	0	51	235	39	1	50	121	22	0	13	174	47	0	1058
7:15 AM	39	281	152	0	87	306	65	0	59	137	35	0	13	107	40	0	1321
7:30 AM	36	279	138	0	73	253	37	0	84	221	42	0	24	119	48	0	1354
7:45 AM	45	347	181	0	73	263	52	1	73	188	50	1	20	101	47	0	1442
8:00 AM	62	241	142	0	80	211	62	0	80	173	29	0	26	113	57	0	1276
8:15 AM	72	236	143	0	82	261	80	1	65	142	48	0	19	71	38	0	1258
8:30 AM	65	198	108	0	52	183	58	0	75	152	55	0	20	80	30	0	1076
8:45 AM	39	164	87	0	69	269	48	0	58	122	37	0	17	66	23	0	999
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	382	1930	1048	0	567	1981	441	3	544	1256	318	1	152	831	330	0	9784
APPROACH %'s :	11.37%	57.44%	31.19%	0.00%	18.95%	66.21%	14.74%	0.10%	25.67%	59.27%	15.01%	0.05%	11.58%	63.29%	25.13%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	182	1148	613	0	313	1033	216	1	296	719	156	1	83	440	192	0	5393
PEAK HR FACTOR :	0.734	0.827	0.847	0.000	0.899	0.844	0.831	0.250	0.881	0.813	0.780	0.250	0.798	0.924	0.842	0.000	0.935
		0.848				0.853				0.844				0.912			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	0	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	54	257	52	0	56	152	64	0	72	133	67	1	61	146	63	0	1178
4:15 PM	69	227	63	0	68	189	70	0	86	150	52	1	80	128	63	0	1246
4:30 PM	54	225	68	0	48	194	75	0	80	128	65	0	102	163	84	0	1286
4:45 PM	82	218	77	0	51	201	66	1	79	142	54	1	73	129	53	0	1227
5:00 PM	76	247	61	0	57	190	61	0	90	143	69	1	73	155	64	0	1287
5:15 PM	83	351	79	0	64	189	84	1	81	142	56	0	46	149	50	0	1375
5:30 PM	78	264	86	0	71	175	88	0	101	163	56	0	45	164	65	0	1356
5:45 PM	84	306	90	0	69	219	70	0	84	147	61	0	55	141	71	0	1397
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	580	2095	576	0	484	1509	578	2	673	1148	480	4	535	1175	513	0	10352
APPROACH %'s :	17.84%	64.44%	17.72%	0.00%	18.81%	58.65%	22.46%	0.08%	29.20%	49.80%	20.82%	0.17%	24.07%	52.86%	23.08%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	321	1168	316	0	261	773	303	1	356	595	242	1	219	609	250	0	5415
PEAK HR FACTOR :	0.955	0.832	0.878	0.000	0.919	0.882	0.861	0.250	0.881	0.913	0.877	0.250	0.750	0.928	0.880	0.000	0.969
		0.880				0.934				0.933				0.923			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mt. SAC Way & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-005
Date: 5/9/2018

Total

NS/EW Streets:	Mt. SAC Way				Mt. SAC Way				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0.5	0.5	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	2	2	0	9	3	11	1	79	174	7	0	5	195	58	1	549
7:15 AM	2	4	1	0	11	1	17	0	81	252	24	0	7	174	68	1	643
7:30 AM	0	3	0	0	7	7	25	0	89	310	39	1	11	150	64	1	707
7:45 AM	2	1	2	0	24	3	25	0	79	294	59	0	16	141	56	3	705
8:00 AM	3	2	0	0	12	7	36	0	57	307	43	2	18	163	31	0	681
8:15 AM	2	3	1	0	16	10	13	0	39	286	38	0	7	114	17	1	547
8:30 AM	3	3	2	0	8	10	18	0	24	294	39	0	4	108	19	2	534
8:45 AM	4	5	0	0	21	15	13	0	20	223	30	0	6	95	18	1	451
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	18	23	8	0	108	56	158	1	468	2140	279	3	74	1140	331	10	4817
APPROACH %'s :	36.73%	46.94%	16.33%	0.00%	33.44%	17.34%	48.92%	0.31%	16.19%	74.05%	9.65%	0.10%	4.76%	73.31%	21.29%	0.64%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	7	10	3	0	54	18	103	0	306	1163	165	3	52	628	219	5	2736
PEAK HR FACTOR :	0.583	0.625	0.375	0.000	0.563	0.643	0.715	0.000	0.860	0.938	0.699	0.375	0.722	0.902	0.805	0.417	0.967
	0.714				0.795				0.932				0.904				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0.5	0.5	1	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	22	3	4	0	21	6	32	0	45	178	17	0	2	204	12	1	547
4:15 PM	47	4	6	0	41	5	72	0	45	222	10	1	2	175	21	1	652
4:30 PM	44	3	7	0	60	2	86	0	50	205	11	0	5	224	14	3	714
4:45 PM	28	0	7	0	26	4	37	0	64	207	9	0	2	188	23	2	597
5:00 PM	30	3	5	0	36	0	49	0	40	191	6	0	3	203	19	2	587
5:15 PM	15	3	2	0	29	2	36	0	46	242	7	0	1	206	17	0	606
5:30 PM	14	4	7	0	26	1	28	0	41	268	8	0	0	212	17	3	629
5:45 PM	23	1	2	0	36	2	48	0	46	252	13	0	1	213	21	3	661
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	223	21	40	0	275	22	388	0	377	1765	81	1	16	1625	144	15	4993
APPROACH %'s :	78.52%	7.39%	14.08%	0.00%	40.15%	3.21%	56.64%	0.00%	16.95%	79.36%	3.64%	0.04%	0.89%	90.28%	8.00%	0.83%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	149	10	25	0	163	11	244	0	199	825	36	1	12	790	77	8	2550
PEAK HR FACTOR :	0.793	0.625	0.893	0.000	0.679	0.550	0.709	0.000	0.777	0.929	0.818	0.250	0.600	0.882	0.837	0.667	0.893
	0.807				0.706				0.947				0.901				

Prepared by NDS/ATD

VOLUME

W Temple Ave & Transit Center

Day: Tuesday
Date: 3/27/2018

City: Walnut
Project #: CA18_5194_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,436	13,967	27,403

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			15		30		45		12:00			188		257		445	
00:15			6		29		35		12:15			187		178		365	
00:30			13		6		19		12:30			169		202		371	
00:45			6	40	9	74	15	114	12:45			187	731	186	823	373	1554
01:00			4		8		12		13:00			243		288		531	
01:15			4		11		15		13:15			162		257		419	
01:30			5		10		15		13:30			168		171		339	
01:45			4	17	8	37	12	54	13:45			180	753	183	899	363	1652
02:00			13		9		22		14:00			190		210		400	
02:15			3		8		11		14:15			206		179		385	
02:30			9		4		13		14:30			198		241		439	
02:45			4	29	6	27	10	56	14:45			268	862	252	882	520	1744
03:00			4		6		10		15:00			228		295		523	
03:15			6		4		10		15:15			200		261		461	
03:30			9		6		15		15:30			182		201		383	
03:45			9	28	6	22	15	50	15:45			213	823	196	953	409	1776
04:00			14		8		22		16:00			232		221		453	
04:15			16		17		33		16:15			281		194		475	
04:30			14		15		29		16:30			246		307		553	
04:45			26	70	38	78	64	148	16:45			259	1018	245	967	504	1985
05:00			22		42		64		17:00			246		268		514	
05:15			16		68		84		17:15			278		244		522	
05:30			44		92		136		17:30			263		237		500	
05:45			61	143	111	313	172	456	17:45			227	1014	263	1012	490	2026
06:00			44		128		172		18:00			215		254		469	
06:15			62		190		252		18:15			299		201		500	
06:30			101		211		312		18:30			336		230		566	
06:45			119	326	218	747	337	1073	18:45			304	1154	222	907	526	2061
07:00			195		234		429		19:00			188		162		350	
07:15			317		268		585		19:15			162		131		293	
07:30			321		221		542		19:30			121		124		245	
07:45			382	1215	215	938	597	2153	19:45			120	591	133	550	253	1141
08:00			292		210		502		20:00			120		144		264	
08:15			288		165		453		20:15			130		122		252	
08:30			235		144		379		20:30			174		112		286	
08:45			226	1041	166	685	392	1726	20:45			105	529	154	532	259	1061
09:00			206		169		375		21:00			115		135		250	
09:15			257		190		447		21:15			106		107		213	
09:30			312		231		543		21:30			97		125		222	
09:45			197	972	169	759	366	1731	21:45			98	416	133	500	231	916
10:00			143		183		326		22:00			125		242		367	
10:15			113		136		249		22:15			88		111		199	
10:30			131		147		278		22:30			44		61		105	
10:45			145	532	192	658	337	1190	22:45			29	286	42	456	71	742
11:00			143		244		387		23:00			25		34		59	
11:15			216		253		469		23:15			20		31		51	
11:30			198		290		488		23:30			25		26		51	
11:45			202	759	247	1034	449	1793	23:45			17	87	23	114	40	201
TOTALS				5172		5372		10544	TOTALS				8264		8595		16859
SPLIT %				49.1%		50.9%		38.5%	SPLIT %				49.0%		51.0%		61.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	13,436	13,967	27,403

AM Peak Hour			07:15	11:15	07:15	PM Peak Hour			18:00	16:30	16:30
AM Pk Volume			1312	1047	2226	PM Pk Volume			1154	1064	2093
Pk Hr Factor			0.859	0.903	0.932	Pk Hr Factor			0.859	0.866	0.946
7 - 9 Volume	0	0	2256	1623	3879	4 - 6 Volume	0	0	2032	1979	4011
7 - 9 Peak Hour			07:15	07:00	07:15	4 - 6 Peak Hour			16:45	16:30	16:30
7 - 9 Pk Volume	0	0	1312	938	2226	4 - 6 Pk Volume	0	0	1046	1064	2093
Pk Hr Factor	0.000	0.000	0.859	0.875	0.932	Pk Hr Factor	0.000	0.000	0.941	0.866	0.946

National Data & Surveying Services

Intersection Turning Movement Count

Location: Transit Center & Temple Ave
City: Walnut
Control: 1-Way Stop (SB)

Project ID: 18-5195-001
Date: 3/27/2018

Total

NS/EW Streets:	Transit Center Dwy				Transit Center Dwy				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
3:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
4:45 AM	0	0	0	0	0	0	1	0	9	0	0	0	0	0	8	0	18
5:00 AM	0	0	0	0	3	0	0	0	2	0	0	0	0	0	4	0	9
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	1	0	0	0	3	0	0	0	0	0	1	0	5
5:45 AM	0	0	0	0	6	0	2	0	1	0	0	0	0	0	4	0	13
6:00 AM	0	0	0	0	6	0	3	0	1	0	0	0	0	0	7	0	17
6:15 AM	0	0	0	0	5	0	1	0	0	0	0	0	0	0	14	0	20
6:30 AM	0	0	0	0	4	0	1	0	2	0	0	0	0	0	21	0	28
6:45 AM	0	0	0	0	5	0	3	0	3	0	0	0	0	0	25	0	36
7:00 AM	0	0	0	0	0	0	1	0	4	0	0	0	0	0	25	0	30
7:15 AM	0	0	0	0	1	0	4	0	6	0	0	0	0	0	35	0	46
7:30 AM	0	0	0	0	3	0	2	0	5	0	0	0	0	0	26	0	36
7:45 AM	0	0	0	0	4	0	2	0	5	0	0	0	0	0	21	0	32
8:00 AM	0	0	0	0	4	0	4	0	6	0	0	0	0	0	24	0	38
8:15 AM	0	0	0	0	6	0	2	0	8	0	0	0	0	0	16	0	32
8:30 AM	0	0	0	0	2	0	5	0	6	0	0	0	0	0	15	0	28
8:45 AM	0	0	0	0	6	0	3	0	7	0	0	0	0	0	20	0	36
9:00 AM	0	0	0	0	2	0	4	0	5	0	0	0	0	0	20	0	31
9:15 AM	0	0	0	0	0	0	4	0	7	0	0	0	0	0	26	0	37
9:30 AM	0	0	0	0	11	0	9	0	9	0	0	0	0	0	39	0	68
9:45 AM	0	0	0	0	7	0	7	0	3	0	0	0	0	0	23	0	40
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	84	0	58	0	92	0	0	0	0	0	380	0	614
APPROACH %'s :					59.15%	0.00%	40.85%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	09:00 AM - 10:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	20	0	24	0	24	0	0	0	0	0	108	0	176
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.455	0.000	0.667	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.692	0.000	0.647
						0.550				0.667					0.692		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	11	0	11	0	1	0	0	0	0	0	14	0	37
2:15 PM	0	0	0	0	8	0	4	0	1	0	0	0	0	0	8	0	21
2:30 PM	0	0	0	0	13	0	8	0	4	0	0	0	0	0	22	0	47
2:45 PM	0	0	0	0	18	0	7	0	2	0	0	0	0	0	22	0	49
3:00 PM	0	0	0	0	13	0	6	0	2	0	0	0	0	0	18	0	39
3:15 PM	0	0	0	0	7	0	10	0	2	0	0	0	0	0	10	0	29
3:30 PM	0	0	0	0	12	0	7	0	4	0	0	0	0	0	8	0	31
3:45 PM	0	0	0	0	12	0	5	0	9	0	0	0	0	0	23	0	49
4:00 PM	0	0	0	0	8	0	9	0	11	0	0	0	0	0	7	0	35
4:15 PM	0	0	0	0	8	0	10	0	18	0	0	0	0	0	10	0	46
4:30 PM	0	0	0	0	14	0	10	0	10	0	0	0	0	0	25	0	59
4:45 PM	0	0	0	0	9	0	5	0	6	0	0	0	0	0	22	0	42
5:00 PM	0	0	0	0	12	0	0	0	12	0	0	0	0	0	25	0	49
5:15 PM	0	0	0	0	11	0	3	0	10	0	0	0	0	0	22	0	46
5:30 PM	0	0	0	0	2	0	9	0	5	0	0	0	0	0	14	0	30
5:45 PM	0	0	0	0	9	0	8	0	7	0	0	0	0	0	15	0	39
6:00 PM	0	0	0	0	6	0	7	0	8	0	0	0	0	0	20	0	41
6:15 PM	0	0	0	0	8	0	14	0	36	0	0	0	0	0	28	0	86
6:30 PM	0	0	0	0	13	0	31	0	36	0	0	0	0	0	21	0	101
6:45 PM	0	0	0	0	17	0	24	0	14	0	0	0	0	0	26	0	81
7:00 PM	0	0	0	0	6	0	8	0	10	0	0	0	0	0	5	0	29
7:15 PM	0	0	0	0	3	0	8	0	5	0	0	0	0	0	2	0	18
7:30 PM	0	0	0	0	4	0	17	0	4	0	0	0	0	0	3	0	28
7:45 PM	0	0	0	0	8	0	9	0	3	0	0	0	0	0	3	0	23
8:00 PM	0	0	0	0	9	0	3	0	3	0	0	0	0	0	2	0	17
8:15 PM	0	0	0	0	7	0	5	0	15	0	0	0	0	0	6	0	33
8:30 PM	0	0	0	0	18	0	23	0	7	0	0	0	0	0	5	0	53
8:45 PM	0	0	0	0	16	0	12	0	0	0	0	0	0	0	2	0	30
9:00 PM	0	0	0	0	24	0	6	0	1	0	0	0	0	0	4	0	35
9:15 PM	0	0	0	0	7	0	0	0	2	0	0	0	0	0	1	0	10
9:30 PM	0	0	0	0	7	0	8	0	0	0	0	0	0	0	2	0	17
9:45 PM	0	0	0	0	8	0	12	0	2	0	0	0	0	0	2	0	24
10:00 PM	0	0	0	0	22	0	8	0	1	0	0	0	0	0	2	0	33
10:15 PM	0	0	0	0	3	0	5	0	0	0	0	0	0	0	1	0	9
10:30 PM	0	0	0	0	3	0	5	0	0	0	0	0	0	0	0	0	8
10:45 PM	0	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	6
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
11:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	364	0	318	0	251	0	0	0	0	0	400	0	1333
APPROACH %'s :					53.37%	0.00%	46.63%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	06:00 PM - 07:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	44	0	76	0	94	0	0	0	0	0	95	0	309
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.647	0.000	0.613	0.000	0.653	0.000	0.000	0.000	0.000	0.000	0.848	0.000	0.765
						0.682				0.653					0.848		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Bonita Ave & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-006
Date: 5/9/2018

Total

NS/EW Streets:	Bonita Ave				Bonita Ave				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	2	1	1	0	2	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	5	0	2	0	7	0	4	0	26	120	7	0	20	304	87	0	582
7:15 AM	6	2	3	0	15	6	6	0	31	155	27	0	24	261	121	0	657
7:30 AM	3	3	4	0	16	3	8	0	76	207	20	0	30	267	130	0	767
7:45 AM	1	1	2	0	15	6	8	0	62	174	31	0	29	236	137	0	702
8:00 AM	6	6	7	0	21	7	15	0	121	150	38	0	38	197	116	0	722
8:15 AM	5	2	4	0	22	4	16	0	103	146	37	0	22	129	71	0	561
8:30 AM	7	2	4	0	20	9	14	0	84	176	29	0	20	122	40	0	527
8:45 AM	2	4	7	0	14	2	14	0	45	177	13	0	26	124	52	0	480
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	20	33	0	130	37	85	0	548	1305	202	0	209	1640	754	0	4998
APPROACH %'s :	39.77%	22.73%	37.50%	0.00%	51.59%	14.68%	33.73%	0.00%	26.67%	63.50%	9.83%	0.00%	8.03%	63.00%	28.97%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	16	12	16	0	67	22	37	0	290	686	116	0	121	961	504	0	2848
PEAK HR FACTOR :	0.667	0.500	0.571	0.000	0.798	0.786	0.617	0.000	0.599	0.829	0.763	0.000	0.796	0.900	0.920	0.000	0.928
			0.579				0.733				0.883				0.929		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	2	1	1	0	2	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	12	2	10	0	48	0	37	0	33	153	5	0	4	202	38	0	544
4:15 PM	4	2	22	0	68	2	30	0	41	200	5	0	6	168	56	0	604
4:30 PM	12	4	25	0	83	1	42	0	33	218	8	0	4	157	26	0	613
4:45 PM	9	1	23	0	40	4	29	0	50	185	6	0	5	179	33	0	564
5:00 PM	3	3	13	0	34	1	23	0	41	189	2	0	10	189	35	0	543
5:15 PM	3	5	14	0	48	2	25	0	37	222	2	0	2	220	36	0	616
5:30 PM	3	0	15	0	31	1	12	0	44	241	10	0	3	241	43	0	644
5:45 PM	4	3	12	0	37	1	21	0	42	195	8	0	8	219	27	0	577
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	50	20	134	0	389	12	219	0	321	1603	46	0	42	1575	294	0	4705
APPROACH %'s :	24.51%	9.80%	65.69%	0.00%	62.74%	1.94%	35.32%	0.00%	16.29%	81.37%	2.34%	0.00%	2.20%	82.42%	15.38%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	13	11	54	0	150	5	81	0	164	847	22	0	23	869	141	0	2380
PEAK HR FACTOR :	0.813	0.550	0.900	0.000	0.781	0.625	0.810	0.000	0.932	0.879	0.550	0.000	0.575	0.901	0.820	0.000	0.924
			0.886				0.787				0.875				0.900		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Lot F Entrance & Temple Ave
City: Walnut
Control: 1-Way Stop (NB)

Project ID: 18-05295-007
Date: 5/9/2018

Total

NS/EW Streets:	Lot F Entrance				Lot F Entrance				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	116	0	0	0	405	12	0	533
7:15 AM	0	0	0	0	0	0	0	0	0	164	0	0	0	416	16	0	596
7:30 AM	0	0	0	0	0	0	0	0	0	231	0	0	0	406	25	0	662
7:45 AM	0	0	0	0	0	0	0	0	0	205	0	1	0	432	51	0	689
8:00 AM	0	0	0	0	0	0	0	0	1	166	0	0	0	340	45	0	552
8:15 AM	0	0	0	0	0	0	0	0	0	180	0	0	0	223	48	0	451
8:30 AM	0	0	0	0	0	0	0	0	1	195	0	1	0	167	31	0	395
8:45 AM	0	0	0	0	0	0	0	0	0	201	0	1	0	199	31	1	433
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	2	1458	0	3	0	2588	259	1	4311
APPROACH %'s :									0.14%	99.66%	0.00%	0.21%	0.00%	90.87%	9.09%	0.04%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	1	766	0	1	0	1594	137	0	2499
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.829	0.000	0.250	0.000	0.922	0.672	0.000	0.907
										0.831				0.896			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	1	2	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	209	0	0	0	236	3	0	448
4:15 PM	0	0	0	0	0	0	0	0	0	266	0	1	0	229	2	0	498
4:30 PM	0	0	0	0	0	0	0	0	0	351	0	0	0	183	3	1	538
4:45 PM	0	0	0	0	0	0	0	0	0	249	0	0	0	219	2	0	470
5:00 PM	0	0	0	0	0	0	0	0	0	224	0	0	0	229	4	2	459
5:15 PM	0	0	0	0	0	0	0	0	0	276	0	1	0	264	8	1	550
5:30 PM	0	0	0	0	0	0	0	0	0	304	0	0	0	266	4	0	574
5:45 PM	0	0	0	0	0	0	0	0	1	254	0	0	0	268	3	0	526
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	1	2133	0	2	0	1894	29	4	4063
APPROACH %'s :									0.05%	99.86%	0.00%	0.09%	0.00%	98.29%	1.50%	0.21%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	1	1058	0	1	0	1027	19	3	2109
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.870	0.000	0.250	0.000	0.958	0.594	0.375	0.919
										0.872				0.961			

National Data & Surveying Services

Intersection Turning Movement Count

Location: University Dr & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-008
Date: 5/9/2018

Total

NS/EW Streets:	University Dr				University Dr				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1.5	0.5	1	0	2	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	11	0	13	0	22	99	1	0	0	398	64	0	609
7:15 AM	0	0	1	0	37	0	29	0	55	108	0	0	0	429	103	2	764
7:30 AM	0	1	0	0	55	0	35	0	96	137	2	0	1	401	121	3	852
7:45 AM	0	1	1	0	57	1	54	0	87	111	0	0	0	389	144	4	849
8:00 AM	0	0	0	0	48	0	24	0	32	137	0	0	0	376	134	5	756
8:15 AM	0	1	0	0	13	1	9	0	41	140	1	0	1	253	109	0	569
8:30 AM	0	0	0	0	16	2	8	0	44	124	1	0	0	185	124	0	504
8:45 AM	0	2	0	0	36	4	17	0	64	145	0	0	1	225	158	1	653
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	5	3	0	273	8	189	0	441	1001	5	0	3	2656	957	15	5556
APPROACH %'s :	0.00%	62.50%	37.50%	0.00%	58.09%	1.70%	40.21%	0.00%	30.48%	69.18%	0.35%	0.00%	0.08%	73.15%	26.36%	0.41%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	2	2	0	197	1	142	0	270	493	2	0	1	1595	502	14	3221
PEAK HR FACTOR :	0.000	0.500	0.500	0.000	0.864	0.250	0.657	0.000	0.703	0.900	0.250	0.000	0.250	0.929	0.872	0.700	0.945
		0.500				0.759				0.814				0.983			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1.5	0.5	1	0	2	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	0	0	207	1	54	0	18	204	0	0	1	182	37	17	722
4:15 PM	1	1	0	0	99	3	19	0	9	259	1	0	0	211	35	9	647
4:30 PM	0	0	0	0	113	4	40	0	16	321	0	0	0	161	46	12	713
4:45 PM	1	0	0	0	84	2	21	0	16	250	0	0	0	194	34	2	604
5:00 PM	1	2	0	0	139	5	50	0	21	207	1	0	0	194	38	7	665
5:15 PM	1	0	0	0	133	3	42	0	29	242	0	0	1	231	43	2	727
5:30 PM	0	1	3	0	97	4	28	0	39	258	0	0	1	237	73	11	752
5:45 PM	0	1	0	0	183	1	48	0	39	216	0	0	0	217	94	13	812
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	5	3	0	1055	23	302	0	187	1957	2	0	3	1627	400	73	5642
APPROACH %'s :	38.46%	38.46%	23.08%	0.00%	76.45%	1.67%	21.88%	0.00%	8.71%	91.19%	0.09%	0.00%	0.14%	77.37%	19.02%	3.47%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	2	4	3	0	552	13	168	0	128	923	1	0	2	879	248	33	2956
PEAK HR FACTOR :	0.500	0.500	0.250	0.000	0.754	0.650	0.840	0.000	0.821	0.894	0.250	0.000	0.500	0.927	0.660	0.635	0.910
		0.563				0.790				0.886				0.897			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Campus Dr & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-009
Date: 5/9/2018

Total

NS/EW Streets:	Campus Dr				Campus Dr				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	8	0	9	0	31	7	188	0	50	76	1	0	1	341	43	0	755
7:15 AM	3	3	4	0	37	1	215	0	51	85	2	0	2	361	54	0	818
7:30 AM	13	7	3	0	44	8	277	0	108	86	2	0	1	336	81	0	966
7:45 AM	14	13	5	0	20	6	279	0	74	94	4	0	8	325	83	3	928
8:00 AM	9	8	6	0	20	7	188	0	77	117	6	0	7	322	92	1	860
8:15 AM	7	4	3	0	25	5	158	0	78	75	3	0	1	220	55	1	635
8:30 AM	8	4	5	0	19	3	129	0	60	89	1	0	4	237	76	0	635
8:45 AM	7	5	5	0	22	4	146	0	80	91	3	0	4	283	95	1	746
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	69	44	40	0	218	41	1580	0	578	713	22	0	28	2425	579	6	6343
APPROACH %'s :	45.10%	28.76%	26.14%	0.00%	11.85%	2.23%	85.92%	0.00%	44.02%	54.30%	1.68%	0.00%	0.92%	79.82%	19.06%	0.20%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	39	31	18	0	121	22	959	0	310	382	14	0	18	1344	310	4	3572
PEAK HR FACTOR :	0.696	0.596	0.750	0.000	0.688	0.688	0.859	0.000	0.718	0.816	0.583	0.000	0.563	0.931	0.842	0.333	0.924
	0.688				0.837				0.883				0.993				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	0.5	2	0	2	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	13	11	0	124	9	95	0	145	257	6	0	10	121	75	0	879
4:15 PM	7	3	14	0	74	6	80	0	161	219	11	0	9	175	58	2	819
4:30 PM	4	6	8	0	84	7	76	0	192	255	5	0	4	147	58	5	851
4:45 PM	0	3	13	0	69	2	91	0	133	198	6	0	9	148	70	1	743
5:00 PM	7	10	11	0	73	10	81	0	147	192	5	0	7	159	78	0	780
5:15 PM	5	8	16	0	60	7	114	0	151	219	10	0	11	175	98	4	878
5:30 PM	10	15	10	0	89	10	123	0	160	200	10	0	10	201	103	2	943
5:45 PM	16	12	12	0	89	10	100	0	137	273	8	0	16	209	105	0	987
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	62	70	95	0	662	61	760	0	1226	1813	61	0	76	1335	645	14	6880
APPROACH %'s :	27.31%	30.84%	41.85%	0.00%	44.64%	4.11%	51.25%	0.00%	39.55%	58.48%	1.97%	0.00%	3.67%	64.49%	31.16%	0.68%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	38	45	49	0	311	37	418	0	595	884	33	0	44	744	384	6	3588
PEAK HR FACTOR :	0.594	0.750	0.766	0.000	0.874	0.925	0.850	0.000	0.930	0.810	0.825	0.000	0.688	0.890	0.914	0.375	0.909
	0.825				0.863				0.904				0.892				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Campus Dr & Kellogg Dr
City: Walnut
Control: Signalized

Project ID: 18-05295-010
Date: 5/9/2018

Total

NS/EW Streets:	Campus Dr				Campus Dr				Kellogg Dr				Kellogg Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	1.5	1.5	0	1	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	40	49	3	0	23	97	18	0	4	38	138	0	12	25	4	0	451
7:15 AM	57	46	8	0	11	122	26	0	0	37	141	0	25	54	7	0	534
7:30 AM	102	76	6	0	15	175	36	0	13	35	148	0	41	87	14	0	748
7:45 AM	103	71	9	0	16	161	23	0	19	41	136	0	54	125	10	0	768
8:00 AM	89	75	3	0	17	113	21	0	13	37	99	0	35	71	19	0	592
8:15 AM	54	88	3	0	16	84	25	0	2	39	69	0	18	44	12	0	454
8:30 AM	72	67	3	0	13	72	29	0	10	26	69	0	16	63	10	0	450
8:45 AM	94	67	5	0	12	75	32	0	3	31	93	0	29	86	11	0	538
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	611	539	40	0	123	899	210	0	64	284	893	0	230	555	87	0	4535
APPROACH %'s :	51.34%	45.29%	3.36%	0.00%	9.98%	72.97%	17.05%	0.00%	5.16%	22.88%	71.96%	0.00%	26.38%	63.65%	9.98%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	351	268	26	0	59	571	106	0	45	150	524	0	155	337	50	0	2642
PEAK HR FACTOR :	0.852	0.882	0.722	0.000	0.868	0.816	0.736	0.000	0.592	0.915	0.885	0.000	0.718	0.674	0.658	0.000	0.860
	0.876				0.814				0.917				0.717				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	1	2	0	0	1	1.5	1.5	0	1	1.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	64	162	6	0	5	41	8	0	21	58	147	0	11	39	46	0	608
4:15 PM	50	180	4	0	2	35	6	0	19	52	108	0	7	46	41	0	550
4:30 PM	34	190	5	0	7	47	10	0	18	40	95	0	9	51	38	0	544
4:45 PM	49	155	2	0	3	47	8	0	23	27	111	0	4	39	35	0	503
5:00 PM	60	169	7	0	10	50	11	0	16	46	96	0	7	39	47	0	558
5:15 PM	81	155	9	0	4	46	7	0	30	59	138	0	11	54	38	0	632
5:30 PM	92	181	5	0	6	45	24	0	20	42	143	0	8	55	23	0	644
5:45 PM	105	148	4	0	2	40	21	0	14	55	150	0	6	69	24	0	638
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	535	1340	42	0	39	351	95	0	161	379	988	0	63	392	292	0	4677
APPROACH %'s :	27.91%	69.90%	2.19%	0.00%	8.04%	72.37%	19.59%	0.00%	10.54%	24.80%	64.66%	0.00%	8.43%	52.48%	39.09%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	338	653	25	0	22	181	63	0	80	202	527	0	32	217	132	0	2472
PEAK HR FACTOR :	0.805	0.902	0.694	0.000	0.550	0.905	0.656	0.000	0.667	0.856	0.878	0.000	0.727	0.786	0.702	0.000	0.960
	0.914				0.887				0.891				0.925				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Valley Blvd & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-011
Date: 5/9/2018

Total

NS/EW Streets:	Valley Blvd				Valley Blvd				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	1	3	0	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	39	46	9	0	11	123	96	0	36	56	28	0	14	261	17	0	736
7:15 AM	55	76	11	0	17	158	108	0	15	70	39	0	19	335	13	0	916
7:30 AM	92	105	13	0	10	145	97	0	22	72	32	2	10	251	23	0	874
7:45 AM	87	142	17	0	9	159	95	0	30	70	20	3	10	290	26	0	958
8:00 AM	72	118	11	0	35	121	92	0	27	89	21	2	5	257	28	0	878
8:15 AM	57	77	8	0	19	134	48	1	35	55	14	0	16	218	24	0	706
8:30 AM	56	86	7	0	15	94	49	0	30	72	16	0	16	265	19	0	725
8:45 AM	62	89	12	0	27	92	73	0	22	92	12	3	24	297	24	0	829
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	520	739	88	0	143	1026	658	1	217	576	182	10	114	2174	174	0	6622
APPROACH %'s :	38.60%	54.86%	6.53%	0.00%	7.82%	56.13%	36.00%	0.05%	22.03%	58.48%	18.48%	1.02%	4.63%	88.30%	7.07%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	306	441	52	0	71	583	392	0	94	301	112	7	44	1133	90	0	3626
PEAK HR FACTOR :	0.832	0.776	0.765	0.000	0.507	0.917	0.907	0.000	0.783	0.846	0.718	0.583	0.579	0.846	0.804	0.000	0.946
	0.812				0.924				0.924				0.863				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	1.5	1.5	0	1	3	0	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	48	136	9	0	62	80	34	0	47	287	55	1	28	141	22	1	951
4:15 PM	47	144	17	0	60	105	48	0	36	218	50	2	17	131	29	1	905
4:30 PM	47	131	17	0	53	86	27	0	45	262	48	2	19	148	26	0	911
4:45 PM	46	160	14	0	53	100	38	0	46	191	35	1	20	127	28	0	859
5:00 PM	66	159	11	0	54	90	32	0	30	240	37	3	21	179	24	1	947
5:15 PM	67	141	15	0	56	97	41	0	33	188	39	0	21	147	27	0	872
5:30 PM	82	173	15	0	48	68	51	0	31	250	37	1	17	214	34	1	1022
5:45 PM	68	131	16	0	44	90	45	0	55	225	59	1	14	198	21	1	968
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	471	1175	114	0	430	716	316	0	323	1861	360	11	157	1285	211	5	7435
APPROACH %'s :	26.76%	66.76%	6.48%	0.00%	29.41%	48.97%	21.61%	0.00%	12.64%	72.84%	14.09%	0.43%	9.47%	77.50%	12.73%	0.30%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	283	604	57	0	202	345	169	0	149	903	172	5	73	738	106	3	3809
PEAK HR FACTOR :	0.863	0.873	0.891	0.000	0.902	0.889	0.828	0.000	0.677	0.903	0.729	0.417	0.869	0.862	0.779	0.750	0.932
	0.874				0.923				0.904				0.865				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Pomona Blvd & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-012
Date: 5/9/2018

Total

NS/EW Streets:	Pomona Blvd				Pomona Blvd				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1.5	0.5	1	0	1	3	0	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	10	48	0	8	45	23	0	5	56	2	6	209	239	42	0	706
7:15 AM	10	9	59	0	10	64	27	0	12	85	2	5	167	342	27	0	819
7:30 AM	11	16	72	0	14	67	43	0	15	65	3	5	163	224	27	2	727
7:45 AM	13	43	84	0	3	49	24	0	8	77	1	4	121	283	19	0	729
8:00 AM	8	32	67	0	23	44	20	0	26	91	4	11	137	238	43	1	745
8:15 AM	9	27	49	0	16	31	15	0	8	70	1	8	159	239	54	0	686
8:30 AM	18	21	53	0	16	31	16	0	11	67	1	10	126	251	50	0	671
8:45 AM	16	17	60	0	17	14	15	0	12	98	2	9	148	330	54	1	793
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	98	175	492	0	107	345	183	0	97	609	16	58	1230	2146	316	4	5876
APPROACH %'s :	12.81%	22.88%	64.31%	0.00%	16.85%	54.33%	28.82%	0.00%	12.44%	78.08%	2.05%	7.44%	33.28%	58.06%	8.55%	0.11%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	42	100	282	0	50	224	114	0	61	318	10	25	588	1087	116	3	3020
PEAK HR FACTOR :	0.808	0.581	0.839	0.000	0.543	0.836	0.663	0.000	0.587	0.874	0.625	0.568	0.880	0.795	0.674	0.375	0.922
	0.757				0.782				0.784				0.837				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1.5	0.5	1	0	1	3	0	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	12	66	147	0	43	24	19	0	13	285	2	14	71	124	15	1	836
4:15 PM	15	57	123	0	40	17	18	0	17	300	2	14	94	165	24	0	886
4:30 PM	25	63	115	0	71	26	29	0	22	267	2	18	70	121	15	0	844
4:45 PM	24	66	143	0	47	21	19	0	13	219	6	16	65	126	7	1	773
5:00 PM	23	62	143	0	67	30	46	0	18	252	0	14	71	136	10	0	872
5:15 PM	12	86	131	0	44	38	28	0	24	236	6	16	92	187	17	0	917
5:30 PM	13	59	136	0	41	37	28	0	12	239	4	10	77	176	7	2	841
5:45 PM	19	48	167	0	30	19	25	0	11	297	3	15	77	205	21	1	938
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	143	507	1105	0	383	212	212	0	130	2095	25	117	617	1240	116	5	6907
APPROACH %'s :	8.15%	28.89%	62.96%	0.00%	47.46%	26.27%	26.27%	0.00%	5.49%	88.51%	1.06%	4.94%	31.19%	62.69%	5.86%	0.25%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	67	255	577	0	182	124	127	0	65	1024	13	55	317	704	55	3	3568
PEAK HR FACTOR :	0.728	0.741	0.864	0.000	0.679	0.816	0.690	0.000	0.677	0.862	0.542	0.859	0.861	0.859	0.655	0.375	0.951
	0.960				0.757				0.887				0.887				

National Data & Surveying Services Intersection Turning Movement Count

Location: SR-57 SB Ramps & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-013
Date: 5/9/2018

Total

NS/EW Streets:	SR-57 SB Ramps				SR-57 SB Ramps				Temple Ave					Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND					WESTBOUND				
	0	1	0	0	1.3	0.3	1.3	0	0	3	0	0	0	1	3	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	ET2	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	1	0	236	2	272	0	0	100	2	0	17	3	280	5	2	920
7:15 AM	0	0	1	0	203	0	274	0	0	131	3	0	19	1	343	5	4	984
7:30 AM	0	0	0	0	179	3	284	0	0	149	4	0	14	0	259	4	5	901
7:45 AM	0	0	3	0	156	3	175	0	0	161	6	0	16	3	261	8	14	806
8:00 AM	0	0	0	0	128	3	207	0	0	199	1	0	16	0	249	4	10	817
8:15 AM	0	0	0	0	128	4	232	0	0	135	1	0	27	3	250	7	4	791
8:30 AM	0	0	0	0	105	2	210	0	0	137	2	0	20	3	284	7	7	777
8:45 AM	0	0	0	0	90	1	220	0	0	168	3	0	27	1	336	6	7	859
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	ET2	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	5	0	1225	18	1874	0	0	1180	22	0	156	14	2262	46	53	6855
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	39.30%	0.58%	60.12%	0.00%	0.00%	86.89%	1.62%	0.00%	11.49%	0.59%	95.24%	1.94%	2.23%	
PEAK HR :	07:00 AM - 08:00 AM																	TOTAL
PEAK HR VOL :	0	0	5	0	774	8	1005	0	0	541	15	0	66	7	1143	22	25	3611
PEAK HR FACTOR :	0.000	0.000	0.417	0.000	0.820	0.667	0.885	0.000	0.000	0.840	0.625	0.000	0.868	0.583	0.833	0.688	0.446	0.917
	0.417				0.876						0.850			0.848				

NS/EW Streets:	SR-57 SB Ramps				SR-57 SB Ramps				Temple Ave					Temple Ave				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND					WESTBOUND				
	0	1	0	0	1.3	0.3	1.3	0	0	3	0	0	0	1	3	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	ET2	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	190	2	103	0	0	458	12	0	70	3	117	11	18	984
4:15 PM	1	0	4	0	227	0	120	0	0	526	9	0	69	2	131	6	11	1106
4:30 PM	0	0	0	0	225	3	112	0	0	474	8	0	83	1	101	15	7	1029
4:45 PM	0	0	3	0	222	3	114	0	0	491	10	0	86	0	108	14	5	1056
5:00 PM	0	0	2	0	293	2	117	0	0	452	2	0	95	0	90	15	10	1078
5:15 PM	0	0	1	0	284	0	156	0	0	499	3	0	100	5	117	13	9	1187
5:30 PM	0	0	2	0	268	0	124	0	0	441	8	0	78	1	153	7	11	1093
5:45 PM	0	0	2	0	281	3	116	0	0	471	8	0	65	1	141	5	6	1099
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	ET2	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	14	0	1990	13	962	0	0	3812	60	0	646	13	958	86	77	8632
APPROACH %'s :	6.67%	0.00%	93.33%	0.00%	67.12%	0.44%	32.45%	0.00%	0.00%	84.37%	1.33%	0.00%	14.30%	1.15%	84.48%	7.58%	6.79%	
PEAK HR :	05:00 PM - 06:00 PM																	TOTAL
PEAK HR VOL :	0	0	7	0	1126	5	513	0	0	1863	21	0	338	7	501	40	36	4457
PEAK HR FACTOR :	0.000	0.000	0.875	0.000	0.961	0.417	0.822	0.000	0.000	0.933	0.656	0.000	0.845	0.350	0.819	0.667	0.818	0.939
	0.875				0.934						0.923			0.849				

National Data & Surveying Services Intersection Turning Movement Count

Location: SR-57 NB Ramps & Temple Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-014
Date: 5/9/2018

Total

NS/EW Streets:	SR-57 NB Ramps				SR-57 NB Ramps				Temple Ave				Temple Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	1	3	2	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	64	0	46	0	0	0	0	0	0	296	45	0	0	231	157	0	839
7:15 AM	110	0	53	0	0	0	0	0	0	272	38	0	0	250	155	1	879
7:30 AM	69	0	59	0	0	0	0	0	0	254	55	0	0	189	222	0	848
7:45 AM	80	0	77	0	0	0	0	0	0	233	80	0	0	219	178	0	867
8:00 AM	91	0	58	0	0	0	0	0	0	209	94	0	0	185	156	0	793
8:15 AM	90	0	64	0	0	0	0	0	0	192	67	0	0	182	173	0	768
8:30 AM	99	0	50	0	0	0	0	0	0	162	72	0	0	196	176	1	756
8:45 AM	124	0	59	0	0	0	0	0	0	167	66	0	0	218	136	0	770
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	727	0	466	0	0	0	0	0	0	1785	517	0	0	1670	1353	2	6520
APPROACH %'s :	60.94%	0.00%	39.06%	0.00%					0.00%	77.54%	22.46%	0.00%	0.00%	55.21%	44.73%	0.07%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	323	0	235	0	0	0	0	0	0	1055	218	0	0	889	712	1	3433
PEAK HR FACTOR :	0.734	0.000	0.763	0.000	0.000	0.000	0.000	0.000	0.000	0.891	0.681	0.000	0.000	0.889	0.802	0.250	0.976
	0.856								0.933				0.974				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	0	1.5	0	0	0	0	0	1	3	2	0	0	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	33	0	57	0	0	0	0	0	0	391	213	1	0	109	73	0	877
4:15 PM	21	0	72	0	0	0	0	0	0	422	245	0	0	125	61	0	946
4:30 PM	21	0	64	0	0	0	0	0	0	486	171	0	0	110	69	0	921
4:45 PM	26	0	72	0	0	0	0	0	0	460	157	0	0	110	66	0	891
5:00 PM	22	0	75	0	0	0	0	0	0	474	167	0	0	100	73	0	911
5:15 PM	26	0	58	0	0	0	0	0	0	528	183	0	0	126	82	0	1003
5:30 PM	23	0	85	0	0	0	0	0	0	509	154	0	0	135	80	0	986
5:45 PM	29	0	60	0	0	0	0	0	0	519	147	0	0	135	75	1	966
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	201	0	543	0	0	0	0	0	0	3789	1437	1	0	950	579	1	7501
APPROACH %'s :	27.02%	0.00%	72.98%	0.00%					0.00%	72.49%	27.49%	0.02%	0.00%	62.09%	37.84%	0.07%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	100	0	278	0	0	0	0	0	0	2030	651	0	0	496	310	1	3866
PEAK HR FACTOR :	0.862	0.000	0.818	0.000	0.000	0.000	0.000	0.000	0.000	0.961	0.889	0.000	0.000	0.919	0.945	0.250	0.964
	0.875								0.943				0.938				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & I-10 WB Ramp
City: Walnut
Control: Signalized

Project ID: 18-05295-015
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				I-10 WB Ramp				I-10 WB Ramp				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	26	174	7	0	0	204	48	0	77	0	36	0	2	2	2	0	578
7:15 AM	10	161	5	0	0	212	43	0	95	7	26	0	3	2	2	0	566
7:30 AM	34	226	13	0	0	227	32	0	80	1	35	0	8	2	1	0	659
7:45 AM	32	214	3	0	0	219	46	0	98	4	31	0	8	4	6	0	665
8:00 AM	40	214	5	0	0	226	62	0	52	2	20	0	4	2	3	0	630
8:15 AM	59	209	7	0	1	165	71	0	74	2	16	0	5	2	2	0	613
8:30 AM	58	201	6	0	0	164	66	0	53	3	10	1	1	0	1	0	564
8:45 AM	59	214	4	0	0	162	83	0	55	2	9	0	1	2	2	0	593
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	318	1613	50	0	1	1579	451	0	584	21	183	1	32	16	19	0	4868
APPROACH %'s :	16.05%	81.42%	2.52%	0.00%	0.05%	77.74%	22.21%	0.00%	74.02%	2.66%	23.19%	0.13%	47.76%	23.88%	28.36%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	165	863	28	0	1	837	211	0	304	9	102	0	25	10	12	0	2567
PEAK HR FACTOR :	0.699	0.955	0.538	0.000	0.250	0.922	0.743	0.000	0.776	0.563	0.729	0.000	0.781	0.625	0.500	0.000	0.965
	0.960				0.911				0.780				0.653				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	1	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	62	209	6	0	2	200	89	0	48	3	7	0	4	3	2	0	635
4:15 PM	76	196	8	0	1	174	90	0	55	3	14	0	8	3	5	0	633
4:30 PM	73	226	9	0	0	184	79	0	50	4	15	0	3	3	3	0	649
4:45 PM	65	202	8	0	3	180	83	0	67	3	22	0	6	3	3	0	645
5:00 PM	62	241	10	0	1	209	78	0	47	6	17	1	13	2	8	0	695
5:15 PM	75	202	14	0	2	203	83	0	67	3	14	0	7	2	3	0	675
5:30 PM	63	208	10	0	1	212	101	0	51	1	11	0	10	7	6	0	681
5:45 PM	70	192	11	0	1	196	78	0	53	3	21	0	7	8	3	0	643
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	546	1676	76	0	11	1558	681	0	438	26	121	1	58	31	33	0	5256
APPROACH %'s :	23.76%	72.93%	3.31%	0.00%	0.49%	69.24%	30.27%	0.00%	74.74%	4.44%	20.65%	0.17%	47.54%	25.41%	27.05%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	265	853	42	0	7	804	345	0	232	13	64	1	36	14	20	0	2696
PEAK HR FACTOR :	0.883	0.885	0.750	0.000	0.583	0.948	0.854	0.000	0.866	0.542	0.727	0.250	0.692	0.500	0.625	0.000	0.970
	0.927				0.920				0.842				0.761				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & I-10 EB Ramp
City: Walnut
Control: Signalized

Project ID: 18-05295-016
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				I-10 EB Ramp				I-10 EB Ramp				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	0	0	1.5	0	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	6	150	0	0	0	184	57	0	62	0	113	0	0	0	0	0	572
7:15 AM	8	121	0	0	0	205	42	2	64	0	162	0	0	0	0	0	604
7:30 AM	11	189	0	0	0	199	60	0	76	0	148	0	0	0	0	0	683
7:45 AM	12	184	0	0	0	205	62	0	70	0	161	0	0	0	0	0	694
8:00 AM	9	188	0	0	0	187	60	0	68	0	123	0	0	0	0	0	635
8:15 AM	6	206	0	0	0	124	48	0	69	0	108	0	0	0	0	0	561
8:30 AM	4	212	0	0	0	124	63	0	58	0	96	0	0	0	0	0	557
8:45 AM	7	182	0	0	0	130	52	0	87	0	132	0	0	0	0	0	590
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	63	1432	0	0	0	1358	444	2	554	0	1043	0	0	0	0	0	4896
APPROACH %'s :	4.21%	95.79%	0.00%	0.00%	0.00%	75.28%	24.61%	0.11%	34.69%	0.00%	65.31%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	40	682	0	0	0	796	224	2	278	0	594	0	0	0	0	0	2616
PEAK HR FACTOR :	0.833	0.902	0.000	0.000	0.000	0.971	0.903	0.250	0.914	0.000	0.917	0.000	0.000	0.000	0.000	0.000	0.942
	0.903				0.957				0.944								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	0	0	1.5	0	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	208	0	0	0	112	85	0	70	0	44	0	0	0	0	0	529
4:15 PM	9	236	0	0	0	140	65	0	49	0	39	0	0	0	0	0	538
4:30 PM	12	227	0	0	0	118	62	0	68	0	50	0	0	0	0	0	537
4:45 PM	8	214	0	0	0	141	89	0	75	0	56	0	0	0	0	0	583
5:00 PM	13	230	0	0	0	140	90	0	65	0	49	0	0	0	0	0	587
5:15 PM	19	233	0	0	0	144	89	0	55	0	40	0	0	0	0	0	580
5:30 PM	6	224	0	0	0	139	93	0	76	0	47	0	0	0	0	0	585
5:45 PM	10	202	0	0	0	151	71	0	66	0	55	0	0	0	0	0	555
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	87	1774	0	0	0	1085	644	0	524	0	380	0	0	0	0	0	4494
APPROACH %'s :	4.67%	95.33%	0.00%	0.00%	0.00%	62.75%	37.25%	0.00%	57.96%	0.00%	42.04%	0.00%					
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	46	901	0	0	0	564	361	0	271	0	192	0	0	0	0	0	2335
PEAK HR FACTOR :	0.605	0.967	0.000	0.000	0.000	0.979	0.970	0.000	0.891	0.000	0.857	0.000	0.000	0.000	0.000	0.000	0.994
	0.939				0.992				0.884								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Holt Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-017
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Holt Ave				Holt Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1	2	1	0	0	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	128	22	0	3	283	15	1	12	2	12	0	96	13	12	0	600
7:15 AM	1	104	24	1	4	343	9	0	11	2	40	0	118	36	12	0	705
7:30 AM	7	181	46	0	6	316	17	3	13	1	26	0	137	25	16	0	794
7:45 AM	7	184	52	0	5	351	8	3	8	6	20	0	83	20	9	0	756
8:00 AM	7	177	48	0	2	290	14	0	2	5	19	0	64	10	5	0	643
8:15 AM	5	198	35	0	9	215	7	3	4	5	5	0	44	12	16	0	558
8:30 AM	6	195	36	0	3	203	10	3	1	12	12	0	37	13	12	0	543
8:45 AM	7	176	35	0	10	240	11	2	6	12	9	0	27	20	10	0	565
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	41	1343	298	1	42	2241	91	15	57	45	143	0	606	149	92	0	5164
APPROACH %'s :	2.44%	79.80%	17.71%	0.06%	1.76%	93.80%	3.81%	0.63%	23.27%	18.37%	58.37%	0.00%	71.55%	17.59%	10.86%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	22	646	170	1	17	1300	48	6	34	14	105	0	402	91	42	0	2898
PEAK HR FACTOR :	0.786	0.878	0.817	0.250	0.708	0.926	0.706	0.500	0.654	0.583	0.656	0.000	0.734	0.632	0.656	0.000	0.912
		0.863				0.934				0.722				0.751			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1	2	1	0	0	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	11	214	31	1	5	142	5	3	6	11	9	0	30	5	4	0	477
4:15 PM	9	229	47	0	8	165	4	2	5	4	5	0	40	4	6	0	528
4:30 PM	16	252	63	0	8	150	6	3	5	5	7	0	42	9	11	0	577
4:45 PM	19	202	50	1	8	172	12	4	7	2	15	0	32	12	4	0	540
5:00 PM	11	210	40	0	5	178	10	2	7	8	8	0	54	15	13	0	561
5:15 PM	15	232	46	0	8	166	7	0	5	5	8	0	61	6	14	0	573
5:30 PM	8	201	51	1	7	163	11	3	4	11	8	0	48	14	8	0	538
5:45 PM	13	217	42	0	6	184	10	3	4	7	9	0	59	11	7	0	572
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	102	1757	370	3	55	1320	65	20	43	53	69	0	366	76	67	0	4366
APPROACH %'s :	4.57%	78.72%	16.58%	0.13%	3.77%	90.41%	4.45%	1.37%	26.06%	32.12%	41.82%	0.00%	71.91%	14.93%	13.16%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	61	896	199	1	29	666	35	9	24	20	38	0	189	42	42	0	2251
PEAK HR FACTOR :	0.803	0.889	0.790	0.250	0.906	0.935	0.729	0.563	0.857	0.625	0.633	0.000	0.775	0.700	0.750	0.000	0.975
		0.874				0.943				0.854				0.832			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Cortez St
City: Walnut
Control: 1-Way Stop (EB)

Project ID: 18-05295-018
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Cortez St				Cortez St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	1	0	0	0.5	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	146	0	0	0	343	21	0	1	0	6	0	0	0	0	0	519
7:15 AM	4	137	0	0	0	448	31	0	2	0	3	0	0	0	0	0	625
7:30 AM	9	231	0	0	0	399	60	0	3	0	10	0	0	0	0	0	712
7:45 AM	7	235	0	0	0	420	18	0	5	0	6	0	0	0	0	0	691
8:00 AM	7	218	0	0	0	353	12	0	4	0	6	0	0	0	0	0	600
8:15 AM	3	237	0	0	0	271	7	0	0	0	5	0	0	0	0	0	523
8:30 AM	5	228	0	0	0	236	7	0	2	0	1	0	0	0	0	0	479
8:45 AM	7	225	0	0	0	279	4	0	0	0	3	0	0	0	0	0	518
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	44	1657	0	0	0	2749	160	0	17	0	40	0	0	0	0	0	4667
APPROACH %'s :	2.59%	97.41%	0.00%	0.00%	0.00%	94.50%	5.50%	0.00%	29.82%	0.00%	70.18%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	27	821	0	0	0	1620	121	0	14	0	25	0	0	0	0	0	2628
PEAK HR FACTOR :	0.750	0.873	0.000	0.000	0.000	0.904	0.504	0.000	0.700	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.923
		0.876				0.909				0.750							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	1	0	0	0.5	0.5	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	5	266	0	0	0	171	5	0	0	0	1	0	0	0	0	0	448
4:15 PM	6	299	0	0	0	204	4	0	3	0	1	0	0	0	0	0	517
4:30 PM	10	346	0	0	0	190	2	0	1	0	1	0	0	0	0	0	550
4:45 PM	7	284	0	0	0	194	5	0	2	0	4	0	0	0	0	0	496
5:00 PM	10	254	0	0	0	231	7	0	2	0	1	0	0	0	0	0	505
5:15 PM	6	302	0	0	0	221	9	0	1	0	5	0	0	0	0	0	544
5:30 PM	7	263	0	0	0	209	9	0	1	0	3	0	0	0	0	0	492
5:45 PM	7	309	0	0	0	238	6	0	1	0	2	0	0	0	0	0	563
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	58	2323	0	0	0	1658	47	0	11	0	18	0	0	0	0	0	4115
APPROACH %'s :	2.44%	97.56%	0.00%	0.00%	0.00%	97.24%	2.76%	0.00%	37.93%	0.00%	62.07%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	30	1128	0	0	0	899	31	0	5	0	11	0	0	0	0	0	2104
PEAK HR FACTOR :	0.750	0.913	0.000	0.000	0.000	0.944	0.861	0.000	0.625	0.000	0.550	0.000	0.000	0.000	0.000	0.000	0.934
		0.916				0.953				0.667							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Barranca St & Cameron Ave
City: Walnut
Control: 3-Way Stop (SB/EB/WB)

Project ID: 18-05295-019
Date: 5/9/2018

Total

NS/EW Streets:	Barranca St				Barranca St				Cameron Ave				Cameron Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	1	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	38	0	72	0	30	100	0	0	0	137	14	0	391
7:15 AM	0	0	0	0	43	0	76	0	40	137	0	0	0	150	24	0	470
7:30 AM	0	0	0	0	44	0	106	0	90	145	0	0	0	140	37	0	562
7:45 AM	0	0	0	0	47	0	86	0	70	153	0	0	0	89	23	0	468
8:00 AM	0	0	0	0	46	0	37	0	60	113	0	0	0	74	25	0	355
8:15 AM	0	0	0	0	46	0	50	0	40	108	0	0	0	80	19	0	343
8:30 AM	0	0	0	0	29	0	53	0	45	69	0	0	0	81	17	0	294
8:45 AM	0	0	0	0	25	0	45	0	42	63	0	0	0	77	19	0	271
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	318	0	525	0	417	888	0	0	0	828	178	0	3154
APPROACH %'s :					37.72%	0.00%	62.28%	0.00%	31.95%	68.05%	0.00%	0.00%	0.00%	82.31%	17.69%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	172	0	340	0	230	535	0	0	0	516	98	0	1891
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.915	0.000	0.802	0.000	0.639	0.874	0.000	0.000	0.000	0.860	0.662	0.000	0.841
					0.853				0.814				0.867				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	2	0	1	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	19	0	49	0	65	93	0	0	0	93	26	0	345
4:15 PM	0	0	0	0	47	0	46	0	78	91	0	0	0	93	19	0	374
4:30 PM	0	0	0	0	21	0	44	0	72	77	0	0	0	106	25	0	345
4:45 PM	0	0	0	0	25	0	42	0	68	82	0	0	0	73	29	0	319
5:00 PM	0	0	0	0	38	0	60	0	85	88	0	0	0	101	30	0	402
5:15 PM	0	0	0	0	24	0	50	0	71	88	0	0	0	120	39	0	392
5:30 PM	0	0	0	0	42	0	53	0	81	89	0	0	0	124	24	0	413
5:45 PM	0	0	0	0	28	0	50	0	62	55	0	0	0	105	19	0	319
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	244	0	394	0	582	663	0	0	0	815	211	0	2909
APPROACH %'s :					38.24%	0.00%	61.76%	0.00%	46.75%	53.25%	0.00%	0.00%	0.00%	79.43%	20.57%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	129	0	205	0	305	347	0	0	0	418	122	0	1526
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.768	0.000	0.854	0.000	0.897	0.975	0.000	0.000	0.000	0.843	0.782	0.000	0.924
					0.852				0.942				0.849				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Cameron Ave
City: Walnut
Control: Signalized

Project ID: 18-05295-020
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Cameron Ave				Cameron Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	79	142	0	0	0	285	65	0	8	0	131	0	0	0	0	0	710
7:15 AM	97	117	0	0	0	397	63	0	13	0	165	0	0	0	0	0	852
7:30 AM	91	201	0	0	0	339	61	0	38	0	174	0	0	0	0	0	904
7:45 AM	69	206	0	0	0	401	26	0	34	0	171	0	0	0	0	0	907
8:00 AM	78	184	0	0	0	337	19	0	25	0	134	0	0	0	0	0	777
8:15 AM	74	226	0	0	0	250	12	0	21	0	138	0	0	0	0	0	721
8:30 AM	61	216	0	0	0	221	16	0	17	0	86	0	0	0	0	0	617
8:45 AM	73	205	0	0	0	274	16	0	10	0	86	0	0	0	0	0	664
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	622	1497	0	0	0	2504	278	0	166	0	1085	0	0	0	0	0	6152
APPROACH %'s :	29.35%	70.65%	0.00%	0.00%	0.00%	90.01%	9.99%	0.00%	13.27%	0.00%	86.73%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	335	708	0	0	0	1474	169	0	110	0	644	0	0	0	0	0	3440
PEAK HR FACTOR :	0.863	0.859	0.000	0.000	0.000	0.919	0.671	0.000	0.724	0.000	0.925	0.000	0.000	0.000	0.000	0.000	0.948
	0.893				0.893				0.889								

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	2	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	107	252	0	0	0	170	13	0	21	0	88	0	0	0	0	0	651
4:15 PM	101	284	0	0	0	183	14	0	11	0	116	0	0	0	0	0	709
4:30 PM	102	335	0	0	0	167	18	0	26	0	76	0	0	0	0	0	724
4:45 PM	92	265	0	0	0	173	19	0	18	0	88	0	0	0	0	0	655
5:00 PM	105	251	0	0	0	224	29	0	13	0	99	0	0	0	0	0	721
5:15 PM	135	293	0	0	0	195	21	0	19	0	109	0	0	0	0	0	772
5:30 PM	119	251	0	0	0	197	17	0	19	0	104	0	0	0	0	0	707
5:45 PM	123	291	0	0	0	207	32	0	15	0	92	0	0	0	0	0	760
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	884	2222	0	0	0	1516	163	0	142	0	772	0	0	0	0	0	5699
APPROACH %'s :	28.46%	71.54%	0.00%	0.00%	0.00%	90.29%	9.71%	0.00%	15.54%	0.00%	84.46%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	482	1086	0	0	0	823	99	0	66	0	404	0	0	0	0	0	2960
PEAK HR FACTOR :	0.893	0.927	0.000	0.000	0.000	0.919	0.773	0.000	0.868	0.000	0.927	0.000	0.000	0.000	0.000	0.000	0.959
	0.916				0.911				0.918								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Mountaineer Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-021
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Mountaineer Rd				Mountaineer Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	205	41	0	73	392	0	0	0	0	0	0	19	0	7	0	737
7:15 AM	0	232	85	0	126	470	0	0	0	0	0	0	34	0	12	0	959
7:30 AM	0	265	81	0	153	404	0	0	0	0	0	0	30	0	31	1	965
7:45 AM	0	264	126	0	171	409	0	0	0	0	0	0	36	0	21	0	1027
8:00 AM	0	259	96	0	115	395	0	0	0	0	0	0	47	0	17	0	929
8:15 AM	0	271	90	0	57	366	0	0	0	0	0	0	42	0	11	1	838
8:30 AM	0	302	51	0	57	291	0	0	0	0	0	0	24	0	15	1	741
8:45 AM	0	201	47	0	46	344	0	0	0	0	0	0	32	0	17	0	687
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1999	617	0	798	3071	0	0	0	0	0	0	264	0	131	3	6883
APPROACH %'s :	0.00%	76.41%	23.59%	0.00%	20.63%	79.37%	0.00%	0.00%					66.33%	0.00%	32.91%	0.75%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1020	388	0	565	1678	0	0	0	0	0	0	147	0	81	1	3880
PEAK HR FACTOR :	0.000	0.962	0.770	0.000	0.826	0.893	0.000	0.000	0.000	0.000	0.000	0.000	0.782	0.000	0.653	0.250	0.944
		0.903				0.941								0.895			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	2	2	0	0	0	0	0	0	2	0	2	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	324	46	0	53	221	0	0	0	0	0	0	51	0	54	0	749
4:15 PM	0	332	42	0	55	246	0	0	0	0	0	0	60	0	51	0	786
4:30 PM	0	404	34	0	32	226	0	0	0	0	0	0	60	0	70	0	826
4:45 PM	0	331	37	0	31	223	0	0	0	0	0	0	41	0	25	0	688
5:00 PM	0	366	41	0	38	282	0	0	0	0	0	0	44	0	44	0	815
5:15 PM	0	374	48	0	43	254	0	0	0	0	0	0	35	0	35	0	789
5:30 PM	0	377	36	0	38	259	0	0	0	0	0	0	31	0	24	0	765
5:45 PM	0	427	43	0	38	261	0	0	0	0	0	0	35	0	24	0	828
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2935	327	0	328	1972	0	0	0	0	0	0	357	0	327	0	6246
APPROACH %'s :	0.00%	89.98%	10.02%	0.00%	14.26%	85.74%	0.00%	0.00%					52.19%	0.00%	47.81%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	1544	168	0	157	1056	0	0	0	0	0	0	145	0	127	0	3197
PEAK HR FACTOR :	0.000	0.904	0.875	0.000	0.913	0.936	0.000	0.000	0.000	0.000	0.000	0.000	0.824	0.000	0.722	0.000	0.965
		0.911				0.948								0.773			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & San Jose Hills Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-022
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				San Jose Hills Rd				San Jose Hills Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	15	222	46	1	46	311	11	1	16	4	25	0	9	2	9	0	718
7:15 AM	17	285	85	1	63	425	21	0	21	15	16	0	16	3	11	0	979
7:30 AM	25	283	95	2	82	320	20	1	51	25	24	0	21	3	6	0	958
7:45 AM	23	322	133	0	85	334	30	0	67	23	27	0	25	9	16	0	1094
8:00 AM	29	282	65	2	52	321	68	0	45	19	32	0	18	6	15	0	954
8:15 AM	31	274	49	1	32	355	92	0	80	10	61	0	7	24	10	0	1026
8:30 AM	11	250	25	2	17	239	18	0	84	9	51	0	9	1	11	0	727
8:45 AM	11	210	31	2	30	351	12	2	32	3	29	0	11	0	15	0	739
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	162	2128	529	11	407	2656	272	4	396	108	265	0	116	48	93	0	7195
APPROACH %'s :	5.72%	75.19%	18.69%	0.39%	12.19%	79.54%	8.15%	0.12%	51.50%	14.04%	34.46%	0.00%	45.14%	18.68%	36.19%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	108	1161	342	5	251	1330	210	1	243	77	144	0	71	42	47	0	4032
PEAK HR FACTOR :	0.871	0.901	0.643	0.625	0.738	0.937	0.571	0.250	0.759	0.770	0.590	0.000	0.710	0.438	0.734	0.000	0.921
		0.845				0.935				0.768				0.800			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	1	0	0	1	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	23	321	34	3	22	221	17	0	17	1	20	0	36	2	24	0	741
4:15 PM	17	328	34	0	18	267	19	0	38	8	21	0	41	12	31	0	834
4:30 PM	16	331	35	0	27	236	25	0	29	0	26	0	68	9	51	0	853
4:45 PM	16	319	25	2	27	247	18	0	23	2	23	0	29	2	29	0	762
5:00 PM	18	335	26	2	26	248	17	0	23	8	24	0	42	7	27	0	803
5:15 PM	20	410	62	0	13	275	25	0	20	2	20	0	37	6	24	0	914
5:30 PM	21	341	52	0	19	243	26	0	25	2	22	0	68	5	27	0	851
5:45 PM	20	431	25	1	13	286	24	0	28	3	26	0	30	4	27	0	918
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	151	2816	293	8	165	2023	171	0	203	26	182	0	351	47	240	0	6676
APPROACH %'s :	4.62%	86.17%	8.97%	0.24%	6.99%	85.76%	7.25%	0.00%	49.39%	6.33%	44.28%	0.00%	55.02%	7.37%	37.62%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	79	1517	165	3	71	1052	92	0	96	15	92	0	177	22	105	0	3486
PEAK HR FACTOR :	0.940	0.880	0.665	0.375	0.683	0.920	0.885	0.000	0.857	0.469	0.885	0.000	0.651	0.786	0.972	0.000	0.949
		0.896				0.940				0.890				0.760			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & La Puente Rd
City: Walnut
Control: Signalized

Project ID: 18-05295-023
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				La Puente Rd				La Puente Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1.5	0.5	1	0	1.5	1	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	52	261	9	1	0	197	78	0	62	2	41	0	17	17	0	0	737
7:15 AM	76	358	8	0	0	211	138	0	114	19	86	0	27	40	2	0	1079
7:30 AM	43	370	16	1	1	262	82	1	140	30	139	0	47	40	3	0	1175
7:45 AM	25	393	6	0	0	300	41	0	120	24	113	0	29	6	2	0	1059
8:00 AM	23	378	21	0	0	244	50	0	72	3	68	0	21	5	4	0	889
8:15 AM	23	300	8	0	1	259	42	0	68	4	52	0	20	8	1	0	786
8:30 AM	33	286	14	0	0	270	25	0	63	4	64	0	27	11	2	0	799
8:45 AM	34	214	14	0	2	235	48	0	54	4	66	0	31	12	3	0	717
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	309	2560	96	2	4	1978	504	1	693	90	629	0	219	139	17	0	7241
APPROACH %'s :	10.41%	86.28%	3.24%	0.07%	0.16%	79.53%	20.27%	0.04%	49.08%	6.37%	44.55%	0.00%	58.40%	37.07%	4.53%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	167	1499	51	1	1	1017	311	1	446	76	406	0	124	91	11	0	4202
PEAK HR FACTOR :	0.549	0.954	0.607	0.250	0.250	0.848	0.563	0.250	0.796	0.633	0.730	0.000	0.660	0.569	0.688	0.000	0.894
	0.972				0.953				0.751				0.628				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	1	0	1.5	0.5	1	0	1.5	1	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	62	339	17	1	1	233	37	0	40	3	70	0	14	10	1	0	828
4:15 PM	53	274	24	0	0	255	47	0	60	14	75	0	15	6	4	0	827
4:30 PM	51	330	19	0	1	336	47	0	62	9	70	0	19	6	1	0	951
4:45 PM	59	299	20	0	1	274	53	0	51	15	95	0	20	5	1	0	893
5:00 PM	69	353	22	0	2	243	46	0	77	12	82	0	18	9	2	0	935
5:15 PM	65	381	34	1	1	273	50	0	85	21	74	0	17	12	5	0	1019
5:30 PM	84	377	33	0	1	234	40	2	80	10	74	0	27	11	1	0	974
5:45 PM	61	385	31	2	4	236	56	2	76	20	89	0	19	9	1	0	991
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	504	2738	200	4	11	2084	376	4	531	104	629	0	149	68	16	0	7418
APPROACH %'s :	14.63%	79.45%	5.80%	0.12%	0.44%	84.20%	15.19%	0.16%	42.01%	8.23%	49.76%	0.00%	63.95%	29.18%	6.87%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	279	1496	120	3	8	986	192	4	318	63	319	0	81	41	9	0	3919
PEAK HR FACTOR :	0.830	0.971	0.882	0.375	0.500	0.903	0.857	0.500	0.935	0.750	0.896	0.000	0.750	0.854	0.450	0.000	0.961
	0.961				0.918				0.946				0.840				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Valley Blvd
City: Walnut
Control: Signalized

Project ID: 18-05295-024
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Valley Blvd				Valley Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	69	228	42	0	30	96	105	0	67	77	16	2	26	274	48	0	1080
7:15 AM	81	269	69	1	42	150	111	0	105	129	32	1	33	343	56	2	1424
7:30 AM	97	300	93	0	74	211	157	1	100	157	52	1	31	279	40	5	1598
7:45 AM	56	273	108	0	77	206	145	0	98	198	58	0	48	290	35	3	1595
8:00 AM	67	280	60	2	53	192	96	0	110	145	37	1	34	176	35	2	1290
8:15 AM	49	212	63	0	46	162	114	2	99	140	36	0	39	228	22	1	1213
8:30 AM	58	208	57	0	54	188	123	0	77	138	34	2	33	206	31	2	1211
8:45 AM	64	172	72	0	55	155	107	0	58	122	37	2	25	194	30	2	1095
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	541	1942	564	3	431	1360	958	3	714	1106	302	9	269	1990	297	17	10506
APPROACH %'s :	17.74%	63.67%	18.49%	0.10%	15.66%	49.42%	34.81%	0.11%	33.51%	51.90%	14.17%	0.42%	10.45%	77.34%	11.54%	0.66%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	301	1122	330	3	246	759	509	1	413	629	179	3	146	1088	166	12	5907
PEAK HR FACTOR :	0.776	0.935	0.764	0.375	0.799	0.899	0.811	0.250	0.939	0.794	0.772	0.750	0.760	0.793	0.741	0.600	0.924
	0.896				0.855				0.864				0.813				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	3	1	0	2	3	1	0	2	3	1	0	2	3	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	57	197	34	8	79	158	84	4	150	288	68	0	49	155	59	7	1397
4:15 PM	55	145	22	10	73	164	112	1	140	283	70	4	54	187	51	6	1377
4:30 PM	55	201	25	2	79	201	121	4	120	275	67	1	37	146	53	4	1391
4:45 PM	60	182	33	8	72	198	98	3	135	319	94	1	65	183	46	2	1499
5:00 PM	72	261	39	3	74	187	90	2	121	339	85	1	46	181	64	1	1566
5:15 PM	67	251	58	4	86	173	104	1	152	338	88	0	60	195	64	7	1648
5:30 PM	71	246	36	6	72	179	79	1	150	342	99	1	51	166	70	5	1574
5:45 PM	66	241	44	2	95	156	74	0	148	349	79	0	49	163	67	3	1536
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	503	1724	291	43	630	1416	762	16	1116	2533	650	8	411	1376	474	35	11988
APPROACH %'s :	19.64%	67.32%	11.36%	1.68%	22.31%	50.14%	26.98%	0.57%	25.91%	58.81%	15.09%	0.19%	17.90%	59.93%	20.64%	1.52%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	276	999	177	15	327	695	347	4	571	1368	351	2	206	705	265	16	6324
PEAK HR FACTOR :	0.958	0.957	0.763	0.625	0.861	0.929	0.834	0.500	0.939	0.980	0.886	0.500	0.858	0.904	0.946	0.571	0.959
	0.965				0.943				0.968				0.914				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & Baker Pkwy
City: Walnut
Control: Signalized

Project ID: 18-05295-025
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				Baker Pkwy				Baker Pkwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	3	1	0	2	0	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	27	375	0	1	0	124	15	0	3	1	6	0	0	0	0	0	552
7:15 AM	30	501	0	0	0	164	20	0	2	0	9	0	0	0	1	0	727
7:30 AM	15	499	0	1	0	187	13	0	3	0	13	0	0	0	0	0	731
7:45 AM	30	529	1	0	0	207	12	0	5	0	15	0	0	0	0	0	799
8:00 AM	27	410	0	1	0	185	24	0	5	0	10	0	0	0	0	0	662
8:15 AM	43	382	1	3	0	181	24	0	8	0	5	0	1	0	0	0	648
8:30 AM	29	333	0	2	0	182	11	0	12	0	5	0	0	0	1	0	575
8:45 AM	26	370	0	2	0	156	12	0	7	0	11	0	0	0	0	0	584
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	227	3399	2	10	0	1386	131	0	45	1	74	0	1	0	2	0	5278
APPROACH %'s :	6.24%	93.43%	0.05%	0.27%	0.00%	91.36%	8.64%	0.00%	37.50%	0.83%	61.67%	0.00%	33.33%	0.00%	66.67%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	102	1939	1	2	0	743	69	0	15	0	47	0	0	0	1	0	2919
PEAK HR FACTOR :	0.850	0.916	0.250	0.500	0.000	0.897	0.719	0.000	0.750	0.000	0.783	0.000	0.000	0.000	0.250	0.000	0.913
		0.913				0.927				0.775				0.250			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	2	0	0	0	3	1	0	2	0	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	234	0	2	0	277	6	0	29	0	30	0	0	0	0	0	588
4:15 PM	6	235	1	2	0	274	7	0	15	0	15	0	0	0	0	0	555
4:30 PM	13	232	0	8	0	286	4	0	25	0	29	0	0	0	0	0	597
4:45 PM	15	251	0	8	0	333	6	0	12	0	47	0	0	0	0	0	672
5:00 PM	4	261	0	4	0	363	4	0	24	0	31	0	0	0	0	0	691
5:15 PM	7	282	0	1	0	318	8	0	25	0	33	0	0	0	0	0	674
5:30 PM	13	332	0	1	0	306	6	0	23	0	53	0	0	0	0	0	734
5:45 PM	10	343	0	1	0	295	9	0	18	0	31	0	0	0	0	0	707
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	78	2170	1	27	0	2452	50	0	171	0	269	0	0	0	0	0	5218
APPROACH %'s :	3.43%	95.34%	0.04%	1.19%	0.00%	98.00%	2.00%	0.00%	38.86%	0.00%	61.14%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	34	1218	0	7	0	1282	27	0	90	0	148	0	0	0	0	0	2806
PEAK HR FACTOR :	0.654	0.888	0.000	0.438	0.000	0.883	0.750	0.000	0.900	0.000	0.698	0.000	0.000	0.000	0.000	0.000	0.956
		0.889				0.892				0.783							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & SR-60 WB Ramps
City: Walnut
Control: Signalized

Project ID: 18-05295-026
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				SR-60 WB Ramps				SR-60 WB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	2.5	0	0	1	0.5	0.5	0	1.3	0.3	1.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	270	61	0	0	119	2	0	0	1	4	0	18	1	86	0	562
7:15 AM	0	360	51	0	0	144	0	0	0	0	0	0	12	0	140	0	707
7:30 AM	0	361	64	0	0	206	1	0	0	0	1	0	37	0	154	0	824
7:45 AM	0	414	61	0	0	219	0	0	0	0	2	0	35	0	170	0	901
8:00 AM	0	311	66	0	0	190	1	0	0	0	0	0	54	1	167	0	790
8:15 AM	0	301	55	0	1	185	1	0	0	0	1	0	34	4	147	0	729
8:30 AM	0	284	49	0	1	202	0	0	0	0	4	0	32	1	129	0	702
8:45 AM	0	299	78	0	0	174	0	0	0	0	0	0	28	0	92	0	671
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2600	485	0	2	1439	5	0	0	1	12	0	250	7	1085	0	5886
APPROACH %'s :	0.00%	84.28%	15.72%	0.00%	0.14%	99.52%	0.35%	0.00%	0.00%	7.69%	92.31%	0.00%	18.63%	0.52%	80.85%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	1387	246	0	1	800	3	0	0	0	4	0	160	5	638	0	3244
PEAK HR FACTOR :	0.000	0.838	0.932	0.000	0.250	0.913	0.750	0.000	0.000	0.000	0.500	0.000	0.741	0.313	0.938	0.000	0.900
		0.859				0.918				0.500				0.904			

NS/EW Streets:	Grand Ave				Grand Ave				SR-60 WB Ramps				SR-60 WB Ramps				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1.5	0.5	0	1.5	2.5	0	0	1	0.5	0.5	0	1.3	0.3	1.3	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	147	33	0	2	290	0	0	0	0	0	0	40	0	80	0	592
4:15 PM	0	155	48	0	2	309	0	0	0	0	0	0	31	0	82	0	627
4:30 PM	0	146	43	0	1	307	1	0	0	0	2	0	36	0	92	0	628
4:45 PM	0	175	41	0	2	322	0	0	0	0	0	0	78	0	127	0	745
5:00 PM	0	169	49	0	1	385	0	0	0	0	0	0	47	0	97	0	748
5:15 PM	0	189	43	0	1	337	0	0	0	0	0	0	27	0	119	0	716
5:30 PM	0	181	44	0	2	345	0	0	0	0	0	0	24	0	140	0	736
5:45 PM	0	192	49	0	2	370	0	0	0	0	0	0	35	0	164	0	812
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1354	350	0	13	2665	1	0	0	0	2	0	318	0	901	0	5604
APPROACH %'s :	0.00%	79.46%	20.54%	0.00%	0.49%	99.48%	0.04%	0.00%	0.00%	0.00%	100.00%	0.00%	26.09%	0.00%	73.91%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	731	185	0	6	1437	0	0	0	0	0	0	133	0	520	0	3012
PEAK HR FACTOR :	0.000	0.952	0.944	0.000	0.750	0.933	0.000	0.000	0.000	0.000	0.000	0.000	0.707	0.000	0.793	0.000	0.927
		0.950				0.935								0.820			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Grand Ave & SR-60 EB Ramps
City: Walnut
Control: Signalized

Project ID: 18-05295-027
Date: 5/9/2018

Total

NS/EW Streets:	Grand Ave				Grand Ave				SR-60 EB Ramps				SR-60 EB Ramps				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	1	0	1	3	0	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	184	61	0	40	92	0	2	150	0	74	0	0	0	0	0	603
7:15 AM	0	246	60	0	57	102	0	3	180	0	60	0	0	0	0	0	708
7:30 AM	0	273	62	0	65	172	0	2	171	0	57	0	0	0	0	0	802
7:45 AM	0	243	79	0	65	186	0	2	204	0	61	0	0	0	0	0	840
8:00 AM	0	214	82	0	75	183	0	2	146	1	72	0	0	0	0	0	775
8:15 AM	0	212	102	0	62	151	0	3	158	0	75	0	0	0	0	0	763
8:30 AM	0	209	62	0	63	164	0	1	132	0	62	0	0	0	0	0	693
8:45 AM	0	244	67	0	66	165	0	1	137	0	74	0	0	0	0	0	754
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1825	575	0	493	1215	0	16	1278	1	535	0	0	0	0	0	5938
APPROACH %'s :	0.00%	76.04%	23.96%	0.00%	28.60%	70.48%	0.00%	0.93%	70.45%	0.06%	29.49%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	942	325	0	267	692	0	9	679	1	265	0	0	0	0	0	3180
PEAK HR FACTOR :	0.000	0.863	0.797	0.000	0.890	0.930	0.000	0.750	0.832	0.250	0.883	0.000	0.000	0.000	0.000	0.000	0.946
		0.946				0.931				0.892							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	1	0	1	3	0	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	163	156	0	69	272	0	0	34	1	50	0	0	0	0	0	745
4:15 PM	0	178	144	0	69	277	0	0	30	0	40	0	0	0	0	0	738
4:30 PM	0	183	157	0	79	263	0	0	26	1	50	0	0	0	0	0	759
4:45 PM	0	182	168	0	87	305	0	0	33	1	68	0	0	0	0	0	844
5:00 PM	0	176	143	0	102	340	0	1	27	0	46	0	0	0	0	0	835
5:15 PM	0	194	153	0	85	270	0	0	33	0	70	0	0	0	0	0	805
5:30 PM	0	169	148	0	87	299	0	1	42	0	73	0	0	0	0	0	819
5:45 PM	0	218	160	0	88	325	0	2	31	1	54	0	0	0	0	0	879
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1463	1229	0	666	2351	0	4	256	4	451	0	0	0	0	0	6424
APPROACH %'s :	0.00%	54.35%	45.65%	0.00%	22.05%	77.82%	0.00%	0.13%	36.01%	0.56%	63.43%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	757	604	0	362	1234	0	4	133	1	243	0	0	0	0	0	3338
PEAK HR FACTOR :	0.000	0.868	0.944	0.000	0.887	0.907	0.000	0.500	0.792	0.250	0.832	0.000	0.000	0.000	0.000	0.000	0.949
		0.900				0.903				0.820							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Kellogg Dr & E Campus Dr/I-10 EB Off Ramp
City: Pomona
Control: No Control

Project ID: 18-05693-001
Date: 10/16/2018

Total

NS/EW Streets:	Kellogg Dr				Kellogg Dr				E Campus Dr/I-10 EB Off Ramp				E Campus Dr/I-10 EB Off Ramp				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	2	0	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	9	11	0	0	236	0	0	0	0	127	0	0	0	0	0	383
7:15 AM	0	12	9	0	0	258	0	0	0	0	191	0	0	0	0	0	470
7:30 AM	0	23	15	0	0	283	0	0	0	0	317	0	0	0	0	0	638
7:45 AM	0	27	14	0	0	274	0	0	0	0	347	0	0	0	0	0	662
8:00 AM	0	28	21	0	0	288	0	0	0	0	369	0	0	0	0	0	706
8:15 AM	0	34	24	0	0	296	0	0	0	0	312	0	0	0	0	0	666
8:30 AM	0	25	35	0	0	222	0	0	0	0	204	0	0	0	0	0	486
8:45 AM	0	13	17	0	0	207	0	0	0	0	142	0	0	0	0	0	379
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	171	146	0	0	2064	0	0	0	0	2009	0	0	0	0	0	4390
APPROACH %'s :	0.00%	53.94%	46.06%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	112	74	0	0	1141	0	0	0	0	1345	0	0	0	0	0	2672
PEAK HR FACTOR :	0.000	0.824	0.771	0.000	0.000	0.964	0.000	0.000	0.000	0.000	0.911	0.000	0.000	0.000	0.000	0.000	0.946
		0.802				0.964				0.911							

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	2	0	0	0	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	226	208	0	0	59	0	0	0	0	39	0	0	0	0	0	532
4:15 PM	0	113	98	0	0	95	0	0	0	0	32	0	0	0	0	0	338
4:30 PM	0	104	74	0	0	93	0	0	0	0	48	0	0	0	0	0	319
4:45 PM	0	105	86	0	0	98	0	0	0	0	41	0	0	0	0	0	330
5:00 PM	0	142	138	0	0	121	0	0	0	0	71	0	0	0	0	0	472
5:15 PM	0	170	162	0	0	130	0	0	0	0	57	0	0	0	0	0	519
5:30 PM	0	154	141	0	0	121	0	0	0	0	35	0	0	0	0	0	451
5:45 PM	0	168	142	0	0	95	0	0	0	0	29	0	0	0	0	0	434
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1182	1049	0	0	812	0	0	0	0	352	0	0	0	0	0	3395
APPROACH %'s :	0.00%	52.98%	47.02%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	634	583	0	0	467	0	0	0	0	192	0	0	0	0	0	1876
PEAK HR FACTOR :	0.000	0.932	0.900	0.000	0.000	0.898	0.000	0.000	0.000	0.000	0.676	0.000	0.000	0.000	0.000	0.000	0.904
		0.916				0.898				0.676							

National Data & Surveying Services

Intersection Turning Movement Count

Location: E Campus Dr & S Campus Dr
City: Pomona
Control: Signalized

Project ID: 18-05693-002
Date: 10/16/2018

Total

NS/EW Streets:	E Campus Dr				E Campus Dr				S Campus Dr				S Campus Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0.5	0	0.5	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	11	0	0	0	0	64	0	0	0	151	0	0	226
7:15 AM	0	0	0	0	7	0	0	0	0	67	0	0	0	204	0	0	278
7:30 AM	0	0	0	0	17	0	1	0	0	80	0	0	0	287	0	0	385
7:45 AM	0	0	0	0	14	0	0	0	0	92	0	0	0	265	0	0	371
8:00 AM	0	0	0	0	19	0	0	0	0	76	0	0	0	235	0	0	330
8:15 AM	0	0	0	0	25	0	1	0	0	82	0	0	0	198	0	0	306
8:30 AM	0	0	0	0	36	0	0	0	0	78	0	0	0	156	0	0	270
8:45 AM	0	0	0	0	16	0	1	0	0	95	0	0	0	127	0	0	239
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	145	0	3	0	0	634	0	0	0	1623	0	0	2405
APPROACH %'s :					97.97%	0.00%	2.03%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	75	0	2	0	0	330	0	0	0	985	0	0	1392
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.750	0.000	0.500	0.000	0.000	0.897	0.000	0.000	0.000	0.858	0.000	0.000	0.904
					0.740				0.897				0.858				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0.5	0	0.5	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	196	0	1	0	0	228	0	0	0	35	0	0	460
4:15 PM	0	0	0	0	112	0	0	0	0	256	0	0	0	46	0	0	414
4:30 PM	0	0	0	0	71	0	0	0	0	255	0	0	0	52	0	0	378
4:45 PM	0	0	0	0	84	0	2	0	0	246	0	0	0	46	0	0	378
5:00 PM	0	0	0	0	125	0	1	0	0	265	0	0	0	63	0	0	454
5:15 PM	0	0	0	0	171	0	2	0	0	260	0	0	0	44	0	0	477
5:30 PM	0	0	0	0	129	0	10	0	0	275	0	0	0	46	0	0	460
5:45 PM	0	0	0	0	141	0	1	0	0	274	0	0	0	42	0	0	458
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1029	0	17	0	0	2059	0	0	0	374	0	0	3479
APPROACH %'s :					98.37%	0.00%	1.63%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	566	0	14	0	0	1074	0	0	0	195	0	0	1849
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.827	0.000	0.350	0.000	0.000	0.976	0.000	0.000	0.000	0.774	0.000	0.000	0.969
					0.838				0.976				0.774				

Appendix B – ICU Spreadsheets and HCM Reports – Existing Conditions

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: AM Peak
Overlap Reduce 35%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	22	1	1.00	0.01	22	1	1.00	0.01	0.878
Comb. L-T						0			
EB Thru	1370	2	2.00	0.43	1404	2	2.00	0.44	
Comb. T-R						0			
EB Right	390	1	1.00	0.24	390	1	1.00	0.24	
Comb. L-T-R						0			
WB Left	132	1	1.00	0.08	133	1	1.00	0.08	0.907
Comb. L-T						0			
WB Thru	1008	2	2.00	0.32	1016	2	2.00	0.32	
Comb. T-R						0			
WB Right	3	1	1.00	0.00	3	1	1.00	0.00	
Comb. L-T-R						0			
NB Left	682	1	1.97	0.22	682	1	1.97	0.22	0.956
Comb. L-T		1				1			
NB Thru	10		0.03	0.22	10	0	0.03	0.22	
Comb. T-R						0			
NB Right	220	1	1.00	0.14	224	1	1.00	0.14	
Comb. L-T-R						0			
SB Left	15		0.27	0.04	15	0	0.27	0.04	0.875
Comb. L-T						0			
SB Thru	17		0.31	0.04	17	0	0.31	0.04	
Comb. T-R						0			
SB Right	24		0.43	0.04	24	0	0.43	0.04	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.51	E-W:	0.52
	N-S:	0.25	N-S:	0.25
	Total:	0.76	Total:	0.77
Lost Time		0.10		0.10
V/C		0.862		0.874
Level of Service		D		D

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	26	1	1.00	0.02	26	1	1.00	0.02	0.956
Comb. L-T		0				0			
EB Thru	1123	2	2.00	0.35	1145	2	2.00	0.36	
Comb. T-R		0				0			
EB Right	326	1	1.00	0.20	326	1	1.00	0.20	
Comb. L-T-R		0				0			
WB Left	216	1	1.00	0.13	218	1	1.00	0.14	0.895
Comb. L-T		0				0			
WB Thru	1010	2	2.00	0.32	1029	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	7	1	1.00	0.00	7	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	713	1	1.97	0.23	713	1	1.97	0.23	0.971
Comb. L-T		1				1			
NB Thru	11	0	0.03	0.23	11	0	0.03	0.23	
Comb. T-R		0				0			
NB Right	208	1	1.00	0.13	211	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	9	0	0.32	0.02	9	0	0.32	0.02	0.786
Comb. L-T		0				0			
SB Thru	10	0	0.36	0.02	10	0	0.36	0.02	
Comb. T-R		0				0			
SB Right	9	0	0.32	0.02	9	0	0.32	0.02	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.49	E-W:	0.49
	N-S:	0.24	N-S:	0.24
	Total:	0.73	Total:	0.74
Lost Time		0.10		0.10
V/C		0.829		0.838
Level of Service		D		D

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	19	1	1.00	0.01	19	1	1.00	0.01	0.856
Comb. L-T						0			
EB Thru	1206	1	1.54	0.49	1247	1	1.55	0.50	
Comb. T-R		1				1			
EB Right	363		0.46	0.49	363	0	0.45	0.50	
Comb. L-T-R						0			
WB Left	72	1	1.00	0.04	73	1	1.00	0.05	0.974
Comb. L-T						0			
WB Thru	696	2	2.00	0.22	704	2	2.00	0.22	
Comb. T-R						0			
WB Right	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. L-T-R						0			
NB Left	249	1	1.70	0.09	249	1	1.70	0.09	0.901
Comb. L-T		1				1			
NB Thru	43		0.30	0.09	43	0	0.30	0.09	
Comb. T-R						0			
NB Right	100	1	1.00	0.06	104	1	1.00	0.07	
Comb. L-T-R						0			
SB Left	42		0.40	0.06	42	0	0.40	0.06	0.818
Comb. L-T		1				1			
SB Thru	62		0.60	0.06	62	0	0.60	0.06	
Comb. T-R						0			
SB Right	28	1	1.00	0.02	28	1	1.00	0.02	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.54	E-W:	0.55
	N-S:	0.16	N-S:	0.16
	Total:	0.69	Total:	0.70

Lost Time	0.10	0.10

V/C	0.792	0.805
Level of Service	C	D

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	23	1	1.00	0.01	23	1	1.00	0.01	0.968
Comb. L-T		0				0			
EB Thru	920	1	1.68	0.34	944	1	1.69	0.35	
Comb. T-R		1				1			
EB Right	174	0	0.32	0.34	174	0	0.31	0.35	
Comb. L-T-R		0				0			
WB Left	96	1	1.00	0.06	98	1	1.00	0.06	0.944
Comb. L-T		0				0			
WB Thru	916	2	2.00	0.29	936	2	2.00	0.29	
Comb. T-R		0				0			
WB Right	32	1	1.00	0.02	32	1	1.00	0.02	
Comb. L-T-R		0				0			
NB Left	316	1	1.75	0.11	316	1	1.75	0.11	0.933
Comb. L-T		1				1			
NB Thru	46	0	0.25	0.11	46	0	0.25	0.11	
Comb. T-R		0				0			
NB Right	114	1	1.00	0.07	117	1	1.00	0.07	
Comb. L-T-R		0				0			
SB Left	32	0	0.55	0.04	32	0	0.55	0.04	0.838
Comb. L-T		1				1			
SB Thru	26	0	0.45	0.04	26	0	0.45	0.04	
Comb. T-R		0				0			
SB Right	21	1	1.00	0.01	21	1	1.00	0.01	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.40	E-W:	0.41
	N-S:	0.15	N-S:	0.15
	Total:	0.55	Total:	0.56
Lost Time		0.10		0.10
V/C		0.652		0.661
Level of Service		B		B

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	27	1	1.00	0.02	27	1	1.00	0.02	0.862
Comb. L-T						0			
EB Thru	1245	2	2.00	0.39	1290	2	2.00	0.40	
Comb. T-R						0			
EB Right	44	1	1.00	0.03	44	1	1.00	0.03	
Comb. L-T-R						0			
WB Left	155	1	1.00	0.10	156	1	1.00	0.10	0.890
Comb. L-T						0			
WB Thru	845	2	2.00	0.26	855	2	2.00	0.27	
Comb. T-R						0			
WB Right	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. L-T-R						0			
NB Left	71	1	1.00	0.04	71	1	1.00	0.04	0.709
Comb. L-T						0			
NB Thru	209	1	1.00	0.13	209	1	1.00	0.13	
Comb. T-R						0			
NB Right	253	1	1.00	0.16	258	1	1.00	0.16	
Comb. L-T-R						0			
SB Left	47	1	1.00	0.03	47	1	1.00	0.03	0.727
Comb. L-T						0			
SB Thru	168		0.77	0.14	168	0	0.77	0.14	
Comb. T-R		1				1			
SB Right	50		0.23	0.14	50	0	0.23	0.14	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.49	E-W:	0.50
	N-S:	0.19	N-S:	0.19
	Total:	0.67	Total:	0.69

Lost Time	0.10	0.10

V/C	0.773	0.791
Level of Service	C	C

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	31	1	1.00	0.02	31	1	1.00	0.02	0.827
Comb. L-T		0				0			
EB Thru	1184	2	2.00	0.37	1217	2	2.00	0.38	
Comb. T-R		0				0			
EB Right	24	1	1.00	0.02	24	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	134	1	1.00	0.08	136	1	1.00	0.09	0.947
Comb. L-T		0				0			
WB Thru	1044	2	2.00	0.33	1067	2	2.00	0.33	
Comb. T-R		0				0			
WB Right	45	1	1.00	0.03	45	1	1.00	0.03	
Comb. L-T-R		0				0			
NB Left	20	1	1.00	0.01	20	1	1.00	0.01	0.878
Comb. L-T		0				0			
NB Thru	102	1	1.00	0.06	102	1	1.00	0.06	
Comb. T-R		0				0			
NB Right	189	1	1.00	0.12	192	1	1.00	0.12	
Comb. L-T-R		0				0			
SB Left	44	1	1.00	0.03	44	1	1.00	0.03	0.778
Comb. L-T		0				0			
SB Thru	58	0	0.58	0.06	58	0	0.58	0.06	
Comb. T-R		1				1			
SB Right	42	0	0.42	0.06	42	0	0.42	0.06	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.45	E-W:	0.47
	N-S:	0.15	N-S:	0.15
	Total:	0.60	Total:	0.61
Lost Time		0.10		0.10
V/C		0.699		0.713
Level of Service		B		C

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	352	2	2.00	0.12	372	2	2.00	0.13	372	2	2.00	0.13	
Comb. L-T						0				0			
EB Thru	852	2	2.00	0.27	882	2	2.00	0.28	882	2	2.48	0.22	0.844
Comb. T-R						0				1			
EB Right	166	1	1.00	0.10	166	1	1.00	0.10	185	0	0.52	0.22	
Comb. L-T-R						0				0			
WB Left	91	2	2.00	0.03	102	2	2.00	0.04	102	2	2.00	0.04	
Comb. L-T						0				0			
WB Thru	482	2	2.00	0.15	489	2	2.00	0.15	489	2	2.02	0.15	0.912
Comb. T-R						0				1			
WB Right	189	1	1.00	0.12	212	1	1.00	0.13	236	0	0.98	0.15	
Comb. L-T-R						0				0			
NB Left	215	2	2.00	0.07	215	2	2.00	0.07	215	2	2.00	0.07	
Comb. L-T						0				0			
NB Thru	1354	3	3.00	0.28	1437	3	3.00	0.30	1437	3	3.00	0.30	0.848
Comb. T-R						0				0			
NB Right	651	1	1.00	0.41	696	1	1.00	0.44	696	1	1.00	0.44	
Comb. L-T-R						0				0			
SB Left	368	2	2.00	0.13	423	2	2.00	0.15	423	2	2.00	0.15	
Comb. L-T						0				0			
SB Thru	1211	2	2.48	0.30	1230	2	2.48	0.31	1230	2	2.48	0.31	0.853
Comb. T-R		1				1				1			
SB Right	253		0.52	0.30	258	0	0.52	0.31	258	0	0.52	0.31	
Comb. L-T-R						0				0			

Critical Volumes	E-W:	0.30	E-W:	0.31	E-W:	0.28
	N-S:	0.53	N-S:	0.58	N-S:	0.58
	Total:	0.83	Total:	0.89	Total:	0.86
Lost Time		0.10		0.10		0.10
V/C		0.932		0.993		0.962
Level of Service		E		E		E

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	383	2	2.00	0.13	396	2	2.00	0.14	396	2	2.00	0.14	
Comb. L-T		0				0				0			
EB Thru	638	2	2.00	0.20	657	2	2.00	0.21	657	2	2.15	0.19	0.933
Comb. T-R		0				0				1			
EB Right	221	1	1.00	0.14	221	1	1.00	0.14	259	0	0.85	0.19	
Comb. L-T-R		0				0				0			
WB Left	237	2	2.00	0.08	263	2	2.00	0.09	263	2	2.00	0.09	
Comb. L-T		0				0				0			
WB Thru	660	2	2.00	0.21	675	2	2.00	0.21	675	2	2.06	0.20	0.923
Comb. T-R		0				0				1			
WB Right	230	1	1.00	0.14	261	1	1.00	0.16	307	0	0.94	0.20	
Comb. L-T-R		0				0				0			
NB Left	365	2	2.00	0.13	365	2	2.00	0.13	365	2	2.00	0.13	
Comb. L-T		0				0				0			
NB Thru	1328	3	3.00	0.28	1382	3	3.00	0.29	1382	3	3.00	0.29	0.880
Comb. T-R		0				0				0			
NB Right	305	1	1.00	0.19	334	1	1.00	0.21	334	1	1.00	0.21	
Comb. L-T-R		0				0				0			
SB Left	280	2	2.00	0.10	320	2	2.00	0.11	320	2	2.00	0.11	
Comb. L-T		0				0				0			
SB Thru	827	2	2.16	0.24	868	2	2.17	0.25	868	2	2.17	0.25	0.934
Comb. T-R		1				1				1			
SB Right	324	0	0.84	0.24	334	0	0.83	0.25	334	0	0.83	0.25	
Comb. L-T-R		0				0				0			

Critical Volumes		E-W:	0.34		E-W:	0.35		E-W:	0.34
		N-S:	0.37		N-S:	0.40		N-S:	0.40
		Total:	0.71		Total:	0.75		Total:	0.74
Lost Time			0.10			0.10			0.10
V/C			0.813			0.847			0.841
Level of Service			D			D			D

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	331	1	1.00	0.21	373	1	1.00	0.23	0.932
Comb. L-T						0			
EB Thru	1248	2	2.00	0.39	1326	2	2.00	0.41	
Comb. T-R						0			
EB Right	177	1	1.00	0.11	181	1	1.00	0.11	
Comb. L-T-R						0			
WB Left	63	1	1.00	0.04	67	1	1.00	0.04	0.904
Comb. L-T						0			
WB Thru	695	2	2.00	0.22	727	2	2.00	0.23	
Comb. T-R						0			
WB Right	242	1	1.00	0.15	271	1	1.00	0.17	
Comb. L-T-R						0			
NB Left	10		0.41	0.01	11	0	0.44	0.02	0.714
Comb. L-T		1				1			
NB Thru	14		0.59	0.01	14	0	0.56	0.02	
Comb. T-R						0			
NB Right	4	1	1.00	0.00	6	1	1.00	0.00	
Comb. L-T-R						0			
SB Left	68		0.75	0.06	75	0	0.77	0.06	0.795
Comb. L-T		1				1			
SB Thru	23		0.25	0.06	23	0	0.23	0.06	
Comb. T-R						0			
SB Right	129	1	1.00	0.08	141	1	1.00	0.09	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.43	E-W:	0.46
	N-S:	0.10	N-S:	0.10
	Total:	0.53	Total:	0.56

Lost Time	0.10	0.10

V/C	0.625	0.664
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	189	1	1.00	0.12	219	1	1.00	0.14	0.915
Comb. L-T		0				0			
EB Thru	1042	2	2.00	0.33	1102	2	2.00	0.34	
Comb. T-R		0				0			
EB Right	37	1	1.00	0.02	40	1	1.00	0.03	
Comb. L-T-R		0				0			
WB Left	13	1	1.00	0.01	17	1	1.00	0.01	0.967
Comb. L-T		0				0			
WB Thru	862	2	2.00	0.27	911	2	2.00	0.28	
Comb. T-R		0				0			
WB Right	76	1	1.00	0.05	95	1	1.00	0.06	
Comb. L-T-R		0				0			
NB Left	114	0	0.88	0.08	117	0	0.88	0.08	0.717
Comb. L-T		1				1			
NB Thru	15	0	0.12	0.08	15	0	0.12	0.08	
Comb. T-R		0				0			
NB Right	22	1	1.00	0.01	25	1	1.00	0.02	
Comb. L-T-R		0				0			
SB Left	149	0	0.96	0.10	166	0	0.97	0.11	0.852
Comb. L-T		1				1			
SB Thru	6	0	0.04	0.10	6	0	0.03	0.11	
Comb. T-R		0				0			
SB Right	189	1	1.00	0.12	214	1	1.00	0.13	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.39	E-W:	0.42
	N-S:	0.20	N-S:	0.22
	Total:	0.59	Total:	0.64

Lost Time	0.10	0.10

V/C	0.687	0.738
Level of Service	B	C

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	26	1	1.00	0.02	26	1	1.00	0.02	
Comb. L-T						0			
EB Thru	1502	2	2.00	0.47	1580	2	2.00	0.49	0.859
Comb. T-R						0			
EB Right			0.00		15	1	1.00	0.01	
Comb. L-T-R						0			
WB Left (U)	0	1	1.00	0.00	15	1	1.00	0.01	
Comb. L-T						0			
WB Thru	948	2	2.00	0.30	1015	2	2.00	0.32	0.853
Comb. T-R						0			
WB Right	124	1	1.00	0.08	124	1	1.00	0.08	
Comb. L-T-R						0			
NB Left	0		0.00		3	1	1.00	0.00	
Comb. L-T						0			
NB Thru	0		0.00		0	0	0.00		0.920
Comb. T-R						0			
NB Right	0		0.00		3	1	1.00	0.00	
Comb. L-T-R						0			
SB Left	16		0.50	0.02	16	0	0.50	0.02	
Comb. L-T						0			
SB Thru			0.00		0	0	0.00		0.750
Comb. T-R						0			
SB Right	16		0.50	0.02	16	0	0.50	0.02	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.47	E-W:	0.50
	N-S:	0.02	N-S:	0.02
	Total:	0.49	Total:	0.53

Lost Time	0.10	0.10

V/C	0.589	0.625
Level of Service	A	B

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	37	1	1.00	0.02	37	1	1.00	0.02	0.912
Comb. L-T		0				0			
EB Thru	1075	2	2.00	0.34	1144	2	2.00	0.36	
Comb. T-R		0				0			
EB Right		0	0.00		10	1	1.00	0.01	
Comb. L-T-R		0				0			
WB Left (U)	0	1	1.00	0.00	10	1	1.00	0.01	0.944
Comb. L-T		0				0			
WB Thru	991	2	2.00	0.31	1056	2	2.00	0.33	
Comb. T-R		0				0			
WB Right	81	1	1.00	0.05	81	1	1.00	0.05	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		8	1	1.00	0.00	0.920
Comb. L-T		0				0			
NB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
NB Right	0	0	0.00		8	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	43	0	0.63	0.04	43	0	0.63	0.04	0.794
Comb. L-T		0				0			
SB Thru		0	0.00		0	0	0.00		
Comb. T-R		0				0			
SB Right	25	0	0.37	0.04	25	0	0.37	0.04	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.34	E-W:	0.36
	N-S:	0.04	N-S:	0.05
	Total:	0.38	Total:	0.41

Lost Time	0.10	0.10

V/C	0.478	0.511
Level of Service	A	A

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	328	2	2.00	0.11	387	2	2.00	0.13	0.883
Comb. L-T						0			
EB Thru	776	1	1.71	0.28	791	2	2.00	0.25	
Comb. T-R		1				0			
EB Right	131		0.29	0.28	136	1	1.00	0.08	
Comb. L-T-R						0			
WB Left	130	1	1.00	0.08	140	1	1.00	0.09	0.929
Comb. L-T						0			
WB Thru	1035	2	2.00	0.32	1096	2	2.00	0.34	
Comb. T-R						0			
WB Right	543	1	1.00	0.34	613	1	1.00	0.38	
Comb. L-T-R						0			
NB Left	28	1	1.00	0.02	29	1	1.00	0.02	0.579
Comb. L-T						0			
NB Thru	21	1	1.00	0.01	21	1	1.00	0.01	
Comb. T-R						0			
NB Right	28	1	1.00	0.02	31	1	1.00	0.02	
Comb. L-T-R						0			
SB Left	91	2	2.00	0.03	116	2	2.00	0.04	0.733
Comb. L-T						0			
SB Thru	30	1	1.00	0.02	30	1	1.00	0.02	
Comb. T-R						0			
SB Right	45	1	1.00	0.03	60	1	1.00	0.04	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.45	E-W:	0.52
	N-S:	0.05	N-S:	0.06
	Total:	0.50	Total:	0.58
Lost Time		0.10		0.10
V/C		0.602		0.677
Level of Service		B		B

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	187	2	2.00	0.07	228	2	2.00	0.08	0.875
Comb. L-T		0				0			
EB Thru	968	1	1.95	0.31	1003	2	2.00	0.31	
Comb. T-R		1				0			
EB Right	25	0	0.05	0.31	29	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	26	1	1.00	0.02	32	1	1.00	0.02	0.900
Comb. L-T		0				0			
WB Thru	966	2	2.00	0.30	1009	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	157	1	1.00	0.10	207	1	1.00	0.13	
Comb. L-T-R		0				0			
NB Left	15	1	1.00	0.01	17	1	1.00	0.01	0.886
Comb. L-T		0				0			
NB Thru	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. T-R		0				0			
NB Right	61	1	1.00	0.04	67	1	1.00	0.04	
Comb. L-T-R		0				0			
SB Left	191	2	2.00	0.07	245	2	2.00	0.09	0.787
Comb. L-T		0				0			
SB Thru	6	1	1.00	0.00	6	1	1.00	0.00	
Comb. T-R		0				0			
SB Right	88	1	1.00	0.05	118	1	1.00	0.07	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.37	E-W:	0.39
	N-S:	0.10	N-S:	0.13
	Total:	0.47	Total:	0.52
Lost Time		0.10		0.10
V/C		0.571		0.621
Level of Service		A		B

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	766	0	1594	137	0	0
Future Vol, veh/h	1	1	766	0	1594	137	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	833	0	1733	149	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1733	1882	0	833	-	0	-	867
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	111	315	-	425	-	-	0	296
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	164	164	-	425	-	-	-	296
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	164	-	425	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-	-	-
HCM Control Delay (s)	27.2	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	800	0	1724	150	0	0
Future Vol, veh/h	1	1	800	0	1724	150	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	870	0	1874	163	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1874	2037	0	870	-	0	-	937
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	90	274	-	402	-	-	0	266
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	135	135	-	402	-	-	-	266
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	135	-	402	-	-	-
HCM Lane V/C Ratio	0.016	-	-	-	-	-
HCM Control Delay (s)	32	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1058	3	1027	19	0	0
Future Vol, veh/h	1	1	1058	3	1027	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1150	3	1116	21	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1116	1137	0	1150	-	0	-	558
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	280	610	-	266	-	-	0	473
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	384	384	-	266	-	-	-	473
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	384	-	266	-	-	-
HCM Lane V/C Ratio	0.006	-	0.012	-	-	-
HCM Control Delay (s)	14.4	-	18.7	-	-	0
HCM Lane LOS	B	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1136	3	1117	28	0	0
Future Vol, veh/h	1	1	1136	3	1117	28	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1235	3	1214	30	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1214	1244	0	1235	-	0	-	607
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	242	555	-	234	-	-	0	439
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	337	337	-	234	-	-	-	439
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	337	-	234	-	-	-
HCM Lane V/C Ratio	0.006	-	0.014	-	-	-
HCM Control Delay (s)	15.8	-	20.6	-	-	0
HCM Lane LOS	C	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	332	2	2.00	0.12	332	2	2.00	0.12	332	2	2.00	0.12	
Comb. L-T						0							
EB Thru	606	2	2.00	0.19	648	2	2.00	0.20	648	2	2.00	0.20	0.814
Comb. T-R						0							
EB Right	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T-R						0							
WB Left	15	1	1.00	0.01	15	1	1.00	0.01	15	1	1.00	0.01	
Comb. L-T						0							
WB Thru	1622	2	2.00	0.51	1769	2	2.00	0.55	1769	2	2.33	0.47	0.983
Comb. T-R						0				1			
WB Right	434	1	1.00	0.27	434	1	1.00	0.27	511	0	0.67	0.47	
Comb. L-T-R						0							
NB Left	0	1	1.00	0.00	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T						0							
NB Thru	4		0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	0.500
Comb. T-R		1				1				1			
NB Right	4		0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	
Comb. L-T-R						0							
SB Left	260	1	1.99	0.08	260	1	1.99	0.08	260	1	1.99	0.08	
Comb. L-T		1				1				1			
SB Thru	1		0.01	0.08	1	0	0.01	0.08	1		0.01	0.08	0.759
Comb. T-R						0							
SB Right	187	1	1.00	0.12	187	1	1.00	0.12	187	1	1.00	0.12	
Comb. L-T-R						0							

Critical Volumes	E-W:	0.62		E-W:	0.67		E-W:	0.59	
	N-S:	0.12		N-S:	0.12		N-S:	0.12	
	Total:	0.74		Total:	0.78		Total:	0.71	
Lost Time		0.10			0.10			0.10	
V/C		0.839			0.885			0.807	
Level of Service		D			D			D	

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	145	2	2.00	0.05	145	2	2.00	0.05	145	2	2.00	0.05	0.886
Comb. L-T		0				0							
EB Thru	1042	2	2.00	0.33	1130	2	2.00	0.35	1130	2	2.00	0.35	
Comb. T-R		0				0							
EB Right	1	1	1.00	0.00	1	1	1.00	0.00	1	1	1.00	0.00	
Comb. L-T-R		0				0							
WB Left	39	1	1.00	0.02	39	1	1.00	0.02	39	1	1.00	0.02	0.897
Comb. L-T		0				0							
WB Thru	980	2	2.00	0.31	1091	2	2.00	0.34	1091	2	2.39	0.28	
Comb. T-R		0				0				1			
WB Right	166	1	1.00	0.10	166	1	1.00	0.10	277	0	0.61	0.28	
Comb. L-T-R		0				0							
NB Left	4	1	1.00	0.00	4	1	1.00	0.00	4	1	1.00	0.00	0.563
Comb. L-T		0				0							
NB Thru	7	0	0.57	0.01	7	0	0.57	0.01	7		0.57	0.01	
Comb. T-R		1				1				1			
NB Right	5	0	0.43	0.01	5	0	0.43	0.01	5		0.43	0.01	
Comb. L-T-R		0				0							
SB Left	699	1	1.95	0.22	699	1	1.95	0.22	699	1	1.95	0.22	0.790
Comb. L-T		1				1				1			
SB Thru	16	0	0.05	0.22	16	0	0.05	0.22	16		0.05	0.22	
Comb. T-R		0				0							
SB Right	213	1	1.00	0.13	213	1	1.00	0.13	213	1	1.00	0.13	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.36			E-W:	0.39			E-W:	0.38	
			N-S:	0.23			N-S:	0.23			N-S:	0.23	
			Total:	0.59			Total:	0.62			Total:	0.61	
Lost Time				0.10				0.10				0.10	
V/C				0.688				0.722				0.709	
Level of Service				B				C				C	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	351	2	2.00	0.12	372	2	2.00	0.13	372	2	2.00	0.13	
Comb. L-T						0				0			
EB Thru	433	2	2.89	0.09	450	2	2.90	0.10	450	2	2.90	0.10	0.883
Comb. T-R		1				1				1			
EB Right	16		0.11	0.09	16	0	0.10	0.10	16	0	0.10	0.10	
Comb. L-T-R						0				0			
WB Left	22	1	1.00	0.01	22	1	1.00	0.01	22	1	1.00	0.01	
Comb. L-T						0				0			
WB Thru	1354	2	2.00	0.42	1419	2	2.00	0.44	1419	2	2.46	0.36	0.993
Comb. T-R						0				1			
WB Right	312	1	1.00	0.20	312	1	1.00	0.20	312	0	0.54	0.36	
Comb. L-T-R						0				0			
NB Left	57	1	1.00	0.04	57	1	1.00	0.04	57	1	1.00	0.04	
Comb. L-T						0				0			
NB Thru	45	1	1.27	0.02	45	1	1.27	0.02	45	1	1.27	0.02	0.688
Comb. T-R		1				1				1			
NB Right	26		0.73	0.02	26	0	0.73	0.02	26	0	0.73	0.02	
Comb. L-T-R						0				0			
SB Left	144	1	1.69	0.05	144	1	1.69	0.05	144	1	1.69	0.05	
Comb. L-T		1				1				1			
SB Thru	26		0.31	0.05	26	0	0.31	0.05	26	0	0.31	0.05	0.837
Comb. T-R						0				0			
SB Right	1031	2	2.00	0.32	1115	2	2.00	0.35	1115	2	2.00	0.35	
Comb. L-T-R						0				0			

Critical Volumes			E-W:	0.54			E-W:	0.57			E-W:	0.49	
			N-S:	0.36			N-S:	0.38			N-S:	0.38	
			Total:	0.90			Total:	0.96			Total:	0.87	
Lost Time				0.10				0.10				0.10	
V/C				1.003				1.056				0.973	
Level of Service				F				F				E	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	658	2	2.00	0.23	706	2	2.00	0.24	706	2	2.00	0.24	0.904
Comb. L-T		0				0				0			
EB Thru	978	2	2.89	0.21	1016	2	2.90	0.22	1016	2	2.90	0.22	
Comb. T-R		1				1				1			
EB Right	36	0	0.11	0.21	36	0	0.10	0.22	36	0	0.10	0.22	
Comb. L-T-R		0				0				0			
WB Left	56	1	1.00	0.04	56	1	1.00	0.04	56	1	1.00	0.04	0.892
Comb. L-T		0				0				0			
WB Thru	834	2	2.00	0.26	884	2	2.00	0.28	884	2	2.02	0.27	
Comb. T-R		0				0				1			
WB Right	430	1	1.00	0.27	430	1	1.00	0.27	430	0	0.98	0.27	
Comb. L-T-R		0				0				0			
NB Left	46	1	1.00	0.03	46	1	1.00	0.03	46	1	1.00	0.03	0.825
Comb. L-T		0				0				0			
NB Thru	55	1	0.96	0.04	55	1	0.96	0.04	55	1	0.96	0.04	
Comb. T-R		1				1				1			
NB Right	59	0	1.04	0.04	59	0	1.04	0.04	59	0	1.04	0.04	
Comb. L-T-R		0				0				0			
SB Left	361	1	1.79	0.13	361	1	1.79	0.13	361	1	1.79	0.13	0.863
Comb. L-T		1				1				1			
SB Thru	43	0	0.21	0.13	43	0	0.21	0.13	43	0	0.21	0.13	
Comb. T-R		0				0				0			
SB Right	363	2	2.00	0.11	410	2	2.00	0.13	410	2	2.00	0.13	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.50			E-W:	0.52			E-W:	0.52	
			N-S:	0.16			N-S:	0.16			N-S:	0.16	
			Total:	0.66			Total:	0.68			Total:	0.68	
Lost Time				0.10				0.10				0.10	
V/C				0.759				0.783				0.780	
Level of Service				C				C				C	

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 20%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	49	1	1.00	0.03	49	1	1.00	0.03	49	1	1.00	0.03	
Comb. L-T						0							
EB Thru	164	1	1.53	0.07	164	1	1.49	0.07	164	1	1.00	0.10	0.917
Comb. T-R		1				1				0			
EB Right	457	1	1.47	0.19	507	1	1.51	0.21	507	2	2.00	0.16	
Comb. L-T-R						0							
WB Left	216	1	1.00	0.14	216	1	1.00	0.14	216	1	1.00	0.14	
Comb. L-T						0							
WB Thru	470	2	2.00	0.15	470	2	2.00	0.15	470	2	2.00	0.15	0.717
Comb. T-R						0							
WB Right	70	1	1.00	0.04	70	1	1.00	0.04	70	1	1.00	0.04	
Comb. L-T-R						0							
NB Left	401	2	2.00	0.14	404	2	2.00	0.14	404	2	2.00	0.14	
Comb. L-T						0							
NB Thru	306	1	1.82	0.10	323	1	1.83	0.11	323	1	1.83	0.11	0.876
Comb. T-R		1				1				1			
NB Right	30		0.18	0.10	30	0	0.17	0.11	30		0.17	0.11	
Comb. L-T-R						0							
SB Left	72	1	1.00	0.05	72	1	1.00	0.05	72	1	1.00	0.05	
Comb. L-T						0							
SB Thru	701	1	1.69	0.26	728	1	1.70	0.27	728	1	1.70	0.27	0.814
Comb. T-R		1				1				1			
SB Right	130		0.31	0.26	130	0	0.30	0.27	130		0.30	0.27	
Comb. L-T-R						0							

Critical Volumes			E-W:	0.33			E-W:	0.34			E-W:	0.29	
			N-S:	0.40			N-S:	0.41			N-S:	0.41	
			Total:	0.73			Total:	0.75			Total:	0.70	
Lost Time				0.10				0.10				0.10	
V/C				0.828				0.853				0.802	
Level of Service				D				D				D	

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	90	1	1.00	0.06	90	1	1.00	0.06	90	1	1.00	0.06	0.891
Comb. L-T		0				0							
EB Thru	227	1	1.68	0.08	227	1	1.64	0.09	227	1	1.00	0.14	
Comb. T-R		1				1				0			
EB Right	444	1	1.32	0.21	476	1	1.36	0.22	476	2	2.00	0.15	
Comb. L-T-R		0				0							
WB Left	35	1	1.00	0.02	35	1	1.00	0.02	35	1	1.00	0.02	0.925
Comb. L-T		0				0							
WB Thru	235	2	2.00	0.07	235	2	2.00	0.07	235	2	2.00	0.07	
Comb. T-R		0				0							
WB Right	143	1	1.00	0.09	143	1	1.00	0.09	143	1	1.00	0.09	
Comb. L-T-R		0				0							
NB Left	370	2	2.00	0.13	378	2	2.00	0.13	378	2	2.00	0.13	0.914
Comb. L-T		0				0							
NB Thru	715	1	1.93	0.23	753	1	1.93	0.24	753	1	1.93	0.24	
Comb. T-R		1				1				1			
NB Right	27	0	0.07	0.23	27	0	0.07	0.24	27		0.07	0.24	
Comb. L-T-R		0				0							
SB Left	25	1	1.00	0.02	25	1	1.00	0.02	25	1	1.00	0.02	0.887
Comb. L-T		0				0							
SB Thru	204	1	1.48	0.09	221	1	1.51	0.09	221	1	1.51	0.09	
Comb. T-R		1				1				1			
SB Right	71	0	0.52	0.09	71	0	0.49	0.09	71		0.49	0.09	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.23			E-W:	0.24			E-W:	0.17	
			N-S:	0.25			N-S:	0.26			N-S:	0.26	
			Total:	0.48			Total:	0.50			Total:	0.43	
Lost Time				0.10				0.10				0.10	
V/C				0.579				0.601				0.530	
Level of Service				A				B				A	

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	109	1	1.00	0.07	112	1	1.00	0.07	112	1	1.00	0.07	
Comb. L-T						0							
EB Thru	326	2	2.19	0.09	339	2	2.21	0.10	339	2	2.21	0.10	0.924
Comb. T-R		1				1				1			
EB Right	121		0.81	0.09	121	0	0.79	0.10	121		0.79	0.10	
Comb. L-T-R						0							
WB Left	51	1	1.00	0.03	51	1	1.00	0.03	51	1	1.00	0.03	
Comb. L-T						0							
WB Thru	1313	2	2.78	0.30	1373	2	2.79	0.31	1373	2	2.79	0.31	0.863
Comb. T-R		1				1				1			
WB Right	104		0.22	0.30	104	0	0.21	0.31	104		0.21	0.31	
Comb. L-T-R						0							
NB Left	377	1	1.00	0.24	377	1	1.00	0.24	377	2	2.00	0.13	
Comb. L-T						0							
NB Thru	543	2	2.00	0.17	543	2	2.00	0.17	543	2	2.00	0.17	0.812
Comb. T-R						0							
NB Right	64	1	1.00	0.04	64	1	1.00	0.04	64	1	1.00	0.04	
Comb. L-T-R						0							
SB Left	77	1	1.00	0.05	77	1	1.00	0.05	77	1	1.00	0.05	
Comb. L-T						0							
SB Thru	631	1	1.79	0.22	631	1	1.77	0.22	631	1	1.77	0.22	0.924
Comb. T-R		1				1				1			
SB Right	424	1	1.21	0.22	438	1	1.23	0.22	438	1	1.23	0.22	
Comb. L-T-R						0							

Critical Volumes			E-W:	0.36			E-W:	0.38			E-W:	0.38	
			N-S:	0.46			N-S:	0.46			N-S:	0.35	
			Total:	0.82			Total:	0.84			Total:	0.73	
Lost Time				0.10				0.10				0.10	
V/C				0.919				0.936				0.832	
Level of Service				E				E				D	

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	170	1	1.00	0.11	178	1	1.00	0.11	178	1	1.00	0.11	
Comb. L-T		0				0							
EB Thru	999	2	2.52	0.25	1030	2	2.53	0.25	1030	2	2.53	0.25	0.904
Comb. T-R		1				1				1			
EB Right	190	0	0.48	0.25	190	0	0.47	0.25	190		0.47	0.25	
Comb. L-T-R		0				0							
WB Left	88	1	1.00	0.05	88	1	1.00	0.05	88	1	1.00	0.05	
Comb. L-T		0				0							
WB Thru	854	2	2.62	0.20	895	2	2.64	0.21	895	2	2.64	0.21	0.865
Comb. T-R		1				1				1			
WB Right	123	0	0.38	0.20	123	0	0.36	0.21	123		0.36	0.21	
Comb. L-T-R		0				0							
NB Left	324	1	1.00	0.20	324	1	1.00	0.20	324	2	2.00	0.11	
Comb. L-T		0				0							
NB Thru	691	2	2.00	0.22	691	2	2.00	0.22	691	2	2.00	0.22	0.874
Comb. T-R		0				0							
NB Right	65	1	1.00	0.04	65	1	1.00	0.04	65	1	1.00	0.04	
Comb. L-T-R		0				0							
SB Left	219	1	1.00	0.14	219	1	1.00	0.14	219	1	1.00	0.14	
Comb. L-T		0				0							
SB Thru	374	1	2.00	0.12	374	1	1.98	0.12	374	1	1.98	0.12	0.923
Comb. T-R		1				1				1			
SB Right	183	1	1.00	0.11	193	1	1.02	0.12	193	1	1.02	0.12	
Comb. L-T-R		0				0							

Critical Volumes	E-W:	0.31	E-W:	0.32	E-W:	0.32
	N-S:	0.35	N-S:	0.35	N-S:	0.35
	Total:	0.66	Total:	0.68	Total:	0.68
Lost Time		0.10		0.10		0.10
V/C		0.763		0.776		0.776
Level of Service		C		C		C

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	110	1	1.00	0.07	110	1	1.00	0.07	110	1	1.00	0.07	
Comb. L-T						0				0			
EB Thru	406	2	2.91	0.09	421	2	2.91	0.09	421	2	2.91	0.09	0.784
Comb. T-R		1				1				1			
EB Right	13		0.09	0.09	13	0	0.09	0.09	13	0	0.09	0.09	
Comb. L-T-R						0				0			
WB Left	706	1	1.00	0.44	706	1	1.00	0.44	706	1	1.00	0.44	
Comb. L-T						0				0			
WB Thru	1299	2	2.71	0.30	1361	2	2.72	0.31	1361	2	2.72	0.31	0.837
Comb. T-R		1				1				1			
WB Right	139		0.29	0.30	139	0	0.28	0.31	139	0	0.28	0.31	
Comb. L-T-R						0				0			
NB Left	55	1	1.00	0.03	55	1	1.00	0.03	55	1	1.00	0.03	
Comb. L-T						0				0			
NB Thru	132	1	1.00	0.08	132	1	1.00	0.08	132	1	1.00	0.08	0.757
Comb. T-R						0				0			
NB Right	372	1	1.00	0.23	372	1	1.00	0.23	372	1	1.00	0.23	
Comb. L-T-R						0				0			
SB Left	64	1	0.36	0.11	64	1	0.36	0.11	64	2	2.00	0.02	
Comb. L-T		1				1				0			
SB Thru	286		1.64	0.11	286	0	1.64	0.11	286	0	0.66	0.27	0.782
Comb. T-R						0				1			
SB Right	146	1	1.00	0.09	146	1	1.00	0.09	146	0	0.34	0.27	
Comb. L-T-R						0				0			

Critical Volumes	E-W:	0.53	E-W:	0.53	E-W:	0.53
	N-S:	0.34	N-S:	0.34	N-S:	0.30
	Total:	0.87	Total:	0.87	Total:	0.84
Lost Time		0.10		0.10		0.10
V/C		0.971		0.974		0.936
Level of Service		E		E		E

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

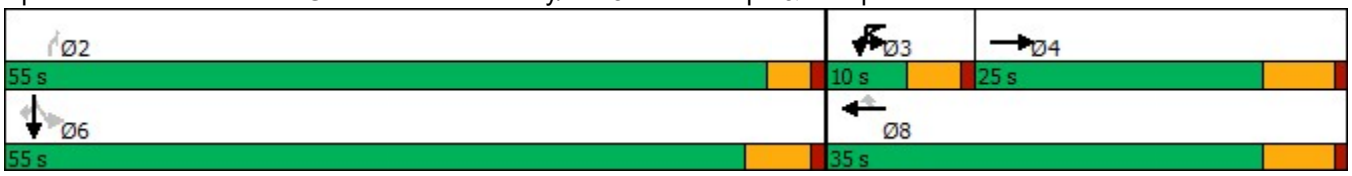
Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	135	1	1.00	0.08	135	1	1.00	0.08	135	1	1.00	0.08	0.887
Comb. L-T		0				0				0			
EB Thru	1154	2	2.96	0.24	1186	2	2.96	0.25	1186	2	2.96	0.25	
Comb. T-R		1				1				1			
EB Right	15	0	0.04	0.24	15	0	0.04	0.25	15	0	0.04	0.25	
Comb. L-T-R		0				0				0			
WB Left	361	1	1.00	0.23	361	1	1.00	0.23	361	1	1.00	0.23	0.887
Comb. L-T		0				0				0			
WB Thru	793	2	2.78	0.18	834	2	2.79	0.19	834	2	2.79	0.19	
Comb. T-R		1				1				1			
WB Right	62	0	0.22	0.18	62	0	0.21	0.19	62	0	0.21	0.19	
Comb. L-T-R		0				0				0			
NB Left	70	1	1.00	0.04	70	1	1.00	0.04	70	1	1.00	0.04	0.960
Comb. L-T		0				0				0			
NB Thru	265	1	1.00	0.17	265	1	1.00	0.17	265	1	1.00	0.17	
Comb. T-R		0				0				0			
NB Right	601	1	1.00	0.38	601	1	1.00	0.38	601	1	1.00	0.38	
Comb. L-T-R		0				0				0			
SB Left	240	1	1.19	0.13	240	1	1.19	0.13	240	2	2.00	0.08	0.757
Comb. L-T		1				1				0			
SB Thru	164	0	0.81	0.13	164	0	0.81	0.13	164	0	0.49	0.21	
Comb. T-R		0				0				1			
SB Right	168	1	1.00	0.10	168	1	1.00	0.10	168	0	0.51	0.21	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.47			E-W:	0.48			E-W:	0.48	
			N-S:	0.50			N-S:	0.50			N-S:	0.46	
			Total:	0.97			Total:	0.98			Total:	0.93	
Lost Time				0.10				0.10				0.10	
V/C				1.071				1.077				1.034	
Level of Service				F				F				F	

Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	640	4	1112	21	4	666	9	940
Future Volume (vph)	640	4	1112	21	4	666	9	940
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	20.3	5.7	25.6	25.6	41.5	40.0	40.0	40.0
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.54	0.52	0.52	0.52
v/c Ratio	0.53	0.31	0.72	0.02	0.00	0.71	0.75	0.68
Control Delay	28.9	46.2	26.6	7.0	0.0	19.6	22.1	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	46.2	26.6	7.0	0.0	19.6	22.1	16.5
LOS	C	D	C	A	A	B	C	B
Approach Delay	28.9		26.9				19.4	
Approach LOS	C		C				B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77.3	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 68.3%	ICU Level of Service C
Analysis Period (min) 15	

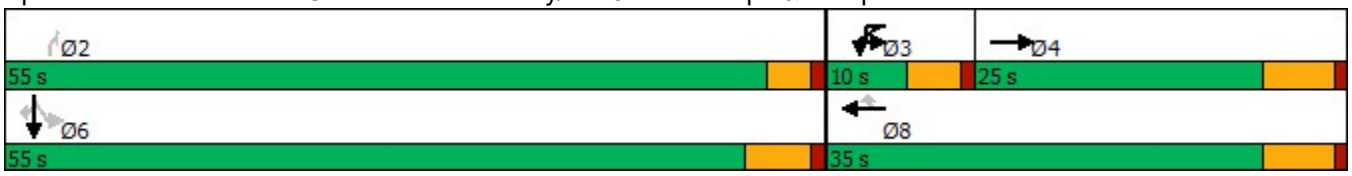
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	650	4	1125	21	4	666	9	979
Future Volume (vph)	650	4	1125	21	4	666	9	979
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	20.5	5.6	25.7	25.7	42.1	40.6	40.6	40.6
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.54	0.52	0.52	0.52
v/c Ratio	0.54	0.31	0.73	0.02	0.00	0.71	0.77	0.71
Control Delay	29.3	46.7	27.2	7.0	0.0	19.7	22.7	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	46.7	27.2	7.0	0.0	19.7	22.7	17.4
LOS	C	D	C	A	A	B	C	B
Approach Delay	29.3		27.4				19.9	
Approach LOS	C		C				B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 78.1	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

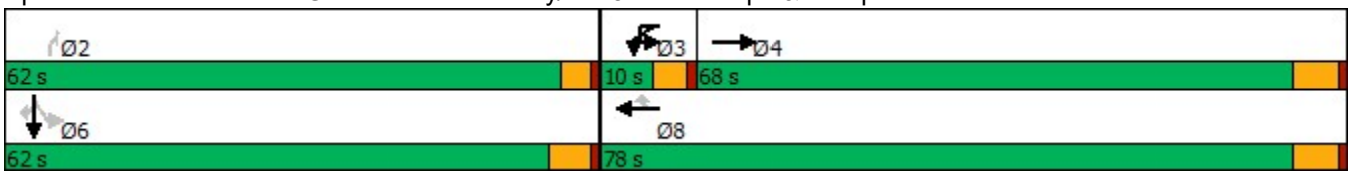
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	1863	7	501	40	7	1126	5	513
Future Volume (vph)	1863	7	501	40	7	1126	5	513
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	60.7	5.4	68.5	68.5	58.0	56.6	56.6	56.6
Actuated g/C Ratio	0.45	0.04	0.50	0.50	0.43	0.42	0.42	0.42
v/c Ratio	0.91	0.67	0.21	0.03	0.01	0.93	0.95	0.64
Control Delay	42.3	107.2	19.0	4.7	0.0	60.0	64.7	18.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	107.2	19.0	4.7	0.0	60.0	64.7	18.2
LOS	D	F	B	A	A	E	E	B
Approach Delay	42.3		24.5				49.9	
Approach LOS	D		C				D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 136.3	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 42.8	Intersection LOS: D
Intersection Capacity Utilization 92.6%	ICU Level of Service F
Analysis Period (min) 15	

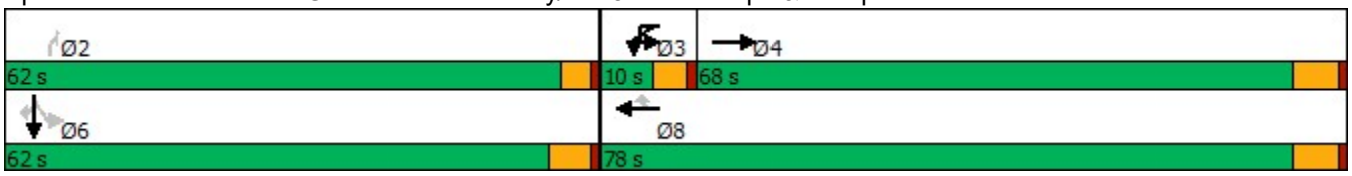
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	1887	7	510	40	7	1126	5	540
Future Volume (vph)	1887	7	510	40	7	1126	5	540
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	61.1	5.4	68.9	68.9	58.1	56.7	56.7	56.7
Actuated g/C Ratio	0.45	0.04	0.50	0.50	0.42	0.41	0.41	0.41
v/c Ratio	0.92	0.67	0.22	0.03	0.01	0.93	0.96	0.68
Control Delay	43.2	107.9	19.0	4.7	0.0	60.5	66.5	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	107.9	19.0	4.7	0.0	60.5	66.5	20.5
LOS	D	F	B	A	A	E	E	C
Approach Delay	43.2		24.5				51.0	
Approach LOS	D		C				D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 136.9	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 43.6	Intersection LOS: D
Intersection Capacity Utilization 92.9%	ICU Level of Service F
Analysis Period (min) 15	

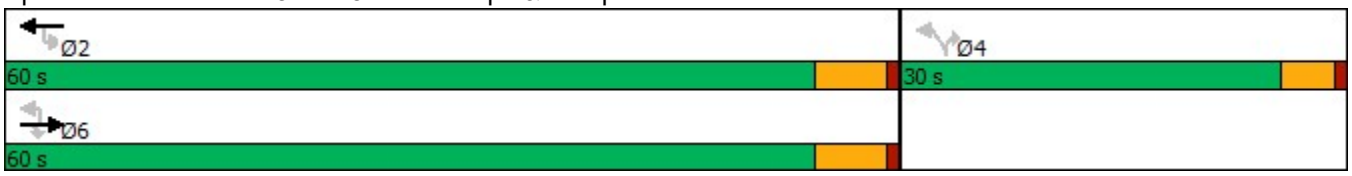
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	968	267	1	1554	350	247
Future Volume (vph)	968	267	1	1554	350	247
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	32.1	32.1		32.1	13.3	13.3
Actuated g/C Ratio	0.57	0.57		0.57	0.24	0.24
v/c Ratio	0.36	0.17		0.62	0.54	0.48
Control Delay	7.0	1.2		9.3	21.9	15.1
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.0	1.2		9.3	21.9	15.1
LOS	A	A		A	C	B
Approach Delay	5.7			9.3	19.8	
Approach LOS	A			A	B	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 56.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 9.8		Intersection LOS: A	
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

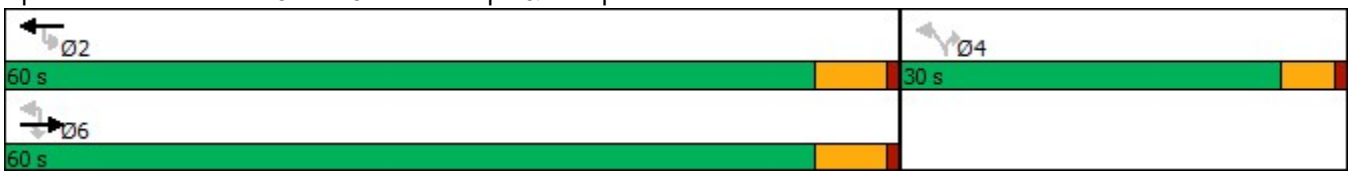
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	969	276	1	1558	359	247
Future Volume (vph)	969	276	1	1558	359	247
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	32.3	32.3		32.3	13.5	13.5
Actuated g/C Ratio	0.57	0.57		0.57	0.24	0.24
v/c Ratio	0.36	0.18		0.62	0.55	0.48
Control Delay	7.1	1.2		9.4	22.2	15.4
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.1	1.2		9.4	22.2	15.4
LOS	A	A		A	C	B
Approach Delay	5.8			9.4	20.0	
Approach LOS	A			A	C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 56.8			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2030	651	1	806	100	278
Future Volume (vph)	2030	651	1	806	100	278
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	11.4	11.4
Actuated g/C Ratio	0.64	0.64		0.64	0.19	0.19
v/c Ratio	0.68	0.35		0.29	0.42	0.55
Control Delay	9.0	1.1		5.6	22.9	29.0
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	9.0	1.1		5.6	22.9	29.0
LOS	A	A		A	C	C
Approach Delay	7.0			5.6	25.2	
Approach LOS	A			A	C	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 60.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2032	672	1	809	106	278
Future Volume (vph)	2032	672	1	809	106	278
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	11.5	11.5
Actuated g/C Ratio	0.64	0.64		0.64	0.19	0.19
v/c Ratio	0.68	0.36		0.29	0.43	0.55
Control Delay	9.0	1.1		5.6	23.0	28.9
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	9.0	1.1		5.6	23.0	28.9
LOS	A	A		A	C	C
Approach Delay	7.0			5.6	25.2	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 60.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 58.2%	ICU Level of Service B
Analysis Period (min) 15	

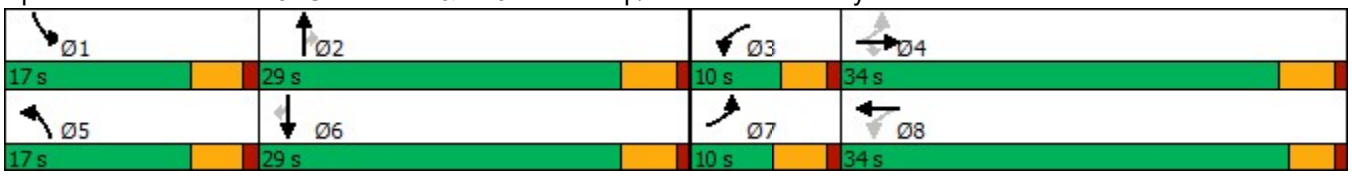
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	325	14	112	23	10	116	815	26	884	183	
Future Volume (vph)	325	14	112	23	10	116	815	26	884	183	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		24.0	24.0		24.7	10.1	36.8	36.8	25.2	25.2	
Actuated g/C Ratio		0.34	0.34		0.35	0.14	0.52	0.52	0.36	0.36	
v/c Ratio		0.83	0.20		0.10	0.50	0.48	0.03	0.76	0.29	
Control Delay		40.3	4.0		13.4	37.8	12.3	0.1	28.1	4.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		40.3	4.0		13.4	37.8	12.3	0.1	28.1	4.8	
LOS		D	A		B	D	B	A	C	A	
Approach Delay		31.3			13.4		15.1		24.1		
Approach LOS		C			B		B		C		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 70.5	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 21.8	Intersection LOS: C
Intersection Capacity Utilization 65.3%	ICU Level of Service C
Analysis Period (min) 15	

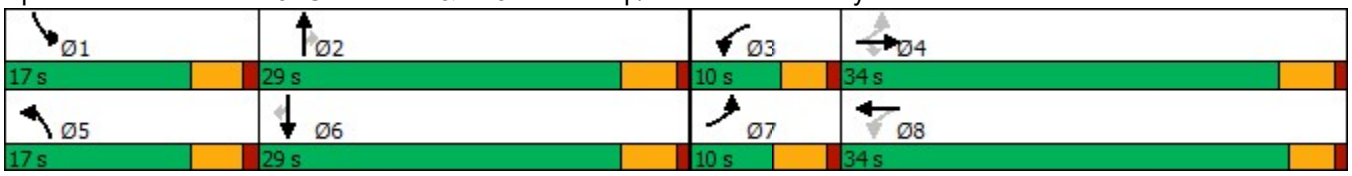
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	325	14	112	23	10	136	819	26	901	183	
Future Volume (vph)	325	14	112	23	10	136	819	26	901	183	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		24.0	24.0		24.7	10.6	39.9	39.9	24.6	24.6	
Actuated g/C Ratio		0.33	0.33		0.34	0.14	0.54	0.54	0.34	0.34	
v/c Ratio		0.86	0.20		0.10	0.58	0.46	0.03	0.83	0.30	
Control Delay		44.7	4.0		13.5	40.3	12.0	0.1	31.7	4.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		44.7	4.0		13.5	40.3	12.0	0.1	31.7	4.8	
LOS		D	A		B	D	B	A	C	A	
Approach Delay		34.6			13.5		15.6		27.2		
Approach LOS		C			B		B		C		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 73.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 66.9%	ICU Level of Service C
Analysis Period (min) 15	

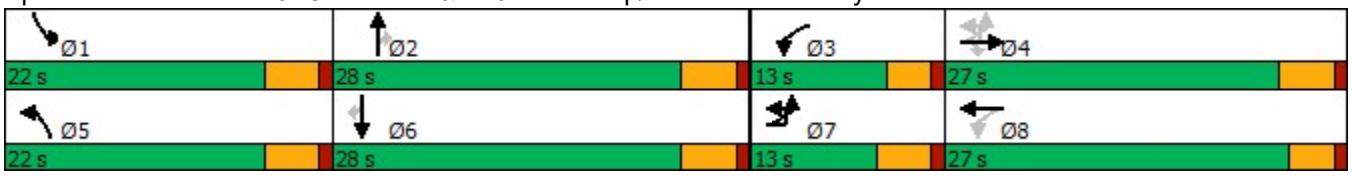
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	218	13	63	37	19	270	843	45	5	820	340
Future Volume (vph)	1	218	13	63	37	19	270	843	45	5	820	340
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			18.1	18.1		18.8	16.1	42.1	42.1	5.8	23.4	23.4
Actuated g/C Ratio			0.25	0.25		0.26	0.22	0.59	0.59	0.08	0.33	0.33
v/c Ratio			0.74	0.14		0.21	0.74	0.44	0.05	0.03	0.77	0.48
Control Delay			39.1	1.0		17.5	39.5	10.6	0.1	33.2	28.7	5.0
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			39.1	1.0		17.5	39.5	10.6	0.1	33.2	28.7	5.0
LOS			D	A		B	D	B	A	C	C	A
Approach Delay			31.0			17.5		16.9			21.8	
Approach LOS			C			B		B			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 71.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

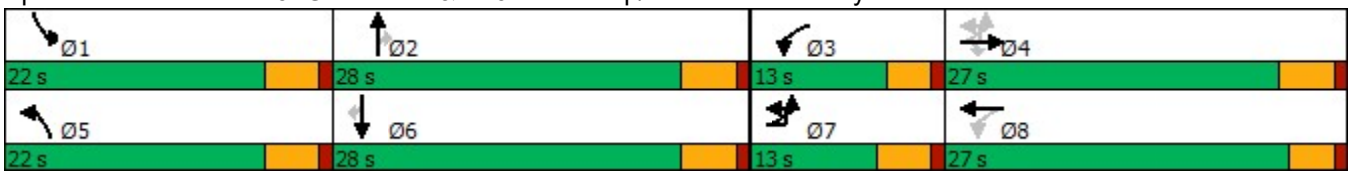
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	218	13	63	37	19	317	852	45	5	832	340
Future Volume (vph)	1	218	13	63	37	19	317	852	45	5	832	340
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			18.2	18.2		18.9	17.5	43.4	43.4	5.8	23.4	23.4
Actuated g/C Ratio			0.25	0.25		0.26	0.24	0.59	0.59	0.08	0.32	0.32
v/c Ratio			0.75	0.14		0.22	0.82	0.44	0.05	0.04	0.80	0.49
Control Delay			40.4	1.0		17.6	45.4	10.5	0.1	33.2	30.2	5.0
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			40.4	1.0		17.6	45.4	10.5	0.1	33.2	30.2	5.0
LOS			D	A		B	D	B	A	C	C	A
Approach Delay			32.0			17.6		19.3			22.9	
Approach LOS			C			B		B			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 73.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 69.1%		ICU Level of Service C	
Analysis Period (min) 15			

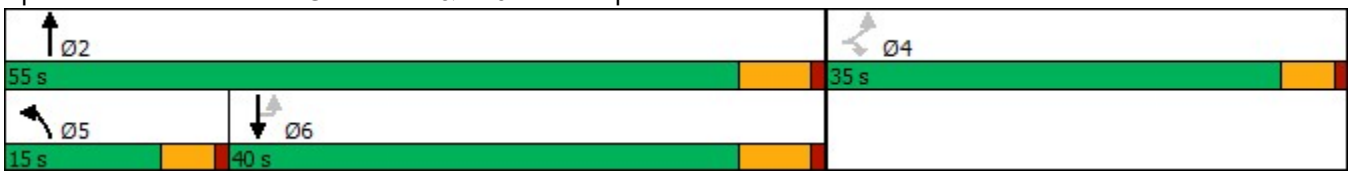
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	278	594	40	682	2	796
Future Volume (vph)	278	594	40	682	2	796
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	25.5	25.5	7.8	36.4		29.8
Actuated g/C Ratio	0.35	0.35	0.11	0.50		0.41
v/c Ratio	0.49	0.87	0.23	0.42		0.82
Control Delay	24.3	27.9	39.1	12.4		26.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	24.3	27.9	39.1	12.4		26.9
LOS	C	C	D	B		C
Approach Delay	26.8			13.9		26.9
Approach LOS	C			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 73.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

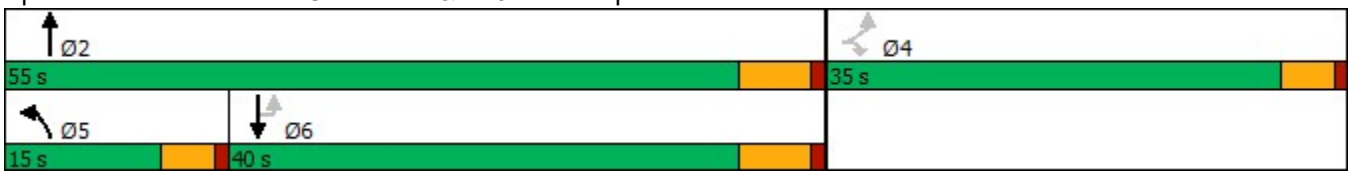
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	278	681	40	706	2	813
Future Volume (vph)	278	681	40	706	2	813
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	31.0	31.0	7.6	38.1		30.9
Actuated g/C Ratio	0.39	0.39	0.10	0.48		0.39
v/c Ratio	0.44	0.93	0.26	0.45		0.87
Control Delay	23.1	37.2	40.3	14.1		31.5
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	23.1	37.2	40.3	14.1		31.5
LOS	C	D	D	B		C
Approach Delay	33.1			15.5		31.5
Approach LOS	C			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 79.3%	ICU Level of Service D
Analysis Period (min) 15	

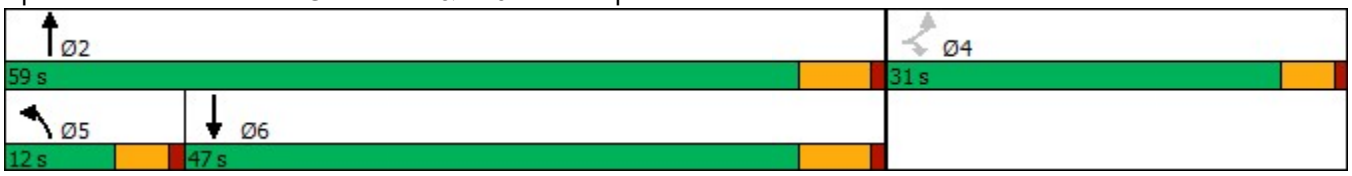
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	262	191	48	889	574
Future Volume (vph)	262	191	48	889	574
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	15.6	15.6	7.4	29.3	23.5
Actuated g/C Ratio	0.27	0.27	0.13	0.51	0.41
v/c Ratio	0.59	0.36	0.23	0.53	0.67
Control Delay	26.3	5.6	33.1	9.9	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	5.6	33.1	9.9	14.6
LOS	C	A	C	A	B
Approach Delay	17.5			11.1	14.6
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 56.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 55.7%	ICU Level of Service B
Analysis Period (min) 15	

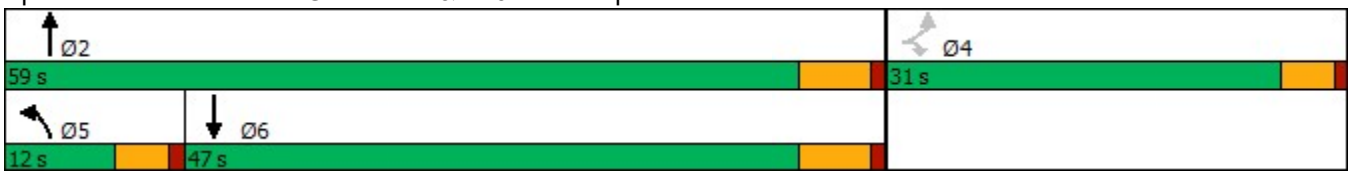
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	262	251	48	946	586
Future Volume (vph)	262	251	48	946	586
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	15.7	15.7	7.4	30.6	24.8
Actuated g/C Ratio	0.27	0.27	0.13	0.53	0.43
v/c Ratio	0.60	0.44	0.23	0.55	0.66
Control Delay	27.0	5.7	33.8	10.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	5.7	33.8	10.1	14.6
LOS	C	A	C	B	B
Approach Delay	16.5			11.3	14.6
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 58.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 17: Grand Ave & I-10 EB Ramps



E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	47		0.22	0.13	47	0	0.22	0.13	47	0	0.22	0.13	
Comb. L-T						0				0			
EB Thru	19		0.09	0.13	19	0	0.09	0.13	19	0	0.09	0.13	0.722
Comb. T-R						0				0			
EB Right	145		0.69	0.13	145	0	0.69	0.13	145	0	0.69	0.13	
Comb. L-T-R		1				1				1			
WB Left	535	1	1.00	0.33	540	1	1.00	0.34	540	1	1.00	0.34	
Comb. L-T						0				0			
WB Thru	121	1	1.00	0.08	121	1	1.00	0.08	121	1	1.00	0.08	0.751
Comb. T-R						0				0			
WB Right	56	1	1.00	0.03	56	1	1.00	0.03	56	1	1.00	0.03	
Comb. L-T-R						0				0			
NB Left	27	1	1.00	0.02	27	1	1.00	0.02	27	1	1.00	0.02	
Comb. L-T						0				0			
NB Thru	748	2	2.00	0.23	776	2	2.00	0.24	776	2	2.00	0.24	0.863
Comb. T-R						0				0			
NB Right	197	1	1.00	0.12	198	1	1.00	0.12	198	1	1.00	0.12	
Comb. L-T-R						0				0			
SB Left	25	1	1.00	0.02	25	1	1.00	0.02	25	1	1.00	0.02	
Comb. L-T						0				0			
SB Thru	1392	2	2.00	0.43	1503	2	2.00	0.47	1503	2	2.90	0.32	0.934
Comb. T-R						0				1			
SB Right	51	1	1.00	0.03	51	1	1.00	0.03	51	0	0.10	0.32	
Comb. L-T-R						0				0			

Critical Volumes			E-W:	0.47			E-W:	0.47			E-W:	0.47	
			N-S:	0.45			N-S:	0.49			N-S:	0.34	
			Total:	0.92			Total:	0.96			Total:	0.81	
Lost Time				0.10				0.10				0.10	
V/C				1.019				1.057				0.911	
Level of Service				F				F				E	

E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	22	0	0.24	0.06	22	0	0.24	0.06	22	0	0.24	0.06	
Comb. L-T		0				0				0			
EB Thru	34	0	0.37	0.06	34	0	0.37	0.06	34	0	0.37	0.06	0.913
Comb. T-R		0				0				0			
EB Right	36	0	0.39	0.06	36	0	0.39	0.06	36	0	0.39	0.06	
Comb. L-T-R		1				1				1			
WB Left	235	1	1.00	0.15	238	1	1.00	0.15	238	1	1.00	0.15	
Comb. L-T		0				0				0			
WB Thru	49	1	1.00	0.03	49	1	1.00	0.03	49	1	1.00	0.03	0.945
Comb. T-R		0				0				0			
WB Right	44	1	1.00	0.03	44	1	1.00	0.03	44	1	1.00	0.03	
Comb. L-T-R		0				0				0			
NB Left	52	1	1.00	0.03	52	1	1.00	0.03	52	1	1.00	0.03	
Comb. L-T		0				0				0			
NB Thru	927	2	2.00	0.29	989	2	2.00	0.31	989	2	2.00	0.31	0.927
Comb. T-R		0				0				0			
NB Right	193	1	1.00	0.12	195	1	1.00	0.12	195	1	1.00	0.12	
Comb. L-T-R		0				0				0			
SB Left	36	1	1.00	0.02	36	1	1.00	0.02	36	1	1.00	0.02	
Comb. L-T		0				0				0			
SB Thru	735	2	2.00	0.23	812	2	2.00	0.25	812	2	2.86	0.18	0.940
Comb. T-R		0				0				1			
SB Right	40	1	1.00	0.03	40	1	1.00	0.03	40	0	0.14	0.18	
Comb. L-T-R		0				0				0			

Critical Volumes	E-W:	0.20	E-W:	0.21	E-W:	0.21
	N-S:	0.31	N-S:	0.33	N-S:	0.33
	Total:	0.52	Total:	0.54	Total:	0.54
Lost Time		0.10		0.10		0.10
V/C		0.617		0.638		0.638
Level of Service		B		B		B

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	25	27	821	1620	121
Future Vol, veh/h	14	25	27	821	1620	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	27	29	892	1761	132

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2265	-	1761	0	-	0
Stage 1	1761	-	-	-	-	-
Stage 2	504	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	34	0	351	-	-	0
Stage 1	123	0	-	-	-	0
Stage 2	572	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	31	-	351	-	-	-
Mov Cap-2 Maneuver	31	-	-	-	-	-
Stage 1	113	-	-	-	-	-
Stage 2	572	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	203.5	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	351	-	31	-	-
HCM Lane V/C Ratio	0.084	-	0.491	-	-
HCM Control Delay (s)	16.2	-	203.5	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.3	-	1.6	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	25	27	847	1729	121
Future Vol, veh/h	14	25	27	847	1729	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	27	29	921	1879	132

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2398	-	1879	0	-	0
Stage 1	1879	-	-	-	-	-
Stage 2	519	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	28	0	316	-	-	0
Stage 1	106	0	-	-	-	0
Stage 2	562	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	25	-	316	-	-	-
Mov Cap-2 Maneuver	25	-	-	-	-	-
Stage 1	96	-	-	-	-	-
Stage 2	562	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	278.2	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	316	-	25	-	-
HCM Lane V/C Ratio	0.093	-	0.609	-	-
HCM Control Delay (s)	17.6	-	278.2	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	11	30	1128	889	31
Future Vol, veh/h	5	11	30	1128	889	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	33	1226	966	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1645	-	966	0	-	0
Stage 1	966	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	90	0	709	-	-	0
Stage 1	330	0	-	-	-	0
Stage 2	465	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	86	-	709	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	314	-	-	-	-	-
Stage 2	465	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	49.7	0.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	709	-	86	-	-
HCM Lane V/C Ratio	0.046	-	0.063	-	-
HCM Control Delay (s)	10.3	-	49.7	0	-
HCM Lane LOS	B	-	E	A	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	11	30	1187	974	31
Future Vol, veh/h	5	11	30	1187	974	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	33	1290	1059	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1770	-	1059	0	-	0
Stage 1	1059	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	74	0	653	-	-	0
Stage 1	295	0	-	-	-	0
Stage 2	448	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	70	-	653	-	-	-
Mov Cap-2 Maneuver	70	-	-	-	-	-
Stage 1	280	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	60.7	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	653	-	70	-	-
HCM Lane V/C Ratio	0.05	-	0.078	-	-
HCM Control Delay (s)	10.8	-	60.7	0	-
HCM Lane LOS	B	-	F	A	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	48.2
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	260	548	453	109	180	305
Future Vol, veh/h	260	548	453	109	180	305
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	596	492	118	196	332
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	80.7	29.9	15.1
HCM LOS	F	D	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	59%	0%	0%	0%	100%	100%	0%
Vol Thru, %	41%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	443	365	302	260	90	90	305
LT Vol	260	0	0	0	90	90	0
Through Vol	183	365	302	151	0	0	0
RT Vol	0	0	0	109	0	0	305
Lane Flow Rate	481	397	328	283	98	98	332
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.117	0.889	0.765	0.636	0.238	0.238	0.535
Departure Headway (Hd)	8.361	8.06	8.657	8.356	9.015	9.015	5.996
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	438	449	420	435	401	401	607
Service Time	6.105	5.803	6.357	6.056	6.715	6.715	3.696
HCM Lane V/C Ratio	1.098	0.884	0.781	0.651	0.244	0.244	0.547
HCM Control Delay	107.6	48	34.5	24.5	14.5	14.5	15.4
HCM Lane LOS	F	E	D	C	B	B	C
HCM 95th-tile Q	16.9	9.5	6.4	4.3	0.9	0.9	3.2

Intersection	
Intersection Delay, s/veh	51.4
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	260	565	457	110	184	305
Future Vol, veh/h	260	565	457	110	184	305
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	614	497	120	200	332
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	86.8	30.9	15.3
HCM LOS	F	D	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	58%	0%	0%	0%	100%	100%	0%
Vol Thru, %	42%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	448	377	305	262	92	92	305
LT Vol	260	0	0	0	92	92	0
Through Vol	188	377	305	152	0	0	0
RT Vol	0	0	0	110	0	0	305
Lane Flow Rate	487	409	331	285	100	100	332
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.137	0.921	0.776	0.645	0.244	0.244	0.539
Departure Headway (Hd)	8.399	8.102	8.721	8.42	9.074	9.074	6.055
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	446	417	431	398	398	600
Service Time	6.144	5.847	6.421	6.12	6.774	6.774	3.755
HCM Lane V/C Ratio	1.122	0.917	0.794	0.661	0.251	0.251	0.553
HCM Control Delay	114.6	53.8	35.8	25.2	14.7	14.7	15.6
HCM Lane LOS	F	F	E	D	B	B	C
HCM 95th-tile Q	17.6	10.4	6.6	4.4	0.9	0.9	3.2

Intersection	
Intersection Delay, s/veh	29.1
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	299	320	450	112	132	213
Future Vol, veh/h	299	320	450	112	132	213
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	325	348	489	122	143	232
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	44.5	22.9	11.7
HCM LOS	E	C	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	74%	0%	0%	0%	100%	100%	0%
Vol Thru, %	26%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	406	213	300	262	66	66	213
LT Vol	299	0	0	0	66	66	0
Through Vol	107	213	300	150	0	0	0
RT Vol	0	0	0	112	0	0	213
Lane Flow Rate	441	232	326	285	72	72	232
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.954	0.477	0.69	0.579	0.168	0.168	0.348
Departure Headway (Hd)	7.786	7.41	7.618	7.313	8.43	8.43	5.418
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	467	487	476	493	426	426	662
Service Time	5.528	5.153	5.362	5.056	6.17	6.17	3.157
HCM Lane V/C Ratio	0.944	0.476	0.685	0.578	0.169	0.169	0.35
HCM Control Delay	59.1	16.8	25.7	19.7	12.9	12.9	11
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	11.6	2.5	5.2	3.6	0.6	0.6	1.6

Intersection	
Intersection Delay, s/veh	30.6
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	299	332	459	114	135	213
Future Vol, veh/h	299	332	459	114	135	213
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	325	361	499	124	147	232
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	46.8	24	11.9
HCM LOS	E	C	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	73%	0%	0%	0%	100%	100%	0%
Vol Thru, %	27%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	410	221	306	267	68	68	213
LT Vol	299	0	0	0	68	68	0
Through Vol	111	221	306	153	0	0	0
RT Vol	0	0	0	114	0	0	213
Lane Flow Rate	445	241	333	290	73	73	232
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.969	0.499	0.709	0.594	0.173	0.173	0.352
Departure Headway (Hd)	7.835	7.462	7.671	7.366	8.487	8.487	5.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	484	472	490	423	423	658
Service Time	5.583	5.211	5.419	5.113	6.227	6.227	3.213
HCM Lane V/C Ratio	0.961	0.498	0.706	0.592	0.173	0.173	0.353
HCM Control Delay	62.7	17.5	27.1	20.4	13	13	11.2
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	12	2.7	5.5	3.8	0.6	0.6	1.6

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	124	1	1.00	0.08	124	1	1.00	0.08	124	1	1.00	0.08	0.889
Comb. L-T						0				0			
EB Thru	0		0.00		0	0	0.00		0	0	0.00		
Comb. T-R						0				0			
EB Right	616	1	1.00	0.38	637	1	1.00	0.40	637	2	2.00	0.20	
Comb. L-T-R						0				0			
WB Left	0		0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T						0				0			
WB Thru	0		0.00		0	0	0.00		0	0	0.00		
Comb. T-R						0				0			
WB Right	0		0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R						0				0			
NB Left	375	2	2.00	0.13	381	2	2.00	0.13	381	2	2.00	0.13	0.893
Comb. L-T						0				0			
NB Thru	793	2	2.00	0.25	822	2	2.00	0.26	822	2	2.00	0.26	
Comb. T-R						0				0			
NB Right	0		0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R						0				0			
SB Left	0		0.00		0	0	0.00		0	0	0.00		0.893
Comb. L-T						0				0			
SB Thru	1651	2	2.00	0.52	1773	2	2.00	0.55	1773	2	2.00	0.55	
Comb. T-R						0				0			
SB Right	189	1	1.00	0.12	189	1	1.00	0.12	189	1	1.00	0.12	
Comb. L-T-R						0				0			

Critical Volumes			E-W:	0.38			E-W:	0.40			E-W:	0.20	
			N-S:	0.65			N-S:	0.69			N-S:	0.69	
			Total:	1.03			Total:	1.08			Total:	0.89	
Lost Time				0.10				0.10				0.10	
V/C				1.131				1.184				0.985	
Level of Service				F				F				E	

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	72	1	1.00	0.04	72	1	1.00	0.04	72	1	1.00	0.04	0.918
Comb. L-T		0				0				0			
EB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
EB Right	330	1	1.00	0.21	342	1	1.00	0.21	342	2	2.00	0.11	
Comb. L-T-R		0				0				0			
WB Left	0	0	0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0				0			
WB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
WB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
NB Left	526	2	2.00	0.18	539	2	2.00	0.19	539	2	2.00	0.19	0.916
Comb. L-T		0				0				0			
NB Thru	1186	2	2.00	0.37	1250	2	2.00	0.39	1250	2	2.00	0.39	
Comb. T-R		0				0				0			
NB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
SB Left	0	0	0.00		0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0				0			
SB Thru	903	2	2.00	0.28	986	2	2.00	0.31	986	2	2.00	0.31	
Comb. T-R		0				0				0			
SB Right	109	1	1.00	0.07	109	1	1.00	0.07	109	1	1.00	0.07	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.21			E-W:	0.21			E-W:	0.11	
			N-S:	0.47			N-S:	0.50			N-S:	0.50	
			Total:	0.67			Total:	0.71			Total:	0.60	
Lost Time				0.10				0.10				0.10	
V/C				0.771				0.809				0.702	
Level of Service				C				D				C	

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0		0.00		0	0	0.00		1.000
Comb. L-T						0			
EB Thru	0		0.00		0	0	0.00		
Comb. T-R						0			
EB Right	0		0.00		0	0	0.00		
Comb. L-T-R						0			
WB Left	165	2	2.00	0.06	176	2	2.00	0.06	0.895
Comb. L-T						0			
WB Thru	0		0.00		0	0	0.00		
Comb. T-R						0			
WB Right	68	2	2.00	0.02	78	2	2.00	0.02	
Comb. L-T-R						0			
NB Left	0		0.00		0	0	0.00		0.903
Comb. L-T						0			
NB Thru	1130	2	2.00	0.35	1150	2	2.00	0.36	
Comb. T-R						0			
NB Right	430	1	1.00	0.27	473	1	1.00	0.30	
Comb. L-T-R						0			
SB Left	601	2	2.00	0.21	656	2	2.00	0.23	0.941
Comb. L-T						0			
SB Thru	1783	2	2.00	0.56	1866	2	2.00	0.58	
Comb. T-R						0			
SB Right	0		0.00		0	0	0.00		
Comb. L-T-R						0			

Critical Volumes	E-W:	0.06	E-W:	0.06
	N-S:	0.56	N-S:	0.59
	Total:	0.62	Total:	0.65

Lost Time	0.10	0.10

V/C	0.719	0.748
Level of Service	C	C

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 11%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0			
EB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
EB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			
WB Left	188	2	2.00	0.07	215	2	2.00	0.07	0.773
Comb. L-T		0				0			
WB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
WB Right	146	2	2.00	0.05	179	2	2.00	0.06	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0			
NB Thru	1696	2	2.00	0.53	1743	2	2.00	0.54	
Comb. T-R		0				0			
NB Right	184	1	1.00	0.12	214	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	166	2	2.00	0.06	204	2	2.00	0.07	0.948
Comb. L-T		0				0			
SB Thru	1114	2	2.00	0.35	1171	2	2.00	0.37	
Comb. T-R		0				0			
SB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.07	E-W:	0.07
	N-S:	0.59	N-S:	0.62
	Total:	0.65	Total:	0.69
Lost Time		0.10		0.10
V/C		0.753		0.790
Level of Service		C		C

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	236	1	1.00	0.15	236	1	1.00	0.15	236	1	1.00	0.15	0.780
Comb. L-T						0				0			
EB Thru	105		0.45	0.15	110	0	0.46	0.15	110	0	0.46	0.15	
Comb. T-R		1				1				1			
EB Right	127		0.55	0.15	127	0	0.54	0.15	127	0	0.54	0.15	
Comb. L-T-R						0				0			
WB Left	107	1	1.00	0.07	126	1	1.00	0.08	126	1	1.62	0.05	0.745
Comb. L-T						0				1			
WB Thru	28	1	1.00	0.02	30	1	1.00	0.02	30	0	0.38	0.05	
Comb. T-R						0				0			
WB Right	64	1	1.00	0.04	75	1	1.00	0.05	75	1	1.00	0.05	
Comb. L-T-R						0				0			
NB Left	115	1	1.00	0.07	115	1	1.00	0.07	115	1	1.00	0.07	0.862
Comb. L-T						0				0			
NB Thru	1359	2	2.00	0.42	1416	2	2.00	0.44	1416	2	2.21	0.40	
Comb. T-R						0				1			
NB Right	438	1	1.00	0.27	509	1	1.00	0.32	509	0	0.79	0.40	
Comb. L-T-R						0				0			
SB Left	316	1	1.00	0.20	355	1	1.00	0.22	355	1	1.00	0.22	0.895
Comb. L-T						0				0			
SB Thru	1564	2	2.00	0.49	1624	2	2.00	0.51	1624	2	2.00	0.51	
Comb. T-R						0				0			
SB Right	155	1	1.00	0.10	155	1	1.00	0.10	155	1	1.00	0.10	
Comb. L-T-R						0				0			

Critical Volumes	E-W:	0.21	E-W:	0.23	E-W:	0.20
	N-S:	0.62	N-S:	0.66	N-S:	0.62
	Total:	0.83	Total:	0.89	Total:	0.82
Lost Time		0.10		0.10		0.10
V/C		0.934		0.992		0.920
Level of Service		E		E		E

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	108	1	1.00	0.07	108	1	1.00	0.07	108	1	1.00	0.07	0.890
Comb. L-T		0				0				0			
EB Thru	17	0	0.14	0.08	20	0	0.16	0.08	20	0	0.16	0.08	
Comb. T-R		1				1				1			
EB Right	103	0	0.86	0.08	103	0	0.84	0.08	103	0	0.84	0.08	
Comb. L-T-R		0				0				0			
WB Left	233	1	1.00	0.15	276	1	1.00	0.17	276	1	1.79	0.10	0.760
Comb. L-T		0				0				1			
WB Thru	29	1	1.00	0.02	32	1	1.00	0.02	32	0	0.21	0.10	
Comb. T-R		0				0				0			
WB Right	138	1	1.00	0.09	163	1	1.00	0.10	163	1	1.00	0.10	
Comb. L-T-R		0				0				0			
NB Left	91	1	1.00	0.06	91	1	1.00	0.06	91	1	1.00	0.06	0.896
Comb. L-T		0				0				0			
NB Thru	1692	2	2.00	0.53	1749	2	2.00	0.55	1749	2	2.65	0.41	
Comb. T-R		0				0				1			
NB Right	184	1	1.00	0.12	231	1	1.00	0.14	231	0	0.35	0.41	
Comb. L-T-R		0				0				0			
SB Left	75	1	1.00	0.05	101	1	1.00	0.06	101	1	1.00	0.06	0.940
Comb. L-T		0				0				0			
SB Thru	1119	2	2.00	0.35	1173	2	2.00	0.37	1173	2	2.00	0.37	
Comb. T-R		0				0				0			
SB Right	98	1	1.00	0.06	98	1	1.00	0.06	98	1	1.00	0.06	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.22			E-W:	0.25			E-W:	0.17	
			N-S:	0.58			N-S:	0.61			N-S:	0.48	
			Total:	0.80			Total:	0.86			Total:	0.65	
Lost Time				0.10				0.10				0.10	
V/C				0.897				0.960				0.749	
Level of Service				D				E				C	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Overlap Reduce 20% 10%

Movement	AM Existing				AM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	594	1	1.71	0.22	599	1	1.71	0.22	599	1	1.71	0.22	
Comb. L-T		1				1				1			
EB Thru	101		0.29	0.22	101	0	0.29	0.22	101	0	0.29	0.22	0.751
Comb. T-R						0				0			
EB Right	541	1	1.00	0.34	541	1	1.00	0.34	487	1	1.00	0.30	
Comb. L-T-R						0				0			
WB Left	198	1	1.15	0.11	198	1	1.15	0.11	198	1	1.15	0.11	
Comb. L-T		1				1				1			
WB Thru	145		1.74	0.05	145	0	1.74	0.05	145	0	1.74	0.05	0.628
Comb. T-R		1				1				1			
WB Right	18		0.11	0.10	18	0	0.11	0.10	18	0	0.11	0.10	
Comb. L-T-R						0				0			
NB Left	173	1	1.00	0.11	173	1	1.00	0.11	173	1	1.00	0.11	
Comb. L-T						0				0			
NB Thru	1543	2	2.00	0.48	1655	2	2.00	0.52	1655	2	2.00	0.52	0.972
Comb. T-R						0				0			
NB Right	52	1	1.00	0.03	52	1	1.00	0.03	52	1	1.00	0.03	
Comb. L-T-R						0				0			
SB Left	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T						0				0			
SB Thru	1067	2	2.00	0.33	1095	2	2.00	0.34	1095	2	2.00	0.34	0.953
Comb. T-R						0				0			
SB Right	261	1	1.00	0.16	262	1	1.00	0.16	262	1	1.00	0.16	
Comb. L-T-R						0				0			

Critical Volumes			E-W:	0.44			E-W:	0.44			E-W:	0.41	
			N-S:	0.48			N-S:	0.52			N-S:	0.52	
			Total:	0.93			Total:	0.96			Total:	0.93	
Lost Time				0.10				0.10				0.10	
V/C				1.028				1.063				1.030	
Level of Service				F				F				F	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Overlap Reduce 15% 10%

Movement	PM Existing				PM Existing + Project				Existing + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	336	1	1.67	0.13	339	1	1.67	0.13	339	1	1.67	0.13	0.946
Comb. L-T		1				1				1			
EB Thru	67	0	0.33	0.13	67	0	0.33	0.13	67	0	0.33	0.13	
Comb. T-R		0				0				0			
EB Right	337	1	1.00	0.21	337	1	1.00	0.21	304	1	1.00	0.19	
Comb. L-T-R		0				0				0			
WB Left	96	1	1.33	0.05	96	1	1.33	0.05	96	1	1.33	0.05	0.840
Comb. L-T		1				1				1			
WB Thru	49	0	1.49	0.02	49	0	1.49	0.02	49	0	1.49	0.02	
Comb. T-R		1				1				1			
WB Right	11	0	0.18	0.04	11	0	0.18	0.04	11	0	0.18	0.04	
Comb. L-T-R		0				0				0			
NB Left	294	1	1.00	0.18	294	1	1.00	0.18	294	1	1.00	0.18	0.961
Comb. L-T		0				0				0			
NB Thru	1557	2	2.00	0.49	1636	2	2.00	0.51	1636	2	2.00	0.51	
Comb. T-R		0				0				0			
NB Right	125	1	1.00	0.08	125	1	1.00	0.08	125	1	1.00	0.08	
Comb. L-T-R		0				0				0			
SB Left	13	1	1.00	0.01	13	1	1.00	0.01	13	1	1.00	0.01	0.918
Comb. L-T		0				0				0			
SB Thru	1074	2	2.00	0.34	1138	2	2.00	0.36	1138	2	2.00	0.36	
Comb. T-R		0				0				0			
SB Right	178	1	1.00	0.11	180	1	1.00	0.11	180	1	1.00	0.11	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.26			E-W:	0.26			E-W:	0.24	
			N-S:	0.52			N-S:	0.54			N-S:	0.54	
			Total:	0.78			Total:	0.80			Total:	0.77	
Lost Time				0.10				0.10				0.10	
V/C				0.875				0.895				0.874	
Level of Service				D				D				D	

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: AM Peak
Free Right Turn 100%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	481	2	2.00	0.17	486	2	2.00	0.17	0.864
Comb. L-T						0			
EB Thru	728	3	3.00	0.15	728	3	3.00	0.15	
Comb. T-R						0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R						0			
WB Left	194	2	2.00	0.07	194	2	2.00	0.07	0.813
Comb. L-T						0			
WB Thru	1338	3	3.00	0.28	1338	3	3.00	0.28	
Comb. T-R						0			
WB Right	204	1	1.00	0.13	204	1	1.00	0.13	
Comb. L-T-R						0			
NB Left	339	2	2.00	0.12	339	2	2.00	0.12	0.896
Comb. L-T						0			
NB Thru	1252	3	3.00	0.26	1368	3	3.00	0.29	
Comb. T-R						0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R						0			
SB Left	289	2	2.00	0.10	289	2	2.00	0.10	0.855
Comb. L-T						0			
SB Thru	888	3	3.00	0.18	916	3	3.00	0.19	
Comb. T-R						0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.45	E-W:	0.45
	N-S:	0.36	N-S:	0.39
	Total:	0.81	Total:	0.83
Lost Time		0.10		0.10
V/C		0.907		0.933
Level of Service		E		E

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: PM Peak
Free Right Turn 100%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	592	2	2.00	0.21	595	2	2.00	0.21	0.968
Comb. L-T		0				0			
EB Thru	1413	3	3.00	0.29	1413	3	3.00	0.29	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left	243	2	2.00	0.08	243	2	2.00	0.08	0.914
Comb. L-T		0				0			
WB Thru	771	3	3.00	0.16	771	3	3.00	0.16	
Comb. T-R		0				0			
WB Right	290	1	1.00	0.18	290	1	1.00	0.18	
Comb. L-T-R		0				0			
NB Left	302	2	2.00	0.10	302	2	2.00	0.10	0.965
Comb. L-T		0				0			
NB Thru	1035	3	3.00	0.22	1110	3	3.00	0.23	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	351	2	2.00	0.12	351	2	2.00	0.12	0.943
Comb. L-T		0				0			
SB Thru	737	3	3.00	0.15	797	3	3.00	0.17	
Comb. T-R		0				0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.39	E-W:	0.39
	N-S:	0.34	N-S:	0.35
	Total:	0.72	Total:	0.74
Lost Time		0.10		0.10
V/C		0.824		0.841
Level of Service		D		D

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM Existing				AM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	19	2	2.00	0.01	19	2	2.00	0.01	0.775
Comb. L-T						0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R						0			
EB Right	61	1	1.00	0.04	61	1	1.00	0.04	
Comb. L-T-R						0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T						0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R						0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R									
NB Left	114	2	2.00	0.04	114	2	2.00	0.04	0.913
Comb. L-T						0			
NB Thru	2125	3	3.00	0.44	2239	3	3.00	0.47	
Comb. T-R						0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R						0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.927
Comb. L-T						0			
SB Thru	802	3	3.00	0.17	827	3	3.00	0.17	
Comb. T-R						0			
SB Right	74	1	1.00	0.05	74	1	1.00	0.05	
Comb. L-T-R						0			

Critical Volumes	E-W:	0.04	E-W:	0.04
	N-S:	0.44	N-S:	0.47
	Total:	0.48	Total:	0.50

Lost Time	0.10	0.10

V/C	0.581	0.604
Level of Service	A	B

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM Existing				PM Existing + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	115	2	2.00	0.04	115	2	2.00	0.04	0.783
Comb. L-T		0				0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
EB Right	189	1	1.00	0.12	189	1	1.00	0.12	
Comb. L-T-R		0				0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T		0				0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	46	2	2.00	0.02	46	2	2.00	0.02	0.889
Comb. L-T		0				0			
NB Thru	1370	3	3.00	0.29	1451	3	3.00	0.30	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.892
Comb. L-T		0				0			
SB Thru	1438	3	3.00	0.30	1502	3	3.00	0.31	
Comb. T-R		0				0			
SB Right	30	1	1.00	0.02	30	1	1.00	0.02	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.12	E-W:	0.12
	N-S:	0.32	N-S:	0.33
	Total:	0.43	Total:	0.45

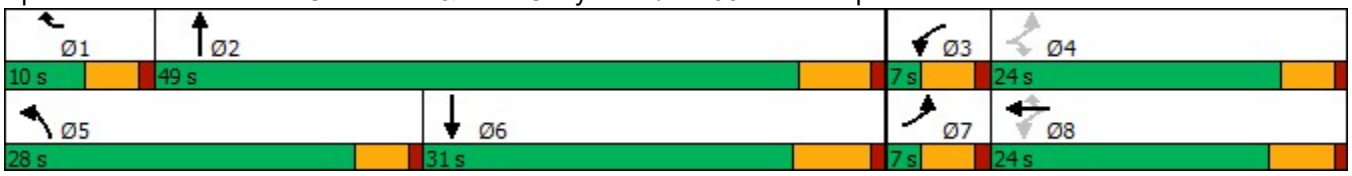
Lost Time	0.10	0.10

V/C	0.534	0.547
Level of Service	A	A

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	138	1	631	242	1446	759	
Future Volume (vph)	3	138	1	631	242	1446	759	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	16.0	15.1	26.1	16.7	40.3	28.7	
Actuated g/C Ratio	0.09	0.21	0.20	0.34	0.22	0.52	0.37	
v/c Ratio	0.02	0.39	0.88	0.57	0.68	0.85	0.35	
Control Delay	33.0	30.5	41.5	16.1	37.9	21.8	19.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	30.5	41.5	16.1	37.9	21.8	19.2	
LOS	C	C	D	B	D	C	B	
Approach Delay			29.1			24.1	19.2	
Approach LOS			C			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

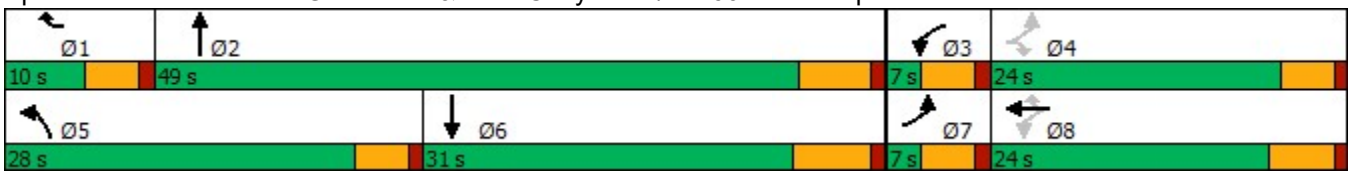
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	138	1	709	242	1472	780	
Future Volume (vph)	3	138	1	709	242	1472	780	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	17.4	16.6	27.5	17.0	41.3	29.4	
Actuated g/C Ratio	0.09	0.22	0.21	0.35	0.21	0.52	0.37	
v/c Ratio	0.02	0.37	0.94	0.63	0.70	0.87	0.36	
Control Delay	33.0	29.9	53.7	18.6	39.1	23.4	19.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	29.9	53.7	18.6	39.1	23.4	19.8	
LOS	C	C	D	B	D	C	B	
Approach Delay			35.3			25.7	19.8	
Approach LOS			D			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 77.4%	ICU Level of Service D
Analysis Period (min) 15	

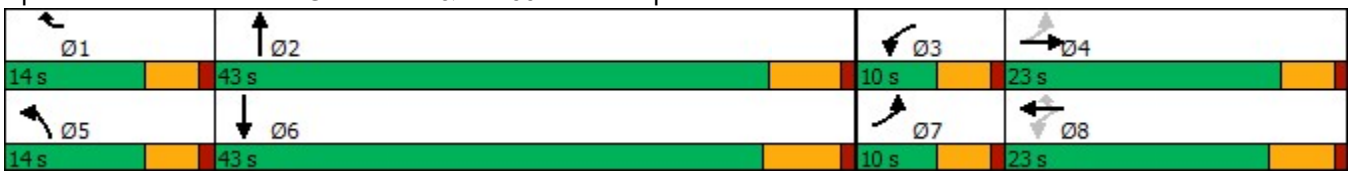
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	133	0	520	185	731	1437		
Future Volume (vph)	133	0	520	185	731	1437		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.9	8.1	19.6	9.6	30.2	26.0		
Actuated g/C Ratio	0.15	0.13	0.32	0.16	0.50	0.43		
v/c Ratio	0.53	0.69	0.46	0.71	0.45	0.57		
Control Delay	33.3	13.8	8.0	44.1	10.9	13.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	33.3	13.8	8.0	44.1	10.9	13.8		
LOS	C	B	A	D	B	B		
Approach Delay		15.0			17.6	13.8		
Approach LOS		B			B	B		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 60.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
Analysis Period (min) 15	

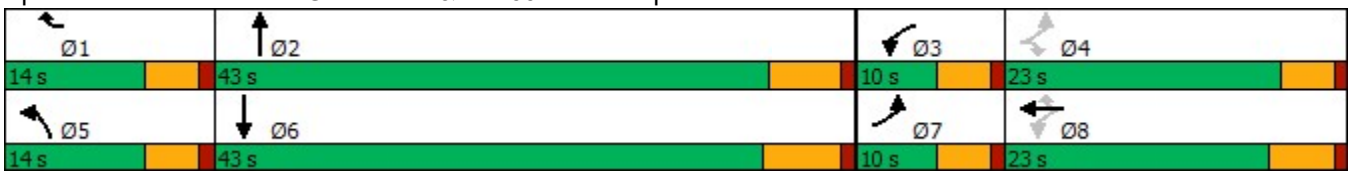
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	133	0	574	185	749	1487		
Future Volume (vph)	133	0	574	185	749	1487		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.8	9.0	20.6	9.7	31.1	27.1		
Actuated g/C Ratio	0.16	0.14	0.33	0.16	0.50	0.43		
v/c Ratio	0.49	0.71	0.50	0.73	0.46	0.59		
Control Delay	32.1	15.0	9.6	47.6	11.5	14.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	32.1	15.0	9.6	47.6	11.5	14.4		
LOS	C	B	A	D	B	B		
Approach Delay		15.7			18.6	14.4		
Approach LOS		B			B	B		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 62.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 15.9	Intersection LOS: B
Intersection Capacity Utilization 53.1%	ICU Level of Service A
Analysis Period (min) 15	

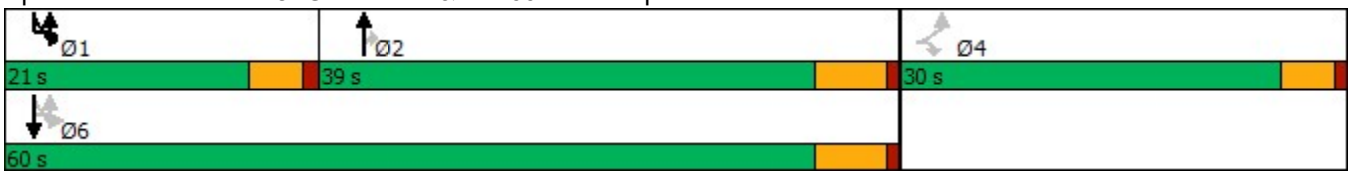
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	701	250	976	283	9	262	643
Future Volume (vph)	701	250	976	283	9	262	643
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	22.5	22.5	30.2	30.2		49.7	48.4
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.59
v/c Ratio	0.80	0.45	0.81	0.40		0.76	0.23
Control Delay	35.9	7.8	29.8	4.1		30.3	8.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	35.9	7.8	29.8	4.1		30.3	8.2
LOS	D	A	C	A		C	A
Approach Delay			24.0				14.7
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 81.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 22.7	Intersection LOS: C
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

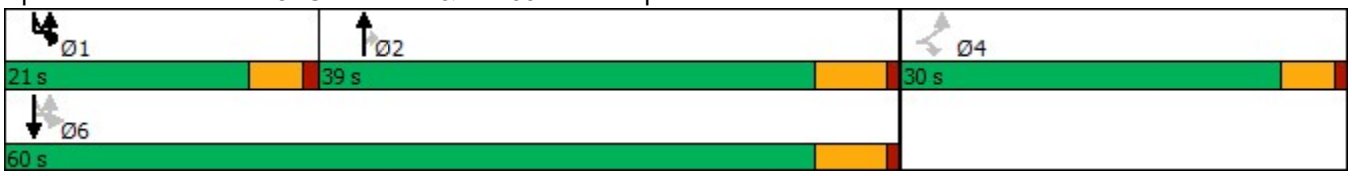
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	714	250	989	283	9	280	646
Future Volume (vph)	714	250	989	283	9	280	646
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	22.8	22.8	30.6	30.6		50.7	49.4
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.60
v/c Ratio	0.82	0.45	0.82	0.40		0.79	0.23
Control Delay	37.1	8.0	30.8	4.1		33.8	8.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	37.1	8.0	30.8	4.1		33.8	8.2
LOS	D	A	C	A		C	A
Approach Delay			24.9				16.1
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

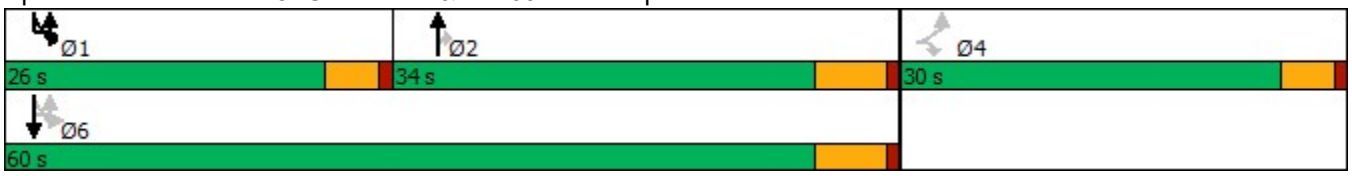
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	133	243	757	604	4	362	1234
Future Volume (vph)	133	243	757	604	4	362	1234
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	13.8	13.8	24.4	24.4		45.9	44.6
Actuated g/C Ratio	0.20	0.20	0.35	0.35		0.66	0.64
v/c Ratio	0.21	0.68	0.66	0.67		0.72	0.41
Control Delay	25.6	27.7	23.5	5.9		18.4	6.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	25.6	27.7	23.5	5.9		18.4	6.8
LOS	C	C	C	A		B	A
Approach Delay			15.7				9.4
Approach LOS			B				A

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 69.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

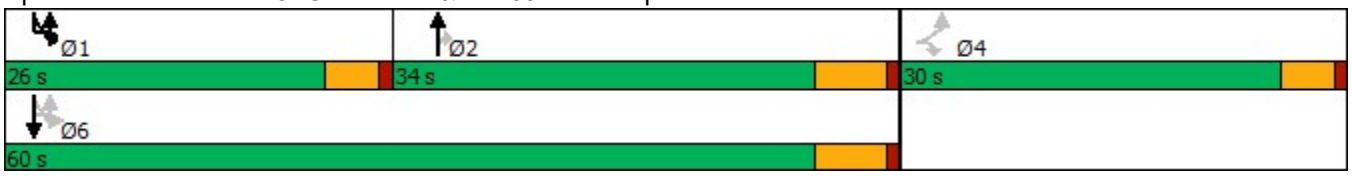
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	142	243	766	604	4	405	1241
Future Volume (vph)	142	243	766	604	4	405	1241
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	14.0	14.0	25.0	25.0		48.6	47.3
Actuated g/C Ratio	0.19	0.19	0.35	0.35		0.67	0.66
v/c Ratio	0.23	0.69	0.68	0.67		0.77	0.40
Control Delay	26.6	29.0	24.8	5.9		22.9	6.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.6	29.0	24.8	5.9		22.9	6.6
LOS	C	C	C	A		C	A
Approach Delay			16.5				10.7
Approach LOS			B				B

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 72.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Appendix C – ICU Spreadsheets and HCM Reports – 2021 Conditions

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: AM Peak
Overlap Reduce 35%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	22	1	1.00	0.01	22	1	1.00	0.01	0.878
Comb. L-T		0				0			
EB Thru	1392	2	2.00	0.43	1405	2	2.00	0.44	
Comb. T-R		0				0			
EB Right	398	1	1.00	0.25	398	1	1.00	0.25	
Comb. L-T-R		0				0			
WB Left	137	1	1.00	0.09	137	1	1.00	0.09	0.907
Comb. L-T		0				0			
WB Thru	1027	2	2.00	0.32	1030	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	3	1	1.00	0.00	3	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	700	1	1.97	0.22	700	1	1.97	0.22	0.956
Comb. L-T		1				1			
NB Thru	10	0	0.03	0.22	10	0	0.03	0.22	
Comb. T-R		0				0			
NB Right	228	1	1.00	0.14	230	1	1.00	0.14	
Comb. L-T-R		0				0			
SB Left	15	0	0.27	0.04	15	0	0.27	0.04	0.875
Comb. L-T		0				0			
SB Thru	17	0	0.31	0.04	17	0	0.31	0.04	
Comb. T-R		0				0			
SB Right	24	0	0.43	0.04	24	0	0.43	0.04	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.52	E-W:	0.52
	N-S:	0.26	N-S:	0.26
	Total:	0.78	Total:	0.78

Lost Time	0.10	0.10

V/C	0.877	0.882
Level of Service	D	D

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	26	1	1.00	0.02	26	1	1.00	0.02	0.956
Comb. L-T		0				0			
EB Thru	1143	2	2.00	0.36	1151	2	2.00	0.36	
Comb. T-R		0				0			
EB Right	335	1	1.00	0.21	335	1	1.00	0.21	
Comb. L-T-R		0				0			
WB Left	225	1	1.00	0.14	226	1	1.00	0.14	0.895
Comb. L-T		0				0			
WB Thru	1028	2	2.00	0.32	1034	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	7	1	1.00	0.00	7	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	728	1	1.97	0.23	728	1	1.97	0.23	0.971
Comb. L-T		1				1			
NB Thru	11	0	0.03	0.23	11	0	0.03	0.23	
Comb. T-R		0				0			
NB Right	215	1	1.00	0.13	216	1	1.00	0.14	
Comb. L-T-R		0				0			
SB Left	9	0	0.32	0.02	9	0	0.32	0.02	0.786
Comb. L-T		0				0			
SB Thru	10	0	0.36	0.02	10	0	0.36	0.02	
Comb. T-R		0				0			
SB Right	9	0	0.32	0.02	9	0	0.32	0.02	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.50	E-W:	0.50
	N-S:	0.25	N-S:	0.25
	Total:	0.75	Total:	0.75

Lost Time	0.10	0.10

V/C	0.846	0.849
Level of Service	D	D

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	19	1	1.00	0.01	19	1	1.00	0.01	0.856
Comb. L-T		0				0			
EB Thru	1229	1	1.54	0.50	1244	1	1.54	0.51	
Comb. T-R		1				1			
EB Right	372	0	0.46	0.50	372	0	0.46	0.51	
Comb. L-T-R		0				0			
WB Left	73	1	1.00	0.05	73	1	1.00	0.05	0.974
Comb. L-T		0				0			
WB Thru	709	2	2.00	0.22	712	2	2.00	0.22	
Comb. T-R		0				0			
WB Right	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. L-T-R		0				0			
NB Left	254	1	1.70	0.09	254	1	1.70	0.09	0.901
Comb. L-T		1				1			
NB Thru	44	0	0.30	0.09	44	0	0.30	0.09	
Comb. T-R		0				0			
NB Right	101	1	1.00	0.06	103	1	1.00	0.06	
Comb. L-T-R		0				0			
SB Left	43	0	0.40	0.07	43	0	0.40	0.07	0.818
Comb. L-T		1				1			
SB Thru	64	0	0.60	0.07	64	0	0.60	0.07	
Comb. T-R		0				0			
SB Right	28	1	1.00	0.02	28	1	1.00	0.02	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.55	E-W:	0.55
	N-S:	0.16	N-S:	0.16
	Total:	0.71	Total:	0.71

Lost Time	0.10	0.10

V/C	0.806	0.810
Level of Service	D	D

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	23	1	1.00	0.01	23	1	1.00	0.01	0.968
Comb. L-T		0				0			
EB Thru	937	1	1.68	0.35	947	1	1.68	0.35	
Comb. T-R		1				1			
EB Right	179	0	0.32	0.35	179	0	0.32	0.35	
Comb. L-T-R		0				0			
WB Left	97	1	1.00	0.06	98	1	1.00	0.06	0.944
Comb. L-T		0				0			
WB Thru	934	2	2.00	0.29	941	2	2.00	0.29	
Comb. T-R		0				0			
WB Right	32	1	1.00	0.02	32	1	1.00	0.02	
Comb. L-T-R		0				0			
NB Left	323	1	1.74	0.12	323	1	1.74	0.12	0.933
Comb. L-T		1				1			
NB Thru	47	0	0.26	0.12	47	0	0.26	0.12	
Comb. T-R		0				0			
NB Right	116	1	1.00	0.07	117	1	1.00	0.07	
Comb. L-T-R		0				0			
SB Left	32	0	0.55	0.04	32	0	0.55	0.04	0.838
Comb. L-T		1				1			
SB Thru	26	0	0.45	0.04	26	0	0.45	0.04	
Comb. T-R		0				0			
SB Right	21	1	1.00	0.01	21	1	1.00	0.01	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.41	E-W:	0.41
	N-S:	0.15	N-S:	0.15
	Total:	0.56	Total:	0.57
Lost Time		0.10		0.10
V/C		0.662		0.665
Level of Service		B		B

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	27	1	1.00	0.02	27	1	1.00	0.02	0.862
Comb. L-T		0				0			
EB Thru	1267	2	2.00	0.40	1285	2	2.00	0.40	
Comb. T-R		0				0			
EB Right	46	1	1.00	0.03	46	1	1.00	0.03	
Comb. L-T-R		0				0			
WB Left	164	1	1.00	0.10	164	1	1.00	0.10	0.890
Comb. L-T		0				0			
WB Thru	858	2	2.00	0.27	863	2	2.00	0.27	
Comb. T-R		0				0			
WB Right	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. L-T-R		0				0			
NB Left	75	1	1.00	0.05	75	1	1.00	0.05	0.709
Comb. L-T		0				0			
NB Thru	212	1	1.00	0.13	212	1	1.00	0.13	
Comb. T-R		0				0			
NB Right	279	1	1.00	0.17	282	1	1.00	0.18	
Comb. L-T-R		0				0			
SB Left	48	1	1.00	0.03	48	1	1.00	0.03	0.727
Comb. L-T		0				0			
SB Thru	171	0	0.77	0.14	171	0	0.77	0.14	
Comb. T-R		1				1			
SB Right	51	0	0.23	0.14	51	0	0.23	0.14	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.50	E-W:	0.50
	N-S:	0.20	N-S:	0.21
	Total:	0.70	Total:	0.71
Lost Time		0.10		0.10
V/C		0.803		0.810
Level of Service		D		D

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	31	1	1.00	0.02	31	1	1.00	0.02	0.827
Comb. L-T		0				0			
EB Thru	1205	2	2.00	0.38	1217	2	2.00	0.38	
Comb. T-R		0				0			
EB Right	27	1	1.00	0.02	27	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	156	1	1.00	0.10	157	1	1.00	0.10	0.947
Comb. L-T		0				0			
WB Thru	1063	2	2.00	0.33	1072	2	2.00	0.33	
Comb. T-R		0				0			
WB Right	46	1	1.00	0.03	46	1	1.00	0.03	
Comb. L-T-R		0				0			
NB Left	22	1	1.00	0.01	22	1	1.00	0.01	0.878
Comb. L-T		0				0			
NB Thru	104	1	1.00	0.06	104	1	1.00	0.06	
Comb. T-R		0				0			
NB Right	205	1	1.00	0.13	206	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	45	1	1.00	0.03	45	1	1.00	0.03	0.778
Comb. L-T		0				0			
SB Thru	59	0	0.58	0.06	59	0	0.58	0.06	
Comb. T-R		1				1			
SB Right	42	0	0.42	0.06	42	0	0.42	0.06	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.47	E-W:	0.48
	N-S:	0.16	N-S:	0.16
	Total:	0.63	Total:	0.64

Lost Time	0.10	0.10

V/C	0.730	0.736
Level of Service	C	C

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	372	2	2.00	0.13	380	2	2.00	0.13	380	2	2.00	0.13	0.844
Comb. L-T		0				0				0			
EB Thru	872	2	2.00	0.27	883	2	2.00	0.28	883	2	2.48	0.22	
Comb. T-R		0				0				1			
EB Right	168	1	1.00	0.11	168	1	1.00	0.11	187	0	0.52	0.22	
Comb. L-T-R		0				0				0			
WB Left	92	2	2.00	0.03	98	2	2.00	0.03	98	2	2.00	0.03	0.912
Comb. L-T		0				0				0			
WB Thru	492	2	2.00	0.15	495	2	2.00	0.15	495	2	2.05	0.15	
Comb. T-R		0				0				1			
WB Right	193	1	1.00	0.12	206	1	1.00	0.13	229	0	0.95	0.15	
Comb. L-T-R		0				0				0			
NB Left	218	2	2.00	0.08	218	2	2.00	0.08	218	2	2.00	0.08	0.848
Comb. L-T		0				0				0			
NB Thru	1425	3	3.00	0.30	1452	3	3.00	0.30	1452	3	3.00	0.30	
Comb. T-R		0				0				0			
NB Right	660	1	1.00	0.41	682	1	1.00	0.43	682	1	1.00	0.43	
Comb. L-T-R		0				0				0			
SB Left	377	2	2.00	0.13	396	2	2.00	0.14	396	2	2.00	0.14	0.853
Comb. L-T		0				0				0			
SB Thru	1260	2	2.48	0.32	1267	2	2.48	0.32	1267	2	2.48	0.32	
Comb. T-R		1				1				1			
SB Right	261	0	0.52	0.32	264	0	0.52	0.32	264	0	0.52	0.32	
Comb. L-T-R		0				0				0			

Critical Volumes	E-W:	0.30	E-W:	0.31	E-W:	0.28
	N-S:	0.54	N-S:	0.56	N-S:	0.56
	Total:	0.85	Total:	0.87	Total:	0.85
Lost Time		0.10		0.10		0.10
V/C		0.948		0.974		0.946
Level of Service		E		E		E

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	397	2	2.00	0.14	402	2	2.00	0.14	402	2	2.00	0.14	0.933
Comb. L-T		0				0				0			
EB Thru	652	2	2.00	0.20	659	2	2.00	0.21	659	2	2.14	0.19	
Comb. T-R		0				0				1			
EB Right	224	1	1.00	0.14	224	1	1.00	0.14	264	0	0.86	0.19	
Comb. L-T-R		0				0				0			
WB Left	241	2	2.00	0.08	252	2	2.00	0.09	252	2	2.00	0.09	0.923
Comb. L-T		0				0				0			
WB Thru	677	2	2.00	0.21	683	2	2.00	0.21	683	2	2.10	0.20	
Comb. T-R		0				0				1			
WB Right	237	1	1.00	0.15	250	1	1.00	0.16	294	0	0.90	0.20	
Comb. L-T-R		0				0				0			
NB Left	371	2	2.00	0.13	371	2	2.00	0.13	371	2	2.00	0.13	0.880
Comb. L-T		0				0				0			
NB Thru	1406	3	3.00	0.29	1424	3	3.00	0.30	1424	3	3.00	0.30	
Comb. T-R		0				0				0			
NB Right	310	1	1.00	0.19	324	1	1.00	0.20	324	1	1.00	0.20	
Comb. L-T-R		0				0				0			
SB Left	287	2	2.00	0.10	303	2	2.00	0.11	303	2	2.00	0.11	0.934
Comb. L-T		0				0				0			
SB Thru	896	2	2.17	0.26	910	2	2.17	0.26	910	2	2.17	0.26	
Comb. T-R		1				1				1			
SB Right	345	0	0.83	0.26	349	0	0.83	0.26	349	0	0.83	0.26	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.35			E-W:	0.35			E-W:	0.34	
			N-S:	0.39			N-S:	0.40			N-S:	0.40	
			Total:	0.74			Total:	0.75			Total:	0.74	
Lost Time				0.10				0.10				0.10	
V/C				0.842				0.855				0.845	
Level of Service				D				D				D	

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	337	1	1.00	0.21	355	1	1.00	0.22	0.932
Comb. L-T		0				0			
EB Thru	1278	2	2.00	0.40	1303	2	2.00	0.41	
Comb. T-R		0				0			
EB Right	179	1	1.00	0.11	185	1	1.00	0.12	
Comb. L-T-R		0				0			
WB Left	64	1	1.00	0.04	66	1	1.00	0.04	0.904
Comb. L-T		0				0			
WB Thru	708	2	2.00	0.22	725	2	2.00	0.23	
Comb. T-R		0				0			
WB Right	246	1	1.00	0.15	257	1	1.00	0.16	
Comb. L-T-R		0				0			
NB Left	10	0	0.41	0.01	11	0	0.44	0.02	0.714
Comb. L-T		1				1			
NB Thru	14	0	0.59	0.01	14	0	0.56	0.02	
Comb. T-R		0				0			
NB Right	4	1	1.00	0.00	4	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	69	0	0.75	0.06	72	0	0.76	0.06	0.795
Comb. L-T		1				1			
SB Thru	23	0	0.25	0.06	23	0	0.24	0.06	
Comb. T-R		0				0			
SB Right	132	1	1.00	0.08	137	1	1.00	0.09	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.44	E-W:	0.45
	N-S:	0.10	N-S:	0.10
	Total:	0.54	Total:	0.55

Lost Time	0.10	0.10

V/C	0.637	0.650
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	192	1	1.00	0.12	206	1	1.00	0.13	0.915
Comb. L-T		0				0			
EB Thru	1064	2	2.00	0.33	1087	2	2.00	0.34	
Comb. T-R		0				0			
EB Right	38	1	1.00	0.02	42	1	1.00	0.03	
Comb. L-T-R		0				0			
WB Left	13	1	1.00	0.01	14	1	1.00	0.01	0.967
Comb. L-T		0				0			
WB Thru	887	2	2.00	0.28	907	2	2.00	0.28	
Comb. T-R		0				0			
WB Right	78	1	1.00	0.05	85	1	1.00	0.05	
Comb. L-T-R		0				0			
NB Left	116	0	0.88	0.08	120	0	0.89	0.08	0.717
Comb. L-T		1				1			
NB Thru	15	0	0.12	0.08	15	0	0.11	0.08	
Comb. T-R		0				0			
NB Right	22	1	1.00	0.01	24	1	1.00	0.01	
Comb. L-T-R		0				0			
SB Left	151	0	0.96	0.10	157	0	0.96	0.10	0.852
Comb. L-T		1				1			
SB Thru	6	0	0.04	0.10	6	0	0.04	0.10	
Comb. T-R		0				0			
SB Right	191	1	1.00	0.12	202	1	1.00	0.13	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.40	E-W:	0.41
	N-S:	0.20	N-S:	0.21
	Total:	0.60	Total:	0.62

Lost Time	0.10	0.10

V/C	0.699	0.722
Level of Service	B	C

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	26	1	1.00	0.02	26	1	1.00	0.02	0.859
Comb. L-T		0				0			
EB Thru	1536	2	2.00	0.48	1562	2	2.00	0.49	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	6	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left (U)	0	1	1.00	0.00	4	1	1.00	0.00	0.853
Comb. L-T		0				0			
WB Thru	965	2	2.00	0.30	996	2	2.00	0.31	
Comb. T-R		0				0			
WB Right	127	1	1.00	0.08	127	1	1.00	0.08	
Comb. L-T-R		0				0			
NB Left	0	1	1.00	0.00	1	1	1.00	0.00	0.920
Comb. L-T		0				0			
NB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	1	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	16	0	0.50	0.02	16	0	0.50	0.02	0.750
Comb. L-T		0				0			
SB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
SB Right	16	0	0.50	0.02	16	0	0.50	0.02	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.48	E-W:	0.49
	N-S:	0.02	N-S:	0.02
	Total:	0.50	Total:	0.51

Lost Time	0.10	0.10

V/C	0.600	0.611
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	38	1	1.00	0.02	38	1	1.00	0.02	0.912
Comb. L-T		0				0			
EB Thru	1098	2	2.00	0.34	1123	2	2.00	0.35	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	3	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left (U)	0	1	1.00	0.00	2	1	1.00	0.00	0.944
Comb. L-T		0				0			
WB Thru	1018	2	2.00	0.32	1043	2	2.00	0.33	
Comb. T-R		0				0			
WB Right	82	1	1.00	0.05	82	1	1.00	0.05	
Comb. L-T-R		0				0			
NB Left	0	1	1.00	0.00	3	1	1.00	0.00	0.920
Comb. L-T		0				0			
NB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	44	0	0.64	0.04	44	0	0.64	0.04	0.794
Comb. L-T		0				0			
SB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
SB Right	25	0	0.36	0.04	25	0	0.36	0.04	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.34	E-W:	0.35
	N-S:	0.04	N-S:	0.05
	Total:	0.39	Total:	0.40

Lost Time	0.10	0.10

V/C	0.486	0.498
Level of Service	A	A

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	333	2	2.00	0.12	352	2	2.00	0.12	0.883
Comb. L-T		0				0			
EB Thru	799	2	2.00	0.25	806	2	2.00	0.25	
Comb. T-R		0				0			
EB Right	134	1	1.00	0.08	134	1	1.00	0.08	
Comb. L-T-R		0				0			
WB Left	132	1	1.00	0.08	136	1	1.00	0.08	0.929
Comb. L-T		0				0			
WB Thru	1053	2	2.00	0.33	1080	2	2.00	0.34	
Comb. T-R		0				0			
WB Right	551	1	1.00	0.34	575	1	1.00	0.36	
Comb. L-T-R		0				0			
NB Left	28	1	1.00	0.02	28	1	1.00	0.02	0.579
Comb. L-T		0				0			
NB Thru	21	1	1.00	0.01	21	1	1.00	0.01	
Comb. T-R		0				0			
NB Right	28	1	1.00	0.02	29	1	1.00	0.02	
Comb. L-T-R		0				0			
SB Left	93	2	2.00	0.03	101	2	2.00	0.04	0.733
Comb. L-T		0				0			
SB Thru	30	1	1.00	0.02	30	1	1.00	0.02	
Comb. T-R		0				0			
SB Right	47	1	1.00	0.03	52	1	1.00	0.03	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.46	E-W:	0.48
	N-S:	0.05	N-S:	0.05
	Total:	0.51	Total:	0.54

Lost Time	0.10	0.10

V/C	0.610	0.635
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	190	2	2.00	0.07	203	2	2.00	0.07	0.875
Comb. L-T		0				0			
EB Thru	989	2	2.00	0.31	1005	2	2.00	0.31	
Comb. T-R		0				0			
EB Right	25	1	1.00	0.02	25	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	26	1	1.00	0.02	28	1	1.00	0.02	0.900
Comb. L-T		0				0			
WB Thru	992	2	2.00	0.31	1011	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	159	1	1.00	0.10	176	1	1.00	0.11	
Comb. L-T-R		0				0			
NB Left	15	1	1.00	0.01	15	1	1.00	0.01	0.886
Comb. L-T		0				0			
NB Thru	12	1	1.00	0.01	12	1	1.00	0.01	
Comb. T-R		0				0			
NB Right	62	1	1.00	0.04	64	1	1.00	0.04	
Comb. L-T-R		0				0			
SB Left	193	2	2.00	0.07	212	2	2.00	0.07	0.787
Comb. L-T		0				0			
SB Thru	6	1	1.00	0.00	6	1	1.00	0.00	
Comb. T-R		0				0			
SB Right	89	1	1.00	0.06	98	1	1.00	0.06	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.38	E-W:	0.39
	N-S:	0.11	N-S:	0.11
	Total:	0.48	Total:	0.50

Lost Time	0.10	0.10

V/C	0.582	0.601
Level of Service	A	B

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	788	0	1621	139	0	0
Future Vol, veh/h	1	1	788	0	1621	139	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	857	0	1762	151	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1762	1913	0	857	-	0	-	881
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	106	306	-	410	-	-	0	290
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	157	157	-	410	-	-	-	290
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	157	-	410	-	-	-
HCM Lane V/C Ratio	0.014	-	-	-	-	-
HCM Control Delay (s)	28.2	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	801	0	1671	144	0	0
Future Vol, veh/h	1	1	801	0	1671	144	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	871	0	1816	157	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1816	1973	0	871	-	0	-	908
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	98	290	-	402	-	-	0	278
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	146	146	-	402	-	-	-	278
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	146	-	402	-	-	-
HCM Lane V/C Ratio	0.015	-	-	-	-	-
HCM Control Delay (s)	29.9	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1080	3	1053	19	0	0
Future Vol, veh/h	1	1	1080	3	1053	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1174	3	1145	21	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1145	1166	0	1174	-	0	-	573
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	268	595	-	257	-	-	0	463
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	370	370	-	257	-	-	-	463
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	370	-	257	-	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-	-
HCM Control Delay (s)	14.8	-	19.2	-	-	0
HCM Lane LOS	B	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1110	3	1088	22	0	0
Future Vol, veh/h	1	1	1110	3	1088	22	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1207	3	1183	24	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1183	1207	0	1207	-	0	-	592
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	253	574	-	244	-	-	0	449
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	351	351	-	244	-	-	-	449
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	351	-	244	-	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-	-
HCM Control Delay (s)	15.3	-	20	-	-	0
HCM Lane LOS	C	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	337	2	2.00	0.12	337	2	2.00	0.12	337	2	2.00	0.12	0.814
Comb. L-T		0				0							
EB Thru	627	2	2.00	0.20	643	2	2.00	0.20	643	2	2.00	0.20	
Comb. T-R		0				0							
EB Right	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T-R		0				0							
WB Left	15	1	1.00	0.01	15	1	1.00	0.01	15	1	1.00	0.01	0.983
Comb. L-T		0				0							
WB Thru	1650	2	2.00	0.52	1706	2	2.00	0.53	1706	2	2.30	0.46	
Comb. T-R		0				0				1			
WB Right	443	1	1.00	0.28	443	1	1.00	0.28	522	0	0.70	0.46	
Comb. L-T-R		0				0							
NB Left	0	1	1.00	0.00	0	1	1.00	0.00	0	1	1.00	0.00	0.500
Comb. L-T		0				0							
NB Thru	4	0	0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	
Comb. T-R		1				1				1			
NB Right	4	0	0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	
Comb. L-T-R		0				0							
SB Left	264	1	1.99	0.08	264	1	1.99	0.08	264	1	1.99	0.08	0.759
Comb. L-T		1				1				1			
SB Thru	1	0	0.01	0.08	1	0	0.01	0.08	1		0.01	0.08	
Comb. T-R		0				0							
SB Right	190	1	1.00	0.12	190	1	1.00	0.12	190	1	1.00	0.12	
Comb. L-T-R		0				0							

Critical Volumes		E-W:	0.63		E-W:	0.65		E-W:	0.58
		N-S:	0.12		N-S:	0.12		N-S:	0.12
		Total:	0.75		Total:	0.77		Total:	0.70
Lost Time			0.10			0.10			0.10
V/C			0.851			0.868			0.800
Level of Service			D			D			C

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	147	2	2.00	0.05	147	2	2.00	0.05	147	2	2.00	0.05	0.886
Comb. L-T		0				0							
EB Thru	1065	2	2.00	0.33	1099	2	2.00	0.34	1099	2	2.00	0.34	
Comb. T-R		0				0							
EB Right	1	1	1.00	0.00	1	1	1.00	0.00	1	1	1.00	0.00	
Comb. L-T-R		0				0							
WB Left	39	1	1.00	0.02	39	1	1.00	0.02	39	1	1.00	0.02	0.897
Comb. L-T		0				0							
WB Thru	1007	2	2.00	0.31	1050	2	2.00	0.33	1050	2	2.36	0.28	
Comb. T-R		0				0				1			
WB Right	171	1	1.00	0.11	171	1	1.00	0.11	286	0	0.64	0.28	
Comb. L-T-R		0				0							
NB Left	4	1	1.00	0.00	4	1	1.00	0.00	4	1	1.00	0.00	0.563
Comb. L-T		0				0							
NB Thru	7	0	0.57	0.01	7	0	0.57	0.01	7		0.57	0.01	
Comb. T-R		1				1				1			
NB Right	5	0	0.43	0.01	5	0	0.43	0.01	5		0.43	0.01	
Comb. L-T-R		0				0							
SB Left	709	1	1.95	0.23	709	1	1.95	0.23	709	1	1.95	0.23	0.790
Comb. L-T		1				1				1			
SB Thru	16	0	0.05	0.23	16	0	0.05	0.23	16		0.05	0.23	
Comb. T-R		0				0							
SB Right	216	1	1.00	0.14	216	1	1.00	0.14	216	1	1.00	0.14	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.37			E-W:	0.38			E-W:	0.37	
			N-S:	0.23			N-S:	0.23			N-S:	0.23	
			Total:	0.60			Total:	0.61			Total:	0.60	
Lost Time				0.10				0.10				0.10	
V/C				0.700				0.713				0.702	
Level of Service				C				C				C	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	366	2	2.00	0.13	374	2	2.00	0.13	374	2	2.00	0.13	0.883
Comb. L-T		0				0				0			
EB Thru	442	2	2.90	0.10	449	2	2.90	0.10	449	2	2.90	0.10	
Comb. T-R		1				1				1			
EB Right	16	0	0.10	0.10	16	0	0.10	0.10	16	0	0.10	0.10	
Comb. L-T-R		0				0				0			
WB Left	22	1	1.00	0.01	22	1	1.00	0.01	22	1	1.00	0.01	0.993
Comb. L-T		0				0				0			
WB Thru	1378	2	2.00	0.43	1403	2	2.00	0.44	1403	2	2.45	0.36	
Comb. T-R		0				0				1			
WB Right	317	1	1.00	0.20	317	1	1.00	0.20	317	0	0.55	0.36	
Comb. L-T-R		0				0				0			
NB Left	58	1	1.00	0.04	58	1	1.00	0.04	58	1	1.00	0.04	0.688
Comb. L-T		0				0				0			
NB Thru	45	1	1.27	0.02	45	1	1.27	0.02	45	1	1.27	0.02	
Comb. T-R		1				1				1			
NB Right	26	0	0.73	0.02	26	0	0.73	0.02	26	0	0.73	0.02	
Comb. L-T-R		0				0				0			
SB Left	150	1	1.70	0.06	150	1	1.70	0.06	150	1	1.70	0.06	0.837
Comb. L-T		1				1				1			
SB Thru	26	0	0.30	0.06	26	0	0.30	0.06	26	0	0.30	0.06	
Comb. T-R		0				0				0			
SB Right	1048	2	2.00	0.33	1080	2	2.00	0.34	1080	2	2.00	0.34	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.56			E-W:	0.57			E-W:	0.49	
			N-S:	0.36			N-S:	0.37			N-S:	0.37	
			Total:	0.92			Total:	0.94			Total:	0.86	
Lost Time				0.10				0.10				0.10	
V/C				1.021				1.042				0.962	
Level of Service				F				F				E	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	673	2	2.00	0.23	691	2	2.00	0.24	691	2	2.00	0.24	0.904
Comb. L-T		0				0				0			
EB Thru	993	2	2.89	0.21	1009	2	2.90	0.22	1009	2	2.90	0.22	
Comb. T-R		1				1				1			
EB Right	36	0	0.11	0.21	36	0	0.10	0.22	36	0	0.10	0.22	
Comb. L-T-R		0				0				0			
WB Left	57	1	1.00	0.04	57	1	1.00	0.04	57	1	1.00	0.04	0.892
Comb. L-T		0				0				0			
WB Thru	852	2	2.00	0.27	871	2	2.00	0.27	871	2	2.00	0.27	
Comb. T-R		0				0				1			
WB Right	438	1	1.00	0.27	438	1	1.00	0.27	438	0	1.00	0.27	
Comb. L-T-R		0				0				0			
NB Left	47	1	1.00	0.03	47	1	1.00	0.03	47	1	1.00	0.03	0.825
Comb. L-T		0				0				0			
NB Thru	56	1	0.96	0.04	56	1	0.96	0.04	56	1	0.96	0.04	
Comb. T-R		1				1				1			
NB Right	61	0	1.04	0.04	61	0	1.04	0.04	61	0	1.04	0.04	
Comb. L-T-R		0				0				0			
SB Left	373	1	1.79	0.13	373	1	1.79	0.13	373	1	1.79	0.13	0.863
Comb. L-T		1				1				1			
SB Thru	44	0	0.21	0.13	44	0	0.21	0.13	44	0	0.21	0.13	
Comb. T-R		0				0				0			
SB Right	376	2	2.00	0.12	394	2	2.00	0.12	394	2	2.00	0.12	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.51			E-W:	0.51			E-W:	0.51	
			N-S:	0.17			N-S:	0.17			N-S:	0.17	
			Total:	0.67			Total:	0.68			Total:	0.68	
Lost Time				0.10				0.10				0.10	
V/C				0.774				0.781				0.779	
Level of Service				C				C				C	

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 20%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	50	1	1.00	0.03	50	1	1.00	0.03	0.917
Comb. L-T		0				0			
EB Thru	166	1	1.52	0.07	166	1	1.51	0.07	
Comb. T-R		1				1			
EB Right	468	1	1.48	0.20	488	1	1.49	0.20	
Comb. L-T-R		0				0			
WB Left	219	1	1.00	0.14	219	1	1.00	0.14	0.717
Comb. L-T		0				0			
WB Thru	477	2	2.00	0.15	477	2	2.00	0.15	
Comb. T-R		0				0			
WB Right	71	1	1.00	0.04	71	1	1.00	0.04	
Comb. L-T-R		0				0			
NB Left	410	2	2.00	0.14	411	2	2.00	0.14	0.876
Comb. L-T		0				0			
NB Thru	316	1	1.83	0.11	323	1	1.83	0.11	
Comb. T-R		1				1			
NB Right	30	0	0.17	0.11	30	0	0.17	0.11	
Comb. L-T-R		0				0			
SB Left	74	1	1.00	0.05	74	1	1.00	0.05	0.814
Comb. L-T		0				0			
SB Thru	712	1	1.69	0.26	722	1	1.69	0.27	
Comb. T-R		1				1			
SB Right	133	0	0.31	0.26	133	0	0.31	0.27	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.34	E-W:	0.34
	N-S:	0.41	N-S:	0.41
	Total:	0.74	Total:	0.75
Lost Time		0.10		0.10
V/C		0.841		0.851
Level of Service		D		D

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	91	1	1.00	0.06	91	1	1.00	0.06	0.891
Comb. L-T		0				0			
EB Thru	230	1	1.67	0.09	230	1	1.65	0.09	
Comb. T-R		1				1			
EB Right	461	1	1.33	0.22	474	1	1.35	0.22	
Comb. L-T-R		0				0			
WB Left	35	1	1.00	0.02	35	1	1.00	0.02	0.925
Comb. L-T		0				0			
WB Thru	238	2	2.00	0.07	238	2	2.00	0.07	
Comb. T-R		0				0			
WB Right	145	1	1.00	0.09	145	1	1.00	0.09	
Comb. L-T-R		0				0			
NB Left	379	2	2.00	0.13	382	2	2.00	0.13	0.914
Comb. L-T		0				0			
NB Thru	729	1	1.93	0.24	744	1	1.93	0.24	
Comb. T-R		1				1			
NB Right	27	0	0.07	0.24	27	0	0.07	0.24	
Comb. L-T-R		0				0			
SB Left	25	1	1.00	0.02	25	1	1.00	0.02	0.887
Comb. L-T		0				0			
SB Thru	209	1	1.49	0.09	215	1	1.50	0.09	
Comb. T-R		1				1			
SB Right	72	0	0.51	0.09	72	0	0.50	0.09	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.24	E-W:	0.24
	N-S:	0.25	N-S:	0.26
	Total:	0.49	Total:	0.50
Lost Time		0.10		0.10
V/C		0.590		0.598
Level of Service		A		A

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	110	1	1.00	0.07	111	1	1.00	0.07	111	1	1.00	0.07	0.924
Comb. L-T		0				0							
EB Thru	333	2	2.17	0.10	339	2	2.18	0.10	339	2	2.18	0.10	
Comb. T-R		1				1				1			
EB Right	127	0	0.83	0.10	127	0	0.82	0.10	127		0.82	0.10	
Comb. L-T-R		0				0							
WB Left	53	1	1.00	0.03	53	1	1.00	0.03	53	1	1.00	0.03	0.863
Comb. L-T		0				0							
WB Thru	1334	2	2.78	0.30	1357	2	2.78	0.30	1357	2	2.78	0.30	
Comb. T-R		1				1				1			
WB Right	105	0	0.22	0.30	105	0	0.22	0.30	105		0.22	0.30	
Comb. L-T-R		0				0							
NB Left	388	1	1.00	0.24	388	1	1.00	0.24	388	2	2.00	0.13	0.812
Comb. L-T		0				0							
NB Thru	552	2	2.00	0.17	552	2	2.00	0.17	552	2	2.00	0.17	
Comb. T-R		0				0							
NB Right	65	1	1.00	0.04	65	1	1.00	0.04	65	1	1.00	0.04	
Comb. L-T-R		0				0							
SB Left	78	1	1.00	0.05	78	1	1.00	0.05	78	1	1.00	0.05	0.924
Comb. L-T		0				0							
SB Thru	641	1	1.79	0.22	641	1	1.78	0.22	641	1	1.78	0.22	
Comb. T-R		1				1				1			
SB Right	431	1	1.21	0.22	436	1	1.22	0.22	436	1	1.22	0.22	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.37			E-W:	0.37			E-W:	0.37	
			N-S:	0.47			N-S:	0.47			N-S:	0.36	
			Total:	0.83			Total:	0.84			Total:	0.73	
Lost Time				0.10				0.10				0.10	
V/C				0.934				0.941				0.833	
Level of Service				E				E				D	

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	173	1	1.00	0.11	176	1	1.00	0.11	176	1	1.00	0.11	0.904
Comb. L-T		0				0							
EB Thru	1016	2	2.51	0.25	1028	2	2.51	0.26	1028	2	2.51	0.26	
Comb. T-R		1				1				1			
EB Right	199	0	0.49	0.25	199	0	0.49	0.26	199		0.49	0.26	
Comb. L-T-R		0				0							
WB Left	90	1	1.00	0.06	90	1	1.00	0.06	90	1	1.00	0.06	0.865
Comb. L-T		0				0							
WB Thru	869	2	2.62	0.21	885	2	2.63	0.21	885	2	2.63	0.21	
Comb. T-R		1				1				1			
WB Right	125	0	0.38	0.21	125	0	0.37	0.21	125		0.37	0.21	
Comb. L-T-R		0				0							
NB Left	334	1	1.00	0.21	334	1	1.00	0.21	334	2	2.00	0.12	0.874
Comb. L-T		0				0							
NB Thru	701	2	2.00	0.22	701	2	2.00	0.22	701	2	2.00	0.22	
Comb. T-R		0				0							
NB Right	66	1	1.00	0.04	66	1	1.00	0.04	66	1	1.00	0.04	
Comb. L-T-R		0				0							
SB Left	222	1	1.00	0.14	222	1	1.00	0.14	222	1	1.00	0.14	0.923
Comb. L-T		0				0							
SB Thru	379	1	2.00	0.12	379	1	2.00	0.12	379	1	2.00	0.12	
Comb. T-R		1				1				1			
SB Right	187	1	1.00	0.12	191	1	1.00	0.12	191	1	1.00	0.12	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.31			E-W:	0.32			E-W:	0.32	
			N-S:	0.36			N-S:	0.36			N-S:	0.36	
			Total:	0.67			Total:	0.68			Total:	0.68	
Lost Time				0.10				0.10				0.10	
V/C				0.773				0.778				0.778	
Level of Service				C				C				C	

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	111	1	1.00	0.07	111	1	1.00	0.07	0.784
Comb. L-T		0				0			
EB Thru	421	2	2.91	0.09	427	2	2.91	0.09	
Comb. T-R		1				1			
EB Right	13	0	0.09	0.09	13	0	0.09	0.09	
Comb. L-T-R		0				0			
WB Left	739	1	1.00	0.46	739	1	1.00	0.46	0.837
Comb. L-T		0				0			
WB Thru	1322	2	2.71	0.30	1346	2	2.72	0.31	
Comb. T-R		1				1			
WB Right	141	0	0.29	0.30	141	0	0.28	0.31	
Comb. L-T-R		0				0			
NB Left	57	1	1.00	0.04	57	1	1.00	0.04	0.757
Comb. L-T		0				0			
NB Thru	141	1	1.00	0.09	141	1	1.00	0.09	
Comb. T-R		0				0			
NB Right	423	1	1.00	0.26	423	1	1.00	0.26	
Comb. L-T-R		0				0			
SB Left	65	1	0.36	0.11	65	1	0.36	0.11	0.782
Comb. L-T		1				1			
SB Thru	298	0	1.64	0.11	298	0	1.64	0.11	
Comb. T-R		0				0			
SB Right	148	1	1.00	0.09	148	1	1.00	0.09	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.55	E-W:	0.55
	N-S:	0.38	N-S:	0.38
	Total:	0.93	Total:	0.93

Lost Time	0.10	0.10

V/C	1.030	1.031
Level of Service	F	F

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	138	1	1.00	0.09	138	1	1.00	0.09	0.887
Comb. L-T		0				0			
EB Thru	1179	2	2.96	0.25	1191	2	2.96	0.25	
Comb. T-R		1				1			
EB Right	15	0	0.04	0.25	15	0	0.04	0.25	
Comb. L-T-R		0				0			
WB Left	433	1	1.00	0.27	433	1	1.00	0.27	0.887
Comb. L-T		0				0			
WB Thru	817	2	2.78	0.18	833	2	2.79	0.19	
Comb. T-R		1				1			
WB Right	63	0	0.22	0.18	63	0	0.21	0.19	
Comb. L-T-R		0				0			
NB Left	71	1	1.00	0.04	71	1	1.00	0.04	0.960
Comb. L-T		0				0			
NB Thru	279	1	1.00	0.17	279	1	1.00	0.17	
Comb. T-R		0				0			
NB Right	651	1	1.00	0.41	651	1	1.00	0.41	
Comb. L-T-R		0				0			
SB Left	244	1	1.16	0.13	244	1	1.16	0.13	0.757
Comb. L-T		1				1			
SB Thru	177	0	0.84	0.13	177	0	0.84	0.13	
Comb. T-R		0				0			
SB Right	170	1	1.00	0.11	170	1	1.00	0.11	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.52	E-W:	0.52
	N-S:	0.54	N-S:	0.54
	Total:	1.06	Total:	1.06

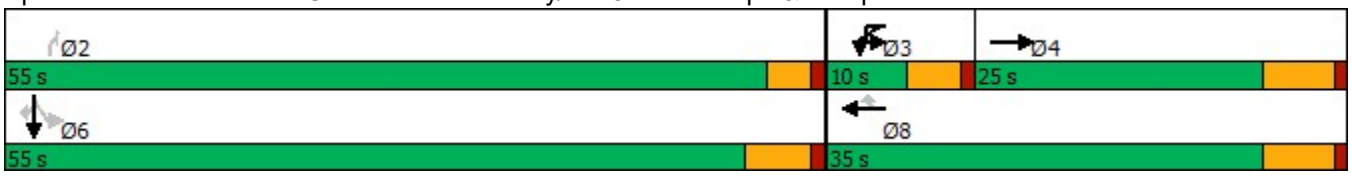
Lost Time	0.10	0.10

V/C	1.158	1.160
Level of Service	F	F

Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	681	4	1134	37	4	676	9	968
Future Volume (vph)	681	4	1134	37	4	676	9	968
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	20.6	5.6	25.8	25.8	42.2	40.8	40.8	40.8
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.54	0.52	0.52	0.52
v/c Ratio	0.57	0.31	0.74	0.04	0.00	0.71	0.77	0.70
Control Delay	29.7	46.7	27.4	7.3	0.0	19.8	22.8	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	46.7	27.4	7.3	0.0	19.8	22.8	17.1
LOS	C	D	C	A	A	B	C	B
Approach Delay	29.7		27.4				19.9	
Approach LOS	C		C				B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 78.3	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 69.9%	ICU Level of Service C
Analysis Period (min) 15	

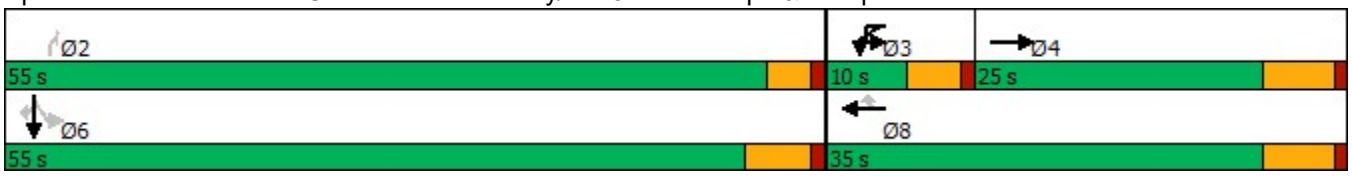
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	685	4	1139	37	4	676	9	983
Future Volume (vph)	685	4	1139	37	4	676	9	983
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	20.6	5.6	25.9	25.9	42.5	41.1	41.1	41.1
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.54	0.52	0.52	0.52
v/c Ratio	0.57	0.31	0.74	0.04	0.00	0.72	0.77	0.71
Control Delay	29.8	46.8	27.6	7.3	0.0	20.1	22.9	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	46.8	27.6	7.3	0.0	20.1	22.9	17.5
LOS	C	D	C	A	A	C	C	B
Approach Delay	29.8		27.6				20.1	
Approach LOS	C		C				C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 78.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 70.6%	ICU Level of Service C
Analysis Period (min) 15	

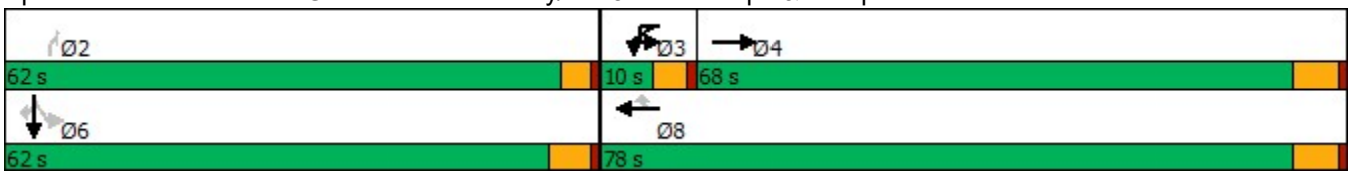
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	1926	7	525	49	7	1144	5	567
Future Volume (vph)	1926	7	525	49	7	1144	5	567
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	61.7	5.4	69.6	69.6	58.1	56.7	56.7	56.7
Actuated g/C Ratio	0.45	0.04	0.51	0.51	0.42	0.41	0.41	0.41
v/c Ratio	0.93	0.70	0.22	0.04	0.01	0.95	0.98	0.72
Control Delay	44.5	110.6	19.0	4.2	0.0	64.2	71.5	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	110.6	19.0	4.2	0.0	64.2	71.5	23.7
LOS	D	F	B	A	A	E	E	C
Approach Delay	44.5		24.4				54.7	
Approach LOS	D		C				D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 137.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.98	
Intersection Signal Delay: 45.6	Intersection LOS: D
Intersection Capacity Utilization 94.7%	ICU Level of Service F
Analysis Period (min) 15	

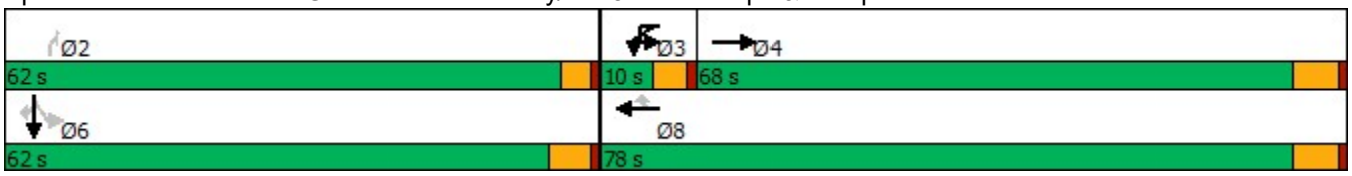
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	1935	7	528	49	7	1144	5	577
Future Volume (vph)	1935	7	528	49	7	1144	5	577
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	61.9	5.4	69.7	69.7	58.1	56.7	56.7	56.7
Actuated g/C Ratio	0.45	0.04	0.51	0.51	0.42	0.41	0.41	0.41
v/c Ratio	0.93	0.70	0.22	0.04	0.01	0.95	0.99	0.73
Control Delay	44.8	110.6	19.0	4.2	0.0	64.4	72.1	24.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	110.6	19.0	4.2	0.0	64.4	72.1	24.7
LOS	D	F	B	A	A	E	E	C
Approach Delay	44.8		24.4				55.2	
Approach LOS	D		C				E	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 137.6	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 45.9	Intersection LOS: D
Intersection Capacity Utilization 94.8%	ICU Level of Service F
Analysis Period (min) 15	

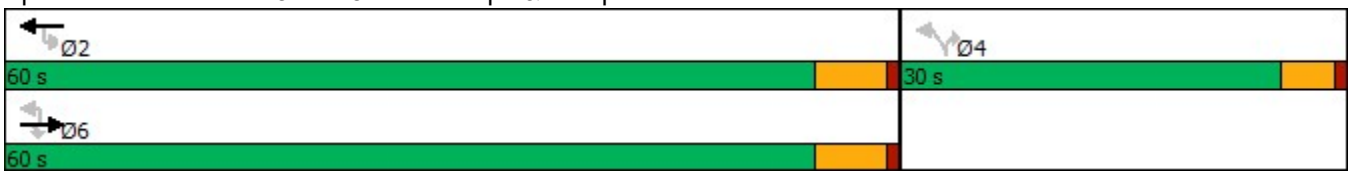
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	983	283	1	1603	355	255
Future Volume (vph)	983	283	1	1603	355	255
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	34.1	34.1		34.1	13.9	13.9
Actuated g/C Ratio	0.58	0.58		0.58	0.24	0.24
v/c Ratio	0.36	0.18		0.63	0.56	0.50
Control Delay	7.0	1.1		9.5	23.0	16.4
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.0	1.1		9.5	23.0	16.4
LOS	A	A		A	C	B
Approach Delay	5.7			9.5	20.9	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 58.9	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 52.0%	ICU Level of Service A
Analysis Period (min) 15	

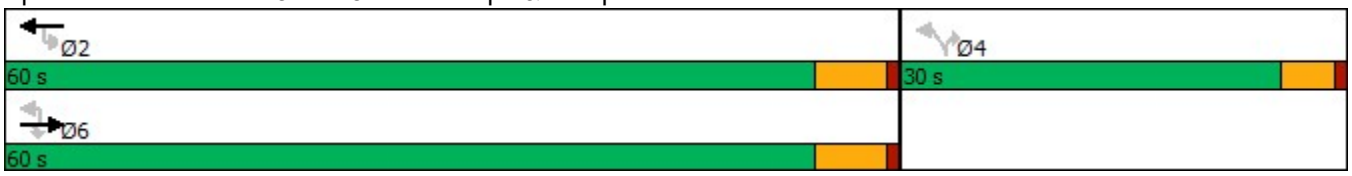
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	983	287	1	1605	358	255
Future Volume (vph)	983	287	1	1605	358	255
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	34.2	34.2		34.2	13.9	13.9
Actuated g/C Ratio	0.58	0.58		0.58	0.24	0.24
v/c Ratio	0.36	0.18		0.63	0.56	0.50
Control Delay	7.1	1.1		9.5	23.1	16.4
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.1	1.1		9.5	23.1	16.4
LOS	A	A		A	C	B
Approach Delay	5.7			9.5	21.0	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 59.1	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 52.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2061	675	1	856	102	299
Future Volume (vph)	2061	675	1	856	102	299
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	11.9	11.9
Actuated g/C Ratio	0.63	0.63		0.63	0.20	0.20
v/c Ratio	0.70	0.36		0.31	0.43	0.57
Control Delay	9.5	1.1		5.9	22.9	29.4
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	9.5	1.1		5.9	22.9	29.4
LOS	A	A		A	C	C
Approach Delay	7.4			5.9	25.3	
Approach LOS	A			A	C	

Intersection Summary		
Cycle Length: 70		
Actuated Cycle Length: 60.7		
Natural Cycle: 60		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.70		
Intersection Signal Delay: 8.9	Intersection LOS: A	
Intersection Capacity Utilization 59.6%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2062	683	1	857	104	299
Future Volume (vph)	2062	683	1	857	104	299
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	11.9	11.9
Actuated g/C Ratio	0.63	0.63		0.63	0.20	0.20
v/c Ratio	0.70	0.36		0.31	0.43	0.57
Control Delay	9.5	1.1		5.9	22.9	29.4
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	9.5	1.1		5.9	22.9	29.4
LOS	A	A		A	C	C
Approach Delay	7.4			5.9	25.3	
Approach LOS	A			A	C	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 60.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

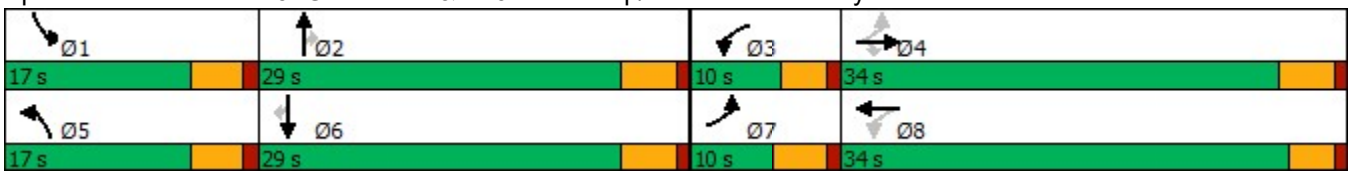
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	330	14	114	23	10	165	835	26	903	186	
Future Volume (vph)	330	14	114	23	10	165	835	26	903	186	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		24.6	24.6		25.3	11.4	40.6	40.6	24.5	24.5	
Actuated g/C Ratio		0.33	0.33		0.34	0.15	0.54	0.54	0.33	0.33	
v/c Ratio		0.87	0.20		0.10	0.66	0.47	0.03	0.84	0.31	
Control Delay		46.0	4.1		13.6	44.2	12.2	0.1	33.2	4.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		46.0	4.1		13.6	44.2	12.2	0.1	33.2	4.8	
LOS		D	A		B	D	B	A	C	A	
Approach Delay		35.6			13.6		17.0		28.4		
Approach LOS		D			B		B		C		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 74.6	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.9	Intersection LOS: C
Intersection Capacity Utilization 68.8%	ICU Level of Service C
Analysis Period (min) 15	

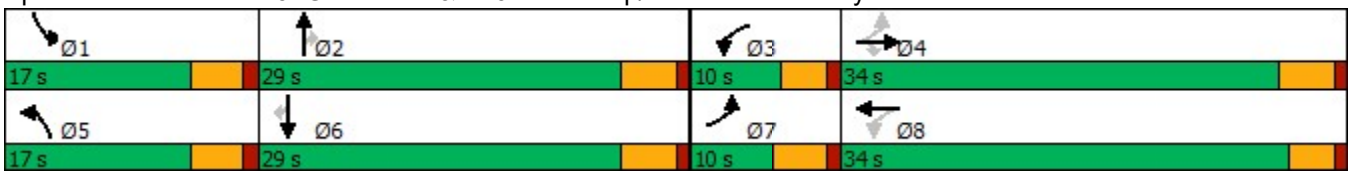
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	330	14	114	23	10	173	837	26	910	186	
Future Volume (vph)	330	14	114	23	10	173	837	26	910	186	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		24.6	24.6		25.3	11.6	40.8	40.8	24.5	24.5	
Actuated g/C Ratio		0.33	0.33		0.34	0.16	0.55	0.55	0.33	0.33	
v/c Ratio		0.88	0.20		0.10	0.68	0.47	0.03	0.85	0.31	
Control Delay		46.4	4.1		13.6	45.4	12.2	0.1	33.9	4.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		46.4	4.1		13.6	45.4	12.2	0.1	33.9	4.9	
LOS		D	A		B	D	B	A	C	A	
Approach Delay		35.9			13.6		17.4		29.0		
Approach LOS		D			B		B		C		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 74.8	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 25.4	Intersection LOS: C
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

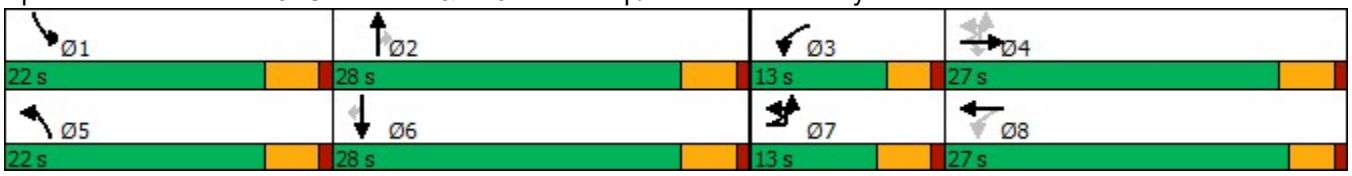
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	221	13	64	38	19	321	872	46	5	841	345
Future Volume (vph)	1	221	13	64	38	19	321	872	46	5	841	345
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			18.3	18.3		19.0	17.4	43.3	43.3	5.8	23.4	23.4
Actuated g/C Ratio			0.25	0.25		0.26	0.24	0.59	0.59	0.08	0.32	0.32
v/c Ratio			0.76	0.14		0.22	0.83	0.45	0.05	0.04	0.81	0.49
Control Delay			41.0	1.2		17.7	46.6	10.7	0.1	33.2	30.8	5.0
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			41.0	1.2		17.7	46.6	10.7	0.1	33.2	30.8	5.0
LOS			D	A		B	D	B	A	C	C	A
Approach Delay			32.4			17.7		19.6			23.3	
Approach LOS			C			B		B			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 73.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			

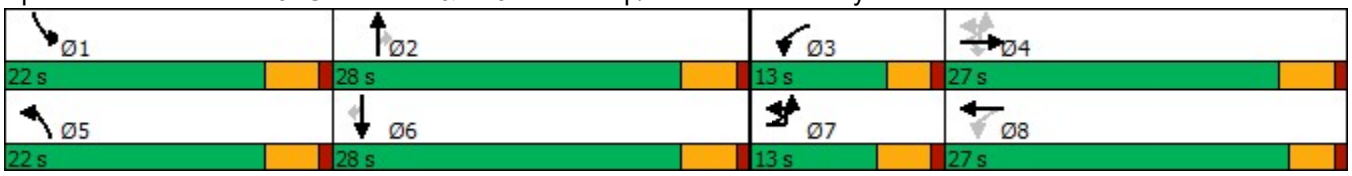
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	221	13	64	38	19	339	876	46	5	846	345
Future Volume (vph)	1	221	13	64	38	19	339	876	46	5	846	345
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			18.3	18.3		19.0	17.4	43.3	43.3	5.8	23.4	23.4
Actuated g/C Ratio			0.25	0.25		0.26	0.24	0.59	0.59	0.08	0.32	0.32
v/c Ratio			0.76	0.14		0.22	0.87	0.45	0.05	0.04	0.81	0.49
Control Delay			41.0	1.2		17.7	51.8	10.7	0.1	33.2	31.0	5.0
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			41.0	1.2		17.7	51.8	10.7	0.1	33.2	31.0	5.0
LOS			D	A		B	D	B	A	C	C	A
Approach Delay			32.4			17.7		21.4			23.5	
Approach LOS			C			B		C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 73.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 23.4		Intersection LOS: C	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

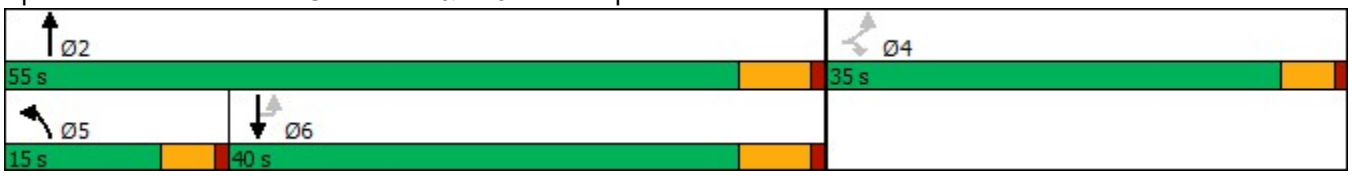
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	282	624	41	747	2	814
Future Volume (vph)	282	624	41	747	2	814
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	27.6	27.6	7.8	37.6		30.6
Actuated g/C Ratio	0.36	0.36	0.10	0.49		0.40
v/c Ratio	0.48	0.89	0.25	0.47		0.85
Control Delay	24.1	31.2	39.8	13.4		28.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	24.1	31.2	39.8	13.4		28.9
LOS	C	C	D	B		C
Approach Delay	29.0			14.8		28.9
Approach LOS	C			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 76.2	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 75.9%	ICU Level of Service D
Analysis Period (min) 15	

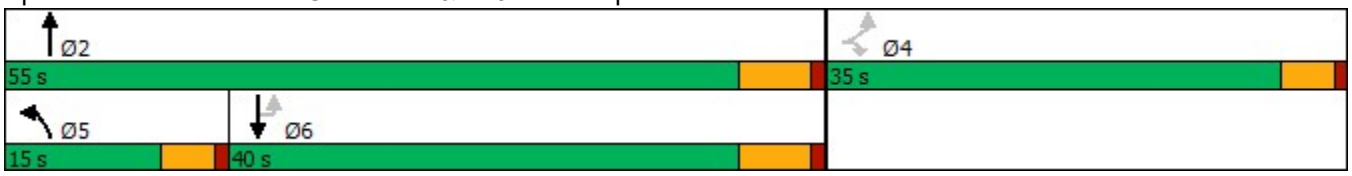
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	282	658	41	756	2	821
Future Volume (vph)	282	658	41	756	2	821
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	30.4	30.4	7.6	38.4		31.2
Actuated g/C Ratio	0.38	0.38	0.10	0.48		0.39
v/c Ratio	0.45	0.91	0.27	0.48		0.87
Control Delay	23.5	33.9	40.4	14.3		31.2
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	23.5	33.9	40.4	14.3		31.2
LOS	C	C	D	B		C
Approach Delay	30.8			15.6		31.2
Approach LOS	C			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

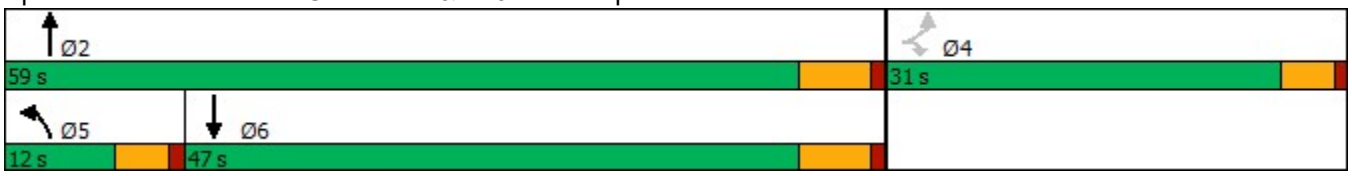
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	266	246	49	965	592
Future Volume (vph)	266	246	49	965	592
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	15.8	15.8	7.4	31.0	25.1
Actuated g/C Ratio	0.27	0.27	0.13	0.53	0.43
v/c Ratio	0.61	0.43	0.24	0.56	0.67
Control Delay	27.3	5.7	34.2	10.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	5.7	34.2	10.3	14.8
LOS	C	A	C	B	B
Approach Delay	16.9			11.4	14.8
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 58.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

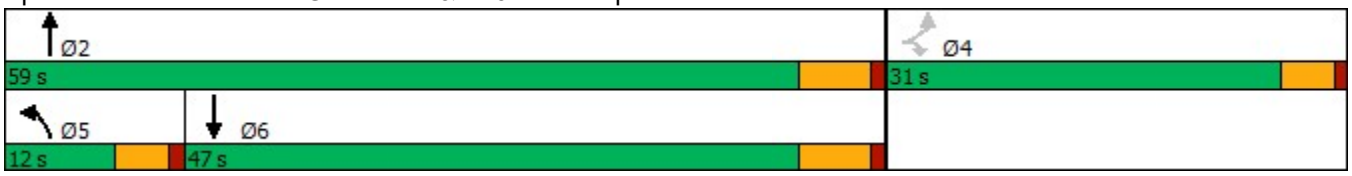
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	266	269	49	987	597
Future Volume (vph)	266	269	49	987	597
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	15.9	15.9	7.4	31.3	25.4
Actuated g/C Ratio	0.27	0.27	0.13	0.53	0.43
v/c Ratio	0.61	0.46	0.24	0.57	0.67
Control Delay	27.5	5.7	34.4	10.4	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	5.7	34.4	10.4	14.8
LOS	C	A	C	B	B
Approach Delay	16.6			11.6	14.8
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 59	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 17: Grand Ave & I-10 EB Ramps



E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	48	0	0.22	0.14	48	0	0.22	0.14	48	0	0.22	0.14	0.722
Comb. L-T		0				0				0			
EB Thru	21	0	0.10	0.14	21	0	0.10	0.14	21	0	0.10	0.14	
Comb. T-R		0				0				0			
EB Right	148	0	0.68	0.14	148	0	0.68	0.14	148	0	0.68	0.14	
Comb. L-T-R		1				1				1			
WB Left	544	1	1.00	0.34	547	1	1.00	0.34	547	1	1.00	0.34	0.751
Comb. L-T		0				0				0			
WB Thru	126	1	1.00	0.08	126	1	1.00	0.08	126	1	1.00	0.08	
Comb. T-R		0				0				0			
WB Right	57	1	1.00	0.04	57	1	1.00	0.04	57	1	1.00	0.04	
Comb. L-T-R		0				0				0			
NB Left	29	1	1.00	0.02	29	1	1.00	0.02	29	1	1.00	0.02	0.863
Comb. L-T		0				0				0			
NB Thru	824	2	2.00	0.26	834	2	2.00	0.26	834	2	2.00	0.26	
Comb. T-R		0				0				0			
NB Right	202	1	1.00	0.13	202	1	1.00	0.13	202	1	1.00	0.13	
Comb. L-T-R		0				0				0			
SB Left	25	1	1.00	0.02	25	1	1.00	0.02	25	1	1.00	0.02	0.934
Comb. L-T		0				0				0			
SB Thru	1441	2	2.00	0.45	1484	2	2.00	0.46	1484	2	2.90	0.32	
Comb. T-R		0				0				1			
SB Right	52	1	1.00	0.03	52	1	1.00	0.03	52	0	0.10	0.32	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.48			E-W:	0.48			E-W:	0.48	
			N-S:	0.47			N-S:	0.48			N-S:	0.34	
			Total:	0.94			Total:	0.96			Total:	0.82	
Lost Time				0.10				0.10				0.10	
V/C				1.045				1.060				0.916	
Level of Service				F				F				E	

E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	22	0	0.23	0.06	22	0	0.23	0.06	22	0	0.23	0.06	0.913
Comb. L-T		0				0				0			
EB Thru	37	0	0.39	0.06	37	0	0.39	0.06	37	0	0.39	0.06	
Comb. T-R		0				0				0			
EB Right	37	0	0.39	0.06	37	0	0.39	0.06	37	0	0.39	0.06	
Comb. L-T-R		1				1				1			
WB Left	240	1	1.00	0.15	241	1	1.00	0.15	241	1	1.00	0.15	0.945
Comb. L-T		0				0				0			
WB Thru	52	1	1.00	0.03	52	1	1.00	0.03	52	1	1.00	0.03	
Comb. T-R		0				0				0			
WB Right	45	1	1.00	0.03	45	1	1.00	0.03	45	1	1.00	0.03	
Comb. L-T-R		0				0				0			
NB Left	54	1	1.00	0.03	54	1	1.00	0.03	54	1	1.00	0.03	0.927
Comb. L-T		0				0				0			
NB Thru	1009	2	2.00	0.32	1033	2	2.00	0.32	1033	2	2.00	0.32	
Comb. T-R		0				0				0			
NB Right	197	1	1.00	0.12	198	1	1.00	0.12	198	1	1.00	0.12	
Comb. L-T-R		0				0				0			
SB Left	36	1	1.00	0.02	36	1	1.00	0.02	36	1	1.00	0.02	0.940
Comb. L-T		0				0				0			
SB Thru	811	2	2.00	0.25	841	2	2.00	0.26	841	2	2.86	0.18	
Comb. T-R		0				0				1			
SB Right	42	1	1.00	0.03	42	1	1.00	0.03	42	0	0.14	0.18	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.21			E-W:	0.21			E-W:	0.21	
			N-S:	0.34			N-S:	0.35			N-S:	0.35	
			Total:	0.55			Total:	0.56			Total:	0.56	
Lost Time				0.10				0.10				0.10	
V/C				0.648				0.656				0.656	
Level of Service				B				B				B	

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	25	27	893	1672	123
Future Vol, veh/h	14	25	27	893	1672	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	27	29	971	1817	134

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2361	-	1817	0	-	0
Stage 1	1817	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	30	0	334	-	-	0
Stage 1	115	0	-	-	-	0
Stage 2	546	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	27	-	334	-	-	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	105	-	-	-	-	-
Stage 2	546	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	248.6	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	334	-	27	-	-
HCM Lane V/C Ratio	0.088	-	0.564	-	-
HCM Control Delay (s)	16.8	-	248.6	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.3	-	1.8	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	25	27	903	1714	123
Future Vol, veh/h	14	25	27	903	1714	123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	27	29	982	1863	134

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2412	-	1863	0	-	0
Stage 1	1863	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	27	0	320	-	-	0
Stage 1	108	0	-	-	-	0
Stage 2	542	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	25	-	320	-	-	-
Mov Cap-2 Maneuver	25	-	-	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	278.2	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	320	-	25	-	-
HCM Lane V/C Ratio	0.092	-	0.609	-	-
HCM Control Delay (s)	17.4	-	278.2	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	11	30	1211	979	31
Future Vol, veh/h	5	11	30	1211	979	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	33	1316	1064	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1788	-	1064	0	-	0
Stage 1	1064	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	72	0	651	-	-	0
Stage 1	293	0	-	-	-	0
Stage 2	441	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	68	-	651	-	-	-
Mov Cap-2 Maneuver	68	-	-	-	-	-
Stage 1	278	-	-	-	-	-
Stage 2	441	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	62.5	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	651	-	68	-	-
HCM Lane V/C Ratio	0.05	-	0.08	-	-
HCM Control Delay (s)	10.8	-	62.5	0	-
HCM Lane LOS	B	-	F	A	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	11	30	1234	1008	31
Future Vol, veh/h	5	11	30	1234	1008	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	12	33	1341	1096	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1833	-	1096	0	-	0
Stage 1	1096	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	68	0	633	-	-	0
Stage 1	282	0	-	-	-	0
Stage 2	434	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	64	-	633	-	-	-
Mov Cap-2 Maneuver	64	-	-	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	66.4	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	633	-	64	-	-
HCM Lane V/C Ratio	0.052	-	0.085	-	-
HCM Control Delay (s)	11	-	66.4	0	-
HCM Lane LOS	B	-	F	A	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	51.6
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	264	556	461	111	183	310
Future Vol, veh/h	264	556	461	111	183	310
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	287	604	501	121	199	337
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	87.5	31.4	15.5
HCM LOS	F	D	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	59%	0%	0%	0%	100%	100%	0%
Vol Thru, %	41%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	449	371	307	265	92	92	310
LT Vol	264	0	0	0	92	92	0
Through Vol	185	371	307	154	0	0	0
RT Vol	0	0	0	111	0	0	310
Lane Flow Rate	488	403	334	288	99	99	337
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.143	0.91	0.783	0.651	0.243	0.243	0.548
Departure Headway (Hd)	8.428	8.127	8.731	8.429	9.085	9.085	6.065
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	430	447	418	432	398	398	600
Service Time	6.173	5.872	6.431	6.129	6.785	6.785	3.765
HCM Lane V/C Ratio	1.135	0.902	0.799	0.667	0.249	0.249	0.562
HCM Control Delay	116.8	51.9	36.5	25.5	14.7	14.7	15.9
HCM Lane LOS	F	F	E	D	B	B	C
HCM 95th-tile Q	17.8	10	6.8	4.5	0.9	0.9	3.3

Intersection	
Intersection Delay, s/veh	53.1
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	264	563	463	111	185	310
Future Vol, veh/h	264	563	463	111	185	310
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	287	612	503	121	201	337
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	90.2	31.9	15.6
HCM LOS	F	D	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	58%	0%	0%	0%	100%	100%	0%
Vol Thru, %	42%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	452	375	309	265	93	93	310
LT Vol	264	0	0	0	93	93	0
Through Vol	188	375	309	154	0	0	0
RT Vol	0	0	0	111	0	0	310
Lane Flow Rate	491	408	336	288	101	101	337
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.152	0.923	0.789	0.655	0.246	0.246	0.55
Departure Headway (Hd)	8.448	8.148	8.76	8.459	9.112	9.112	6.092
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	445	416	430	396	396	596
Service Time	6.193	5.893	6.46	6.159	6.812	6.812	3.792
HCM Lane V/C Ratio	1.137	0.917	0.808	0.67	0.255	0.255	0.565
HCM Control Delay	120	54.4	37.2	25.8	14.8	14.8	16
HCM Lane LOS	F	F	E	D	B	B	C
HCM 95th-tile Q	18.1	10.4	6.9	4.6	1	1	3.3

Intersection	
Intersection Delay, s/veh	31.1
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	304	326	457	114	134	216
Future Vol, veh/h	304	326	457	114	134	216
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	330	354	497	124	146	235
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	48.2	23.9	11.9
HCM LOS	E	C	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	74%	0%	0%	0%	100%	100%	0%
Vol Thru, %	26%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	413	217	305	266	67	67	216
LT Vol	304	0	0	0	67	67	0
Through Vol	109	217	305	152	0	0	0
RT Vol	0	0	0	114	0	0	216
Lane Flow Rate	449	236	331	289	73	73	235
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.977	0.49	0.706	0.593	0.172	0.172	0.357
Departure Headway (Hd)	7.84	7.465	7.679	7.373	8.486	8.486	5.472
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	462	482	470	489	423	423	657
Service Time	5.588	5.212	5.427	5.121	6.225	6.225	3.21
HCM Lane V/C Ratio	0.972	0.49	0.704	0.591	0.173	0.173	0.358
HCM Control Delay	64.5	17.2	26.9	20.4	13	13	11.2
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	12.3	2.7	5.5	3.8	0.6	0.6	1.6

Intersection	
Intersection Delay, s/veh	31.7
Intersection LOS	D

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	304	331	461	115	135	216
Future Vol, veh/h	304	331	461	115	135	216
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	330	360	501	125	147	235
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	49.3	24.4	12
HCM LOS	E	C	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	73%	0%	0%	0%	100%	100%	0%
Vol Thru, %	27%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	414	221	307	269	68	68	216
LT Vol	304	0	0	0	68	68	0
Through Vol	110	221	307	154	0	0	0
RT Vol	0	0	0	115	0	0	216
Lane Flow Rate	450	240	334	292	73	73	235
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	0.984	0.499	0.715	0.6	0.173	0.173	0.358
Departure Headway (Hd)	7.862	7.488	7.7	7.394	8.509	8.509	5.495
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	464	482	471	488	422	422	653
Service Time	5.607	5.233	5.447	5.14	6.251	6.251	3.236
HCM Lane V/C Ratio	0.97	0.498	0.709	0.598	0.173	0.173	0.36
HCM Control Delay	66.3	17.5	27.6	20.7	13	13	11.3
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	12.5	2.7	5.6	3.9	0.6	0.6	1.6

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	126	1	1.00	0.08	126	1	1.00	0.08	126	1	1.00	0.08	0.889
Comb. L-T		0				0				0			
EB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
EB Right	626	1	1.00	0.39	634	1	1.00	0.40	634	2	2.00	0.20	
Comb. L-T-R		0				0				0			
WB Left	0	0	0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0				0			
WB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
WB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
NB Left	384	2	2.00	0.13	386	2	2.00	0.13	386	2	2.00	0.13	0.893
Comb. L-T		0				0				0			
NB Thru	872	2	2.00	0.27	884	2	2.00	0.28	884	2	2.00	0.28	
Comb. T-R		0				0				0			
NB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
SB Left	0	0	0.00		0	0	0.00		0	0	0.00		0.893
Comb. L-T		0				0				0			
SB Thru	1707	2	2.00	0.53	1754	2	2.00	0.55	1754	2	2.00	0.55	
Comb. T-R		0				0				0			
SB Right	193	1	1.00	0.12	193	1	1.00	0.12	193	1	1.00	0.12	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.39			E-W:	0.40			E-W:	0.20	
			N-S:	0.67			N-S:	0.68			N-S:	0.68	
			Total:	1.06			Total:	1.08			Total:	0.88	
Lost Time				0.10				0.10				0.10	
V/C				1.158				1.178				0.980	
Level of Service				F				F				E	

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	73	1	1.00	0.05	73	1	1.00	0.05	73	1	1.00	0.05	0.918
Comb. L-T		0				0				0			
EB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
EB Right	339	1	1.00	0.21	344	1	1.00	0.21	344	2	2.00	0.11	
Comb. L-T-R		0				0				0			
WB Left	0	0	0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0				0			
WB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
WB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
NB Left	538	2	2.00	0.19	544	2	2.00	0.19	544	2	2.00	0.19	0.916
Comb. L-T		0				0				0			
NB Thru	1275	2	2.00	0.40	1300	2	2.00	0.41	1300	2	2.00	0.41	
Comb. T-R		0				0				0			
NB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
SB Left	0	0	0.00		0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0				0			
SB Thru	989	2	2.00	0.31	1021	2	2.00	0.32	1021	2	2.00	0.32	
Comb. T-R		0				0				0			
SB Right	110	1	1.00	0.07	110	1	1.00	0.07	110	1	1.00	0.07	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.21			E-W:	0.21			E-W:	0.11	
			N-S:	0.50			N-S:	0.51			N-S:	0.51	
			Total:	0.71			Total:	0.72			Total:	0.62	
Lost Time				0.10				0.10				0.10	
V/C				0.808				0.823				0.715	
Level of Service				D				D				C	

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0			
EB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
EB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			
WB Left	168	2	2.00	0.06	173	2	2.00	0.06	0.895
Comb. L-T		0				0			
WB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
WB Right	69	2	2.00	0.02	74	2	2.00	0.02	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		0	0	0.00		0.903
Comb. L-T		0				0			
NB Thru	1217	2	2.00	0.38	1223	2	2.00	0.38	
Comb. T-R		0				0			
NB Right	437	1	1.00	0.27	459	1	1.00	0.29	
Comb. L-T-R		0				0			
SB Left	610	2	2.00	0.21	635	2	2.00	0.22	0.941
Comb. L-T		0				0			
SB Thru	1842	2	2.00	0.58	1871	2	2.00	0.58	
Comb. T-R		0				0			
SB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.06	E-W:	0.06
	N-S:	0.59	N-S:	0.60
	Total:	0.65	Total:	0.66
Lost Time		0.10		0.10
V/C		0.750		0.763
Level of Service		C		C

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 11%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0			
EB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
EB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			
WB Left	190	2	2.00	0.07	204	2	2.00	0.07	0.773
Comb. L-T		0				0			
WB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
WB Right	149	2	2.00	0.05	164	2	2.00	0.05	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0			
NB Thru	1798	2	2.00	0.56	1814	2	2.00	0.57	
Comb. T-R		0				0			
NB Right	188	1	1.00	0.12	203	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	168	2	2.00	0.06	185	2	2.00	0.06	0.948
Comb. L-T		0				0			
SB Thru	1206	2	2.00	0.38	1226	2	2.00	0.38	
Comb. T-R		0				0			
SB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.07	E-W:	0.07
	N-S:	0.62	N-S:	0.63
	Total:	0.69	Total:	0.70
Lost Time		0.10		0.10
V/C		0.786		0.802
Level of Service		C		D

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	247	1	1.00	0.15	247	1	1.00	0.15	247	1	1.00	0.15	0.780
Comb. L-T		0				0				0			
EB Thru	106	0	0.44	0.15	109	0	0.45	0.15	109	0	0.45	0.15	
Comb. T-R		1				1				1			
EB Right	135	0	0.56	0.15	135	0	0.55	0.15	135	0	0.55	0.15	
Comb. L-T-R		0				0				0			
WB Left	110	1	1.00	0.07	117	1	1.00	0.07	117	1	1.61	0.05	0.745
Comb. L-T		0				0				1			
WB Thru	28	1	1.00	0.02	28	1	1.00	0.02	28	0	0.39	0.05	
Comb. T-R		0				0				0			
WB Right	66	1	1.00	0.04	70	1	1.00	0.04	70	1	1.00	0.04	
Comb. L-T-R		0				0				0			
NB Left	118	1	1.00	0.07	118	1	1.00	0.07	118	1	1.00	0.07	0.862
Comb. L-T		0				0				0			
NB Thru	1446	2	2.00	0.45	1473	2	2.00	0.46	1473	2	2.28	0.40	
Comb. T-R		0				0				1			
NB Right	445	1	1.00	0.28	468	1	1.00	0.29	468	0	0.72	0.40	
Comb. L-T-R		0				0				0			
SB Left	321	1	1.00	0.20	335	1	1.00	0.21	335	1	1.00	0.21	0.895
Comb. L-T		0				0				0			
SB Thru	1618	2	2.00	0.51	1638	2	2.00	0.51	1638	2	2.00	0.51	
Comb. T-R		0				0				0			
SB Right	160	1	1.00	0.10	160	1	1.00	0.10	160	1	1.00	0.10	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.22			E-W:	0.23			E-W:	0.20	
			N-S:	0.65			N-S:	0.67			N-S:	0.61	
			Total:	0.87			Total:	0.89			Total:	0.81	
Lost Time				0.10				0.10				0.10	
V/C				0.972				0.995				0.914	
Level of Service				E				E				E	

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	113	1	1.00	0.07	113	1	1.00	0.07	113	1	1.00	0.07	0.890
Comb. L-T		0				0				0			
EB Thru	17	0	0.13	0.08	18	0	0.14	0.08	18	0	0.14	0.08	
Comb. T-R		1				1				1			
EB Right	109	0	0.87	0.08	109	0	0.86	0.08	109	0	0.86	0.08	
Comb. L-T-R		0				0				0			
WB Left	237	1	1.00	0.15	251	1	1.00	0.16	251	1	1.79	0.09	0.760
Comb. L-T		0				0				1			
WB Thru	29	1	1.00	0.02	30	1	1.00	0.02	30	0	0.21	0.09	
Comb. T-R		0				0				0			
WB Right	141	1	1.00	0.09	150	1	1.00	0.09	150	1	1.00	0.09	
Comb. L-T-R		0				0				0			
NB Left	99	1	1.00	0.06	99	1	1.00	0.06	99	1	1.00	0.06	0.896
Comb. L-T		0				0				0			
NB Thru	1792	2	2.00	0.56	1815	2	2.00	0.57	1815	2	2.70	0.42	
Comb. T-R		0				0				1			
NB Right	187	1	1.00	0.12	203	1	1.00	0.13	203	0	0.30	0.42	
Comb. L-T-R		0				0				0			
SB Left	77	1	1.00	0.05	86	1	1.00	0.05	86	1	1.00	0.05	0.940
Comb. L-T		0				0				0			
SB Thru	1204	2	2.00	0.38	1225	2	2.00	0.38	1225	2	2.00	0.38	
Comb. T-R		0				0				0			
SB Right	106	1	1.00	0.07	106	1	1.00	0.07	106	1	1.00	0.07	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.23			E-W:	0.24			E-W:	0.17	
			N-S:	0.61			N-S:	0.62			N-S:	0.47	
			Total:	0.83			Total:	0.86			Total:	0.64	
Lost Time				0.10				0.10				0.10	
V/C				0.934				0.957				0.742	
Level of Service				E				E				C	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: AM Peak — Overlap Reduce 20% — Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	603	1	1.71	0.22	606	1	1.71	0.22	606	1	1.71	0.22	0.751
Comb. L-T		1				1				1			
EB Thru	103	0	0.29	0.22	103	0	0.29	0.22	103	0	0.29	0.22	
Comb. T-R		0				0				0			
EB Right	554	1	1.00	0.35	554	1	1.00	0.35	499	1	1.00	0.31	
Comb. L-T-R		0				0				0			
WB Left	201	1	1.13	0.11	201	1	1.13	0.11	201	1	1.13	0.11	0.628
Comb. L-T		1				1				1			
WB Thru	156	0	1.77	0.05	156	0	1.77	0.05	156	0	1.77	0.05	
Comb. T-R		1				1				1			
WB Right	18	0	0.10	0.11	18	0	0.10	0.11	18	0	0.10	0.11	
Comb. L-T-R		0				0				0			
NB Left	180	1	1.00	0.11	180	1	1.00	0.11	180	1	1.00	0.11	0.972
Comb. L-T		0				0				0			
NB Thru	1611	2	2.00	0.50	1654	2	2.00	0.52	1654	2	2.00	0.52	
Comb. T-R		0				0				0			
NB Right	54	1	1.00	0.03	54	1	1.00	0.03	54	1	1.00	0.03	
Comb. L-T-R		0				0				0			
SB Left	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	0.953
Comb. L-T		0				0				0			
SB Thru	1111	2	2.00	0.35	1121	2	2.00	0.35	1121	2	2.00	0.35	
Comb. T-R		0				0				0			
SB Right	265	1	1.00	0.17	265	1	1.00	0.17	265	1	1.00	0.17	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.46			E-W:	0.46			E-W:	0.42	
			N-S:	0.50			N-S:	0.52			N-S:	0.52	
			Total:	0.96			Total:	0.98			Total:	0.94	
Lost Time				0.10				0.10				0.10	
V/C				1.062				1.076				1.041	
Level of Service				F				F				F	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: PM Peak — Overlap Reduce 15% — Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				2021 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	341	1	1.67	0.13	343	1	1.67	0.13	343	1	1.67	0.13	0.946
Comb. L-T		1				1				1			
EB Thru	68	0	0.33	0.13	68	0	0.33	0.13	68	0	0.33	0.13	
Comb. T-R		0				0				0			
EB Right	345	1	1.00	0.22	345	1	1.00	0.22	310	1	1.00	0.19	
Comb. L-T-R		0				0				0			
WB Left	98	1	1.25	0.05	98	1	1.25	0.05	98	1	1.25	0.05	0.840
Comb. L-T		1				1				1			
WB Thru	58	0	1.59	0.02	58	0	1.59	0.02	58	0	1.59	0.02	
Comb. T-R		1				1				1			
WB Right	11	0	0.16	0.04	11	0	0.16	0.04	11	0	0.16	0.04	
Comb. L-T-R		0				0				0			
NB Left	312	1	1.00	0.20	312	1	1.00	0.20	312	1	1.00	0.20	0.961
Comb. L-T		0				0				0			
NB Thru	1635	2	2.00	0.51	1665	2	2.00	0.52	1665	2	2.00	0.52	
Comb. T-R		0				0				0			
NB Right	127	1	1.00	0.08	127	1	1.00	0.08	127	1	1.00	0.08	
Comb. L-T-R		0				0				0			
SB Left	13	1	1.00	0.01	13	1	1.00	0.01	13	1	1.00	0.01	0.918
Comb. L-T		0				0				0			
SB Thru	1147	2	2.00	0.36	1172	2	2.00	0.37	1172	2	2.00	0.37	
Comb. T-R		0				0				0			
SB Right	181	1	1.00	0.11	181	1	1.00	0.11	181	1	1.00	0.11	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.26			E-W:	0.26			E-W:	0.24	
			N-S:	0.55			N-S:	0.56			N-S:	0.56	
			Total:	0.82			Total:	0.83			Total:	0.80	
Lost Time				0.10				0.10				0.10	
V/C				0.918				0.926				0.904	
Level of Service				E				E				E	

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: AM Peak
Free Right Turn 100%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	488	2	2.00	0.17	491	2	2.00	0.17	0.864
Comb. L-T		0				0			
EB Thru	750	3	3.00	0.16	750	3	3.00	0.16	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left	220	2	2.00	0.08	220	2	2.00	0.08	0.813
Comb. L-T		0				0			
WB Thru	1382	3	3.00	0.29	1382	3	3.00	0.29	
Comb. T-R		0				0			
WB Right	258	1	1.00	0.16	258	1	1.00	0.16	
Comb. L-T-R		0				0			
NB Left	345	2	2.00	0.12	345	2	2.00	0.12	0.896
Comb. L-T		0				0			
NB Thru	1277	3	3.00	0.27	1322	3	3.00	0.28	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	310	2	2.00	0.11	310	2	2.00	0.11	0.855
Comb. L-T		0				0			
SB Thru	918	3	3.00	0.19	929	3	3.00	0.19	
Comb. T-R		0				0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.46	E-W:	0.46
	N-S:	0.37	N-S:	0.38
	Total:	0.83	Total:	0.84
Lost Time		0.10		0.10
V/C		0.931		0.941
Level of Service		E		E

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: PM Peak
Free Right Turn 100%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	602	2	2.00	0.21	603	2	2.00	0.21	0.968
Comb. L-T		0				0			
EB Thru	1470	3	3.00	0.31	1470	3	3.00	0.31	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left	270	2	2.00	0.09	270	2	2.00	0.09	0.914
Comb. L-T		0				0			
WB Thru	800	3	3.00	0.17	800	3	3.00	0.17	
Comb. T-R		0				0			
WB Right	346	1	1.00	0.22	346	1	1.00	0.22	
Comb. L-T-R		0				0			
NB Left	307	2	2.00	0.11	307	2	2.00	0.11	0.965
Comb. L-T		0				0			
NB Thru	1068	3	3.00	0.22	1097	3	3.00	0.23	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	403	2	2.00	0.14	403	2	2.00	0.14	0.943
Comb. L-T		0				0			
SB Thru	757	3	3.00	0.16	780	3	3.00	0.16	
Comb. T-R		0				0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.43	E-W:	0.43
	N-S:	0.36	N-S:	0.37
	Total:	0.79	Total:	0.79
Lost Time		0.10		0.10
V/C		0.888		0.894
Level of Service		D		D

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2021 without Project				AM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	19	2	2.00	0.01	19	2	2.00	0.01	0.775
Comb. L-T		0				0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
EB Right	62	1	1.00	0.04	62	1	1.00	0.04	
Comb. L-T-R		0				0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T		0				0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R									
NB Left	116	2	2.00	0.04	116	2	2.00	0.04	0.913
Comb. L-T		0				0			
NB Thru	2167	3	3.00	0.45	2210	3	3.00	0.46	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.927
Comb. L-T		0				0			
SB Thru	851	3	3.00	0.18	861	3	3.00	0.18	
Comb. T-R		0				0			
SB Right	76	1	1.00	0.05	76	1	1.00	0.05	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.04	E-W:	0.04
	N-S:	0.45	N-S:	0.46
	Total:	0.49	Total:	0.50

Lost Time	0.10	0.10

V/C	0.590	0.599
Level of Service	A	A

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2021 without Project				PM 2021 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	116	2	2.00	0.04	116	2	2.00	0.04	0.783
Comb. L-T		0				0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
EB Right	192	1	1.00	0.12	192	1	1.00	0.12	
Comb. L-T-R		0				0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T		0				0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	47	2	2.00	0.02	47	2	2.00	0.02	0.889
Comb. L-T		0				0			
NB Thru	1424	3	3.00	0.30	1455	3	3.00	0.30	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.892
Comb. L-T		0				0			
SB Thru	1495	3	3.00	0.31	1520	3	3.00	0.32	
Comb. T-R		0				0			
SB Right	30	1	1.00	0.02	30	1	1.00	0.02	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.12	E-W:	0.12
	N-S:	0.33	N-S:	0.33
	Total:	0.45	Total:	0.45

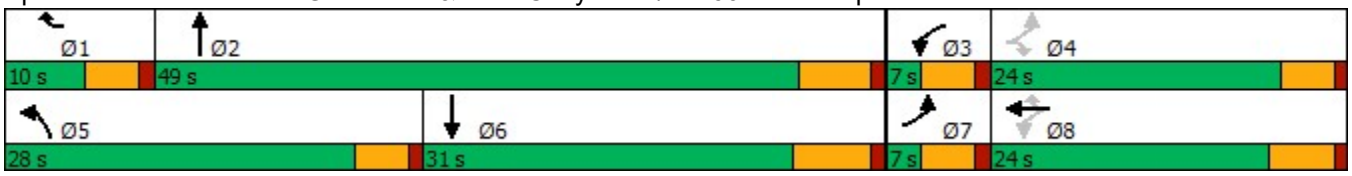
Lost Time	0.10	0.10

V/C	0.548	0.553
Level of Service	A	A

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	140	1	642	246	1473	782	
Future Volume (vph)	3	140	1	642	246	1473	782	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	16.2	15.4	26.3	17.0	41.0	29.1	
Actuated g/C Ratio	0.09	0.21	0.20	0.34	0.22	0.53	0.37	
v/c Ratio	0.02	0.39	0.89	0.59	0.69	0.86	0.37	
Control Delay	33.0	30.6	43.6	16.6	38.4	22.5	19.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	30.6	43.6	16.6	38.4	22.5	19.4	
LOS	C	C	D	B	D	C	B	
Approach Delay			30.2			24.8	19.4	
Approach LOS			C			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 74.6%	ICU Level of Service D
Analysis Period (min) 15	

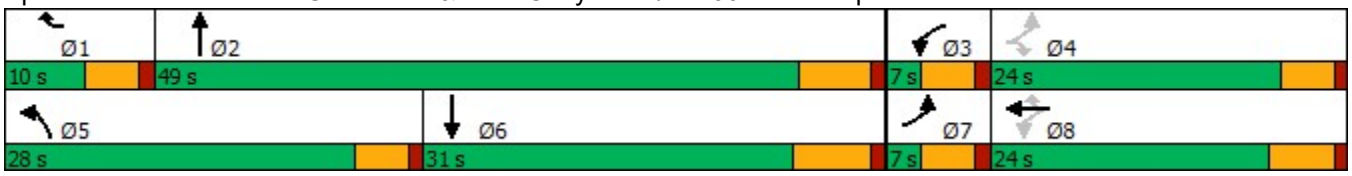
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	140	1	672	246	1483	790	
Future Volume (vph)	3	140	1	672	246	1483	790	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	16.8	16.0	26.9	17.1	41.3	29.3	
Actuated g/C Ratio	0.09	0.21	0.20	0.34	0.22	0.52	0.37	
v/c Ratio	0.02	0.38	0.91	0.61	0.70	0.87	0.37	
Control Delay	33.0	30.3	48.1	17.5	38.8	23.2	19.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	30.3	48.1	17.5	38.8	23.2	19.6	
LOS	C	C	D	B	D	C	B	
Approach Delay			32.4			25.4	19.6	
Approach LOS			C			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 78.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 76.2%	ICU Level of Service D
Analysis Period (min) 15	

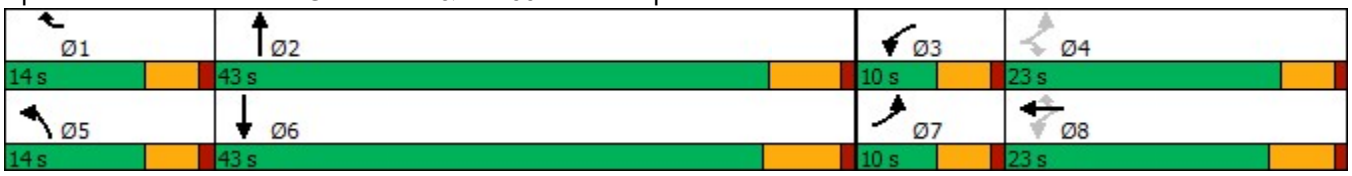
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	135	0	530	188	757	1473		
Future Volume (vph)	135	0	530	188	757	1473		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.9	8.1	19.6	9.6	30.9	26.8		
Actuated g/C Ratio	0.15	0.13	0.32	0.16	0.50	0.44		
v/c Ratio	0.54	0.68	0.47	0.73	0.46	0.58		
Control Delay	34.2	13.4	8.8	46.5	10.9	13.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	34.2	13.4	8.8	46.5	10.9	13.8		
LOS	C	B	A	D	B	B		
Approach Delay		15.3			18.0	13.8		
Approach LOS		B			B	B		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 61.2	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

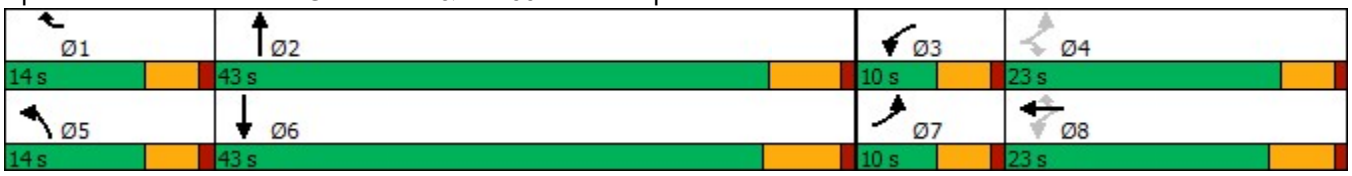
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	135	0	551	188	764	1492		
Future Volume (vph)	135	0	551	188	764	1492		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.4	8.6	20.1	9.6	31.2	27.2		
Actuated g/C Ratio	0.15	0.14	0.32	0.15	0.50	0.44		
v/c Ratio	0.52	0.70	0.49	0.74	0.47	0.59		
Control Delay	33.2	14.4	9.4	47.9	11.3	14.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	33.2	14.4	9.4	47.9	11.3	14.2		
LOS	C	B	A	D	B	B		
Approach Delay		15.6			18.5	14.2		
Approach LOS		B			B	B		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 62	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 53.4%	ICU Level of Service A
Analysis Period (min) 15	

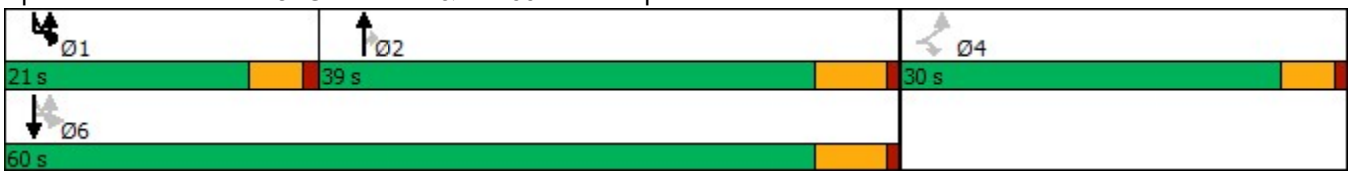
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	720	254	991	287	9	278	653
Future Volume (vph)	720	254	991	287	9	278	653
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	23.0	23.0	30.6	30.6		50.7	49.4
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.60
v/c Ratio	0.83	0.46	0.83	0.40		0.79	0.23
Control Delay	37.4	8.5	30.9	4.1		33.8	8.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	8.5	30.9	4.1		33.8	8.2
LOS	D	A	C	A		C	A
Approach Delay			24.9				16.0
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 83	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	

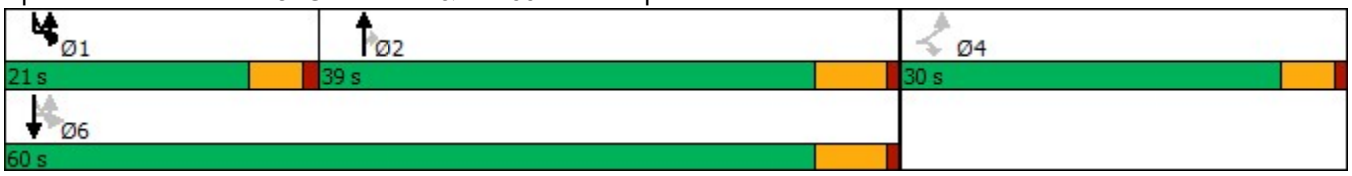
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	725	254	996	287	9	285	654
Future Volume (vph)	725	254	996	287	9	285	654
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	23.1	23.1	30.8	30.8		51.1	49.8
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.60
v/c Ratio	0.83	0.46	0.83	0.40		0.81	0.23
Control Delay	37.9	8.5	31.3	4.1		35.4	8.2
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	37.9	8.5	31.3	4.1		35.4	8.2
LOS	D	A	C	A		D	A
Approach Delay			25.2				16.7
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 83.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

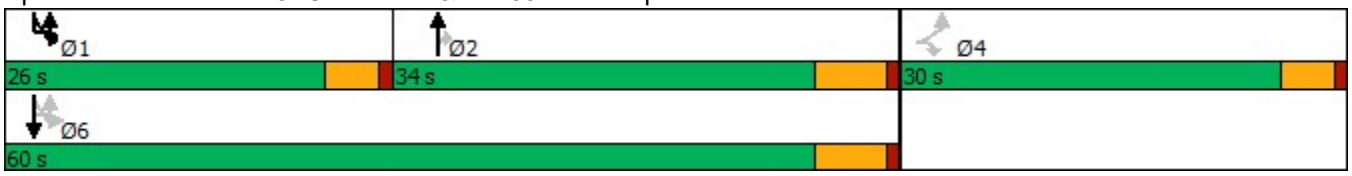
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	164	247	768	613	4	381	1253
Future Volume (vph)	164	247	768	613	4	381	1253
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	14.2	14.2	24.9	24.9		47.4	46.1
Actuated g/C Ratio	0.20	0.20	0.35	0.35		0.67	0.65
v/c Ratio	0.26	0.69	0.67	0.68		0.75	0.41
Control Delay	26.4	28.6	24.4	6.0		21.0	6.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.4	28.6	24.4	6.0		21.0	6.8
LOS	C	C	C	A		C	A
Approach Delay			16.2				10.2
Approach LOS			B				B

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 71.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

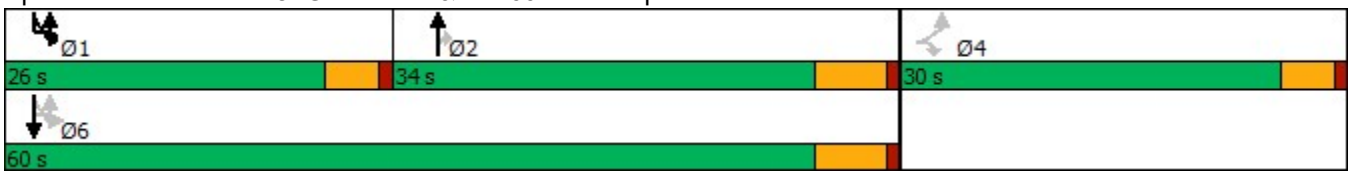
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	167	247	771	613	4	397	1256
Future Volume (vph)	167	247	771	613	4	397	1256
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	14.2	14.2	25.0	25.0		48.2	47.0
Actuated g/C Ratio	0.20	0.20	0.35	0.35		0.67	0.65
v/c Ratio	0.27	0.70	0.68	0.68		0.77	0.41
Control Delay	26.7	29.0	24.8	6.0		22.8	6.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.7	29.0	24.8	6.0		22.8	6.8
LOS	C	C	C	A		C	A
Approach Delay			16.5				10.7
Approach LOS			B				B

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 72.1			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Appendix D – ICU Spreadsheets and HCM Reports – 2027 Conditions

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: AM Peak
Overlap Reduce 35%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	23	1	1.00	0.01	23	1	1.00	0.01	23	1	1.00	0.01	
Comb. L-T		0				0				0			
EB Thru	1465	2	2.00	0.46	1499	2	2.00	0.47	1499	2	2.09	0.45	0.878
Comb. T-R		0				0				1			
EB Right	426	1	1.00	0.27	426	1	1.00	0.27	656	0	0.91	0.45	
Comb. L-T-R		0				0				0			
WB Left	143	1	1.00	0.09	144	1	1.00	0.09	144	1	1.00	0.09	
Comb. L-T		0				0				0			
WB Thru	1096	2	2.00	0.34	1103	2	2.00	0.34	1103	2	2.00	0.34	0.907
Comb. T-R		0				0				0			
WB Right	3	1	1.00	0.00	3	1	1.00	0.00	3	1	1.00	0.00	
Comb. L-T-R		0				0				0			
NB Left	746	1	1.97	0.24	746	1	1.97	0.24	746	1	1.97	0.24	
Comb. L-T		1				1				1			
NB Thru	12	0	0.03	0.24	12	0	0.03	0.24	12	0	0.03	0.24	0.956
Comb. T-R		0				0				0			
NB Right	236	1	1.00	0.15	241	1	1.00	0.15	241	1	1.00	0.15	
Comb. L-T-R		0				0				0			
SB Left	16	0	0.26	0.04	16	0	0.26	0.04	16	0	0.26	0.04	
Comb. L-T		0				0				0			
SB Thru	18	0	0.30	0.04	18	0	0.30	0.04	18	0	0.30	0.04	0.875
Comb. T-R		0				0				0			
SB Right	26	0	0.43	0.04	26	0	0.43	0.04	26	0	0.43	0.04	
Comb. L-T-R		1				1				1			

Critical Volumes			E-W:	0.55			E-W:	0.56			E-W:	0.54	
			N-S:	0.27			N-S:	0.27			N-S:	0.27	
			Total:	0.82			Total:	0.83			Total:	0.81	
Lost Time				0.10				0.10				0.10	
V/C				0.922				0.933				0.914	
Level of Service				E				E				E	

E-W Street: Amar Rd
N-S Street: Nogales St
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	28	1	1.00	0.02	28	1	1.00	0.02	28	1	1.00	0.02	0.956
Comb. L-T		0				0				0			
EB Thru	1207	2	2.00	0.38	1229	2	2.00	0.38	1229	2	2.02	0.38	
Comb. T-R		0				0				1			
EB Right	356	1	1.00	0.22	356	1	1.00	0.22	594	0	0.98	0.38	
Comb. L-T-R		0				0				0			
WB Left	233	1	1.00	0.15	236	1	1.00	0.15	236	1	1.00	0.15	0.895
Comb. L-T		0				0				0			
WB Thru	1086	2	2.00	0.34	1105	2	2.00	0.35	1105	2	2.00	0.35	
Comb. T-R		0				0				0			
WB Right	8	1	1.00	0.00	8	1	1.00	0.00	8	1	1.00	0.00	
Comb. L-T-R		0				0				0			
NB Left	780	1	1.97	0.25	780	1	1.97	0.25	780	1	1.97	0.25	0.971
Comb. L-T		1				1				1			
NB Thru	12	0	0.03	0.25	12	0	0.03	0.25	12	0	0.03	0.25	
Comb. T-R		0				0				0			
NB Right	225	1	1.00	0.14	228	1	1.00	0.14	228	1	1.00	0.14	
Comb. L-T-R		0				0				0			
SB Left	10	0	0.32	0.02	10	0	0.32	0.02	10	0	0.32	0.02	0.786
Comb. L-T		0				0				0			
SB Thru	11	0	0.36	0.02	11	0	0.36	0.02	11	0	0.36	0.02	
Comb. T-R		0				0				0			
SB Right	10	0	0.32	0.02	10	0	0.32	0.02	10	0	0.32	0.02	
Comb. L-T-R		1				1				1			

Critical Volumes			E-W:	0.52			E-W:	0.53			E-W:	0.53	
			N-S:	0.27			N-S:	0.27			N-S:	0.27	
			Total:	0.79			Total:	0.80			Total:	0.79	
Lost Time				0.10				0.10				0.10	
V/C				0.890				0.899				0.894	
Level of Service				D				D				D	

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	20	1	1.00	0.01	20	1	1.00	0.01	0.856
Comb. L-T		0				0			
EB Thru	1278	1	1.53	0.52	1319	1	1.54	0.54	
Comb. T-R		1				1			
EB Right	397	0	0.47	0.52	397	0	0.46	0.54	
Comb. L-T-R		0				0			
WB Left	78	1	1.00	0.05	79	1	1.00	0.05	0.974
Comb. L-T		0				0			
WB Thru	753	2	2.00	0.24	762	2	2.00	0.24	
Comb. T-R		0				0			
WB Right	13	1	1.00	0.01	13	1	1.00	0.01	
Comb. L-T-R		0				0			
NB Left	272	1	1.70	0.10	272	1	1.70	0.10	0.901
Comb. L-T		1				1			
NB Thru	48	0	0.30	0.10	48	0	0.30	0.10	
Comb. T-R		0				0			
NB Right	104	1	1.00	0.07	109	1	1.00	0.07	
Comb. L-T-R		0				0			
SB Left	45	0	0.40	0.07	45	0	0.40	0.07	0.818
Comb. L-T		1				1			
SB Thru	68	0	0.60	0.07	68	0	0.60	0.07	
Comb. T-R		0				0			
SB Right	31	1	1.00	0.02	31	1	1.00	0.02	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.57	E-W:	0.59
	N-S:	0.17	N-S:	0.17
	Total:	0.74	Total:	0.76

Lost Time	0.10	0.10

V/C	0.843	0.857
Level of Service	D	D

E-W Street: Amar Rd
N-S Street: Lemon Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	25	1	1.00	0.02	25	1	1.00	0.02	0.968
Comb. L-T		0				0			
EB Thru	981	1	1.68	0.37	1005	1	1.68	0.37	
Comb. T-R		1				1			
EB Right	190	0	0.32	0.37	190	0	0.32	0.37	
Comb. L-T-R		0				0			
WB Left	104	1	1.00	0.06	106	1	1.00	0.07	0.944
Comb. L-T		0				0			
WB Thru	982	2	2.00	0.31	1002	2	2.00	0.31	
Comb. T-R		0				0			
WB Right	35	1	1.00	0.02	35	1	1.00	0.02	
Comb. L-T-R		0				0			
NB Left	345	1	1.75	0.12	345	1	1.75	0.12	0.933
Comb. L-T		1				1			
NB Thru	50	0	0.25	0.12	50	0	0.25	0.12	
Comb. T-R		0				0			
NB Right	121	1	1.00	0.08	124	1	1.00	0.08	
Comb. L-T-R		0				0			
SB Left	36	0	0.56	0.04	36	0	0.56	0.04	0.838
Comb. L-T		1				1			
SB Thru	29	0	0.44	0.04	29	0	0.44	0.04	
Comb. T-R		0				0			
SB Right	24	1	1.00	0.01	24	1	1.00	0.01	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.43	E-W:	0.44
	N-S:	0.16	N-S:	0.16
	Total:	0.59	Total:	0.60

Lost Time	0.10	0.10

V/C	0.695	0.704
Level of Service	B	C

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	29	1	1.00	0.02	29	1	1.00	0.02	0.862
Comb. L-T		0				0			
EB Thru	1317	2	2.00	0.41	1362	2	2.00	0.43	
Comb. T-R		0				0			
EB Right	49	1	1.00	0.03	49	1	1.00	0.03	
Comb. L-T-R		0				0			
WB Left	168	1	1.00	0.11	170	1	1.00	0.11	0.890
Comb. L-T		0				0			
WB Thru	913	2	2.00	0.29	923	2	2.00	0.29	
Comb. T-R		0				0			
WB Right	13	1	1.00	0.01	13	1	1.00	0.01	
Comb. L-T-R		0				0			
NB Left	78	1	1.00	0.05	78	1	1.00	0.05	0.709
Comb. L-T		0				0			
NB Thru	229	1	1.00	0.14	229	1	1.00	0.14	
Comb. T-R		0				0			
NB Right	271	1	1.00	0.17	277	1	1.00	0.17	
Comb. L-T-R		0				0			
SB Left	51	1	1.00	0.03	51	1	1.00	0.03	0.727
Comb. L-T		0				0			
SB Thru	183	0	0.77	0.15	183	0	0.77	0.15	
Comb. T-R		1				1			
SB Right	54	0	0.23	0.15	54	0	0.23	0.15	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.52	E-W:	0.53
	N-S:	0.20	N-S:	0.20
	Total:	0.72	Total:	0.74

Lost Time	0.10	0.10

V/C	0.818	0.836
Level of Service	D	D

E-W Street: Amar Rd
N-S Street: Meadow Pass Rd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	34	1	1.00	0.02	34	1	1.00	0.02	0.827
Comb. L-T		0				0			
EB Thru	1263	2	2.00	0.39	1296	2	2.00	0.40	
Comb. T-R		0				0			
EB Right	27	1	1.00	0.02	27	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	152	1	1.00	0.10	154	1	1.00	0.10	0.947
Comb. L-T		0				0			
WB Thru	1121	2	2.00	0.35	1143	2	2.00	0.36	
Comb. T-R		0				0			
WB Right	50	1	1.00	0.03	50	1	1.00	0.03	
Comb. L-T-R		0				0			
NB Left	23	1	1.00	0.01	23	1	1.00	0.01	0.878
Comb. L-T		0				0			
NB Thru	112	1	1.00	0.07	112	1	1.00	0.07	
Comb. T-R		0				0			
NB Right	204	1	1.00	0.13	207	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	48	1	1.00	0.03	48	1	1.00	0.03	0.778
Comb. L-T		0				0			
SB Thru	63	0	0.58	0.07	63	0	0.58	0.07	
Comb. T-R		1				1			
SB Right	46	0	0.42	0.07	46	0	0.42	0.07	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.49	E-W:	0.50
	N-S:	0.16	N-S:	0.16
	Total:	0.65	Total:	0.66

Lost Time	0.10	0.10

V/C	0.747	0.761
Level of Service	C	C

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	365	2	2.00	0.13	385	2	2.00	0.13	385	2	2.00	0.13	
Comb. L-T		0				0				0			
EB Thru	900	2	2.00	0.28	931	2	2.00	0.29	931	2	2.46	0.24	0.844
Comb. T-R		0				0				1			
EB Right	182	1	1.00	0.11	182	1	1.00	0.11	203	0	0.54	0.24	
Comb. L-T-R		0				0				0			
WB Left	91	2	2.00	0.03	102	2	2.00	0.04	102	2	2.00	0.04	
Comb. L-T		0				0				0			
WB Thru	521	2	2.00	0.16	527	2	2.00	0.16	527	2	2.07	0.16	0.912
Comb. T-R		0				0				1			
WB Right	189	1	1.00	0.12	212	1	1.00	0.13	236	0	0.93	0.16	
Comb. L-T-R		0				0				0			
NB Left	235	2	2.00	0.08	235	2	2.00	0.08	235	2	2.00	0.08	
Comb. L-T		0				0				0			
NB Thru	1399	3	3.00	0.29	1482	3	3.00	0.31	1482	3	3.00	0.31	0.848
Comb. T-R		0				0				0			
NB Right	666	1	1.00	0.42	711	1	1.00	0.44	711	1	1.00	0.44	
Comb. L-T-R		0				0				0			
SB Left	368	2	2.00	0.13	423	2	2.00	0.15	423	2	2.00	0.15	
Comb. L-T		0				0				0			
SB Thru	1306	2	2.48	0.33	1324	2	2.48	0.33	1324	2	2.48	0.33	0.853
Comb. T-R		1				1				1			
SB Right	272	0	0.52	0.33	277	0	0.52	0.33	277	0	0.52	0.33	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.31			E-W:	0.33			E-W:	0.29	
			N-S:	0.54			N-S:	0.59			N-S:	0.59	
			Total:	0.86			Total:	0.92			Total:	0.88	
Lost Time				0.10				0.10				0.10	
V/C				0.957				1.018				0.984	
Level of Service				E				F				E	

E-W Street: Temple Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	405	2	2.00	0.14	418	2	2.00	0.15	418	2	2.00	0.15	0.933
Comb. L-T		0				0				0			
EB Thru	679	2	2.00	0.21	698	2	2.00	0.22	698	2	2.13	0.20	
Comb. T-R		0				0				1			
EB Right	241	1	1.00	0.15	241	1	1.00	0.15	284	0	0.87	0.20	
Comb. L-T-R		0				0				0			
WB Left	237	2	2.00	0.08	263	2	2.00	0.09	263	2	2.00	0.09	0.923
Comb. L-T		0				0				0			
WB Thru	706	2	2.00	0.22	722	2	2.00	0.23	722	2	2.11	0.21	
Comb. T-R		0				0				1			
WB Right	230	1	1.00	0.14	261	1	1.00	0.16	307	0	0.89	0.21	
Comb. L-T-R		0				0				0			
NB Left	399	2	2.00	0.14	399	2	2.00	0.14	399	2	2.00	0.14	0.880
Comb. L-T		0				0				0			
NB Thru	1397	3	3.00	0.29	1452	3	3.00	0.30	1452	3	3.00	0.30	
Comb. T-R		0				0				0			
NB Right	305	1	1.00	0.19	334	1	1.00	0.21	334	1	1.00	0.21	
Comb. L-T-R		0				0				0			
SB Left	280	2	2.00	0.10	320	2	2.00	0.11	320	2	2.00	0.11	0.934
Comb. L-T		0				0				0			
SB Thru	864	2	2.14	0.25	904	2	2.16	0.26	904	2	2.16	0.26	
Comb. T-R		1				1				1			
SB Right	345	0	0.86	0.25	354	0	0.84	0.26	354	0	0.84	0.26	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.36			E-W:	0.37			E-W:	0.36	
			N-S:	0.39			N-S:	0.41			N-S:	0.41	
			Total:	0.75			Total:	0.78			Total:	0.77	
Lost Time				0.10				0.10				0.10	
V/C				0.852				0.884				0.873	
Level of Service				D				D				D	

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	331	1	1.00	0.21	373	1	1.00	0.23	373	1	1.00	0.23	0.932
Comb. L-T		0				0				0			
EB Thru	1286	2	2.00	0.40	1364	2	2.00	0.43	1364	2	2.00	0.43	
Comb. T-R		0				0				0			
EB Right	189	1	1.00	0.12	193	1	1.00	0.12	193	1	1.00	0.12	
Comb. L-T-R		0				0				0			
WB Left	64	1	1.00	0.04	69	1	1.00	0.04	69	1	1.00	0.04	0.904
Comb. L-T		0				0				0			
WB Thru	728	2	2.00	0.23	760	2	2.00	0.24	760	2	2.21	0.21	
Comb. T-R		0				0				1			
WB Right	242	1	1.00	0.15	271	1	1.00	0.17	271	0	0.79	0.21	
Comb. L-T-R		0				0				0			
NB Left	10	0	0.39	0.02	11	0	0.42	0.02	11	0	0.42	0.02	0.714
Comb. L-T		1				1				1			
NB Thru	15	0	0.61	0.02	15	0	0.58	0.02	15	0	0.58	0.02	
Comb. T-R		0				0				0			
NB Right	4	1	1.00	0.00	6	1	1.00	0.00	6	1	1.00	0.00	
Comb. L-T-R		0				0				0			
SB Left	68	0	0.73	0.06	75	0	0.75	0.06	75	0	0.75	0.06	0.795
Comb. L-T		1				1				1			
SB Thru	25	0	0.27	0.06	25	0	0.25	0.06	25	0	0.25	0.06	
Comb. T-R		0				0				0			
SB Right	131	1	1.00	0.08	142	1	1.00	0.09	142	1	1.00	0.09	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.44			E-W:	0.47			E-W:	0.47	
			N-S:	0.10			N-S:	0.11			N-S:	0.11	
			Total:	0.54			Total:	0.58			Total:	0.57	
Lost Time				0.10				0.10				0.10	
V/C				0.639				0.676				0.675	
Level of Service				B				B				B	

E-W Street: Temple Ave
N-S Street: Mt SAC Way
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	189	1	1.00	0.12	219	1	1.00	0.14	219	1	1.00	0.14	0.915
Comb. L-T		0				0				0			
EB Thru	1079	2	2.00	0.34	1139	2	2.00	0.36	1139	2	2.00	0.36	
Comb. T-R		0				0				0			
EB Right	37	1	1.00	0.02	40	1	1.00	0.03	40	1	1.00	0.03	
Comb. L-T-R		0				0				0			
WB Left	14	1	1.00	0.01	18	1	1.00	0.01	18	1	1.00	0.01	0.967
Comb. L-T		0				0				0			
WB Thru	894	2	2.00	0.28	943	2	2.00	0.29	943	2	2.73	0.22	
Comb. T-R		0				0				1			
WB Right	76	1	1.00	0.05	95	1	1.00	0.06	95	0	0.27	0.22	
Comb. L-T-R		0				0				0			
NB Left	123	0	0.88	0.09	126	0	0.88	0.09	126	0	0.88	0.09	0.717
Comb. L-T		1				1				1			
NB Thru	17	0	0.12	0.09	17	0	0.12	0.09	17	0	0.12	0.09	
Comb. T-R		0				0				0			
NB Right	22	1	1.00	0.01	25	1	1.00	0.02	25	1	1.00	0.02	
Comb. L-T-R		0				0				0			
SB Left	149	0	0.96	0.10	166	0	0.97	0.11	166	0	0.97	0.11	0.852
Comb. L-T		1				1				1			
SB Thru	6	0	0.04	0.10	6	0	0.03	0.11	6	0	0.03	0.11	
Comb. T-R		0				0				0			
SB Right	189	1	1.00	0.12	214	1	1.00	0.13	214	1	1.00	0.13	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.40			E-W:	0.43			E-W:	0.37	
			N-S:	0.21			N-S:	0.22			N-S:	0.22	
			Total:	0.60			Total:	0.65			Total:	0.59	
Lost Time				0.10				0.10				0.10	
V/C				0.703				0.754				0.689	
Level of Service				C				C				B	

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	28	1	1.00	0.02	28	1	1.00	0.02	0.859
Comb. L-T		0				0			
EB Thru	1565	2	2.00	0.49	1643	2	2.00	0.51	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	15	1	1.00	0.01	
Comb. L-T-R		0				0			
WB Left (U)	0	1	1.00	0.00	15	1	1.00	0.01	0.853
Comb. L-T		0				0			
WB Thru	970	2	2.00	0.30	1037	2	2.00	0.32	
Comb. T-R		0				0			
WB Right	136	1	1.00	0.09	136	1	1.00	0.09	
Comb. L-T-R		0				0			
NB Left	0	1	1.00	0.00	3	1	1.00	0.00	0.920
Comb. L-T		0				0			
NB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	3	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	17	0	0.50	0.02	17	0	0.50	0.02	0.750
Comb. L-T		0				0			
SB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
SB Right	17	0	0.50	0.02	17	0	0.50	0.02	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.49	E-W:	0.52
	N-S:	0.02	N-S:	0.02
	Total:	0.51	Total:	0.55

Lost Time	0.10	0.10

V/C	0.611	0.647
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Transit Center Access
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	41	1	1.00	0.03	41	1	1.00	0.03	0.912
Comb. L-T		0				0			
EB Thru	1107	2	2.00	0.35	1176	2	2.00	0.37	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	10	1	1.00	0.01	
Comb. L-T-R		0				0			
WB Left (U)	0	1	1.00	0.00	10	1	1.00	0.01	0.944
Comb. L-T		0				0			
WB Thru	1020	2	2.00	0.32	1085	2	2.00	0.34	
Comb. T-R		0				0			
WB Right	88	1	1.00	0.05	88	1	1.00	0.05	
Comb. L-T-R		0				0			
NB Left	0	1	1.00	0.00	8	1	1.00	0.00	0.920
Comb. L-T		0				0			
NB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	8	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	47	0	0.63	0.05	47	0	0.63	0.05	0.794
Comb. L-T		0				0			
SB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
SB Right	28	0	0.37	0.05	28	0	0.37	0.05	
Comb. L-T-R		1				1			

Critical Volumes	E-W:	0.35	E-W:	0.37
	N-S:	0.05	N-S:	0.05
	Total:	0.39	Total:	0.42

Lost Time	0.10	0.10

V/C	0.492	0.525
Level of Service	A	A

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	328	2	2.00	0.11	387	2	2.00	0.13	0.883
Comb. L-T		0				0			
EB Thru	834	2	2.00	0.26	849	2	2.00	0.27	
Comb. T-R		0				0			
EB Right	139	1	1.00	0.09	144	1	1.00	0.09	
Comb. L-T-R		0				0			
WB Left	132	1	1.00	0.08	142	1	1.00	0.09	0.929
Comb. L-T		0				0			
WB Thru	1070	2	2.00	0.33	1132	2	2.00	0.35	
Comb. T-R		0				0			
WB Right	543	1	1.00	0.34	613	1	1.00	0.38	
Comb. L-T-R		0				0			
NB Left	28	1	1.00	0.02	29	1	1.00	0.02	0.579
Comb. L-T		0				0			
NB Thru	22	1	1.00	0.01	22	1	1.00	0.01	
Comb. T-R		0				0			
NB Right	28	1	1.00	0.02	31	1	1.00	0.02	
Comb. L-T-R		0				0			
SB Left	91	2	2.00	0.03	116	2	2.00	0.04	0.733
Comb. L-T		0				0			
SB Thru	33	1	1.00	0.02	33	1	1.00	0.02	
Comb. T-R		0				0			
SB Right	45	1	1.00	0.03	60	1	1.00	0.04	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.45	E-W:	0.52
	N-S:	0.05	N-S:	0.06
	Total:	0.50	Total:	0.58

Lost Time	0.10	0.10

V/C	0.602	0.677
Level of Service	B	B

E-W Street: Temple Ave
N-S Street: Bonita Dr
Scenario: PM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	187	2	2.00	0.07	228	2	2.00	0.08	0.875
Comb. L-T		0				0			
EB Thru	1022	2	2.00	0.32	1058	2	2.00	0.33	
Comb. T-R		0				0			
EB Right	25	1	1.00	0.02	29	1	1.00	0.02	
Comb. L-T-R		0				0			
WB Left	26	1	1.00	0.02	32	1	1.00	0.02	0.900
Comb. L-T		0				0			
WB Thru	1012	2	2.00	0.32	1056	2	2.00	0.33	
Comb. T-R		0				0			
WB Right	157	1	1.00	0.10	207	1	1.00	0.13	
Comb. L-T-R		0				0			
NB Left	15	1	1.00	0.01	17	1	1.00	0.01	0.886
Comb. L-T		0				0			
NB Thru	14	1	1.00	0.01	14	1	1.00	0.01	
Comb. T-R		0				0			
NB Right	61	1	1.00	0.04	67	1	1.00	0.04	
Comb. L-T-R		0				0			
SB Left	191	2	2.00	0.07	245	2	2.00	0.09	0.787
Comb. L-T		0				0			
SB Thru	6	1	1.00	0.00	6	1	1.00	0.00	
Comb. T-R		0				0			
SB Right	88	1	1.00	0.05	118	1	1.00	0.07	
Comb. L-T-R		0				0			

Critical Volumes				
	E-W:	0.38	E-W:	0.41
	N-S:	0.10	N-S:	0.13
	Total:	0.49	Total:	0.54

Lost Time	0.10	0.10

V/C	0.586	0.636
Level of Service	A	B

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	804	0	1613	137	0	0
Future Vol, veh/h	1	1	804	0	1613	137	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	874	0	1753	149	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1753	1902	0	874	-	0	-	877
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	108	309	-	400	-	-	0	292
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	160	160	-	400	-	-	-	292
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	160	-	400	-	-	-
HCM Lane V/C Ratio	0.014	-	-	-	-	-
HCM Control Delay (s)	27.8	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	838	0	1743	150	0	0
Future Vol, veh/h	1	1	838	0	1743	150	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	911	0	1895	163	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1895	2058	0	911	-	0	-	948
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	87	268	-	379	-	-	0	262
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	131	131	-	379	-	-	-	262
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	131	-	379	-	-	-
HCM Lane V/C Ratio	0.017	-	-	-	-	-
HCM Control Delay (s)	32.9	-	0	-	-	0
HCM Lane LOS	D	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1079	3	1033	19	0	0
Future Vol, veh/h	1	1	1079	3	1033	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1173	3	1123	21	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1123	1144	0	1173	-	0	-	562
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	277	606	-	257	-	-	0	470
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	380	380	-	257	-	-	-	470
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	380	-	257	-	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-	-
HCM Control Delay (s)	14.5	-	19.2	-	-	0
HCM Lane LOS	B	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Traffic Vol, veh/h	1	1	1157	3	1123	28	0	0
Future Vol, veh/h	1	1	1157	3	1123	28	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None
Storage Length	-	350	-	137	-	120	-	0
Veh in Median Storage, #	-	-	0	-	0	-	0	-
Grade, %	-	-	0	-	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1258	3	1221	30	0	0

Major/Minor	Major1			Major2			Minor2	
Conflicting Flow All	1221	1251	0	1258	-	0	-	611
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	239	552	-	226	-	-	0	437
Stage 1	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	0	-
Platoon blocked, %			-		-	-		
Mov Cap-1 Maneuver	334	334	-	226	-	-	-	437
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBU	WBT	WBR	SBLn1
Capacity (veh/h)	334	-	226	-	-	-
HCM Lane V/C Ratio	0.007	-	0.014	-	-	-
HCM Control Delay (s)	15.9	-	21.2	-	-	0
HCM Lane LOS	C	-	C	-	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	-

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	362	2	2.00	0.13	362	2	2.00	0.13	362	2	2.00	0.13	
Comb. L-T		0				0							
EB Thru	621	2	2.00	0.19	662	2	2.00	0.21	662	2	2.00	0.21	0.814
Comb. T-R		0				0							
EB Right	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T-R		0				0							
WB Left	16	1	1.00	0.01	16	1	1.00	0.01	16	1	1.00	0.01	
Comb. L-T		0				0							
WB Thru	1627	2	2.00	0.51	1774	2	2.00	0.55	1774	2	2.28	0.49	0.983
Comb. T-R		0				0				1			
WB Right	475	1	1.00	0.30	475	1	1.00	0.30	558	0	0.72	0.49	
Comb. L-T-R		0				0							
NB Left	0	1	1.00	0.00	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T		0				0							
NB Thru	4	0	0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	0.500
Comb. T-R		1				1				1			
NB Right	4	0	0.50	0.01	4	0	0.50	0.01	4		0.50	0.01	
Comb. L-T-R		0				0							
SB Left	283	1	1.99	0.09	283	1	1.99	0.09	283	1	1.99	0.09	
Comb. L-T		1				1				1			
SB Thru	1	0	0.01	0.09	1	0	0.01	0.09	1		0.01	0.09	0.759
Comb. T-R		0				0							
SB Right	204	1	1.00	0.13	204	1	1.00	0.13	204	1	1.00	0.13	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.63			E-W:	0.68			E-W:	0.61	
			N-S:	0.13			N-S:	0.13			N-S:	0.13	
			Total:	0.76			Total:	0.81			Total:	0.74	
Lost Time				0.10				0.10				0.10	
V/C				0.862				0.908				0.839	
Level of Service				D				E				D	

E-W Street: Temple Ave
N-S Street: University Dr
Scenario: PM Peak
Overlap Reduce 40%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	158	2	2.00	0.05	158	2	2.00	0.05	158	2	2.00	0.05	0.886
Comb. L-T		0				0							
EB Thru	1051	2	2.00	0.33	1139	2	2.00	0.36	1139	2	2.00	0.36	
Comb. T-R		0				0							
EB Right	1	1	1.00	0.00	1	1	1.00	0.00	1	1	1.00	0.00	
Comb. L-T-R		0				0							
WB Left	42	1	1.00	0.03	42	1	1.00	0.03	42	1	1.00	0.03	0.897
Comb. L-T		0				0							
WB Thru	980	2	2.00	0.31	1091	2	2.00	0.34	1091	2	2.35	0.29	
Comb. T-R		0				0				1			
WB Right	181	1	1.00	0.11	181	1	1.00	0.11	302	0	0.65	0.29	
Comb. L-T-R		0				0							
NB Left	4	1	1.00	0.00	4	1	1.00	0.00	4	1	1.00	0.00	0.563
Comb. L-T		0				0							
NB Thru	7	0	0.57	0.01	7	0	0.57	0.01	7		0.57	0.01	
Comb. T-R		1				1				1			
NB Right	5	0	0.43	0.01	5	0	0.43	0.01	5		0.43	0.01	
Comb. L-T-R		0				0							
SB Left	765	1	1.95	0.24	765	1	1.95	0.24	765	1	1.95	0.24	0.790
Comb. L-T		1				1				1			
SB Thru	18	0	0.05	0.24	18	0	0.05	0.24	18		0.05	0.24	
Comb. T-R		0				0							
SB Right	233	1	1.00	0.15	233	1	1.00	0.15	233	1	1.00	0.15	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.36			E-W:	0.40			E-W:	0.38	
			N-S:	0.25			N-S:	0.25			N-S:	0.25	
			Total:	0.61			Total:	0.65			Total:	0.63	
Lost Time				0.10				0.10				0.10	
V/C				0.714				0.748				0.735	
Level of Service				C				C				C	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 10%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	364	2	2.00	0.13	384	2	2.00	0.13	384	2	2.00	0.13	
Comb. L-T		0				0				0			
EB Thru	457	2	2.89	0.10	474	2	2.90	0.10	474	2	2.90	0.10	0.883
Comb. T-R		1				1				1			
EB Right	17	0	0.11	0.10	17	0	0.10	0.10	17	0	0.10	0.10	
Comb. L-T-R		0				0				0			
WB Left	24	1	1.00	0.02	24	1	1.00	0.02	24	1	1.00	0.02	
Comb. L-T		0				0				0			
WB Thru	1415	2	2.00	0.44	1481	2	2.00	0.46	1481	2	2.44	0.38	0.993
Comb. T-R		0				0				1			
WB Right	341	1	1.00	0.21	341	1	1.00	0.21	341	0	0.56	0.38	
Comb. L-T-R		0				0				0			
NB Left	63	1	1.00	0.04	63	1	1.00	0.04	63	1	1.00	0.04	
Comb. L-T		0				0				0			
NB Thru	49	1	1.26	0.02	49	1	1.26	0.02	49	1	1.26	0.02	0.688
Comb. T-R		1				1				1			
NB Right	29	0	0.74	0.02	29	0	0.74	0.02	29	0	0.74	0.02	
Comb. L-T-R		0				0				0			
SB Left	158	1	1.69	0.06	158	1	1.69	0.06	158	1	1.69	0.06	
Comb. L-T		1				1				1			
SB Thru	29	0	0.31	0.06	29	0	0.31	0.06	29	0	0.31	0.06	0.837
Comb. T-R		0				0				0			
SB Right	1044	2	2.00	0.33	1127	2	2.00	0.35	1127	2	2.00	0.35	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.57			E-W:	0.60			E-W:	0.51	
			N-S:	0.37			N-S:	0.39			N-S:	0.39	
			Total:	0.93			Total:	0.99			Total:	0.90	
Lost Time				0.10				0.10				0.10	
V/C				1.034				1.087				1.004	
Level of Service				F				F				F	

E-W Street: Temple Ave
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	672	2	2.00	0.23	720	2	2.00	0.25	720	2	2.00	0.25	0.904
Comb. L-T		0				0				0			
EB Thru	1031	2	2.89	0.22	1069	2	2.89	0.23	1069	2	2.89	0.23	
Comb. T-R		1				1				1			
EB Right	40	0	0.11	0.22	40	0	0.11	0.23	40	0	0.11	0.23	
Comb. L-T-R		0				0				0			
WB Left	62	1	1.00	0.04	62	1	1.00	0.04	62	1	1.00	0.04	0.892
Comb. L-T		0				0				0			
WB Thru	862	2	2.00	0.27	912	2	2.00	0.29	912	2	1.98	0.29	
Comb. T-R		0				0				1			
WB Right	471	1	1.00	0.29	471	1	1.00	0.29	471	0	1.02	0.29	
Comb. L-T-R		0				0				0			
NB Left	51	1	1.00	0.03	51	1	1.00	0.03	51	1	1.00	0.03	0.825
Comb. L-T		0				0				0			
NB Thru	59	1	0.95	0.04	59	1	0.95	0.04	59	1	0.95	0.04	
Comb. T-R		1				1				1			
NB Right	65	0	1.05	0.04	65	0	1.05	0.04	65	0	1.05	0.04	
Comb. L-T-R		0				0				0			
SB Left	394	1	1.79	0.14	394	1	1.79	0.14	394	1	1.79	0.14	0.863
Comb. L-T		1				1				1			
SB Thru	46	0	0.21	0.14	46	0	0.21	0.14	46	0	0.21	0.14	
Comb. T-R		0				0				0			
SB Right	363	2	2.00	0.11	410	2	2.00	0.13	410	2	2.00	0.13	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.53			E-W:	0.54			E-W:	0.54	
			N-S:	0.18			N-S:	0.18			N-S:	0.18	
			Total:	0.70			Total:	0.72			Total:	0.71	
Lost Time				0.10				0.10				0.10	
V/C				0.804				0.821				0.815	
Level of Service				D				D				D	

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: AM Peak
Overlap Reduce 20%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	53	1	1.00	0.03	53	1	1.00	0.03	53	1	1.00	0.03	
Comb. L-T		0				0							
EB Thru	179	1	1.56	0.07	179	1	1.52	0.07	179	1	1.00	0.11	0.917
Comb. T-R		1				1				0			
EB Right	457	1	1.44	0.20	507	1	1.48	0.21	507	2	2.00	0.16	
Comb. L-T-R		0				0							
WB Left	237	1	1.00	0.15	237	1	1.00	0.15	237	1	1.00	0.15	
Comb. L-T		0				0							
WB Thru	515	2	2.00	0.16	515	2	2.00	0.16	515	2	2.00	0.16	0.717
Comb. T-R		0				0							
WB Right	77	1	1.00	0.05	77	1	1.00	0.05	77	1	1.00	0.05	
Comb. L-T-R		0				0							
NB Left	435	2	2.00	0.15	438	2	2.00	0.15	438	2	2.00	0.15	
Comb. L-T		0				0							
NB Thru	317	1	1.82	0.11	334	1	1.83	0.11	334	1	1.83	0.11	0.876
Comb. T-R		1				1				1			
NB Right	32	0	0.18	0.11	32	0	0.17	0.11	32		0.17	0.11	
Comb. L-T-R		0				0							
SB Left	80	1	1.00	0.05	80	1	1.00	0.05	80	1	1.00	0.05	
Comb. L-T		0				0							
SB Thru	739	1	1.68	0.28	766	1	1.69	0.28	766	1	1.69	0.28	0.814
Comb. T-R		1				1				1			
SB Right	142	0	0.32	0.28	142	0	0.31	0.28	142		0.31	0.28	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.35			E-W:	0.36			E-W:	0.31	
			N-S:	0.43			N-S:	0.44			N-S:	0.44	
			Total:	0.77			Total:	0.80			Total:	0.74	
Lost Time				0.10				0.10				0.10	
V/C				0.873				0.899				0.843	
Level of Service				D				D				D	

E-W Street: Kellogg Dr
N-S Street: Campus Dr
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	98	1	1.00	0.06	98	1	1.00	0.06	98	1	1.00	0.06	0.891
Comb. L-T		0				0							
EB Thru	248	1	1.71	0.09	248	1	1.68	0.09	248	1	1.00	0.16	
Comb. T-R		1				1				0			
EB Right	452	1	1.29	0.22	485	1	1.32	0.23	485	2	2.00	0.15	
Comb. L-T-R		0				0							
WB Left	38	1	1.00	0.02	38	1	1.00	0.02	38	1	1.00	0.02	0.925
Comb. L-T		0				0							
WB Thru	256	2	2.00	0.08	256	2	2.00	0.08	256	2	2.00	0.08	
Comb. T-R		0				0							
WB Right	156	1	1.00	0.10	156	1	1.00	0.10	156	1	1.00	0.10	
Comb. L-T-R		0				0							
NB Left	397	2	2.00	0.14	405	2	2.00	0.14	405	2	2.00	0.14	0.914
Comb. L-T		0				0							
NB Thru	743	1	1.92	0.24	781	1	1.93	0.25	781	1	1.93	0.25	
Comb. T-R		1				1				1			
NB Right	30	0	0.08	0.24	30	0	0.07	0.25	30		0.07	0.25	
Comb. L-T-R		0				0							
SB Left	27	1	1.00	0.02	27	1	1.00	0.02	27	1	1.00	0.02	0.887
Comb. L-T		0				0							
SB Thru	206	1	1.45	0.09	223	1	1.48	0.09	223	1	1.48	0.09	
Comb. T-R		1				1				1			
SB Right	78	0	0.55	0.09	78	0	0.52	0.09	78		0.52	0.09	
Comb. L-T-R		0				0							

Critical Volumes	E-W:	0.24	E-W:	0.25	E-W:	0.18	
	N-S:	0.26	N-S:	0.27	N-S:	0.27	
	Total:	0.50	Total:	0.52	Total:	0.45	
Lost Time		0.10		0.10		0.10	
V/C		0.601		0.623		0.549	
Level of Service		B		B		A	

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	117	1	1.00	0.07	120	1	1.00	0.08	120	1	1.00	0.08	0.924
Comb. L-T		0				0							
EB Thru	343	2	2.17	0.10	356	2	2.19	0.10	356	2	2.19	0.10	
Comb. T-R		1				1				1			
EB Right	132	0	0.83	0.10	132	0	0.81	0.10	132		0.81	0.10	
Comb. L-T-R		0				0							
WB Left	56	1	1.00	0.03	56	1	1.00	0.03	56	1	1.00	0.03	0.863
Comb. L-T		0				0							
WB Thru	1375	2	2.77	0.31	1436	2	2.78	0.32	1436	2	2.78	0.32	
Comb. T-R		1				1				1			
WB Right	114	0	0.23	0.31	114	0	0.22	0.32	114		0.22	0.32	
Comb. L-T-R		0				0							
NB Left	413	1	1.00	0.26	413	1	1.00	0.26	413	2	2.00	0.14	0.812
Comb. L-T		0				0							
NB Thru	594	2	2.00	0.19	594	2	2.00	0.19	594	2	2.00	0.19	
Comb. T-R		0				0							
NB Right	70	1	1.00	0.04	70	1	1.00	0.04	70	1	1.00	0.04	
Comb. L-T-R		0				0							
SB Left	84	1	1.00	0.05	84	1	1.00	0.05	84	1	1.00	0.05	0.924
Comb. L-T		0				0							
SB Thru	690	1	1.82	0.24	690	1	1.79	0.24	690	1	1.79	0.24	
Comb. T-R		1				1				1			
SB Right	450	1	1.18	0.24	464	1	1.21	0.24	464	1	1.21	0.24	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.38			E-W:	0.40			E-W:	0.40	
			N-S:	0.50			N-S:	0.50			N-S:	0.38	
			Total:	0.88			Total:	0.90			Total:	0.78	
Lost Time				0.10				0.10				0.10	
V/C				0.979				0.996				0.882	
Level of Service				E				E				D	

E-W Street: Temple Ave
N-S Street: Valley Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	178	1	1.00	0.11	186	1	1.00	0.12	186	1	1.00	0.12	0.904
Comb. L-T		0				0							
EB Thru	1062	2	2.51	0.26	1093	2	2.52	0.27	1093	2	2.52	0.27	
Comb. T-R		1				1				1			
EB Right	208	0	0.49	0.26	208	0	0.48	0.27	208		0.48	0.27	
Comb. L-T-R		0				0							
WB Left	96	1	1.00	0.06	96	1	1.00	0.06	96	1	1.00	0.06	0.865
Comb. L-T		0				0							
WB Thru	892	2	2.61	0.21	933	2	2.62	0.22	933	2	2.62	0.22	
Comb. T-R		1				1				1			
WB Right	134	0	0.39	0.21	134	0	0.38	0.22	134		0.38	0.22	
Comb. L-T-R		0				0							
NB Left	355	1	1.00	0.22	355	1	1.00	0.22	355	2	2.00	0.12	0.874
Comb. L-T		0				0							
NB Thru	756	2	2.00	0.24	756	2	2.00	0.24	756	2	2.00	0.24	
Comb. T-R		0				0							
NB Right	71	1	1.00	0.04	71	1	1.00	0.04	71	1	1.00	0.04	
Comb. L-T-R		0				0							
SB Left	240	1	1.00	0.15	240	1	1.00	0.15	240	1	1.00	0.15	0.923
Comb. L-T		0				0							
SB Thru	409	1	2.00	0.13	409	1	2.00	0.13	409	1	2.00	0.13	
Comb. T-R		1				1				1			
SB Right	191	1	1.00	0.12	201	1	1.00	0.13	201	1	1.00	0.13	
Comb. L-T-R		0				0							

Critical Volumes			E-W:	0.33			E-W:	0.34			E-W:	0.34	
			N-S:	0.39			N-S:	0.39			N-S:	0.39	
			Total:	0.71			Total:	0.72			Total:	0.72	
Lost Time				0.10				0.10				0.10	
V/C				0.811				0.825				0.825	
Level of Service				D				D				D	

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	120	1	1.00	0.07	120	1	1.00	0.07	120	1	1.00	0.07	
Comb. L-T		0				0				0			
EB Thru	429	2	2.90	0.09	444	2	2.91	0.10	444	2	2.91	0.10	0.784
Comb. T-R		1				1				1			
EB Right	14	0	0.10	0.09	14	0	0.09	0.10	14	0	0.09	0.10	
Comb. L-T-R		0				0				0			
WB Left	772	1	1.00	0.48	772	1	1.00	0.48	772	1	1.00	0.48	
Comb. L-T		0				0				0			
WB Thru	1359	2	2.70	0.31	1421	2	2.71	0.33	1421	2	2.71	0.33	0.837
Comb. T-R		1				1				1			
WB Right	152	0	0.30	0.31	152	0	0.29	0.33	152	0	0.29	0.33	
Comb. L-T-R		0				0				0			
NB Left	61	1	1.00	0.04	61	1	1.00	0.04	61	1	1.00	0.04	
Comb. L-T		0				0				0			
NB Thru	144	1	1.00	0.09	144	1	1.00	0.09	144	1	1.00	0.09	0.757
Comb. T-R		0				0				0			
NB Right	417	1	1.00	0.26	417	1	1.00	0.26	417	1	1.00	0.26	
Comb. L-T-R		0				0				0			
SB Left	70	1	0.37	0.12	70	1	0.37	0.12	70	2	2.00	0.02	
Comb. L-T		1				1				0			
SB Thru	313	0	1.63	0.12	313	0	1.63	0.12	313	0	0.66	0.30	0.782
Comb. T-R		0				0				1			
SB Right	160	1	1.00	0.10	160	1	1.00	0.10	160	0	0.34	0.30	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.57			E-W:	0.58			E-W:	0.58	
			N-S:	0.38			N-S:	0.38			N-S:	0.33	
			Total:	0.96			Total:	0.96			Total:	0.91	
Lost Time				0.10				0.10				0.10	
V/C				1.055				1.059				1.011	
Level of Service				F				F				F	

E-W Street: Temple Ave
N-S Street: Pomona Blvd
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

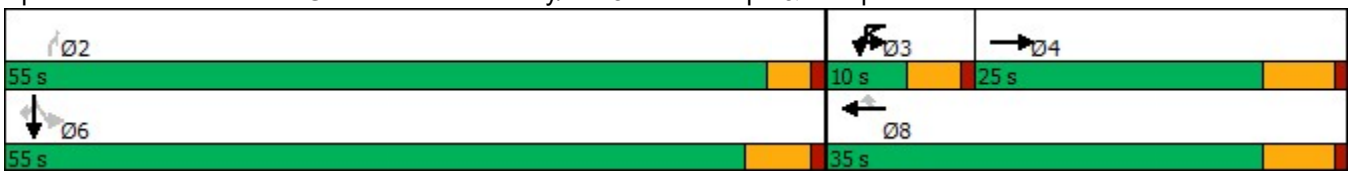
Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	148	1	1.00	0.09	148	1	1.00	0.09	148	1	1.00	0.09	0.887
Comb. L-T		0				0				0			
EB Thru	1231	2	2.96	0.26	1262	2	2.96	0.27	1262	2	2.96	0.27	
Comb. T-R		1				1				1			
EB Right	16	0	0.04	0.26	16	0	0.04	0.27	16	0	0.04	0.27	
Comb. L-T-R		0				0				0			
WB Left	427	1	1.00	0.27	427	1	1.00	0.27	427	1	1.00	0.27	0.887
Comb. L-T		0				0				0			
WB Thru	827	2	2.77	0.19	868	2	2.78	0.19	868	2	2.78	0.19	
Comb. T-R		1				1				1			
WB Right	68	0	0.23	0.19	68	0	0.22	0.19	68	0	0.22	0.19	
Comb. L-T-R		0				0				0			
NB Left	76	1	1.00	0.05	76	1	1.00	0.05	76	1	1.00	0.05	0.960
Comb. L-T		0				0				0			
NB Thru	290	1	1.00	0.18	290	1	1.00	0.18	290	1	1.00	0.18	
Comb. T-R		0				0				0			
NB Right	657	1	1.00	0.41	657	1	1.00	0.41	657	1	1.00	0.41	
Comb. L-T-R		0				0				0			
SB Left	263	1	1.19	0.14	263	1	1.19	0.14	263	2	2.00	0.09	0.757
Comb. L-T		1				1				0			
SB Thru	180	0	0.81	0.14	180	0	0.81	0.14	180	0	0.49	0.23	
Comb. T-R		0				0				1			
SB Right	184	1	1.00	0.11	184	1	1.00	0.11	184	0	0.51	0.23	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.53			E-W:	0.53			E-W:	0.53	
			N-S:	0.55			N-S:	0.55			N-S:	0.50	
			Total:	1.08			Total:	1.08			Total:	1.04	
Lost Time				0.10				0.10				0.10	
V/C				1.176				1.182				1.135	
Level of Service				F				F				F	

Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	690	4	1203	37	4	728	10	989
Future Volume (vph)	690	4	1203	37	4	728	10	989
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	21.4	5.6	26.8	26.8	44.1	42.7	42.7	42.7
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.54	0.53	0.53	0.53
v/c Ratio	0.57	0.35	0.78	0.04	0.00	0.74	0.79	0.72
Control Delay	30.3	48.7	29.2	7.2	0.0	21.1	24.2	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	48.7	29.2	7.2	0.0	21.1	24.2	18.1
LOS	C	D	C	A	A	C	C	B
Approach Delay	30.3		29.2				21.2	
Approach LOS	C		C				C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 81	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 25.6	Intersection LOS: C
Intersection Capacity Utilization 72.1%	ICU Level of Service C
Analysis Period (min) 15	

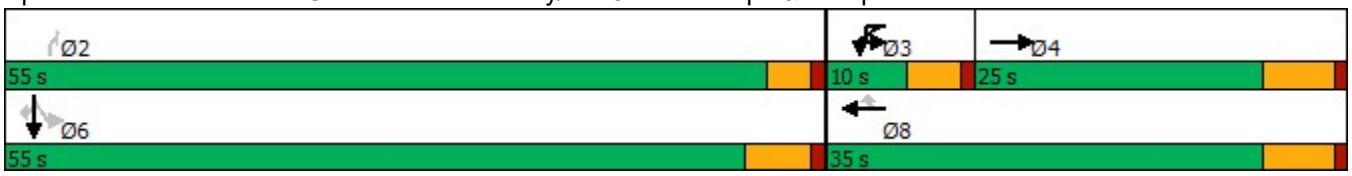
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	700	4	1216	37	4	728	10	1028
Future Volume (vph)	700	4	1216	37	4	728	10	1028
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	25.0	10.0	35.0	35.0	55.0	55.0	55.0	55.0
Total Split (%)	27.8%	11.1%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	21.5	5.6	27.0	27.0	44.7	43.2	43.2	43.2
Actuated g/C Ratio	0.26	0.07	0.33	0.33	0.55	0.53	0.53	0.53
v/c Ratio	0.58	0.36	0.79	0.04	0.00	0.76	0.81	0.73
Control Delay	30.6	49.1	29.7	7.2	0.0	21.7	25.5	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	49.1	29.7	7.2	0.0	21.7	25.5	18.7
LOS	C	D	C	A	A	C	C	B
Approach Delay	30.6		29.7				22.0	
Approach LOS	C		C				C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 81.7			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

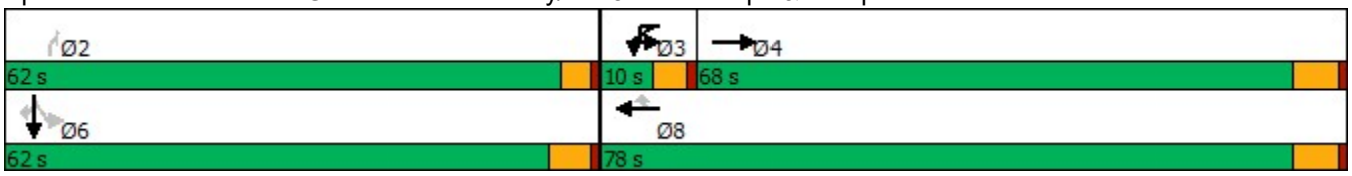
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	2014	8	539	48	8	1231	5	534
Future Volume (vph)	2014	8	539	48	8	1231	5	534
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	62.3	5.4	70.1	70.1	58.1	56.6	56.6	56.6
Actuated g/C Ratio	0.45	0.04	0.51	0.51	0.42	0.41	0.41	0.41
v/c Ratio	0.97	0.74	0.23	0.04	0.01	1.03	1.05	0.68
Control Delay	49.7	117.4	19.0	4.3	0.0	82.0	88.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	117.4	19.0	4.3	0.0	82.0	88.5	22.2
LOS	D	F	B	A	A	F	F	C
Approach Delay	49.7		25.2				68.1	
Approach LOS	D		C				E	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 138	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 53.4	Intersection LOS: D
Intersection Capacity Utilization 99.6%	ICU Level of Service F
Analysis Period (min) 15	

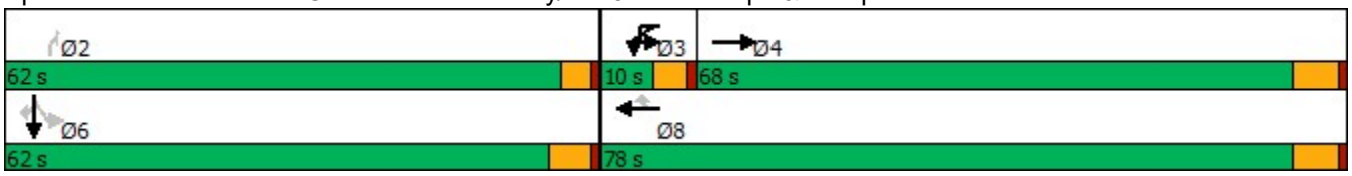
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	2038	8	548	48	8	1231	5	561
Future Volume (vph)	2038	8	548	48	8	1231	5	561
Turn Type	NA	Prot	NA	Perm	Perm	Perm	NA	Perm
Protected Phases	4	3	8				6	
Permitted Phases				8	2	6		6
Detector Phase	4	3	8	8	2	6	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	10.0	24.0	24.0	24.0	24.0	24.0	24.0
Total Split (s)	68.0	10.0	78.0	78.0	62.0	62.0	62.0	62.0
Total Split (%)	48.6%	7.1%	55.7%	55.7%	44.3%	44.3%	44.3%	44.3%
Yellow Time (s)	4.8	3.6	4.8	4.8	3.0	4.4	4.4	4.4
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.8	4.6	5.8	5.8	4.0	5.4	5.4	5.4
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	62.3	5.4	70.1	70.1	58.1	56.6	56.6	56.6
Actuated g/C Ratio	0.45	0.04	0.51	0.51	0.42	0.41	0.41	0.41
v/c Ratio	0.98	0.74	0.23	0.04	0.01	1.03	1.05	0.72
Control Delay	51.8	117.4	19.1	4.3	0.0	82.0	89.8	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	117.4	19.1	4.3	0.0	82.0	89.8	24.9
LOS	D	F	B	A	A	F	F	C
Approach Delay	51.8		25.2				68.7	
Approach LOS	D		C				E	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 138	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 54.6	Intersection LOS: D
Intersection Capacity Utilization 99.9%	ICU Level of Service F
Analysis Period (min) 15	

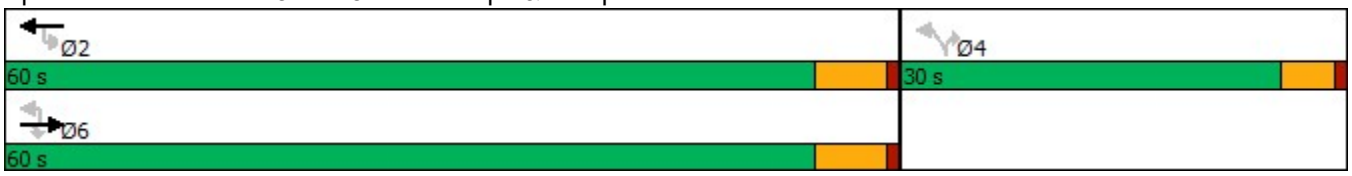
Splits and Phases: 14: Gas Station Driveway/SR-57 SB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1058	283	1	1696	374	270
Future Volume (vph)	1058	283	1	1696	374	270
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	37.8	37.8		37.8	14.9	14.9
Actuated g/C Ratio	0.59	0.59		0.59	0.23	0.23
v/c Ratio	0.38	0.17		0.65	0.59	0.55
Control Delay	7.2	1.1		9.9	25.3	20.6
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.2	1.1		9.9	25.3	20.6
LOS	A	A		A	C	C
Approach Delay	5.9			9.9	23.8	
Approach LOS	A			A	C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 63.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

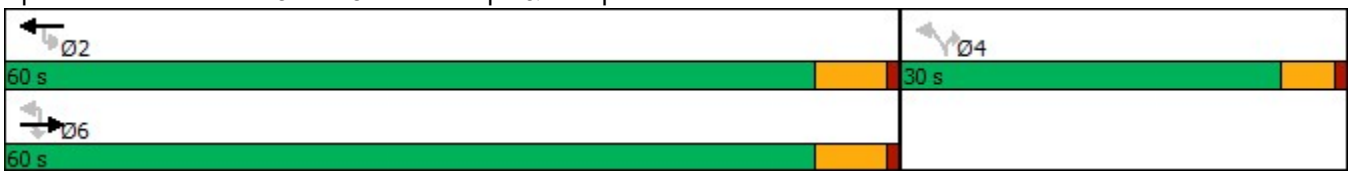
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1059	292	1	1700	383	270
Future Volume (vph)	1059	292	1	1700	383	270
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	60.0	60.0	60.0	60.0	30.0	30.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.0	38.0		38.0	15.0	15.0
Actuated g/C Ratio	0.59	0.59		0.59	0.23	0.23
v/c Ratio	0.38	0.18		0.65	0.60	0.55
Control Delay	7.3	1.1		10.0	25.5	20.8
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	7.3	1.1		10.0	25.5	20.8
LOS	A	A		A	C	C
Approach Delay	6.0			10.0	24.0	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 64	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 54.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2218	691	1	878	103	304
Future Volume (vph)	2218	691	1	878	103	304
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	12.1	12.1
Actuated g/C Ratio	0.63	0.63		0.63	0.20	0.20
v/c Ratio	0.75	0.37		0.32	0.43	0.57
Control Delay	10.6	1.1		6.1	23.0	29.8
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	10.6	1.1		6.1	23.0	29.8
LOS	B	A		A	C	C
Approach Delay	8.3			6.1	25.5	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 60.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBT	EBR	WBU	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2220	712	1	881	109	304
Future Volume (vph)	2220	712	1	881	109	304
Turn Type	NA	Perm	Perm	NA	Perm	Perm
Protected Phases	6			2		
Permitted Phases		6	2		4	4
Detector Phase	6	6	2	2	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	26.0	26.0	26.0	26.0	26.0	26.0
Total Split (s)	44.0	44.0	44.0	44.0	26.0	26.0
Total Split (%)	62.9%	62.9%	62.9%	62.9%	37.1%	37.1%
Yellow Time (s)	4.8	4.8	4.8	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.8	5.8		5.8	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	38.3	38.3		38.3	12.1	12.1
Actuated g/C Ratio	0.63	0.63		0.63	0.20	0.20
v/c Ratio	0.75	0.38		0.32	0.44	0.57
Control Delay	10.6	1.2		6.1	23.1	29.8
Queue Delay	0.0	0.0		0.0	0.0	0.0
Total Delay	10.6	1.2		6.1	23.1	29.8
LOS	B	A		A	C	C
Approach Delay	8.3			6.1	25.6	
Approach LOS	A			A	C	

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 60.9	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

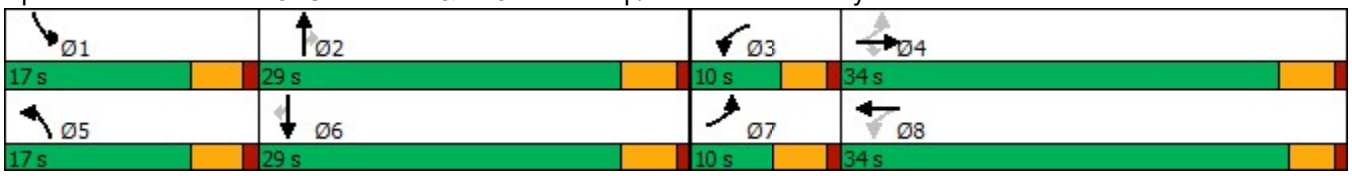
Splits and Phases: 15: SR-57 NB Ramps & Temple Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	355	15	122	25	11	152	887	28	950	200	
Future Volume (vph)	355	15	122	25	11	152	887	28	950	200	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		25.8	25.8		26.5	11.1	40.3	40.3	24.5	24.5	
Actuated g/C Ratio		0.34	0.34		0.35	0.15	0.53	0.53	0.32	0.32	
v/c Ratio		0.91	0.21		0.11	0.63	0.51	0.03	0.90	0.33	
Control Delay		50.8	4.4		13.6	42.9	13.1	0.1	38.3	4.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		50.8	4.4		13.6	42.9	13.1	0.1	38.3	4.9	
LOS		D	A		B	D	B	A	D	A	
Approach Delay		39.3			13.6		17.0		32.5		
Approach LOS		D			B		B		C		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 75.5	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 27.4	Intersection LOS: C
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

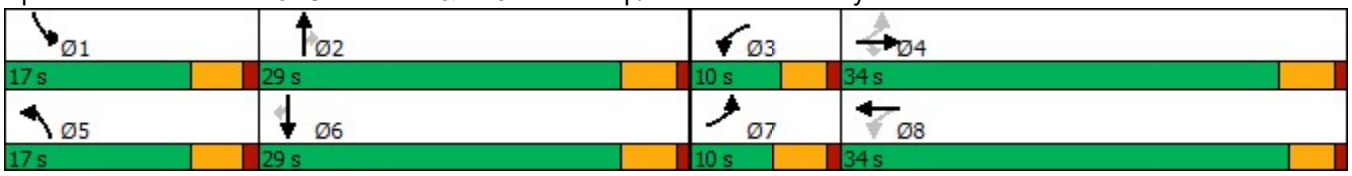
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	Ø1
Lane Configurations											
Traffic Volume (vph)	355	15	122	25	11	172	891	28	967	200	
Future Volume (vph)	355	15	122	25	11	172	891	28	967	200	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	NA	Perm	
Protected Phases	7	4		3	8	5	2		6		1
Permitted Phases	4		4	8				2		6	
Detector Phase	7	4	4	3	8	5	2	2	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.7	22.7	22.7	9.5	22.5	9.7	22.7	22.7	22.7	22.7	9.7
Total Split (s)	10.0	34.0	34.0	10.0	34.0	17.0	29.0	29.0	29.0	29.0	17.0
Total Split (%)	11.1%	37.8%	37.8%	11.1%	37.8%	18.9%	32.2%	32.2%	32.2%	32.2%	19%
Yellow Time (s)	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.7	3.7	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		4.7	4.7		4.0	4.6	4.7	4.7	4.7	4.7	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		25.9	25.9		26.6	11.7	40.8	40.8	24.5	24.5	
Actuated g/C Ratio		0.34	0.34		0.35	0.15	0.54	0.54	0.32	0.32	
v/c Ratio		0.91	0.21		0.11	0.69	0.51	0.03	0.92	0.33	
Control Delay		51.6	4.4		13.6	46.2	13.1	0.1	41.3	4.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		51.6	4.4		13.6	46.2	13.1	0.1	41.3	4.9	
LOS		D	A		B	D	B	A	D	A	
Approach Delay		39.9			13.6		18.0		35.0		
Approach LOS		D			B		B		D		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 76.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

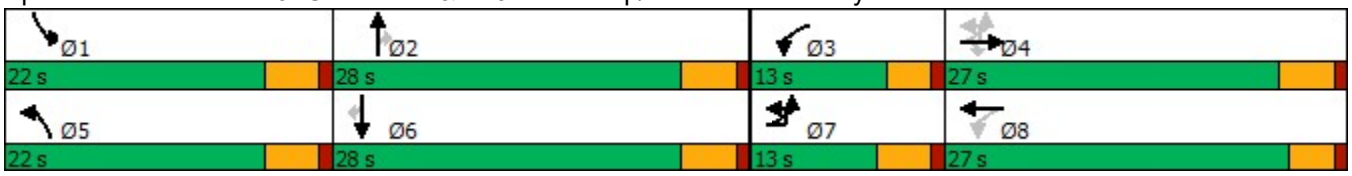
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	238	14	69	40	21	292	913	49	5	885	372
Future Volume (vph)	1	238	14	69	40	21	292	913	49	5	885	372
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			19.1	19.1		19.8	16.9	42.8	42.8	5.8	23.4	23.4
Actuated g/C Ratio			0.26	0.26		0.27	0.23	0.58	0.58	0.08	0.32	0.32
v/c Ratio			0.80	0.15		0.24	0.78	0.48	0.05	0.04	0.85	0.52
Control Delay			44.4	1.6		18.0	42.7	11.3	0.1	33.4	33.6	5.1
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			44.4	1.6		18.0	42.7	11.3	0.1	33.4	33.6	5.1
LOS			D	A		B	D	B	A	C	C	A
Approach Delay			35.3			18.0		18.1			25.2	
Approach LOS			D			B		B			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 73.5	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 70.3%	ICU Level of Service C
Analysis Period (min) 15	

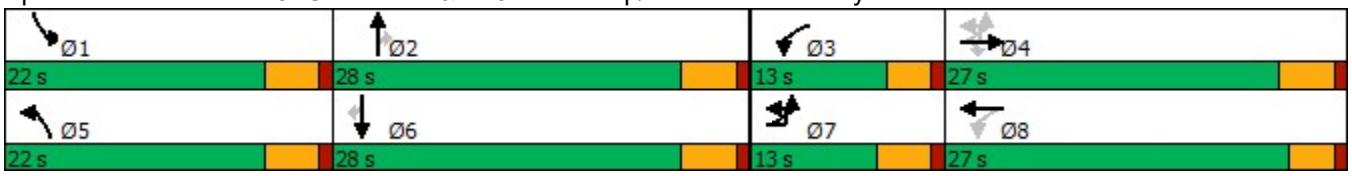
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	238	14	69	40	21	339	922	49	5	897	372
Future Volume (vph)	1	238	14	69	40	21	339	922	49	5	897	372
Turn Type	pm+pt	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	7	4		3	8	5	2		1	6	
Permitted Phases	4	4		4	8				2			6
Detector Phase	7	7	4	4	3	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	9.6	22.7	22.7	9.5	22.5	9.6	22.7	22.7	9.6	22.7	22.7
Total Split (s)	13.0	13.0	27.0	27.0	13.0	27.0	22.0	28.0	28.0	22.0	28.0	28.0
Total Split (%)	14.4%	14.4%	30.0%	30.0%	14.4%	30.0%	24.4%	31.1%	31.1%	24.4%	31.1%	31.1%
Yellow Time (s)	3.6	3.6	3.7	3.7	3.0	3.0	3.6	3.7	3.7	3.6	3.7	3.7
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)			4.7	4.7		4.0	4.6	4.7	4.7	4.6	4.7	4.7
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)			19.1	19.1		19.8	17.5	43.3	43.3	5.8	23.4	23.4
Actuated g/C Ratio			0.26	0.26		0.27	0.24	0.59	0.59	0.08	0.32	0.32
v/c Ratio			0.81	0.15		0.24	0.88	0.48	0.05	0.04	0.87	0.52
Control Delay			45.2	1.6		18.0	53.5	11.3	0.1	33.4	35.2	5.1
Queue Delay			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay			45.2	1.6		18.0	53.5	11.3	0.1	33.4	35.2	5.1
LOS			D	A		B	D	B	A	C	D	A
Approach Delay			35.8			18.0		21.8			26.4	
Approach LOS			D			B		C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 74			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 25.2		Intersection LOS: C	
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

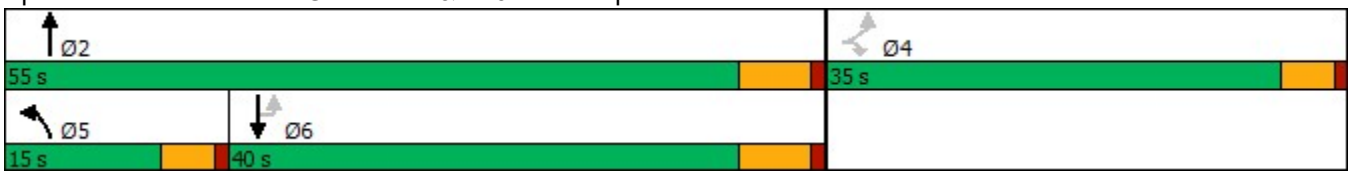
Splits and Phases: 16: Grand Ave & I-10 WB Ramp/7-Eleven Driveway



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	304	594	44	722	2	854
Future Volume (vph)	304	594	44	722	2	854
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	25.8	25.8	7.8	39.0		32.0
Actuated g/C Ratio	0.34	0.34	0.10	0.51		0.42
v/c Ratio	0.55	0.89	0.26	0.43		0.85
Control Delay	26.1	30.6	39.9	12.4		28.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	26.1	30.6	39.9	12.4		28.8
LOS	C	C	D	B		C
Approach Delay	29.1			14.0		28.8
Approach LOS	C			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 75.8	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

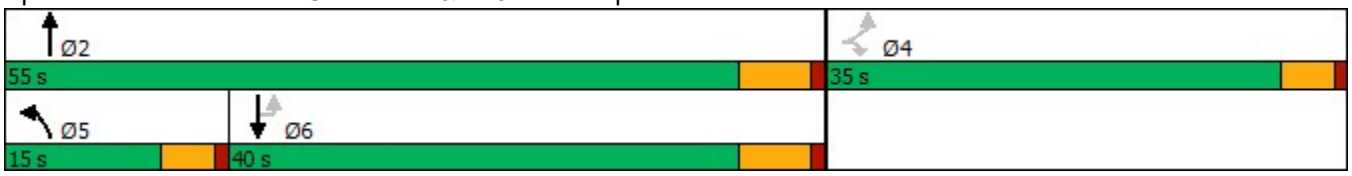
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Configurations						
Traffic Volume (vph)	304	681	44	746	2	871
Future Volume (vph)	304	681	44	746	2	871
Turn Type	Perm	Perm	Prot	NA	Perm	NA
Protected Phases			5	2		6
Permitted Phases	4	4			6	
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0	24.0
Total Split (s)	35.0	35.0	15.0	55.0	40.0	40.0
Total Split (%)	38.9%	38.9%	16.7%	61.1%	44.4%	44.4%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8		5.8
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	30.7	30.7	7.7	41.0		33.4
Actuated g/C Ratio	0.37	0.37	0.09	0.50		0.41
v/c Ratio	0.50	0.96	0.29	0.46		0.90
Control Delay	24.9	43.5	41.2	14.0		33.5
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	24.9	43.5	41.2	14.0		33.5
LOS	C	D	D	B		C
Approach Delay	37.8			15.5		33.5
Approach LOS	D			B		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 30.1	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

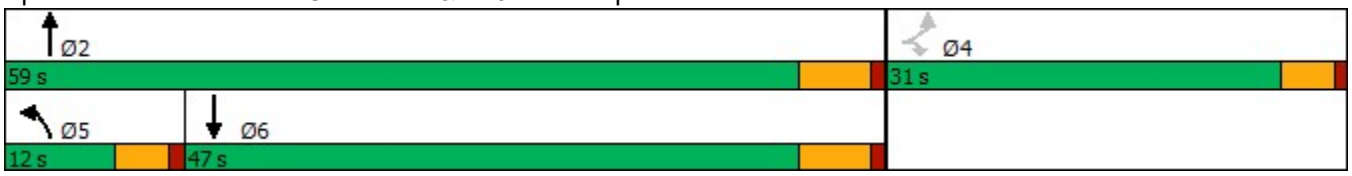
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	287	225	52	915	616
Future Volume (vph)	287	225	52	915	616
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	17.4	17.4	7.4	32.9	27.0
Actuated g/C Ratio	0.28	0.28	0.12	0.53	0.43
v/c Ratio	0.63	0.40	0.27	0.53	0.69
Control Delay	29.1	5.7	36.6	10.3	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	5.7	36.6	10.3	15.3
LOS	C	A	D	B	B
Approach Delay	18.8			11.7	15.3
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 62.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

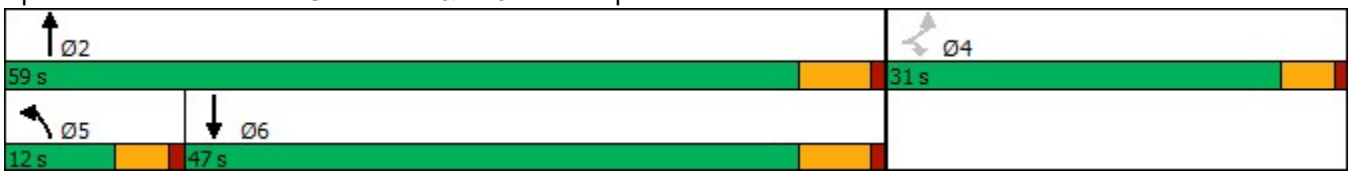
Splits and Phases: 17: Grand Ave & I-10 EB Ramps



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	287	285	52	972	628
Future Volume (vph)	287	285	52	972	628
Turn Type	Perm	Perm	Prot	NA	NA
Protected Phases			5	2	6
Permitted Phases	4	4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	11.0	24.0	24.0
Total Split (s)	31.0	31.0	12.0	59.0	47.0
Total Split (%)	34.4%	34.4%	13.3%	65.6%	52.2%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8
Lead/Lag			Lead		Lag
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	None
Act Effct Green (s)	17.6	17.6	7.5	33.8	27.9
Actuated g/C Ratio	0.28	0.28	0.12	0.53	0.44
v/c Ratio	0.63	0.47	0.27	0.56	0.69
Control Delay	29.4	6.5	37.3	10.7	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	6.5	37.3	10.7	15.5
LOS	C	A	D	B	B
Approach Delay	18.0			12.0	15.5
Approach LOS	B			B	B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 63.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 59.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 17: Grand Ave & I-10 EB Ramps



E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	51	0	0.22	0.14	51	0	0.22	0.14	51	0	0.22	0.14	
Comb. L-T		0				0				0			
EB Thru	21	0	0.09	0.14	21	0	0.09	0.14	21	0	0.09	0.14	0.722
Comb. T-R		0				0				0			
EB Right	159	0	0.69	0.14	159	0	0.69	0.14	159	0	0.69	0.14	
Comb. L-T-R		1				1				1			
WB Left	580	1	1.00	0.36	586	1	1.00	0.37	586	1	1.00	0.37	
Comb. L-T		0				0				0			
WB Thru	133	1	1.00	0.08	133	1	1.00	0.08	133	1	1.00	0.08	0.751
Comb. T-R		0				0				0			
WB Right	61	1	1.00	0.04	61	1	1.00	0.04	61	1	1.00	0.04	
Comb. L-T-R		0				0				0			
NB Left	29	1	1.00	0.02	29	1	1.00	0.02	29	1	1.00	0.02	
Comb. L-T		0				0				0			
NB Thru	791	2	2.00	0.25	819	2	2.00	0.26	819	2	2.00	0.26	0.863
Comb. T-R		0				0				0			
NB Right	214	1	1.00	0.13	215	1	1.00	0.13	215	1	1.00	0.13	
Comb. L-T-R		0				0				0			
SB Left	28	1	1.00	0.02	28	1	1.00	0.02	28	1	1.00	0.02	
Comb. L-T		0				0				0			
SB Thru	1411	2	2.00	0.44	1523	2	2.00	0.48	1523	2	2.89	0.33	0.934
Comb. T-R		0				0				1			
SB Right	56	1	1.00	0.03	56	1	1.00	0.03	56	0	0.11	0.33	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.51			E-W:	0.51			E-W:	0.51	
			N-S:	0.46			N-S:	0.49			N-S:	0.35	
			Total:	0.97			Total:	1.00			Total:	0.86	
Lost Time				0.10				0.10				0.10	
V/C				1.066				1.105				0.958	
Level of Service				F				F				E	

E-W Street: Holt Ave
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	24	0	0.24	0.06	24	0	0.24	0.06	24	0	0.24	0.06	0.913
Comb. L-T		0				0				0			
EB Thru	37	0	0.37	0.06	37	0	0.37	0.06	37	0	0.37	0.06	
Comb. T-R		0				0				0			
EB Right	39	0	0.39	0.06	39	0	0.39	0.06	39	0	0.39	0.06	
Comb. L-T-R		1				1				1			
WB Left	254	1	1.00	0.16	257	1	1.00	0.16	257	1	1.00	0.16	0.945
Comb. L-T		0				0				0			
WB Thru	53	1	1.00	0.03	53	1	1.00	0.03	53	1	1.00	0.03	
Comb. T-R		0				0				0			
WB Right	49	1	1.00	0.03	49	1	1.00	0.03	49	1	1.00	0.03	
Comb. L-T-R		0				0				0			
NB Left	56	1	1.00	0.04	56	1	1.00	0.04	56	1	1.00	0.04	0.927
Comb. L-T		0				0				0			
NB Thru	953	2	2.00	0.30	1015	2	2.00	0.32	1015	2	2.00	0.32	
Comb. T-R		0				0				0			
NB Right	209	1	1.00	0.13	211	1	1.00	0.13	211	1	1.00	0.13	
Comb. L-T-R		0				0				0			
SB Left	39	1	1.00	0.02	39	1	1.00	0.02	39	1	1.00	0.02	0.940
Comb. L-T		0				0				0			
SB Thru	735	2	2.00	0.23	812	2	2.00	0.25	812	2	2.84	0.18	
Comb. T-R		0				0				1			
SB Right	45	1	1.00	0.03	45	1	1.00	0.03	45	0	0.16	0.18	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.22			E-W:	0.22			E-W:	0.22	
			N-S:	0.32			N-S:	0.34			N-S:	0.34	
			Total:	0.54			Total:	0.57			Total:	0.57	
Lost Time				0.10				0.10				0.10	
V/C				0.644				0.665				0.665	
Level of Service				B				B				B	

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	27	30	872	1663	132
Future Vol, veh/h	15	27	30	872	1663	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	29	33	948	1808	143

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2348	-	1808	0	-	0
Stage 1	1808	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	30	0	336	-	-	0
Stage 1	116	0	-	-	-	0
Stage 2	548	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	27	-	336	-	-	-
Mov Cap-2 Maneuver	27	-	-	-	-	-
Stage 1	105	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	259.4	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	336	-	27	-	-
HCM Lane V/C Ratio	0.097	-	0.604	-	-
HCM Control Delay (s)	16.9	-	259.4	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	15	27	30	898	1772	132
Future Vol, veh/h	15	27	30	898	1772	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	29	33	976	1926	143

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2480	-	1926	0	-	0
Stage 1	1926	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	24	0	302	-	-	0
Stage 1	100	0	-	-	-	0
Stage 2	539	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	21	-	302	-	-	-
Mov Cap-2 Maneuver	21	-	-	-	-	-
Stage 1	89	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 376	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	302	-	21	-	-
HCM Lane V/C Ratio	0.108	-	0.776	-	-
HCM Control Delay (s)	18.4	-	$ 376	0	-
HCM Lane LOS	C	-	F	A	-
HCM 95th %tile Q(veh)	0.4	-	2.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	12	33	1175	908	34
Future Vol, veh/h	5	12	33	1175	908	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	36	1277	987	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1698	-	987	0	-	0
Stage 1	987	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	83	0	696	-	-	0
Stage 1	322	0	-	-	-	0
Stage 2	448	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	79	-	696	-	-	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	53.9	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	696	-	79	-	-
HCM Lane V/C Ratio	0.052	-	0.069	-	-
HCM Control Delay (s)	10.5	-	53.9	0	-
HCM Lane LOS	B	-	F	A	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	12	33	1234	983	34
Future Vol, veh/h	5	12	33	1234	983	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	52	0	50	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	36	1341	1068	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1811	-	1068	0	-	0
Stage 1	1068	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Critical Hdwy	6.84	-	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	-	2.22	-	-	-
Pot Cap-1 Maneuver	70	0	648	-	-	0
Stage 1	291	0	-	-	-	0
Stage 2	431	0	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	66	-	648	-	-	-
Mov Cap-2 Maneuver	66	-	-	-	-	-
Stage 1	275	-	-	-	-	-
Stage 2	431	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	64.4	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT
Capacity (veh/h)	648	-	66	-	-
HCM Lane V/C Ratio	0.055	-	0.082	-	-
HCM Control Delay (s)	10.9	-	64.4	0	-
HCM Lane LOS	B	-	F	A	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	67.9
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	284	582	491	118	193	334
Future Vol, veh/h	284	582	491	118	193	334
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	309	633	534	128	210	363
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	119.1	38.8	17.4
HCM LOS	F	E	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	59%	0%	0%	0%	100%	100%	0%
Vol Thru, %	41%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	478	388	327	282	97	97	334
LT Vol	284	0	0	0	97	97	0
Through Vol	194	388	327	164	0	0	0
RT Vol	0	0	0	118	0	0	334
Lane Flow Rate	520	422	356	306	105	105	363
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.256	0.984	0.854	0.71	0.261	0.261	0.609
Departure Headway (Hd)	8.702	8.397	9.031	8.73	9.382	9.382	6.36
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	421	434	406	416	385	385	570
Service Time	6.453	6.148	6.731	6.43	7.082	7.082	4.06
HCM Lane V/C Ratio	1.235	0.972	0.877	0.736	0.273	0.273	0.637
HCM Control Delay	160	68.8	46.3	30.1	15.4	15.4	18.5
HCM Lane LOS	F	F	E	D	C	C	C
HCM 95th-tile Q	22	12.1	8.2	5.4	1	1	4.1

Intersection	
Intersection Delay, s/veh	72.4
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	284	599	495	119	197	334
Future Vol, veh/h	284	599	495	119	197	334
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	309	651	538	129	214	363
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	127.4	40.6	17.7
HCM LOS	F	E	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	59%	0%	0%	0%	100%	100%	0%
Vol Thru, %	41%	100%	100%	58%	0%	0%	0%
Vol Right, %	0%	0%	0%	42%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	484	399	330	284	99	99	334
LT Vol	284	0	0	0	99	99	0
Through Vol	200	399	330	165	0	0	0
RT Vol	0	0	0	119	0	0	334
Lane Flow Rate	526	434	359	309	107	107	363
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.277	1.018	0.867	0.721	0.268	0.268	0.615
Departure Headway (Hd)	8.743	8.442	9.101	8.8	9.457	9.457	6.436
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	415	430	402	414	382	382	566
Service Time	6.502	6.2	6.801	6.5	7.157	7.157	4.136
HCM Lane V/C Ratio	1.267	1.009	0.893	0.746	0.28	0.28	0.641
HCM Control Delay	168.4	77.8	48.6	31.2	15.6	15.6	18.9
HCM Lane LOS	F	F	E	D	C	C	C
HCM 95th-tile Q	22.8	13.2	8.5	5.6	1.1	1.1	4.2

Intersection	
Intersection Delay, s/veh	39.8
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	327	338	483	120	141	233
Future Vol, veh/h	327	338	483	120	141	233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	355	367	525	130	153	253
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	66.5	27.2	12.5
HCM LOS	F	D	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	74%	0%	0%	0%	100%	100%	0%
Vol Thru, %	26%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	440	225	322	281	71	71	233
LT Vol	327	0	0	0	71	71	0
Through Vol	113	225	322	161	0	0	0
RT Vol	0	0	0	120	0	0	233
Lane Flow Rate	478	245	350	305	77	77	253
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.071	0.523	0.754	0.632	0.182	0.182	0.389
Departure Headway (Hd)	8.066	7.686	7.945	7.639	8.706	8.706	5.686
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	454	473	459	476	415	415	636
Service Time	5.766	5.386	5.645	5.339	6.406	6.406	3.386
HCM Lane V/C Ratio	1.053	0.518	0.763	0.641	0.186	0.186	0.398
HCM Control Delay	91.1	18.5	31.2	22.6	13.3	13.3	12
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	15.5	3	6.3	4.3	0.7	0.7	1.8

Intersection	
Intersection Delay, s/veh	40.9
Intersection LOS	E

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	327	350	492	122	144	233
Future Vol, veh/h	327	350	492	122	144	233
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	355	380	535	133	157	253
Number of Lanes	0	2	2	0	2	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	3	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	3	2
HCM Control Delay	68.6	27.8	12.5
HCM LOS	F	D	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	74%	0%	0%	0%	100%	100%	0%
Vol Thru, %	26%	100%	100%	57%	0%	0%	0%
Vol Right, %	0%	0%	0%	43%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	444	233	328	286	72	72	233
LT Vol	327	0	0	0	72	72	0
Through Vol	117	233	328	164	0	0	0
RT Vol	0	0	0	122	0	0	233
Lane Flow Rate	482	254	357	311	78	78	253
Geometry Grp	8	8	8	8	7	7	7
Degree of Util (X)	1.082	0.543	0.762	0.639	0.183	0.183	0.387
Departure Headway (Hd)	8.077	7.701	7.971	7.665	8.742	8.742	5.722
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	472	456	476	413	413	633
Service Time	5.777	5.401	5.671	5.365	6.442	6.442	3.422
HCM Lane V/C Ratio	1.064	0.538	0.783	0.653	0.189	0.189	0.4
HCM Control Delay	94.6	19.2	32	23	13.4	13.4	12
HCM Lane LOS	F	C	D	C	B	B	B
HCM 95th-tile Q	15.9	3.2	6.5	4.4	0.7	0.7	1.8

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 15%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	135	1	1.00	0.08	135	1	1.00	0.08	135	1	1.00	0.08	0.889
Comb. L-T		0				0				0			
EB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
EB Right	652	1	1.00	0.41	673	1	1.00	0.42	673	2	2.00	0.21	
Comb. L-T-R		0				0				0			
WB Left	0	0	0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0				0			
WB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
WB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
NB Left	404	2	2.00	0.14	410	2	2.00	0.14	410	2	2.00	0.14	0.893
Comb. L-T		0				0				0			
NB Thru	838	2	2.00	0.26	867	2	2.00	0.27	867	2	2.00	0.27	
Comb. T-R		0				0				0			
NB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
SB Left	0	0	0.00		0	0	0.00		0	0	0.00		0.893
Comb. L-T		0				0				0			
SB Thru	1683	2	2.00	0.53	1805	2	2.00	0.56	1805	2	2.00	0.56	
Comb. T-R		0				0				0			
SB Right	207	1	1.00	0.13	207	1	1.00	0.13	207	1	1.00	0.13	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.41			E-W:	0.42			E-W:	0.21	
			N-S:	0.67			N-S:	0.71			N-S:	0.71	
			Total:	1.07			Total:	1.13			Total:	0.92	
Lost Time				0.10				0.10				0.10	
V/C				1.174				1.227				1.017	
Level of Service				F				F				F	

E-W Street: Cameron Ave
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	78	1	1.00	0.05	78	1	1.00	0.05	78	1	1.00	0.05	0.918
Comb. L-T		0				0				0			
EB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
EB Right	349	1	1.00	0.22	361	1	1.00	0.23	361	2	2.00	0.11	
Comb. L-T-R		0				0				0			
WB Left	0	0	0.00		0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0				0			
WB Thru	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. T-R		0				0				0			
WB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
NB Left	562	2	2.00	0.20	575	2	2.00	0.20	575	2	2.00	0.20	0.916
Comb. L-T		0				0				0			
NB Thru	1233	2	2.00	0.39	1297	2	2.00	0.41	1297	2	2.00	0.41	
Comb. T-R		0				0				0			
NB Right	0	0	0.00		0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0				0			
SB Left	0	0	0.00		0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0				0			
SB Thru	906	2	2.00	0.28	988	2	2.00	0.31	988	2	2.00	0.31	
Comb. T-R		0				0				0			
SB Right	119	1	1.00	0.07	119	1	1.00	0.07	119	1	1.00	0.07	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.22			E-W:	0.23			E-W:	0.11	
			N-S:	0.48			N-S:	0.51			N-S:	0.51	
			Total:	0.70			Total:	0.73			Total:	0.62	
Lost Time				0.10				0.10				0.10	
V/C				0.796				0.834				0.721	
Level of Service				C				D				C	

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: AM Peak
Overlap Reduce 25%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0			
EB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
EB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			
WB Left	171	2	2.00	0.06	181	2	2.00	0.06	0.895
Comb. L-T		0				0			
WB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
WB Right	68	2	2.00	0.02	78	2	2.00	0.02	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		0	0	0.00		0.903
Comb. L-T		0				0			
NB Thru	1217	2	2.00	0.38	1236	2	2.00	0.39	
Comb. T-R		0				0			
NB Right	430	1	1.00	0.27	473	1	1.00	0.30	
Comb. L-T-R		0				0			
SB Left	602	2	2.00	0.21	657	2	2.00	0.23	0.941
Comb. L-T		0				0			
SB Thru	1867	2	2.00	0.58	1950	2	2.00	0.61	
Comb. T-R		0				0			
SB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.06	E-W:	0.06
	N-S:	0.59	N-S:	0.61
	Total:	0.65	Total:	0.68
Lost Time		0.10		0.10
V/C		0.748		0.777
Level of Service		C		C

E-W Street: Mountaineer Rd
N-S Street: Grand Ave
Scenario: PM Peak
Overlap Reduce 11%
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	0	0	0.00		0	0	0.00		1.000
Comb. L-T		0				0			
EB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
EB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			
WB Left	188	2	2.00	0.07	215	2	2.00	0.07	0.773
Comb. L-T		0				0			
WB Thru	0	0	0.00		0	0	0.00		
Comb. T-R		0				0			
WB Right	146	2	2.00	0.05	179	2	2.00	0.06	
Comb. L-T-R		0				0			
NB Left	0	0	0.00		0	0	0.00		0.911
Comb. L-T		0				0			
NB Thru	1808	2	2.00	0.56	1855	2	2.00	0.58	
Comb. T-R		0				0			
NB Right	184	1	1.00	0.12	214	1	1.00	0.13	
Comb. L-T-R		0				0			
SB Left	166	2	2.00	0.06	204	2	2.00	0.07	0.948
Comb. L-T		0				0			
SB Thru	1162	2	2.00	0.36	1219	2	2.00	0.38	
Comb. T-R		0				0			
SB Right	0	0	0.00		0	0	0.00		
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.07	E-W:	0.07
	N-S:	0.62	N-S:	0.65
	Total:	0.69	Total:	0.72
Lost Time		0.10		0.10
V/C		0.788		0.825
Level of Service		C		D

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	258	1	1.00	0.16	258	1	1.00	0.16	258	1	1.00	0.16	
Comb. L-T		0				0				0			
EB Thru	110	0	0.44	0.16	115	0	0.45	0.16	115	0	0.45	0.16	0.780
Comb. T-R		1				1				1			
EB Right	138	0	0.56	0.16	138	0	0.55	0.16	138	0	0.55	0.16	
Comb. L-T-R		0				0				0			
WB Left	107	1	1.00	0.07	126	1	1.00	0.08	126	1	1.61	0.05	
Comb. L-T		0				0				1			
WB Thru	30	1	1.00	0.02	31	1	1.00	0.02	31	0	0.39	0.05	0.745
Comb. T-R		0				0				0			
WB Right	64	1	1.00	0.04	75	1	1.00	0.05	75	1	1.00	0.05	
Comb. L-T-R		0				0				0			
NB Left	125	1	1.00	0.08	125	1	1.00	0.08	125	1	1.00	0.08	
Comb. L-T		0				0				0			
NB Thru	1430	2	2.00	0.45	1486	2	2.00	0.46	1486	2	2.23	0.42	0.862
Comb. T-R		0				0				1			
NB Right	438	1	1.00	0.27	509	1	1.00	0.32	509	0	0.77	0.42	
Comb. L-T-R		0				0				0			
SB Left	316	1	1.00	0.20	355	1	1.00	0.22	355	1	1.00	0.22	
Comb. L-T		0				0				0			
SB Thru	1652	2	2.00	0.52	1711	2	2.00	0.53	1711	2	2.00	0.53	0.895
Comb. T-R		0				0				0			
SB Right	170	1	1.00	0.11	170	1	1.00	0.11	170	1	1.00	0.11	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.22			E-W:	0.24			E-W:	0.21	
			N-S:	0.64			N-S:	0.69			N-S:	0.64	
			Total:	0.87			Total:	0.92			Total:	0.85	
Lost Time				0.10				0.10				0.10	
V/C				0.967				1.024				0.948	
Level of Service				E				F				E	

E-W Street: San Jose Hills Rd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	118	1	1.00	0.07	118	1	1.00	0.07	118	1	1.00	0.07	
Comb. L-T		0				0				0			
EB Thru	17	0	0.13	0.08	20	0	0.15	0.08	20	0	0.15	0.08	0.890
Comb. T-R		1				1				1			
EB Right	113	0	0.87	0.08	113	0	0.85	0.08	113	0	0.85	0.08	
Comb. L-T-R		0				0				0			
WB Left	233	1	1.00	0.15	276	1	1.00	0.17	276	1	1.79	0.10	
Comb. L-T		0				0				1			
WB Thru	29	1	1.00	0.02	32	1	1.00	0.02	32	0	0.21	0.10	0.760
Comb. T-R		0				0				0			
WB Right	138	1	1.00	0.09	163	1	1.00	0.10	163	1	1.00	0.10	
Comb. L-T-R		0				0				0			
NB Left	99	1	1.00	0.06	99	1	1.00	0.06	99	1	1.00	0.06	
Comb. L-T		0				0				0			
NB Thru	1794	2	2.00	0.56	1851	2	2.00	0.58	1851	2	2.67	0.43	0.896
Comb. T-R		0				0				1			
NB Right	184	1	1.00	0.12	231	1	1.00	0.14	231	0	0.33	0.43	
Comb. L-T-R		0				0				0			
SB Left	75	1	1.00	0.05	101	1	1.00	0.06	101	1	1.00	0.06	
Comb. L-T		0				0				0			
SB Thru	1170	2	2.00	0.37	1224	2	2.00	0.38	1224	2	2.00	0.38	0.940
Comb. T-R		0				0				0			
SB Right	107	1	1.00	0.07	107	1	1.00	0.07	107	1	1.00	0.07	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.23			E-W:	0.26			E-W:	0.18	
			N-S:	0.61			N-S:	0.64			N-S:	0.50	
			Total:	0.83			Total:	0.90			Total:	0.68	
Lost Time				0.10				0.10				0.10	
V/C				0.935				0.998				0.777	
Level of Service				E				E				C	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Overlap Reduce 20%

Overlap Reduce 10%

Movement	AM 2027 without Project				AM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	645	1	1.71	0.24	650	1	1.71	0.24	650	1	1.71	0.24	
Comb. L-T		1				1				1			
EB Thru	111	0	0.29	0.24	111	0	0.29	0.24	111	0	0.29	0.24	0.751
Comb. T-R		0				0				0			
EB Right	591	1	1.00	0.37	591	1	1.00	0.37	532	1	1.00	0.33	
Comb. L-T-R		0				0				0			
WB Left	217	1	1.15	0.12	217	1	1.15	0.12	217	1	1.15	0.12	
Comb. L-T		1				1				1			
WB Thru	159	0	1.74	0.06	159	0	1.74	0.06	159	0	1.74	0.06	0.628
Comb. T-R		1				1				1			
WB Right	19	0	0.11	0.11	19	0	0.11	0.11	19	0	0.11	0.11	
Comb. L-T-R		0				0				0			
NB Left	189	1	1.00	0.12	189	1	1.00	0.12	189	1	1.00	0.12	
Comb. L-T		0				0				0			
NB Thru	1575	2	2.00	0.49	1687	2	2.00	0.53	1687	2	2.00	0.53	0.972
Comb. T-R		0				0				0			
NB Right	58	1	1.00	0.04	58	1	1.00	0.04	58	1	1.00	0.04	
Comb. L-T-R		0				0				0			
SB Left	2	1	1.00	0.00	2	1	1.00	0.00	2	1	1.00	0.00	
Comb. L-T		0				0				0			
SB Thru	1140	2	2.00	0.36	1167	2	2.00	0.36	1167	2	2.00	0.36	0.953
Comb. T-R		0				0				0			
SB Right	285	1	1.00	0.18	285	1	1.00	0.18	285	1	1.00	0.18	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.49			E-W:	0.49			E-W:	0.45	
			N-S:	0.49			N-S:	0.53			N-S:	0.53	
			Total:	0.98			Total:	1.02			Total:	0.98	
Lost Time				0.10				0.10				0.10	
V/C				1.080				1.115				1.079	
Level of Service				F				F				F	

E-W Street: La Puente Rd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Overlap Reduce 15%

Overlap Reduce 10%

Movement	PM 2027 without Project				PM 2027 + Project				2027 + Project with Mitigation				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	365	1	1.67	0.14	368	1	1.67	0.14	368	1	1.67	0.14	0.946
Comb. L-T		1				1				1			
EB Thru	73	0	0.33	0.14	73	0	0.33	0.14	73	0	0.33	0.14	
Comb. T-R		0				0				0			
EB Right	369	1	1.00	0.23	369	1	1.00	0.23	332	1	1.00	0.21	
Comb. L-T-R		0				0				0			
WB Left	106	1	1.30	0.05	106	1	1.30	0.05	106	1	1.30	0.05	0.840
Comb. L-T		1				1				1			
WB Thru	57	0	1.53	0.02	57	0	1.53	0.02	57	0	1.53	0.02	
Comb. T-R		1				1				1			
WB Right	12	0	0.17	0.04	12	0	0.17	0.04	12	0	0.17	0.04	
Comb. L-T-R		0				0				0			
NB Left	321	1	1.00	0.20	321	1	1.00	0.20	321	1	1.00	0.20	0.961
Comb. L-T		0				0				0			
NB Thru	1625	2	2.00	0.51	1703	2	2.00	0.53	1703	2	2.00	0.53	
Comb. T-R		0				0				0			
NB Right	136	1	1.00	0.09	136	1	1.00	0.09	136	1	1.00	0.09	
Comb. L-T-R		0				0				0			
SB Left	14	1	1.00	0.01	14	1	1.00	0.01	14	1	1.00	0.01	0.918
Comb. L-T		0				0				0			
SB Thru	1110	2	2.00	0.35	1174	2	2.00	0.37	1174	2	2.00	0.37	
Comb. T-R		0				0				0			
SB Right	193	1	1.00	0.12	194	1	1.00	0.12	194	1	1.00	0.12	
Comb. L-T-R		0				0				0			

Critical Volumes			E-W:	0.28			E-W:	0.28			E-W:	0.26	
			N-S:	0.55			N-S:	0.57			N-S:	0.57	
			Total:	0.83			Total:	0.85			Total:	0.83	
Lost Time				0.10				0.10				0.10	
V/C				0.929				0.949				0.926	
Level of Service				E				E				E	

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Free Right Turn 100%

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	522	2	2.00	0.18	526	2	2.00	0.18	0.864
Comb. L-T		0				0			
EB Thru	796	3	3.00	0.17	796	3	3.00	0.17	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left	219	2	2.00	0.08	219	2	2.00	0.08	0.813
Comb. L-T		0				0			
WB Thru	1463	3	3.00	0.30	1463	3	3.00	0.30	
Comb. T-R		0				0			
WB Right	254	1	1.00	0.16	254	1	1.00	0.16	
Comb. L-T-R		0				0			
NB Left	371	2	2.00	0.13	371	2	2.00	0.13	0.896
Comb. L-T		0				0			
NB Thru	1253	3	3.00	0.26	1370	3	3.00	0.29	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	316	2	2.00	0.11	316	2	2.00	0.11	0.855
Comb. L-T		0				0			
SB Thru	943	3	3.00	0.20	971	3	3.00	0.20	
Comb. T-R		0				0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.49	E-W:	0.49
	N-S:	0.37	N-S:	0.39
	Total:	0.86	Total:	0.88

Lost Time	0.10	0.10

V/C	0.957	0.983
Level of Service	E	E

E-W Street: Valley Blvd
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Free Right Turn 100%

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	644	2	2.00	0.22	647	2	2.00	0.22	0.968
Comb. L-T		0				0			
EB Thru	1546	3	3.00	0.32	1546	3	3.00	0.32	
Comb. T-R		0				0			
EB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
WB Left	268	2	2.00	0.09	268	2	2.00	0.09	0.914
Comb. L-T		0				0			
WB Thru	843	3	3.00	0.18	843	3	3.00	0.18	
Comb. T-R		0				0			
WB Right	341	1	1.00	0.21	341	1	1.00	0.21	
Comb. L-T-R		0				0			
NB Left	329	2	2.00	0.11	329	2	2.00	0.11	0.965
Comb. L-T		0				0			
NB Thru	1058	3	3.00	0.22	1132	3	3.00	0.24	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	398	2	2.00	0.14	398	2	2.00	0.14	0.943
Comb. L-T		0				0			
SB Thru	745	3	3.00	0.16	806	3	3.00	0.17	
Comb. T-R		0				0			
SB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.44	E-W:	0.44
	N-S:	0.36	N-S:	0.37
	Total:	0.80	Total:	0.81

Lost Time	0.10	0.10

V/C	0.895	0.912
Level of Service	D	E

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: AM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	AM 2027 without Project				AM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	21	2	2.00	0.01	21	2	2.00	0.01	0.775
Comb. L-T		0				0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
EB Right	66	1	1.00	0.04	66	1	1.00	0.04	
Comb. L-T-R		0				0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T		0				0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R									
NB Left	125	2	2.00	0.04	125	2	2.00	0.04	0.913
Comb. L-T		0				0			
NB Thru	2210	3	3.00	0.46	2324	3	3.00	0.48	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.927
Comb. L-T		0				0			
SB Thru	851	3	3.00	0.18	877	3	3.00	0.18	
Comb. T-R		0				0			
SB Right	81	1	1.00	0.05	81	1	1.00	0.05	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.04	E-W:	0.04
	N-S:	0.46	N-S:	0.48
	Total:	0.50	Total:	0.53

Lost Time	0.10	0.10

V/C	0.602	0.625
Level of Service	B	B

E-W Street: Baker Pkwy
N-S Street: Grand Ave
Scenario: PM Peak
Lane Capacity: 1600
Dual Lefts Capacity (per lane): 1440

Movement	PM 2027 without Project				PM 2027 + Project				PHF
	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	Total Volume	No. of Lanes	Equivalent Lanes	Movement V/C	
EB Left	125	2	2.00	0.04	125	2	2.00	0.04	0.783
Comb. L-T		0				0			
EB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
EB Right	207	1	1.00	0.13	207	1	1.00	0.13	
Comb. L-T-R		0				0			
WB Left	0	2	2.00	0.00	0	2	2.00	0.00	1.000
Comb. L-T		0				0			
WB Thru	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. T-R		0				0			
WB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
NB Left	51	2	2.00	0.02	51	2	2.00	0.02	0.889
Comb. L-T		0				0			
NB Thru	1417	3	3.00	0.30	1498	3	3.00	0.31	
Comb. T-R		0				0			
NB Right	0	1	1.00	0.00	0	1	1.00	0.00	
Comb. L-T-R		0				0			
SB Left	0	2	2.00	0.00	0	2	2.00	0.00	0.892
Comb. L-T		0				0			
SB Thru	1508	3	3.00	0.31	1572	3	3.00	0.33	
Comb. T-R		0				0			
SB Right	34	1	1.00	0.02	34	1	1.00	0.02	
Comb. L-T-R		0				0			

Critical Volumes	E-W:	0.13	E-W:	0.13
	N-S:	0.33	N-S:	0.35
	Total:	0.46	Total:	0.47

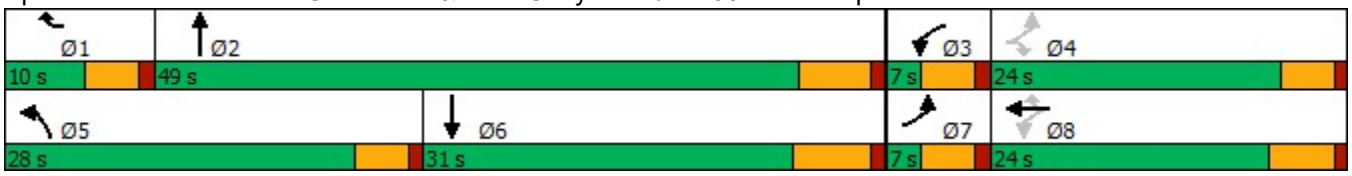
Lost Time	0.10	0.10

V/C	0.561	0.574
Level of Service	A	A

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	151	1	631	265	1555	809	
Future Volume (vph)	3	151	1	631	265	1555	809	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	6.9	16.3	15.5	26.3	17.7	43.3	30.6	
Actuated g/C Ratio	0.09	0.20	0.19	0.33	0.22	0.54	0.38	
v/c Ratio	0.02	0.43	0.89	0.59	0.74	0.88	0.37	
Control Delay	33.0	31.8	44.8	16.6	40.6	24.1	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	31.8	44.8	16.6	40.6	24.1	19.7	
LOS	C	C	D	B	D	C	B	
Approach Delay			31.0			26.5	19.7	
Approach LOS			C			C	B	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 80	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 25.8	Intersection LOS: C
Intersection Capacity Utilization 76.5%	ICU Level of Service D
Analysis Period (min) 15	

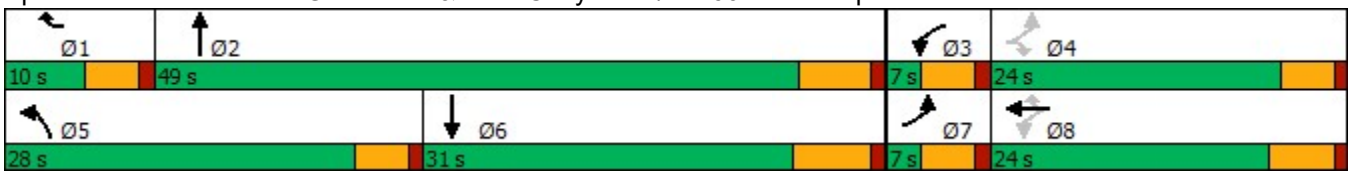
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	Ø7
Lane Configurations								
Traffic Volume (vph)	3	151	1	709	265	1581	830	
Future Volume (vph)	3	151	1	709	265	1581	830	
Turn Type	Perm	pm+pt	NA	custom	Prot	NA	NA	
Protected Phases		3	8	1	5	2	6	7
Permitted Phases	4	8		8				
Detector Phase	4	3	8	1	5	2	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.6	9.6	23.4	9.6	9.6	23.8	24.2	9.6
Total Split (s)	24.0	7.0	24.0	10.0	28.0	49.0	31.0	7.0
Total Split (%)	26.7%	7.8%	26.7%	11.1%	31.1%	54.4%	34.4%	8%
Yellow Time (s)	3.6	3.6	4.4	3.6	3.6	4.8	5.2	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.6	4.6	5.4	4.6	4.6	5.8	6.2	
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	17.6	16.8	27.6	17.9	43.2	30.4	
Actuated g/C Ratio	0.09	0.22	0.21	0.34	0.22	0.53	0.37	
v/c Ratio	0.02	0.41	0.96	0.64	0.74	0.91	0.39	
Control Delay	33.0	30.9	57.5	19.1	41.2	27.1	20.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	30.9	57.5	19.1	41.2	27.1	20.4	
LOS	C	C	E	B	D	C	C	
Approach Delay			37.1			29.1	20.4	
Approach LOS			D			C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 81.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

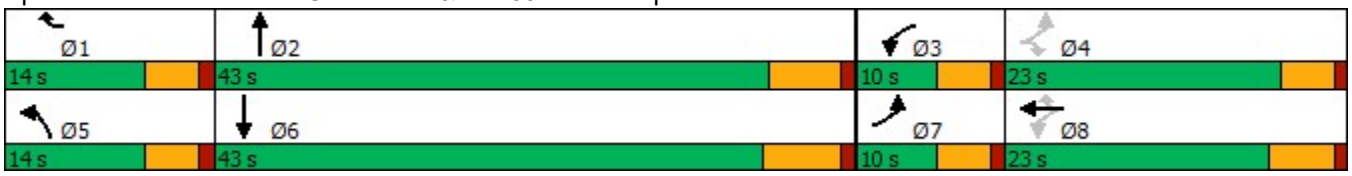
Splits and Phases: 27: Grand Ave & Brea Canyon Rd/SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	145	0	520	202	781	1522		
Future Volume (vph)	145	0	520	202	781	1522		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.0	8.1	19.6	9.6	32.2	28.1		
Actuated g/C Ratio	0.14	0.13	0.31	0.15	0.52	0.45		
v/c Ratio	0.59	0.68	0.47	0.81	0.47	0.58		
Control Delay	36.7	13.7	9.1	54.3	10.9	13.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	36.7	13.7	9.1	54.3	10.9	13.7		
LOS	D	B	A	D	B	B		
Approach Delay		16.4			19.8	13.7		
Approach LOS		B			B	B		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 62.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 54.5%	ICU Level of Service A
Analysis Period (min) 15	

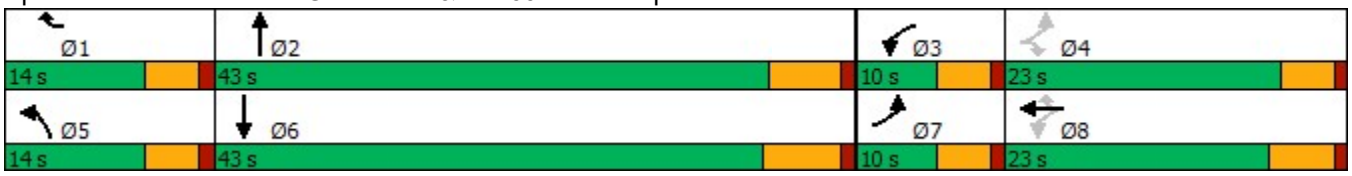
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	Ø4	Ø7
Lane Configurations								
Traffic Volume (vph)	145	0	574	202	799	1572		
Future Volume (vph)	145	0	574	202	799	1572		
Turn Type	pm+pt	NA	custom	Prot	NA	NA		
Protected Phases	3	8	1	5	2	6	4	7
Permitted Phases	8		8					
Detector Phase	3	8	1	5	2	6		
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.6	23.4	9.6	9.6	23.8	24.2	22.6	9.6
Total Split (s)	10.0	23.0	14.0	14.0	43.0	43.0	23.0	10.0
Total Split (%)	11.1%	25.6%	15.6%	15.6%	47.8%	47.8%	26%	11%
Yellow Time (s)	3.6	4.4	3.6	3.6	4.8	5.2	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	5.4	4.6	4.6	5.8	6.2		
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lag	Lead
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.1	9.3	20.9	9.6	33.6	29.6		
Actuated g/C Ratio	0.15	0.14	0.32	0.15	0.52	0.45		
v/c Ratio	0.54	0.73	0.52	0.84	0.48	0.60		
Control Delay	34.6	16.6	10.8	61.0	11.6	14.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	34.6	16.6	10.8	61.0	11.6	14.4		
LOS	C	B	B	E	B	B		
Approach Delay		17.5			21.6	14.4		
Approach LOS		B			C	B		

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 65.2			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

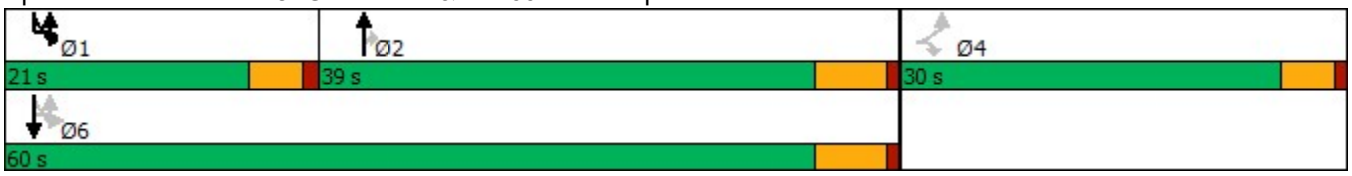
Splits and Phases: 27: Grand Ave & SR-60 WB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	754	273	1054	310	10	269	700
Future Volume (vph)	754	273	1054	310	10	269	700
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	23.5	23.5	31.5	31.5		51.4	50.2
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.60
v/c Ratio	0.86	0.50	0.87	0.42		0.79	0.25
Control Delay	39.7	11.9	33.5	4.1		33.7	8.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	39.7	11.9	33.5	4.1		33.7	8.4
LOS	D	B	C	A		C	A
Approach Delay			26.8				15.6
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 76.4%	ICU Level of Service D
Analysis Period (min) 15	

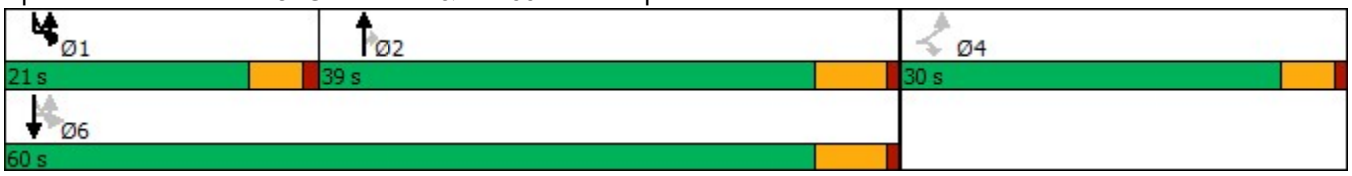
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	767	273	1067	310	10	287	703
Future Volume (vph)	767	273	1067	310	10	287	703
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	39.0	39.0	21.0	21.0	60.0
Total Split (%)	33.3%	33.3%	43.3%	43.3%	23.3%	23.3%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	24.1	24.1	32.0	32.0		52.3	51.1
Actuated g/C Ratio	0.28	0.28	0.37	0.37		0.61	0.60
v/c Ratio	0.86	0.50	0.88	0.42		0.83	0.25
Control Delay	40.6	11.9	34.9	4.1		38.6	8.5
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	40.6	11.9	34.9	4.1		38.6	8.5
LOS	D	B	C	A		D	A
Approach Delay			28.0				17.5
Approach LOS			C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 26.4	Intersection LOS: C
Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	

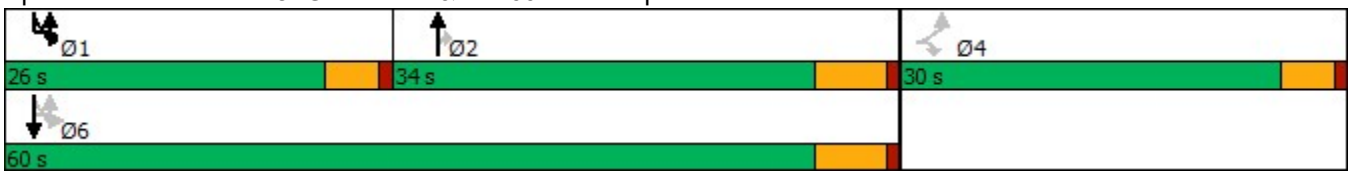
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	153	266	819	661	4	362	1343
Future Volume (vph)	153	266	819	661	4	362	1343
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	15.4	15.4	26.0	26.0		48.5	47.2
Actuated g/C Ratio	0.21	0.21	0.35	0.35		0.66	0.64
v/c Ratio	0.23	0.72	0.71	0.72		0.75	0.45
Control Delay	25.9	30.0	26.0	7.5		23.2	7.6
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	25.9	30.0	26.0	7.5		23.2	7.6
LOS	C	C	C	A		C	A
Approach Delay			17.7				10.9
Approach LOS			B				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 73.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

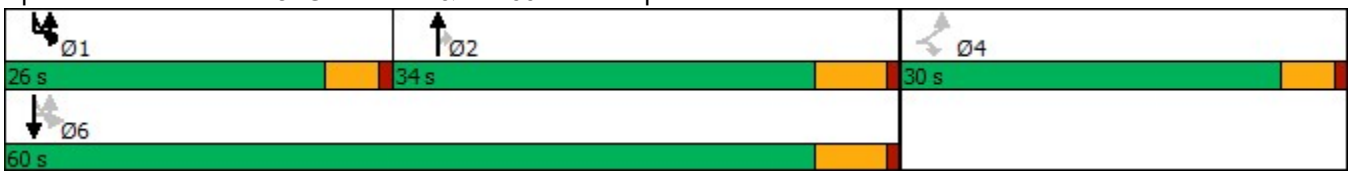
Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



Lane Group	EBL	EBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	162	266	828	661	4	405	1350
Future Volume (vph)	162	266	828	661	4	405	1350
Turn Type	Perm	Perm	NA	Perm	pm+pt	pm+pt	NA
Protected Phases			2		1	1	6
Permitted Phases	4	4		2	6	6	
Detector Phase	4	4	2	2	1	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	23.0	23.0	24.0	24.0	11.0	11.0	24.0
Total Split (s)	30.0	30.0	34.0	34.0	26.0	26.0	60.0
Total Split (%)	33.3%	33.3%	37.8%	37.8%	28.9%	28.9%	66.7%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8		4.6	5.8
Lead/Lag			Lag	Lag	Lead	Lead	
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	None	None	None
Act Effct Green (s)	15.6	15.6	26.4	26.4		51.0	49.8
Actuated g/C Ratio	0.20	0.20	0.35	0.35		0.67	0.65
v/c Ratio	0.25	0.73	0.73	0.73		0.80	0.44
Control Delay	26.8	31.3	27.5	8.3		28.5	7.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	26.8	31.3	27.5	8.3		28.5	7.4
LOS	C	C	C	A		C	A
Approach Delay			19.0				12.3
Approach LOS			B				B

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 76.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 28: Grand Ave & SR-60 EB Ramps



NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

March 23, 2018

Charles Cisneros
Psomas

Sent by E-mail: Charles.cisneros@psomas.com

RE: Proposed Mt. San Antonio College Transit Center (3MTS010200) Project, City of Walnut; San Dimas USGS Quadrangle, Los Angeles County, California

Dear Mr. Cisneros:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

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Native American Heritage Commission
Native American Contact List
Los Angeles County
3/23/2018

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Pauma Band of Luiseno Indians - Pauma & Yuima Reservation
Temet Aguilar, Chairperson
P.O. Box 369 — Luiseno
Pauma Valley, CA, 92061
Phone: (760) 742 - 1289
Fax: (760) 742-3422
bennaecalac@aol.com

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk
Newhall, CA, 91322 — Serrano
Phone: (503) 539 - 0933 — Tataviam
Fax: (503) 574-3308
ddyocum@comcast.net

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Mt. San Antonio College Transit Center Project, Los Angeles County.

MT. SAC
Mt. San Antonio College

1100 North Grand Avenue
Walnut, CA 91789-1399
909-274-7500
www.mtsac.edu

September 18, 2018

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians-Kizh Nation
PO BOX 393
Covina, CA 91723

Subject: Assembly Bill (AB) 52 (Public Resources Code §21080.3.1): Long Range Development Plan Mt. San Antonio College 2018 Educational and Facilities Master Plan, City of Walnut, Los Angeles County, California

Dear Mr. Salas:

Mt. San Antonio College (Mt. SAC) is the lead agency, pursuant to the California Environmental Quality Act (CEQA), for the proposed *Mt. San Antonio College 2018 Educational and Facilities Master Plan* and associated 2017 Parking and Circulation Master Plan (EFMP). The campus encompasses 418.44 acres (comprised of 3 parcels) and is located north and south of Temple Avenue east of Grand Avenue, with the "West Parcel" located west of Grand Avenue and south of Amar Road/Temple Avenue. Mountaineer Road and Edinger Way form the northern boundary of the campus and the eastern boundary is consistent with the City of Walnut's eastern boundary.

The proposed EFMP is the College's long-range development plan and also serves as the foundation for other components of the College's integrated planning process. Among other purposes, the EFMP projects Mt. SAC's overall growth and the growth of programs and services during the planning horizon and develops recommendations for site and facilities improvements that are informed by educational planning.

AB 52 requires lead agencies to consult with California Native American tribes that request such consultation in writing prior to the agency's release of a Notice of Preparation (NOP) of an Environmental Impact Report (EIR) or notice of a Mitigated Negative Declaration (MND), or Negative Declaration (ND). To that end, Mt. SAC is notifying you of this Project. AB 52 allows tribes 30 days after receiving notification to request consultation. Please refer to the attached NOP for a project description and location map.

Your participation in this local planning process is important. If you possess any information or knowledge regarding Native American Sacred Lands or other tribal cultural resources in and around the Project site, and wish to consult with Mt. SAC regarding these resources, please direct your email to facilities planning@mtsac.edu or any correspondence on this matter to:

Gary Nellesen
Director, Facilities Planning & Management
Mt. San Antonio College
1100 N. Grand Ave
Walnut, CA 91789

BOARD OF TRUSTEES
Dr. Manuel Baca • Rosanne M. Bader • Jay Chen
Judy Chen Haggerty, Esq. • Gary Chow • Robert F. Hidalgo • Laura Santos
COLLEGE PRESIDENT / CEO – Dr. William T. Scroggins

Mt. SAC would welcome a response at your earliest possible convenience, but no later than 30 days after receiving this letter. Should we not receive a response within 30 days, we will presume that you have declined consultation under AB 52. Please do not hesitate to let us know if you have any questions or would like to discuss this proposed Project. Please contact Mikaela (Mika) Klein by phone at (909) 274-5720 with any questions.

Thank you very much for your assistance.

Sincerely,

Gary Nellesen
Director, Facilities Planning & Management

Attachment:

Notice of Preparation