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APPENDICES – VOLUME II
ENVIRONMENTAL IMPACT REPORT
STATE CLEARINGHOUSE NO.2021110098
5037 PATATA STREET
INDUSTRIAL DEVELOPMENT
SOUTH GATE, CALIFORNIA

LEAD AGENCY:

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NOVEMBER 15, 2022

SGAT 036

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APPENDIX E – GEOTECHNICAL

GEOTECHNICAL INVESTIGATION PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT

5037 Patata Street
South Gate, California
For
Overton Moore Properties

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

January 29, 2021

Overton Moore Properties
19700 S. Vermont Avenue #101
Torrance, California 90502

Attention: Mr. Jason Hines
Vice President

Project No.: **21G103-1**

Subject: **Geotechnical Investigation**
Proposed Commercial/Industrial Development
5037 Patata Street
South Gate, California

Reference: Geotechnical Investigation, Proposed Industrial Building, 5037 Patata Street, South Gate, California, prepared by Southern California Geotechnical (SCG) for Birtcher Development, SCG Project No. 20G182-1, dated September 17, 2020.

Gentlemen:

In accordance with your request, we have conducted a geotechnical investigation at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

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1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report.

Geotechnical Design Considerations

- The results of the previous liquefaction evaluation indicate total dynamic settlements ranging between 3.18 and 3.39± inches. The liquefaction induced differential settlements are expected to be on the order of 2± inches.
- Some of the potentially liquefiable soil layers are present at depths between 8 to 12± feet. These liquefiable soil layers are expected to be located within or directly beneath the zone of influence for the new building foundations. In order to help mitigate the potential for excessive differential settlement of the new building foundations and the potential for surface manifestations within the proposed building area, additional deeper overexcavation is recommended within the zones of foundation influence.
- Artificial fill soils were encountered at all of the boring locations, extending from the ground surface to depths of 4½ to 8± feet.
- The fill soils possess varying strengths. The existing fill soils are considered to represent undocumented fill. These soils, in their present condition, are not considered suitable for support of the foundation loads of the new structure(s). Additionally, it is anticipated that demolition of the existing structures and associated improvements will cause disturbance of the upper 2 to 3± feet of soil.
- The recommended depth of remedial grading is will need to be sufficient to help reduce potential static settlements to within tolerable levels, as well as help mitigate some of the potential consequences of liquefaction, described in the previous report.
- The results of the previous soluble sulfate testing indicate that some of the soils possess a severe sulfate concentration (Sulfate Class S2) in accordance with ACI 318-14. The results of the previous corrosivity testing indicate that the near surface soils are severely corrosive to buried metallic improvements such as ductile iron pipe and to copper pipe.
- Boring No. B-20 was performed in the eastern portion of the site, closer to the Los Angeles River, and encountered groundwater at depths a depth of 37½± feet below the existing ground surface. Groundwater was also encountered a at depth of 47± feet at Boring No. B-17, and water was not encountered at Boring Nos. B-18 and B-19, which were terminated at a depth of 25± feet below existing site grades.
- Based on the presence of shallow liquefiable soil layers and the relatively shallow historic high groundwater level of 8± feet, we do not recommend that on-site stormwater infiltration systems be used at this site.

Site Preparation Recommendations

- Demolition of the existing structures and pavements will be required in order to facilitate construction of the new building(s). Demolition should also include all utilities and any other subsurface improvements that will not remain in place for use with the new development. Debris resultant from demolition should be disposed of offsite. Alternatively, concrete and asphalt debris may be pulverized to a maximum 2-inch particle size, well mixed with the on-

site soils, and incorporated into new structural fills, or it may be crushed and used to mechanically stabilize overexcavation subgrades.

- Site stripping of existing vegetated areas should remove include all vegetation, including tree root masses and any organic topsoil.
- Remedial grading is recommended to be performed within the proposed building pad area(s). Based on the results of the liquefaction evaluation and the presence of liquefiable soil layers within or directly beneath the influence zones of new foundations, we recommend that the soils within proposed foundation influence zones be overexcavated to a depth of at least 12 feet below the existing site grades. The depth of overexcavation should also extend to a depth of at least 1½ times the footing width below the foundation bearing grade for spread footings and to a depth of at least 2 times the footing width below the foundation bearing grade for continuous foundations. In non-foundation areas of the proposed building pad area(s), the existing soils should be overexcavated to a depth of at least 6 feet below existing grade and 5 feet below proposed pad grades, whichever is greater.
- After overexcavation has been completed, the resulting subgrade soils should be evaluated by the geotechnical engineer to identify any additional soils that should be overexcavated, moisture conditioned, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The previously excavated soils may then be replaced as compacted structural fill.
- The new parking area subgrade soils are recommended to be scarified to a depth of 12± inches, thoroughly moisture conditioned and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.
- Consideration should be given to installing temporary groundwater observation wells to accurately measure the groundwater levels.

Foundation Design Recommendations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 2,500 lbs/ft^2 maximum allowable soil bearing pressure.
- Reinforcement consisting of at least six (6) No. 5 rebars (3 top and 3 bottom) in strip footings due to the presence of potentially liquefiable soils. Additional reinforcement may be necessary for structural considerations.

Building Floor Slab Design Recommendations

- Conventional Slab-on-Grade: minimum 7 inches thick.
- Modulus of Subgrade Reaction: k = 100 psi/in.
- Reinforcement consisting of No. 3 rebars at 16 inches on center in both directions due to the presence of liquefiable soils. The actual floor slab reinforcement should be determined by the structural engineer, based on the imposed slab loading.

Pavement Design Recommendations

ASPHALT PAVEMENTS (R = 30)					
Materials	**Thickness (inches)**				
	Parking Stalls (TI = 4.0)	Auto Drive Lanes (TI = 5.0)	Truck Traffic		
			(TI = 6.0)	(TI = 7.0)	(TI = 8.0)
Asphalt Concrete	3	3	3½	4	5
Aggregate Base	3	6	8	10	11
Compacted Subgrade (90% minimum compaction)	12	12	12	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS (R = 30)				
Materials	**Thickness (inches)**			
	Automobile Parking and Drive Areas (TI = 5.0)	Truck Traffic		
		(TI =6.0)	(TI =7.0)	(TI =8.0)
PCC	5	5	5½	6½
Compacted Subgrade (95% minimum compaction)	12	12	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in accordance with our Proposal No. 21P102, dated January 5, 2021. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to provide criteria for preparing the design of the building foundations, building floor slabs, and parking lot pavements along with site preparation recommendations and construction considerations for the proposed development. Based on the location of this site, this investigation also included a site-specific liquefaction evaluation. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical investigation.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The subject site is located at the northeast corner of Patata Street and Wilcox Avenue in South Gate, California. The site is also referenced by the street address of 5037 Patata Street. The site is bounded to the north by existing single-family residences, to the northwest by an existing commercial/industrial building, to the south by an existing railroad easement, and to the east by the Los Angeles River. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

The subject site consists of a trapezoidal-shaped parcel, 27.05± acres in size. Based on visiting the site and aerial photographs obtained from Google Earth, the site is currently developed with several contiguous commercial/industrial buildings located in the western two-thirds of the site. The buildings are one and two-story metal-frame structures and are assumed to be supported on shallow foundations with concrete slab-on-grade floors. The central-southern portion of the site contains three above-ground silos utilized for transferring manufactured materials. The central-northern portion of the site also contains one (1), four to five-story silo. The buildings are surrounded by asphaltic concrete pavements, with limited areas containing Portland cement. The asphaltic concrete is utilized as material and equipment storage in the central area of the site and automobile parking in the western area of the site. The asphaltic concrete pavements are in poor condition with moderate to severe cracking throughout. An abandoned rail spur that diverges from the southern railroad easement enters the site through Patata Street and trends east-west along the southern side of the site. The eastern one-third of the site is vacant and undeveloped. The ground surface cover in this area consists of exposed soil with moderate native grass and sparse weed growth. A drainage ditch ranging from 2 to 7± feet deep trends north and south between the western developed portion of the site and the eastern undeveloped portion.

Detailed topographic information was not available at the time of this report. However, based on topographic information obtained from Google Earth, the site topography ranges from 97 to 105± feet msl in the southeast and western portions of the site, respectively. Overall, the site slopes gently downward toward the west with an average gradient of less than 1± percent.

3.2 Proposed Development

SCG was provided with two preliminary site plans for the proposed development, Scheme 1 was prepared by HPA Architecture and Scheme 7C was prepared by Ware Malcomb.

Scheme 1

Based on the site plan prepared by HPA Architecture, the site will be developed with three (3) commercial/industrial building. The buildings will be identified as Buildings 1 through 3. Building

1 will be located in the western area of the site and will be 188,710± ft² in size. Building 2 will be located in the central area of the site and will be 194,270± ft² in size, and Building 3 will be located in the eastern area of the site and will be 195,260± ft² in size. Dock-high doors will be constructed along a portion of the western building walls. The buildings will be surrounded by asphaltic concrete pavements in the parking and drive lane areas, Portland cement concrete pavements in the loading dock areas. We expect the new development will also include areas of concrete flatwork and landscape planters.

Detailed structural information has not been provided. It is assumed that the new buildings will be one-story structures of tilt-up concrete construction, typically supported on conventional shallow foundations with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 100 kips and 2 to 4 kips per linear foot, respectively.

No significant amounts of below-grade construction, such as crawl spaces or new basements, are expected to be included in the proposed development. Based on the assumed topography, cuts and fills up to 2 to 3± feet are expected to be necessary to achieve the proposed site grades

Scheme 7C

Based on the site plan prepared by Ware Malcomb, the site will be developed with one commercial/industrial building with a footprint of 409,920± ft² in size, located in the north-central area of the site. The building will be constructed with dock-high doors along the south building wall. The building will be surrounded by asphaltic concrete pavements in the parking and drive lane areas, Portland cement concrete pavements in the loading dock areas. We expect the new development will also include areas of concrete flatwork and landscape planters.

Detailed structural information has not been provided. It is assumed that the new building will be a one-story structure of tilt-up concrete construction, typically supported on conventional shallow foundations with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 100 kips and 2 to 4 kips per linear foot, respectively.

No significant amounts of below-grade construction, such as crawl spaces or new basements, are expected to be included in the proposed development. Based on the assumed topography, cuts and fills up to 2 to 3± feet are expected to be necessary to achieve the proposed site grades.

3.3 Previous Study

Southern California Geotechnical, Inc. previously performed a geotechnical investigation at the subject site, previously referenced. As part of this investigation, subsurface exploration was performed including eight (8) borings (identified as B-9 through B-16) advanced to depths of 10 to 50± feet. Three (3) borings were advanced to a depth of 50± feet as part of the liquefaction evaluation. In addition to the borings, three (3) Cone Penetration Test (CPT) soundings

(identified as CPT1 through CPT-3) were advanced to depths of 66 to 100± feet at the site as part of the liquefaction evaluation. Asphaltic concrete (AC) pavements were encountered at the ground surface at Boring No. B-9, and Boring Nos. B-12 through B-16. These pavements consist of 3 to 4± inches of asphaltic concrete underlain by 3 to 7± inches of aggregate base. Crushed aggregate base, 4± inches thick, was encountered at the ground surface at Boring No. B-10. Artificial fill soils were encountered beneath the pavements (or aggregate base) at Boring Nos. B-9, B-10, and B-12, extending to depths of 2½ to 5½± feet below the existing site grades. The artificial fill soils generally consist of loose to medium dense fine to coarse sand and silty fine sand with trace medium to coarse sand and fine to coarse gravel. The fill soils possess a disturbed and mottled appearance, with some samples possessing debris, such as fragments of asphaltic concrete, resulting in their classification as artificial fill. Fill soils were encountered to depths as great a 6½± feet during the previous study SCG Job No. 17G144-1. Native alluvium was encountered at the ground surface or directly beneath the pavements at Boring Nos. B-11, B-13, and B-16, and beneath the artificial fill and/or possible fill soils at the remaining boring locations, extending to at least the maximum depth explored of 50± feet. In general, the soils at this site vary in composition and consist of interbedded layers of sands, silty sands, sandy silts, with occasional silty clay and clayey silt layers. The near surface native alluvial soils within the upper 8½ to 17± feet generally consists of interbedded layers of loose to medium dense fine sands and silty fine sands and fine sandy silts. At depths greater than 17± feet, the native alluvium generally consists of interbedded layers of loose to medium dense fine sand, silty fine sand and fine sandy silt with occasional medium stiff to very stiff silty clay and clayey silt lenses. These soils possess trace to little amounts of iron oxide staining and calcareous veining and nodules. Free water was not encountered during the drilling of any of the borings. However, water was observed in some of the borings after the completion of drilling and very moist samples were encountered at most of the borings, especially at depths greater than 13½± feet below the ground surface. At the time of completion, free water was present in Boring No. B-13 groundwater at a depth of 18± feet below the ground surface. Delayed groundwater level readings were taken at Boring Nos. B-10 and B-11 approximately two hours after completion. Water was measured in these borings at a depth 43± feet in Boring No. B-10 and at a depth of 16± feet in Boring No. B-11. The remaining boreholes were dry at the time of completion of drilling. In general, groundwater appears to be present at shallower depths in the eastern portion of the site, closer to the Los Angeles River. Groundwater was generally encountered at greater depths, if at all, in the western portion of the site (farther from the Los Angeles River). Based on the moisture contents of the recovered soil samples and the delayed water measurement taken within the open borehole, the static groundwater table on the eastern half of the site is considered to have been present at depths of 16 to 18± feet below the existing site grades at the time of subsurface exploration. In the western portion of the site, the groundwater table is considered to have been present at depths of 43± feet and greater. In the central portion of the sites, the depth to groundwater is assumed to vary between these depths.

Liquefaction evaluation performed during the previous study indicate total dynamic settlements ranging between 3.18 and 3.39± inches. The liquefaction induced differential settlements are expected to be on the order of 2± inches. Some of the potentially liquefiable soil layers are present at depths between 8 to 12± feet. These liquefiable soil layers are expected to be located within or directly beneath the zone of influence for the proposed new building foundations. In order to help mitigate the potential for excessive differential settlement of the proposed new building foundations and the potential for surface manifestations within the

proposed new building area, additional deeper overexcavation was recommended within the zones of foundation influence.

Prior to the preparation of this report SCG reviewed the previously prepared report for the subject. This report is SCG Job No. 17G144-1. The findings and data contained in the 17G144-1 report were utilized and incorporated in the 20G182-1 report.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration conducted for this phase of the project consisted of four (4) borings (identified as Boring Nos. B-17 through B-20) advanced to depths of 25 to 50± feet below existing site grades. All of the borings were logged during drilling by a member of our staff.

The borings were advanced with hollow-stem augers, by a conventional truck-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling. Relatively undisturbed samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. Samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings and previous CPT soundings are indicated on the Boring and CPT Location Plans, included as Plates 2A and 2B in Appendix A of this report. The Boring Logs, which illustrate the conditions encountered at the boring locations, as well as the results of some of the laboratory testing, are included in Appendix B. The results of the previous CPT soundings are presented in a report prepared by KTE, included in Appendix F of this report.

4.2 Geotechnical Conditions

Pavements

Asphaltic concrete (AC) pavements were encountered at the ground surface at Boring Nos. B-17 through B-19. The pavement sections at these locations consisted of 2 to 5± inches of AC with 4 to 6± inches of Aggregate Base.

Artificial Fill

Artificial fill soils were encountered beneath the existing pavements or at the ground surface at all of the boring locations, extending to depths of 4½ to 8± feet below the existing site grades. The fill soils generally consist of loose to medium dense silty fine sands with varying amounts of medium and coarse sand content. The fill soils possess a disturbed appearance, and occasionally contained AC fragments, resulting in the classification of artificial fill.

Alluvium

Native alluvial soils were encountered beneath the artificial fill soils at all boring locations, extending to at least the maximum depth explored of 50± feet below existing site grades. The near-surface alluvium generally consists of loose to medium dense silty sands, sandy silts and well-graded sands, with varying silt and clay content, extending to depths of 10 to 17± feet. Boring No. B-19 encountered a layer of medium stiff silty clay at a depth of 13½± feet below the existing site grades. At greater depths and extending to the maximum depth explored of 50± feet, the alluvial soils generally consists of medium dense silty sands and sandy silts, with varying amounts of clay content. The deeper alluvium also consists of soft to very stiff silty clay with varying amounts of sand content.

Groundwater

Free water was encountered during the drilling at two (2) of the boring locations. Water was encountered at 47± feet below existing site grades at Boring No. B-17 and at 37½± feet below existing site grades at Boring No. B-20. The remaining boreholes were dry at the time of completion of drilling. Very moist samples were also encountered at all of the borings, especially at depths greater than 12± feet below the ground surface. Using information from SCG's previous reports, along with the groundwater readings taken during this subsurface exploration, groundwater appears to be present at shallower depths in the eastern portion of the site, closer to the Los Angeles River. Groundwater was generally encountered at greater depths, if at all, in the western portion of the site (farther from the Los Angeles River). Based on the moisture contents of the recovered soil samples and the water measurement taken within the open boreholes, the static groundwater table on the eastern half of the site is considered to have been present at depths of 37½± feet below the existing site grades at the time of this subsurface exploration. In the western portion of the site, the groundwater table is considered to have been present at depths of 47± feet and greater. In the central portion of the sites, the depth to groundwater is assumed to vary between these depths.

As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the historic groundwater depths in area of the subject site is CGS Open File Report 98-26 for the South Gate 7.5 Minute Quadrangle, which indicates that the historic high groundwater level for the site was 8± feet below the ground surface.

Recent water level data was obtained from the California State Water Resources Control Board, GeoTracker, website, http://geotracker.waterboards.ca.gov/. The nearest monitoring well with readily available groundwater depth data is located approximately 1,930 feet southwest of the site. Water level readings within this monitoring well indicate a groundwater level of 40± feet below the ground surface in January 2012.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. The field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring Logs and are periodically referenced throughout this report.

Dry Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Consolidation

Selected soil samples have been tested to determine their consolidation potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-4 in Appendix C of this report. The results of consolidation testing performed during the referenced geotechnical investigation are included in Appendix H of this report.

Grain Size Analysis

Limited grain size analyses have been performed on several selected samples, in accordance with ASTM D-1140. These samples were washed over a #200 sieve to determine the percentage of fine-grained material in each sample, which is defined as the material which passes the #200 sieve. The weight of the portion of the sample retained on each screen is recorded and the percentage finer or coarser of the total weight is calculated. The results of these laboratory tests are shown on the attached boring logs.

Atterberg Limits

Atterberg Limits testing (ASTM D-4318) was performed on selected samples of various soil

strata encountered at the site. This test is used to determine the Liquid Limit and Plastic Limit of the soil. The Plasticity Index is the difference between the two limits. Plasticity Index is a general indicator of the expansive potential of the soil, with higher numbers indicating higher expansive potential. Soils with a PI greater than 25 are considered to have a high plasticity, and a high expansion potential. Nonsensitive soils with a PI greater than 18 are not considered to be susceptible to liquefaction when the moisture content of the soil is less than 80 percent of the liquid limit. The results of the Atterberg Limits testing are presented on the boring logs.

Maximum Dry Density and Optimum Moisture Content

One representative bulk sample has been tested for its maximum dry density and optimum moisture content. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557 and are presented on Plate C-5 in Appendix C of this report. This test is generally used to compare the in-situ densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil types or soil mixes may be necessary at a later date. The results of consolidation testing performed during the referenced geotechnical investigation are included in Appendix H of this report.

Expansion Index

The expansion potential of the on-site soils was determined in general accordance with ASTM D-4829. The testing apparatus is designed to accept a 4-inch diameter, 1-in high, remolded sample. The sample is initially remolded to 50± 1 percent saturation and then loaded with a surcharge equivalent to 144 pounds per square foot. The sample is then inundated with water and allowed to swell against the surcharge. The resultant swell or consolidation is recorded after a 24-hour period. The results of the EI testing are as follows:

Sample Identification	**Expansion Index**	**Expansive Potential**
B-18 @ 5 to 10 feet	3	Very Low

Soluble Sulfates

A representative sample of the near-surface soil was submitted to a subcontracted analytical laboratory for determination of soluble sulfate content. Sulfate testing was also performed as part of the previous studies, and these results are included in the table below. Soluble sulfates are naturally present in soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing are presented below and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	Sulfate Classification
B-18 @ 0 to 5 feet	0.004	Not Applicable (S0)
B-9 @ 0 to 5 feet (from previous study SCG Job No. 20G182-1)	0.012	Not Applicable (S0)
B-11 @ 0 to 5 feet (from previous study SCG Job No. 20G182-1)	0.454	Severe (S2)
B-1 @ 0 to 5 feet (from previous study SCG Job No. 17G144-1R2)	0.002	Not Applicable (S0)
B-6 @ 0 to 5 feet (from previous study SCG Job No. 17G144-1R2)	0.002	Not Applicable (S0)

Corrosivity Testing

One representative bulk sample of the near-surface soils was submitted to a subcontracted corrosion engineering laboratory to identify potentially corrosive characteristics with respect to common construction materials. Corrosivity testing was also performed as part of the previous study, and these results are included in the table below. The corrosivity testing included a determination of the electrical resistivity, pH, and chloride and nitrate concentrations of the soils, as well as other tests. The results of some of these tests are presented below.

Sample Identification	Saturated Resistivity (ohm-cm)	pH	Chlorides (mg/kg)	Nitrates (mg/kg)
B-18 @ 0 to 5 feet	6,400	8.1	5.1	8.7
B-9 @ 0 to 5 feet (from previous study SCG Job No. 20G182-1)	1,920	7.6	7.8	240
B-9 @ 0 to 5 feet (from previous study SCG Job No. 20G182-1)	720	7.7	38	23

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. The recommendations contained in this report should be taken into the design, construction, and grading considerations.

The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record. The recommendations are provided with the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to verify compliance with these recommendations. Maintaining Southern California Geotechnical, Inc., (SCG) as the geotechnical consultant from the beginning to the end of the project will provide continuity of services. The geotechnical engineering firm providing testing and observation services shall assume the responsibility of Geotechnical Engineer of Record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structure should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

Seismic Design Parameters

The California Building Code (CBC) provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of the structure including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2019 edition of the California Building Code (CBC), which was adopted on January 1, 2020.

The 2019 CBC Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool, a web-based software application available at the website www.seismicmaps.org. This software application calculates seismic design parameters in accordance with several building code reference documents, including ASCE 7-16, upon which the 2019 CBC is based. The application utilizes a database of risk-targeted maximum considered earthquake (MCE_R) site accelerations at 0.01-degree intervals for each of the code documents. The tables below were created using data obtained from the application. The output generated from this program is included as Plate E-1 in Appendix E of this report.

The 2019 CBC requires that a site-specific ground motion study be performed in accordance with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than 0.2. However, Section 11.4.8 of ASCE 7-16 also indicates an exception to the requirement for a site-specific ground motion hazard analysis for certain structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) indicates that "In general, this exception effectively limits the requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." **Based on our understanding of the proposed development, the seismic design parameters presented below were calculated assuming that the exception in Section 11.4.8 applies to the proposed structure at this site. However, the structural engineer should verify that this exception is applicable to the proposed structure.** Based on the exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 16.4.4 of the 2019 CBC.

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.745
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.623
Site Class	---	D*
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.745
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	1.059
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	1.163
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.706

*The 2019 CBC requires that Site Class F be assigned to any profile containing soils vulnerable to potential failure or collapse under seismic loading, such as liquefiable soils. For Site Class F, the site *coefficients* are to be determined in accordance with Section 11.4.7 of ASCE 7-16. However, Section 20.3.1 of ASCE 7-16 indicates that for sites with structures having a fundamental period of vibration equal to or less than 0.5 seconds, the site coefficient factors (F_a and F_v) may be determined using the standard procedures. The seismic design parameters tabulated above were calculated using the site coefficient factors for Site Class D, assuming that the fundamental period of the structure(s) is less than 0.5 seconds. However, the results of the liquefaction evaluation indicate that the subject site is underlain by potentially liquefiable soils. Therefore, if the proposed structures have a fundamental period greater than 0.5 seconds, a site-specific seismic hazards analysis will be required and additional subsurface exploration will be necessary.

It should be noted that the site coefficient F_v and the parameters S_{M1} and S_{D1} were not included in the SEAOC/OSHPD Seismic Design Maps Tool output for the 2019 CBC. We calculated these parameters-based on Table 1613.2.3(2) in Section 16.4.4 of the 2019 CBC using the value of S_1 obtained from the Seismic Design Maps Tool, assuming that a site-specific ground motion hazards analysis is not required for the proposed buildings at this site.

Site Class D was determined for this site using shear wave velocity data for the on-site soils obtained at CPT Location CPT-1. Shear wave velocity measurements were performed at 10±-foot intervals at this CPT location, beginning at a depth of approximately 10 feet, through the maximum depth explored of approximately 100 feet. The average shear wave velocity measurement for the upper 100 feet at this CPT location exceeds 600 feet per second, resulting in our classification of this site as Site Class D. These measurements are included in the CPT report dated August 19, 2020 in Appendix F of this report. However, as discussed above and based on the presence of potentially liquefiable soil layers within the upper 50± feet, **this site should be classified as Site Class F if the proposed structure possesses a fundamental period of vibration greater than 0.5 seconds.**

Ground Motion Parameters

For the purposes of the liquefaction analysis performed for this study, we utilized a site acceleration consistent with maximum considered earthquake ground motions, as required by the 2019 CBC. The peak ground acceleration (PGA) was determined in accordance with Section 11.8.3 of ASCE 7-16. The parameter PGA_M is the maximum considered earthquake geometric mean (MCE_G) PGA, multiplied by the appropriate site coefficient from Table 11.8-1 of ASCE 7-16. The web-based software application SEAOC/OSHPD Seismic Design Maps Tool (described in the previous section) was used to determine PGA_M, which is 0.82g. A portion of the program output is included as Plate E-1 of this report. An associated earthquake magnitude was obtained from the USGS Unified Hazard Tool, Interactive Deaggregation application available on the USGS website. The deaggregated modal magnitude is 7.3, based on the peak ground acceleration and soil classification D.

Liquefaction

Research of the map, Earthquake Zones of Required Investigation, South Gate Quadrangle, published by the California Geological Survey, indicates that the site is located in a designated liquefaction hazard zone. Therefore, the scope of this study included liquefaction evaluation in order to investigate the site-specific liquefaction potential.

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include

groundwater table elevation, soil type and plasticity characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Non-sensitive clayey (cohesive) soils which possess a plasticity index of at least 18 (Bray and Sancio, 2006) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The liquefaction analysis was conducted in accordance with the requirements of Special Publication 117A (CDMG, 2008), and currently accepted practice (SCEC, 1997). The liquefaction potential of the subject site was evaluated using the empirical method developed by Boulanger and Idriss (Boulanger and Idriss, 2008, 2014). This method predicts the earthquake-induced liquefaction potential of the site based on a given design earthquake magnitude and peak ground acceleration at the subject site. This procedure essentially compares the cyclic resistance ratio (CRR) [the cyclic stress ratio required to induce liquefaction for a cohesionless soil stratum at a given depth] with the earthquake-induced cyclic stress ratio (CSR) at that depth from a specified design earthquake (defined by a peak ground surface acceleration and an associated earthquake moment magnitude). CRR is determined as a function of the corrected CPT tip stress, q_{c1N-cs}. The factor of safety against liquefaction is defined as CRR/CSR. Based on Special Publication 117A, a factor of safety of at least 1.3 is required in order to demonstrate that a given soil stratum is non-liquefiable. Additionally, in accordance with Special Publication 117A, clayey soils which do not meet the criteria for liquefiable soils defined by Bray and Sancio (2006), loose soils with a plasticity index (PI) less than 12 and moisture content greater than 85 percent of the liquid limit, are considered to be insusceptible to liquefaction. Non-sensitive soils with a PI greater than 18 are also considered non-liquefiable.

As part of the previous liquefaction evaluation, CPT-1 through CPT-3, inclusive, were extended to a depth of at least 50 feet. Borings were also drilled in close proximity to the CPT locations to provide physical samples for further analysis and correlation with the CPT data. The liquefaction potential for the on-site soils was evaluated using the computer program CLiq V3.0.3.2, which was developed by Geologismiki, copyright 2007. The analysis method is based on Boulanger and Idriss 2014. The liquefaction potential of the site was analyzed utilizing a PGA_M of 0.82g for a magnitude 7.3 seismic event. The potential settlements that could occur as a result of liquefaction for each of the potentially liquefiable layers was calculated. A copy of the program output is presented in Appendix G of this report.

Conclusions and Recommendations

The results of the previous liquefaction analysis have identified potentially liquefiable soils at all three (3) of the CPT soundings performed at the site. Soils which are located above the historic groundwater table or possess factors of safety of at least 1.3 are considered to be non-liquefiable. Several clayey strata encountered between depths of 8 and 50± feet are considered to be non-liquefiable due to their cohesive characteristics, as interpreted by the CPT. Several Atterberg limits tests were also performed on representative soil samples recovered at the boring locations, in order to confirm the cohesive characteristics of the on-site soils. Settlement analyses were conducted for each of the potentially liquefiable strata. The total dynamic

settlement for each CPT location, based on the results of the dynamic settlement analyses (presented in Appendix G) are presented below:

- CPT-1: 3.18± inches
- CPT-2: 3.20± inches
- CPT-3: 3.39± inches

Based on these total settlements, differential settlements of up to 2± inches should be expected to occur during a liquefaction inducing seismic event. The estimated differential settlement could be assumed to occur across a distance of 100 feet, indicating a maximum angular distortion of about 0.002 inches per inch.

Shallow Liquefiable Layers

The CPTs identified liquefiable soils between depths of 8 to 12± feet below the existing site grades (as well as greater depths). Additionally, several of the borings encountered loose silty sands and sandy silts between depths of 8 to 12± feet. Based on these considerations, we expect that liquefiable soils will be present within the influence zones of new foundations. Additionally, based on Ishihara's criteria, liquefaction of the near surface soils could result in surface manifestations, including sand boils.

The consequences of soil liquefaction occurring within the zone of influence of a foundation can result in the loss of bearing capacity and/or punching failure. An isolated column footing with typical structural loads could settle rapidly during a liquefaction-inducing seismic event. The magnitude of the settlement below a loaded column can be much higher than the dynamic settlements presented above for free-field conditions.

Based on these considerations, we recommend that remedial grading be performed within the area of the proposed building(s) in order mitigate the potential for liquefaction within the influence zones of new conventional shallow foundations. Detailed remedial grading recommendations are presented in Section 6.3 of this report. The recommended remedial grading will help protect the structure against the effects of bearing capacity loss and punching failures of isolated column footings due to the presence of potentially liquefiable soils present within the influence zones of new foundations.

Based on the recommended remedial grading, this report provides recommendations to support the new building(s) on conventional shallow foundations. Such a foundation system can be designed to resist the effects of the anticipated differential settlements, to the extent that the structure would not catastrophically fail. Designing the proposed structure to remain completely undamaged during a major seismic event is not considered to be economically feasible. Based on this understanding, the use of a shallow foundation system is considered to be the most economical means of supporting the proposed structure.

In order to support the proposed structure(s) on shallow foundations (such as spread footings) the structural engineer should verify that the structure(s) would not catastrophically fail due to the predicted dynamic differential settlements. Any utility connections to the structure should be

designed to withstand the estimated differential settlements. It should also be noted that minor to moderate repairs, including re-leveling, restoration of utility connections, repair of damaged drywall and stucco, etc., would likely be required after occurrence of the liquefaction-induced settlements.

The use of a shallow foundation system in conjunction with the recommended remedial grading, as described in this report, is typical for buildings of the type planned for this site, where they are underlain by the extent of liquefiable soils encountered at this site. The post-liquefaction damage that could occur within the building(s) proposed for this site will also be typical of similar buildings in the vicinity of this project. However, if the owner determines that this level of potential damage is not acceptable, other geotechnical and structural options are available, including the use of ground improvement, deep foundations or a mat foundation. If detailed recommendations regarding these other options are desired, they can be provided at the owner's request.

6.2 Geotechnical Design Considerations

General

The site is generally underlain by artificial fill soils, extending to depths of 4½ to 8± feet at most of the boring locations. These soils possess variable densities, variable composition, minor debris content, and a disturbed, mottled appearance. Additionally, no documentation regarding the placement and compaction of these soils has been provided. The fill soils are therefore considered to be undocumented fill. The fill soils are underlain by native alluvium which possesses variable strengths and composition. Based on these conditions, the artificial fill materials and the near-surface alluvium, in their present condition, are not considered suitable for support of the foundations and floor slabs of the new structure. Remedial grading will be necessary within the proposed building area(s) to remove the artificial fill soils in their entirety as well as a portion of the near-surface alluvium, and to replace these soils as compacted structural fill.

As discussed in the previous section of this report, potentially liquefiable soils were identified at this site. **Additional remedial grading is recommended within the foundation influence zones of the proposed building area(s) in order to help mitigate the potential for excessive liquefaction-induced differential settlements.** The presence of the recommended layer of newly placed compacted structural fill above the remaining liquefiable soils will help to reduce potential surface manifestations during a liquefaction-inducing seismic event. The foundation design recommendations presented in the subsequent sections of this report also contain recommendations to provide additional rigidity in order to reduce the potential effects of differential settlement that could occur as a result of liquefaction.

Settlement

The recommended remedial grading will remove the existing fill soils from the new building area(s) as well as a portion of the variable strength compressible alluvium and replace these materials as compacted structural fill. The native soils that will remain in place below the

recommended depth of overexcavation will not be subject to significant load increases from the foundations of the new structure(s). Provided that the recommended remedial grading is completed, the post-construction settlements of the proposed structure is expected to be within tolerable limits.

On-site Stormwater Infiltration

Based on the presence of shallow liquefiable soil layers and the relatively shallow historic high groundwater level of 8± feet, we do not recommend that on-site stormwater infiltration systems be used at this site.

Soluble Sulfates

The results of the soluble sulfate testing indicate that one of the selected samples from the previous report **contain a concentration of soluble sulfates that correspond to Sulfate Class S2, and possess a severe potential to attack concrete**, in accordance with the American Concrete Institute (ACI) Publication 318-14 Building Code Requirements for Structural Concrete and Commentary, Section 4.3. Therefore, it is recommended that a sulfate-resistant concrete mix design be utilized for the foundations and floor slabs at this site. In accordance with the ACI requirements, it is recommended that this concrete incorporate the following characteristics:

- Cement Type: V (Five)
- Minimum Compressive Strength (f'_c) = 4,500 lbs/in^2
- Maximum Water/Cement Ratio: 0.45

It is recommended that additional sulfate testing be performed at the completion of rough grading to verify the concentrations which are present in the actual building pad subgrade soils.

Corrosion Potential

The results of the electrical resistivity and pH testing indicate that a sample of the on-site soils has resistivity values ranging from 720 to 6,400 ohm-cm, and pH values ranging from 7.6 to 8.1. These test results have been evaluated in accordance with guidelines published by the Ductile Iron Pipe Research Association (DIPRA). The DIPRA guidelines consist of a point system by which characteristics of the soils are used to quantify the corrosivity characteristics of the site. Resistivity and pH are two of the five factors that enter into the evaluation procedure. Redox potential, relative soil moisture content and sulfides are also included. Although sulfide testing was not part of the scope of services for this project, we have evaluated the corrosivity characteristics of the on-site soils using resistivity, pH and moisture content. **Based on these factors, and utilizing the DIPRA procedure, some of the on-site soils are considered to be severely corrosive to ductile iron pipe. Therefore, polyethylene protection is expected to be required for cast iron or ductile iron pipes.** It should be noted that SCG does not practice in the field of corrosion engineering, and therefore, the client may also wish to contact a corrosion engineer to provide a more thorough evaluation.

Relatively low concentrations of chlorides, 5.1 to 38 mg/kg, were detected in the samples submitted for corrosivity testing. In general, soils possessing chloride concentrations in excess

of 500 parts per million (ppm) are considered to be corrosive with respect to steel reinforcement within reinforced concrete. Based on the relatively low chloride concentration in the tested sample, the site is considered to have a C1 chloride exposure in accordance with the American Concrete Institute (ACI) Publication 318 Building Code Requirements for Structural Concrete and Commentary. Therefore, a specialized concrete mix design for protection against chloride exposure is not considered warranted.

Nitrates

Nitrates present in soil can be corrosive to copper tubing at concentrations greater than 50 mg/kg. The tested samples possess nitrate concentrations of 8.7 to 240 mg/kg. **Based on these test results, the on-site soils are considered to be corrosive to copper pipe. Since SCG does not practice in the area of corrosion engineering, we recommend that the client contact a corrosion engineer to provide recommendations for the protection of copper tubing/pipe in contact with the on-site soils. Alternatively, consideration should be given to perform a more extensive nitrate content study to help more precisely determine the nitrate concentration in the on-site soils throughout the proposed building footprint. This may help minimize the costs associated with the mitigation of high-nitrate-content soils.**

Expansion

Laboratory testing performed on a representative sample of the near surface soils indicates that these materials are very low expansive (EI = 3). Based on this test result, no special design considerations for expansive soils are considered warranted. However, it is recommended that additional expansion index testing be conducted at the completion of rough grading to verify the expansion potential of the as-graded building pad.

Shrinkage/Subsidence

Removal and recompaction of the near-surface native alluvial soils is estimated to result in an average shrinkage of 12 to 20 percent. However, the estimated shrinkage of the individual soil layers at the site is highly variable, locally ranging from 5 to 21 percent shrinkage. It should be noted that the potential shrinkage estimate is based on dry density testing performed on small-diameter samples taken at the boring locations. If a more accurate and precise shrinkage estimate is desired, SCG can perform a shrinkage study involving several excavated test-pits where in-place densities are determined using in-situ testing methods instead of laboratory density testing on small-diameter samples. Please contact SCG for details and a cost estimate regarding a shrinkage study, if desired.

Minor ground subsidence is expected to occur in the soils below the zone of removal, due to settlement and machinery working. The subsidence is estimated to be 0.15± feet.

These estimates are based on previous experience and the subsurface conditions encountered at the boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

As discussed previously, detailed foundation plans and grading plans were not available at the time of this report. It is therefore recommended that we be provided with copies of the plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Site Grading Recommendations

The grading recommendations presented below are based on the subsurface conditions encountered at the boring locations and our understanding of the proposed development. We recommend that all grading activities be completed in accordance with the Grading Guide Specifications included as Appendix D of this report, unless superseded by site-specific recommendations presented below.

Site Stripping and Demolition

Initial site stripping should include removal of all surficial vegetation. Any organic topsoil and tree root masses should be removed during site stripping. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered.

The proposed development will require extensive demolition of the existing buildings and pavements. Additionally, any existing improvements that will not remain in place for use with the new development should be removed in their entirety. This should include all foundations, floor slabs, utilities, and any other subsurface improvements associated with the existing structures. The existing pavements are not expected to be reused with the new development. Debris resultant from demolition should be disposed of off-site. Alternatively, concrete and asphalt debris may be pulverized to a maximum 2-inch particle size, well mixed with the on-site soils, and incorporated into new structural fills. Asphalt and concrete debris may also be crushed to a 2- to 4-inch particle size and used as stabilization material for use at the base of the recommended overexcavation, as discussed in a subsequent section of this report. These materials may also be crushed and made into miscellaneous base for use in the proposed pavement areas**.**

Detailed structural information regarding the existing buildings has not been provided to our office. Therefore, the foundation systems supporting the existing buildings are presently unknown by SCG. If any of the existing buildings are supported on deep foundation systems, the deep foundation elements located within the proposed building area(s) should be cut off at a depth of at least 2 feet below the bottom of the planned overexcavation. Where drilled pier or driven pile foundations are encountered within proposed pavement areas, they should be cut off at a depth of at least 2 feet below the proposed pavement subgrade or at a depth of at least 1 foot below the bottom of any planned utilities.

Treatment of Existing Soils: Building Pad(s)

Remedial grading should be performed within the new building pad area(s) to remove all of the undocumented fill soils and a portion of the near surface native alluvium. Based on the

conditions encountered at the borings, these fill soils extend to depths of 4½ to 8± feet below the existing site grades.

As previously discussed in Sections 6.1 and 6.2 of this report, potentially liquefiable soil layers were identified at all of the CPT locations between depths of 8 to at 12± feet below the existing site grades, as well as at greater depths. **In order to help mitigate the potential for excessive differential settlements due to liquefaction of the near surface soils, the influence zones should be overexcavated to a depth of at least 12 feet below the existing site grades, and to a depth equal to at least 1½ times the footing width below foundation bearing grade for spread footings and at least 2 times the footing width below the foundation bearing grade for continuous footings and a to a depth of at least 5 feet below all foundation bearing grades, whichever is greater.**

The existing soils within the remaining areas of the building pad(s), outside of the foundation influence zones, are recommended to be overexcavated to a depth of at least 6 feet below existing grade, and to a depth of at least 5 feet below the proposed building pad subgrade elevations, in non-foundation areas of the building(s). However, in order to avoid abrupt transitions between the overexcavation depth for foundation and non-foundation areas of the building(s), the bottom of the overexcavation should be sloped no steeper than 4h:1v in these transition areas.

The overexcavation areas should extend at least 5 feet beyond the building and foundation perimeters and to an extent equal to the depth of fill below the foundations. If the proposed structure(s) incorporates any exterior columns (such as for a canopy or overhang) the overexcavation should also encompass these areas.

Following completion of the overexcavation, the subgrade soils within the building area(s) should be evaluated by the geotechnical engineer to verify their suitability to serve as the structural fill subgrade, as well as to support the foundation loads of the new structure(s). This evaluation should include proofrolling and probing to identify any soft, loose or otherwise unstable soils that must be removed. Some localized areas of deeper excavation may be required if additional fill materials or loose, porous, or low density native soils are encountered at the base of the overexcavation.

Based on the conditions encountered at the exploratory boring locations, very moist soils will be encountered at or near the base of the recommended overexcavation. Stabilization of the exposed overexcavation subgrade soils is expected to be necessary. Scarification and air drying of these materials may be sufficient to obtain a stable subgrade, but it is expected that an extended period of drying with favorable weather conditions may be required. However, if highly unstable soils are identified, and if the construction schedule does not allow for delays associated with drying, mechanical stabilization, usually consisting of coarse crushed stone or geotextile, will likely be necessary. In this event, the geotechnical engineer should be contacted for supplementary recommendations. Typically, an unstable subgrade can be stabilized using a suitable geotextile fabric, such as Mirafi RS580I, and/or a 12 to 18-inch thick layer of coarse (2 to 4-inch particle size) crushed stone. Crushed asphalt and concrete debris resultant from demolition could also be used as a subgrade stabilization material if crushed to particle sizes between 2 and 4 inches. Other options, including lime or cement treatment are also available. Typically, an unstable subgrade may be

stabilized by treating the upper 12 to 18 inches of subgrade material with cement to a concentration of 4 to 6 percent (by dry weight of soil).

After a suitable overexcavation subgrade has been achieved, the exposed soils should be scarified to a depth of at least 12 inches, moisture treated to 0 to 4 percent above optimum moisture content, and compacted. The previously excavated soils may then be replaced as compacted structural fill.

As an alternative to the relatively deep overexcavation which is discussed above, it may be feasible to limit or eliminate the overexcavation of the proposed building area(s) by implementing ground improvements at the site. Some ground improvement methods that can be considered are deep dynamic compaction (DDC), rammed aggregate piers (RAP), and deep mixing (DM).

If ground improvement measures are considered, ground improvement should be designed to reduce total seismic settlements to less than 4 inches. The actual design of the ground improvement method should be performed by the design-build contractor who specializes in and is experienced with these methods. Ground improvement methods are performed by specialty contractors on a design–build basis where the contractors are ultimately responsible for their designs. The geotechnical engineer should be provided the ground improvement plans for review

The precise groundwater level was not accurately measured at the site based on the presence of low-strength, caving, clayey soils. If a precise groundwater level is required in order to properly design the ground improvement program, then it is recommended that the groundwater levels at the site be determined using several piezometers prior to the design of the ground improvement program.

Treatment of Existing Soils: Retaining Walls and Site Walls

The existing soils within the areas of proposed retaining and non-retaining site walls should be overexcavated to a depth of at least 3 feet below foundation bearing grade and replaced as compacted structural fill as discussed above for the proposed building pad(s). Any undocumented fill soils within any of these foundation areas should be removed in their entirety. The overexcavation areas should extend at least 5 feet beyond the foundation perimeters, and to an extent equal to the depth of fill below the new foundations. Any erection pads used to construct tilt-up panel walls are considered to be part of the foundation system. These overexcavation recommendations apply to erection pads also. The overexcavation subgrade soils should be evaluated by the geotechnical engineer prior to scarifying, moisture conditioning, and recompacting the upper 12 inches of exposed subgrade soils, as discussed for the building area(s). The previously excavated soils may then be replaced as compacted structural fill.

If the full lateral extent of overexcavation is not achievable for the proposed walls, the foundations should be redesigned using a lower bearing pressure. The geotechnical engineer of record should be contacted for recommendations pertaining to this type of condition.

Treatment of Existing Soils: Parking and Drive Areas

Based on economic considerations, overexcavation of the existing soils in the new parking and drive areas is not considered warranted, with the exception of areas where lower strength, or unstable soils are identified by the geotechnical engineer during grading. Subgrade preparation in the new parking and drive areas should initially consist of removal of all soils disturbed during stripping and demolition operations.

The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. Any such materials should be removed to a level of firm and unyielding soil. The exposed subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 0 to 4 percent above the optimum moisture content, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength surficial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within the proposed parking areas. The grading recommendations presented above do not completely mitigate the extent of the existing fill soils and low strength alluvium in the parking areas. As such, settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the removed soils replaced as compacted structural fill.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 0 to 4 percent above the optimum moisture content, and compacted. Drying of the some of the on-site soils will be required before placement and compaction as fill.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2019 CBC and the grading code of the city of South Gate.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Imported Structural Fill

All imported structural fill should consist of very low expansive (EI < 20), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve).

Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of South Gate. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near surface soils generally consist of a variety of materials, including sands, silts, and some clays. Some of these materials may be subject to caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, temporary excavation slopes should be made no steeper than 2h:1v. The contractor should take all necessary precautions during grading and foundation construction to prevent damage to improvements which are adjacent to the proposed development. Deeper excavations may require some form of external stabilization such as shoring or bracing. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. All excavation activities on this site should be conducted in accordance with Cal-OSHA regulations.

Moisture Sensitive Subgrade Soils

The near surface fill soils generally consist of sands, silty sands, sandy silts, and occasional silty clays. Based on the silt and clay content, some of these soils will become unstable if exposed to significant moisture infiltration or disturbance by construction traffic. If grading occurs during a period of relatively wet weather, an increase in subgrade instability should also be expected. The site should, therefore, be graded to prevent ponding of surface water and to prevent water from running into excavations.

As discussed in Section 6.3 of this report, unstable subgrade soils are likely to be encountered at the base of the overexcavations within the proposed building area(s). The extent of unstable subgrade soils will to a large degree depend on methods used by the contractor to avoid adding additional moisture to these soils or disturbing soils which already possess high moisture contents. If grading occurs during a period of relatively wet weather, an increase in subgrade instability should also be expected.

If the construction schedule dictates that site grading will occur during a period of wet weather, allowances should be made for costs and delays associated with drying the on-site soils or import of a drier, less moisture sensitive fill material. Grading during wet or cool weather may also increase the depth of overexcavation in the pad area(s) as well as the need for and/or the thickness of the crushed stone stabilization layer, discussed in Section 6.3 of this report.

Groundwater

Based on the conditions encountered in the borings performed during this phase of investigation, the groundwater table is considered to have existed at depths ranging between 37½± feet in the eastern portion of the site to depths greater than 47± feet in the western portion of the site at the time of subsurface exploration. Based on the current groundwater depths, we do not expect that groundwater will affect excavations for the new foundations or utilities. However, the previous study encountered groundwater at depths as shallow as 16± feet below the existing site grades. Due to the groundwater depth variability, consideration should be given to installing piezometers at the site to more accurately determine the depth to groundwater. Additionally, it should be noted that the historic high groundwater level for this site is 8± feet below the existing site grades.

6.5 Foundation Design and Construction

Based on the preceding grading recommendations, it is assumed that the new building pad(s) will be underlain by structural fill soils used to replace undocumented fill soils and a portion of the underlying potentially compressible and potentially liquefiable alluvium. The new structural fill soils are expected to extend to a depth of at least 1½ times the width of the foundation below foundation bearing grade beneath spread footings and to a depth of at least 2 times the foundation width below the foundation bearing grade for continuous footings. Based on this subsurface profile and based on the design considerations presented in Section 6.1 of this report, the proposed structure(s) may be supported on shallow foundations.

Building Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 lbs/ft^2.
- Minimum wall/column footing width: 14 inches/24 inches.
- Minimum longitudinal steel reinforcement within strip footings: Six (6) No. 5 rebars (3 top and 3 bottom) due to the liquefaction potential of the on-site soils.
- Minimum foundation embedment: 12 inches into suitable structural fill soils, and at least 18 inches below adjacent grade.

- It is recommended that the perimeter building foundations be continuous across all exterior doorways. Any flatwork adjacent to the exterior doors should be doweled into the perimeter foundations in a manner determined by the structural engineer.

The allowable bearing pressures presented above may be increased by 1/3 when considering short duration wind loads. **However, we do not recommend that an increase in allowable bearing pressure be used when considering seismic loads because some of the soils directly beneath the foundation influence zone may liquefy during the design level earthquake.** The actual design of the foundations should be determined by the structural engineer.

Foundation Construction

The foundation subgrade soils should be evaluated at the time of overexcavation, as discussed in Section 6.3 of this report. It is further recommended that the foundation subgrade soils be evaluated by the geotechnical engineer immediately prior to steel or concrete placement. Within the new building area(s), soils suitable for direct foundation support should consist of newly placed structural fill, compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Any unsuitable materials should be removed to a depth of suitable bearing compacted structural fill or competent native alluvial soils, with the resulting excavations backfilled with compacted fill soils. As an alternative, lean concrete slurry (500 to 1,500 psi) may be used to backfill such isolated overexcavations.

The foundation subgrade soils should also be properly moisture conditioned to 0 to 4 percent of the Modified Proctor optimum, to a depth of at least 12 inches below bearing grade**. Since it is typically not feasible to increase the moisture content of the floor slab and foundation subgrade soils once rough grading has been completed, care should be taken to maintain the moisture content of the building pad subgrade soils throughout the construction process.**

Estimated Foundation Settlements

Post-construction total and differential settlements of shallow foundations designed and constructed in accordance with the previously presented recommendations are estimated to be less than 1.0 and 0.5 inches, respectively. Differential movements are expected to occur over a 30-foot span, thereby resulting in an angular distortion of less than 0.002 inches per inch. These settlements are in addition to the liquefaction-induced settlements previously discussed in Section 6.1 of this report. However, the likelihood of these two settlements combining is considered remote. The static settlements are expected to occur in a relatively short period of time after the building loads being applied to the foundations, during and immediately subsequent to construction.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 300 lbs/ft^3
- Friction Coefficient: 0.30

These are allowable values, and include a factor of safety. When combining friction and passive resistance, the passive pressure component should be reduced by one-third. These values assume that footings will be poured directly against compacted structural fill soils. The maximum allowable passive pressure is 2,500 lbs/ft^2.

6.6 Floor Slab Design and Construction

Subgrades which will support new floor slab(s) should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Based on the anticipated grading which will occur at this site, and based on the design considerations presented in Section 6.1 of this report, the floor of the new structure(s) may be constructed as a conventional slab-on-grade, supported on newly placed structural fill, extending to a depth of at least 5 feet below finished pad grade. Based on geotechnical considerations, the floor slab(s) may be designed as follows:

- Minimum slab thickness: 7 inches.
- Minimum slab reinforcement: Reinforcement of the floor slab should consist of No. 3 bars at 16-inches on center in both directions due to the presence of potentially liquefiable soils. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.
- Modulus of Subgrade Reaction: 100 psi/in
- If any moisture sensitive floor coverings will be used, then minimum slab underlayment should consist of a moisture vapor barrier constructed below any areas where such moisture sensitive floor coverings are expected. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview.
- Moisture condition the floor slab subgrade soils to 0 to 4 percent of the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.
- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

- The floor slabs should be structurally connected to the foundations as detailed by the structural engineer.

The actual design of the floor slabs should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Exterior Flatwork Design and Construction

Subgrades which will support new exterior slabs-on-grade for sidewalks, patios, and other concrete flatwork, should be prepared in accordance with the recommendations contained in the ***Grading Recommendations*** section of this report. Based on geotechnical considerations, exterior slabs on grade may be designed as follows:

- Minimum slab thickness: 4½ inches.
- The flatwork at building entry areas should be structurally connected to the perimeter foundation that is recommended to span across the door opening. This recommendation is designed to reduce the potential for differential movement at this joint.
- Moisture condition the slab subgrade soils to at least 0 to 4 percent above the optimum moisture content, to a depth of at least 12 inches. Adequate moisture conditioning should be verified by the geotechnical engineer 24 hours prior to concrete placement.
- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.
- Control joints should be provided at a maximum spacing of 8 feet on center in two directions for slabs and at 6 feet on center for sidewalks. Control joints are intended to direct cracking. Minor cracking of exterior concrete slabs on grade should be expected.

Expansion or felt joints should be used at the interface of exterior slabs on grade and any fixed structures to permit relative movement

6.8 Retaining Wall Design and Construction

New retaining walls are expected to be necessary in the truck court area. Additionally, although not indicated on the site plan, the proposed development may require some small retaining walls (less than 5± feet in height) to facilitate the new site grades.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. We have provided parameters assuming the use of on-site soils for retaining wall backfill. The near surface soils generally consist of sandy silts, silty sands, and occasional silty clay. Based on their classifications, the sandy silt and silty sand materials are expected to possess a friction angle of at least 30

degrees when compacted to 90 percent of the ASTM-1557 maximum dry density. **However, silty clay soils should not be used to backfill retaining walls because they likely possess higher expansion potential and lower strengths than the majority of the near-surface soils at the site.**

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		Soil Type
		On-Site Sands and Silty Sands
Internal Friction Angle (ϕ)		30°
Unit Weight		129 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	43 lbs/ft^3
	Active Condition (2h:1v backfill)	69 lbs/ft^3
	At-Rest Condition (level backfill)	65 lbs/ft^3

Regardless of the backfill type, the walls should be designed using a soil-footing coefficient of friction of 0.30 and an equivalent passive pressure of 300 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In addition to the lateral earth pressures presented in the previous section, retaining walls which are more than 6 feet in height should be designed for a seismic lateral earth pressure, in accordance with the 2019 CBC. Based on the current site plan, it is not expected that any walls

in excess of 6 feet in height will be required for this project. If any such walls are proposed, our office should be contacted for supplementary design recommendations.

Backfill Material

Retaining wall backfill soils should consist of imported select structural fill possessing an expansion index less than 20. All backfill material placed within 3 feet of the back wall face should have a particle size no greater than 3 inches. The retaining wall backfill materials should be well graded.

It is recommended that a minimum 1 foot thick layer of free-draining granular material (less than 5 percent passing the No. 200 sieve) be placed against the face of the retaining walls. This material should extend from the top of the retaining wall footing to within 1 foot of the ground surface on the back side of the retaining wall. This material should be approved by the geotechnical engineer. In lieu of the 1 foot thick layer of free-draining material, a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved equivalent), which is specifically designed for use behind retaining walls, may be used. If the layer of free-draining material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The layer of free draining granular material should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering-controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 4-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 8-foot on-center spacing. The weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system.

Weep holes or a footing drain will not be required for building stem walls.

6.9 Pavement Design Parameters

Site preparation in the pavement area should be completed as previously recommended in the ***Site Grading Recommendations*** section of this report. The subsequent pavement recommendations assume proper drainage and construction monitoring, and are based on either PCA or CALTRANS design parameters for a twenty (20) year design period. However, these designs also assume a routine pavement maintenance program to obtain the anticipated 20-year pavement service life.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of scarified, thoroughly moisture conditioned and recompacted existing soils. The near-surface soils consist of various soil materials including fine sands, silty sands, and occasional sandy silts. These soils are generally considered to possess good pavement support characteristics with estimated R-values ranging from 30 to 50. The subsequent pavement design is therefore based upon an assumed R-value of 30. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and compacted under engineering controlled conditions. It is recommended that R-value testing be performed after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20-year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3
7.0	11
8.0	35

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R = 30)					
Materials	**Thickness (inches)**				
	Auto Parking (TI = 4.0)	Auto Drive Lanes (TI = 5.0)	Truck Traffic		
			(TI = 6.0)	(TI = 7.0)	(TI = 8.0)
Asphalt Concrete	3	3	3½	4	5
Aggregate Base	3	6	8	10	11
Compacted Subgrade	12	12	12	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS (R = 30)				
Materials	**Thickness (inches)**			
	Auto Parking & Drives (TI = 5.0)	Truck Traffic		
		(TI = 6.0)	(TI = 7.0)	(TI = 8.0)
PCC	5	5	5½	6½
Compacted Subgrade (95% Relative Compaction)	12	12	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. Any reinforcement within the PCC pavements should be determined by the project structural engineer. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness.

7.0 GENERAL COMMENTS

This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

8.0 REFERENCES

California Division of Mines and Geology (CDMG), "Guidelines for Evaluating and Mitigating Seismic Hazards in California," State of California, Department of Conservation, Division of Mines and Geology, Special Publication 117A, 2008.

Idriss, I. M. and Boulanger, R.W., "Soil Liquefaction During Earthquakes", Earthquake Engineering Research Institute, 2008.

National Research Council (NRC), "Liquefaction of Soils During Earthquakes," Committee on Earthquake Engineering, National Research Council, Washington D. C., Report No. CETS-EE-001, 1985.

Seed, H. B., and Idriss, I. M., "Simplified Procedure for Evaluating Soil Liquefaction Potential using field Performance Data," Journal of the Soil Mechanics and Foundations Division, American Society of Civil Engineers, September 1971, pp. 1249-1273.

Sadigh, K., Chang, C. –Y., Egan, J. A., Makdisi. F., Youngs, R. R., "*Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data*", Seismological Research Letters, Seismological Society of America, Volume 68, Number 1, January/ February 1997, pp. 180-189.

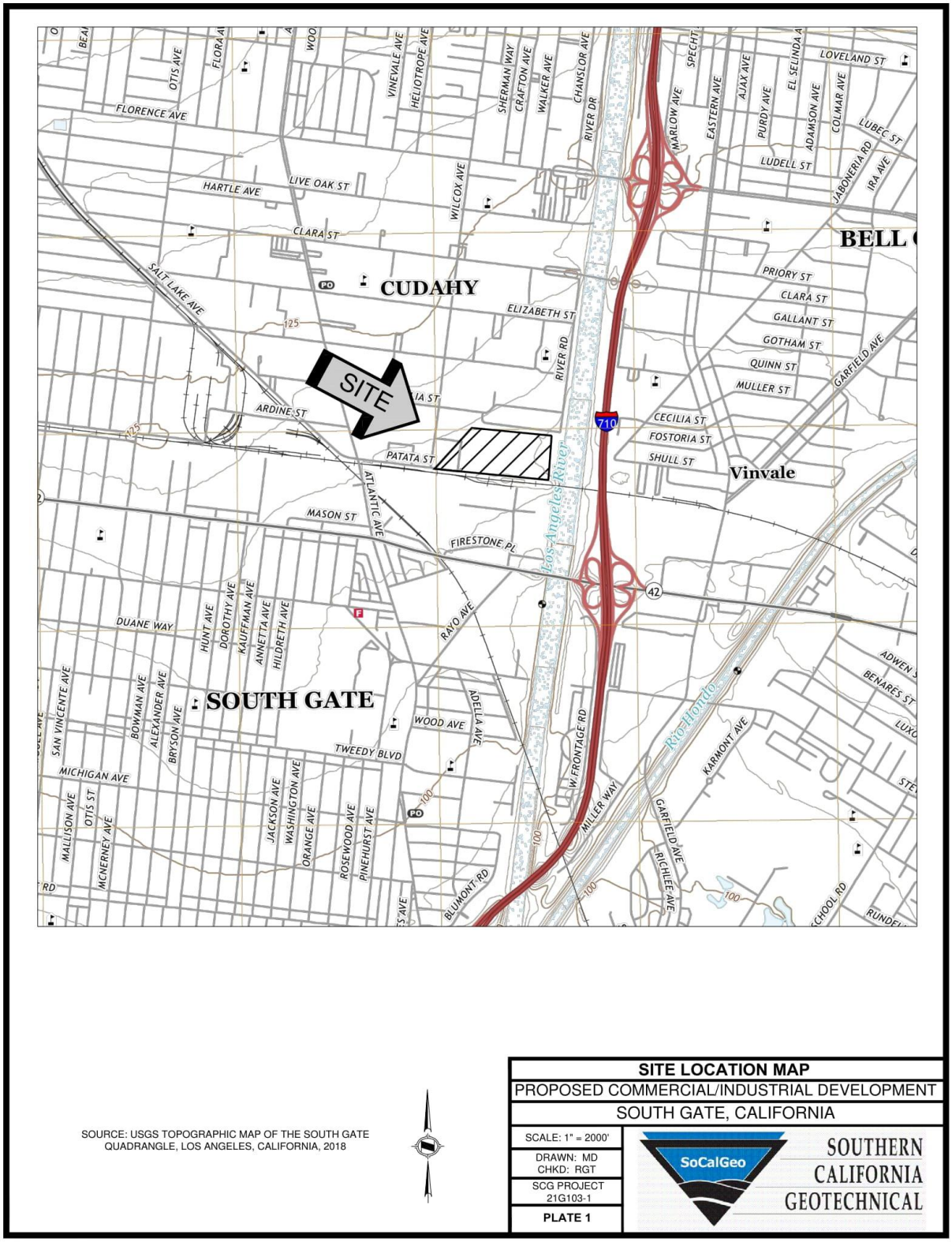
Southern California Earthquake Center (SCEC), University of Southern California, "Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California," Committee formed 1997.

Tokimatsu K., and Seed, H. B., "Evaluation of Settlements in Sands Due to Earthquake Shaking," Journal of the Geotechnical Engineering Division, American society of Civil Engineers, Volume 113, No. 8, August 1987, pp. 861-878.

Tokimatsu, K. and Yoshimi, Y., "*Empirical Correlations of Soil Liquefaction Based on SPT N-value and Fines Content,"* Seismological Research Letters, Eastern Section Seismological Society Of America, Volume 63, Number 1, p. 73.

Youd, T. L. and Idriss, I. M. (Editors), "Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils," Salt Lake City, UT, January 5-6 1996, NCEER Technical Report NCEER-97-0022, Buffalo, NY.

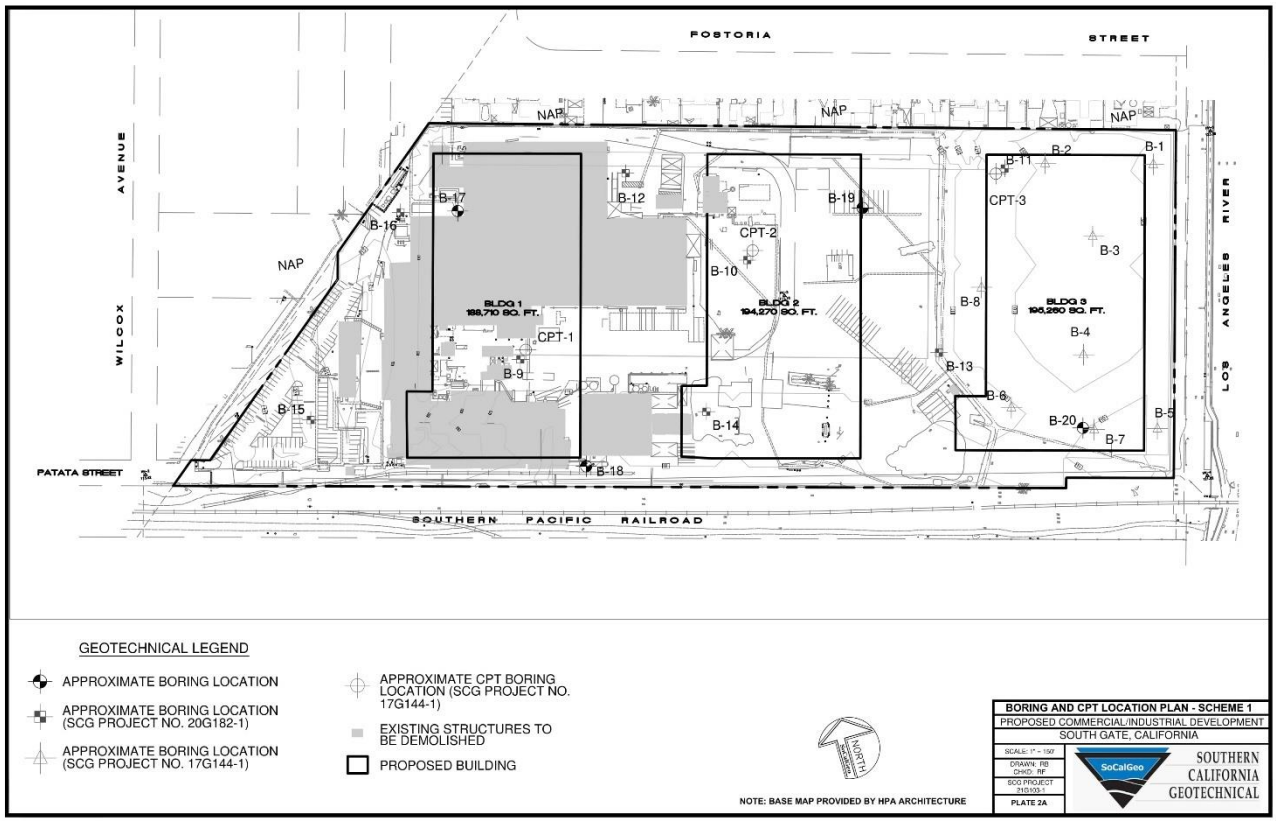
APPENDIX A

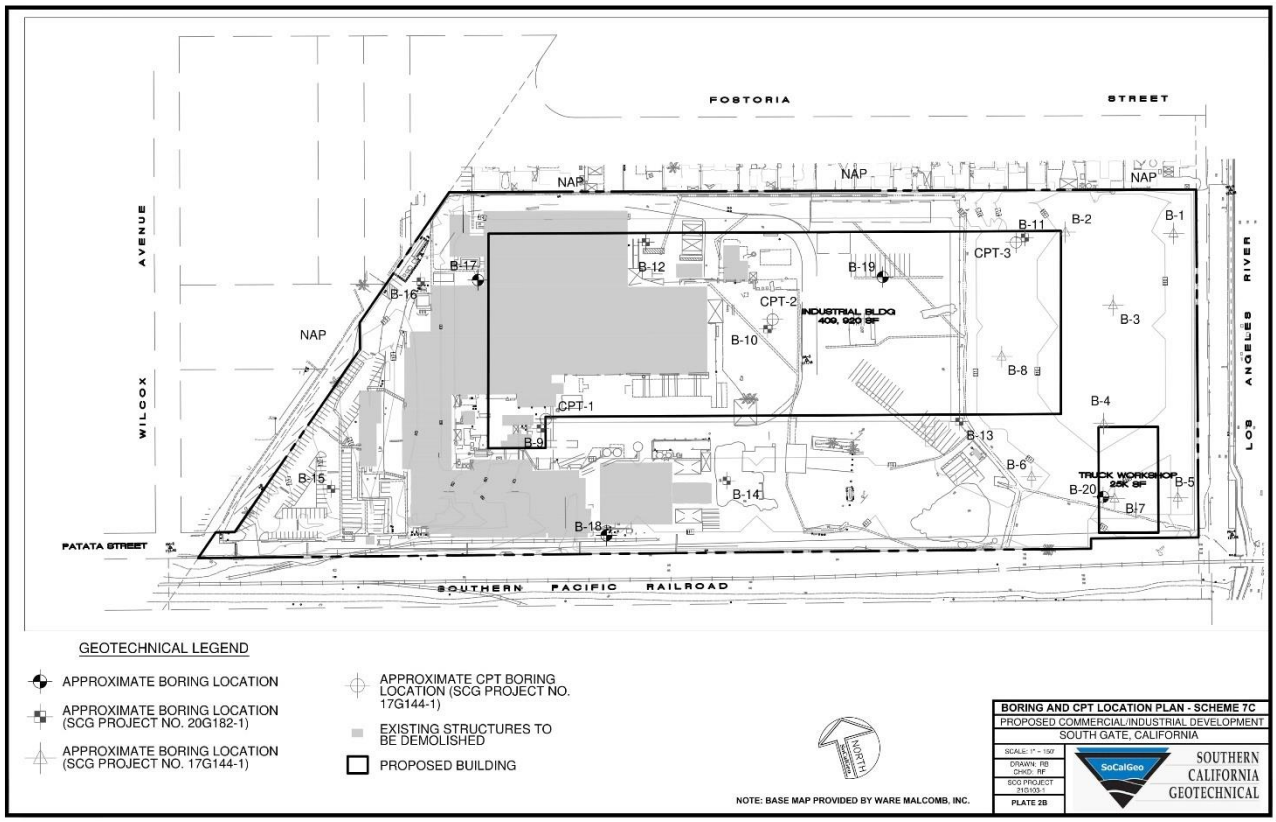


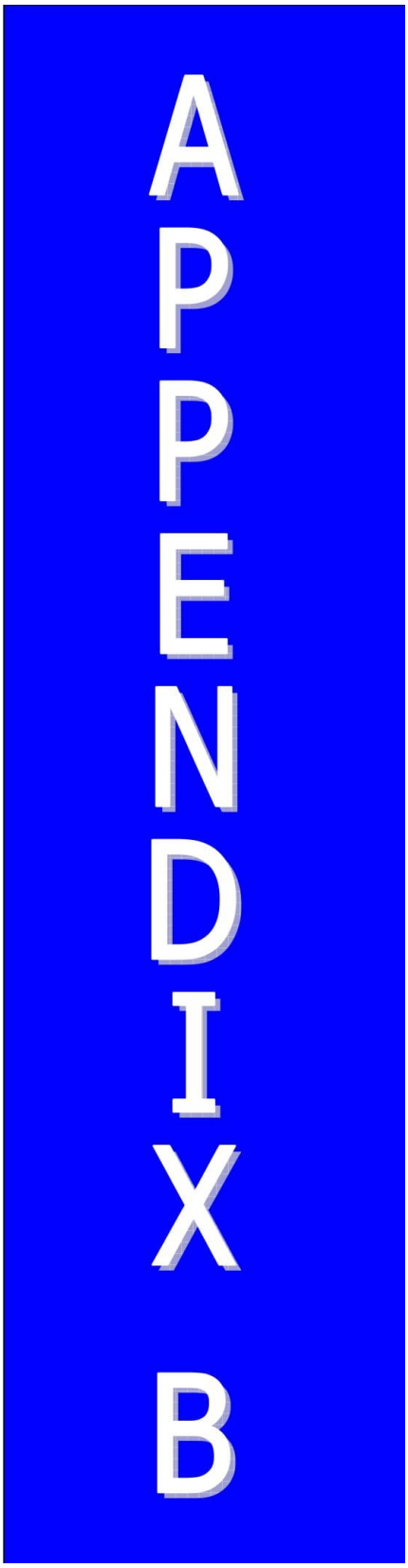
SOURCE: USGS TOPOGRAPHIC MAP OF THE SOUTH GATE QUADRANGLE, LOS ANGELES, CALIFORNIA, 2018

SITE LOCATION MAP
PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT
SOUTH GATE, CALIFORNIA
SCALE: 1" = 2000'
DRAWN: MD CHKD: RGT
SCG PROJECT 21G103-1
PLATE 1

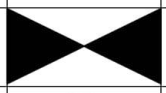
SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL


FOSTORIA
STREET
WILCOX
AVENUE
LOS ANGELES RIVER
PATATA STREET
SOUTHERN PACIFIC RAILROAD
NAP
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
B-15
B-16
B-17
B-18
B-19
B-20
CPT-1
CPT-2
CPT-3
BLDG 1
198,710 SQ. FT.
BLDG 2
194,270 SQ. FT.
BLDG 3
195,260 SQ. FT.
GEOTECHNICAL LEGEND
APPROXIMATE BORING LOCATION
APPROXIMATE BORING LOCATION (SCG PROJECT NO. 20G182-1)
APPROXIMATE BORING LOCATION (SCG PROJECT NO. 17G144-1)
APPROXIMATE CPT BORING LOCATION (SCG PROJECT NO. 17G144-1)
EXISTING STRUCTURES TO BE DEMOLISHED
PROPOSED BUILDING
NORTH
NOTE: BASE MAP PROVIDED BY HPA ARCHITECTURE
BORING AND CPT LOCATION PLAN - SCHEME 1
PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT
SOUTH GATE, CALIFORNIA
SCALE: 1" = 150'
DRAWN: RB
CHKD: RF
SCG PROJECT 21G103-1
PLATE 2A
SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL


FOSTORIA STREET
WILCOX AVENUE
LOS ANGELES RIVER
PATATA STREET
SOUTHERN PACIFIC RAILROAD
NAP
NAP
NAP
NAP
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
B-15
B-16
B-17
B-18
B-19
B-20
CPT-1
CPT-2
CPT-3
INDUSTRIAL BLDG
409, 920 SF
TRUCK WORKSHOP
25K SF
GEOTECHNICAL LEGEND
APPROXIMATE BORING LOCATION
APPROXIMATE BORING LOCATION (SCG PROJECT NO. 20G182-1)
APPROXIMATE BORING LOCATION (SCG PROJECT NO. 17G144-1)
APPROXIMATE CPT BORING LOCATION (SCG PROJECT NO. 17G144-1)
EXISTING STRUCTURES TO BE DEMOLISHED
PROPOSED BUILDING
NORTH
NOTE: BASE MAP PROVIDED BY WARE MALCOMB, INC.
BORING AND CPT LOCATION PLAN - SCHEME 7C
PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT
SOUTH GATE, CALIFORNIA
SCALE: 1" = 150'
DRAWN: RB
CHKD: RF
SCG PROJECT 21G103-1
PLATE 2B
SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL


APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		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		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		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

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-17

JOB NO.: 21G103-1 | DRILLING DATE: 1/12/21 | WATER DEPTH: 47 feet
PROJECT: Proposed Commercial/Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 18 feet
LOCATION: South Gate, California | LOGGED BY: Ryan Bremer | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					5± inches Asphaltic Concrete; 6± inches Aggregate Base							
		15			FILL: Dark Brown Silty fine Sand, trace medium to coarse Sand, loose to medium dense-damp to moist		9					
		6					13					
5		9			ALLUVIUM: Gray Brown Silty fine Sand, trace iron oxide staining, loose-very moist		18					
		10			Dark Gray Brown fine Sandy Silt, trace iron oxide staining, loose to medium dense-very moist		25			75		
10												
					Dark Gray Brown Silty fine Sand, medium dense-very moist							
		15					19			43		
15												
		16					15			34		
20												
		13			@ 23½± feet, 3 to 4-inch lense Light Brown Silty Clay		22			37		
25												
		16					18			36		
30												
		19					16			44		

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-1a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-17

JOB NO.: 21G103-1 DRILLING DATE: 1/12/21 WATER DEPTH: 47 feet
PROJECT: Proposed Commercial/Industrial Building DRILLING METHOD: Hollow Stem Auger CAVE DEPTH: 18 feet
LOCATION: South Gate, California LOGGED BY: Ryan Bremer READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Dark Gray Brown Silty fine Sand, medium dense-very moist							
					Dark Gray Brown fine Sandy Silt medium dense-very moist							
40		18					19			66		
					Dark Gray Silty Clay, little fine Sand, stiff to very stiff-very moist to wet							
45		15					27	29	18	72		
		10					35	48	21	92		
50					Boring Terminated at 50'							

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-1b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-18

JOB NO.: 21G103-1 | DRILLING DATE: 1/12/21 | WATER DEPTH: Dry
PROJECT: Proposed Commercial/Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 16 feet
LOCATION: South Gate, California | LOGGED BY: Ryan Bremer | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					2± inches Asphaltic Concrete; 6± inches Aggregate Base							
		9			FILL: Light brown Silty fine to coarse Sand, trace fine to coarse Gravel, trace Asphaltic Concrete fragments, loose-very moist	101	17					EI = 3 @ 0 to 5 feet
		6			FILL: Dark Brown Silty fine Sand, loose-very moist	103	14					
5		12			ALLUVIUM: Gray fine to medium Sand, little Silt, trace fine Sand, loose-damp to moist	102	7					
		11				99	4					
					Dark Brown Silty fine Sand, trace Clay, loose to medium dense-very moist		16					
		13				102	16					
10												
		15				101	21					
15												
		10					22					
20												
		20			@ 24± feet, trace medium to coarse Sand, trace fine Gravel	82	27					
25												
					Boring Terminated at 25'							

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-2**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-19

JOB NO.: 21G103-1 | DRILLING DATE: 1/12/21 | WATER DEPTH: Dry
PROJECT: Proposed Commercial/Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 17 feet
LOCATION: South Gate, California | LOGGED BY: Ryan Bremer | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					2± inches Asphaltic Concrete; 4± inches Aggregate Base							
		7			FILL: Dark Brown Silty fine Sand, trace Asphaltic Concrete fragments, loose-very moist	99	14					
		8				99	14					
5		9			ALLUVIUM: Gray Brown fine Sand, little Silt, loose-damp	92	5					
		9			Dark Brown fine Sandy Silt, trace Clay, loose-very moist	98	22					
		12				97	22					
10												
					Gray Brown Silty Clay, stiff-very moist							
		8	3.5			94	31					
15												
					Dark Gray Silty fine Sand to fine Sandy Silt, loose to medium dense-very moist							
		12					20					
20												
		6					35					
25												
					Boring Terminated at 25'							

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-3**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-20

JOB NO.: 21G103-1 | DRILLING DATE: 1/12/21 | WATER DEPTH: 37.5 feet
PROJECT: Proposed Commercial/Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 32 feet
LOCATION: South Gate, California | LOGGED BY: Ryan Bremer | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		10			FILL: Brown Silty fine Sand, trace medium Sand, loose to medium dense-damp to moist		6					
		10			@ 3½± feet, trace fine root fibers		9					
5		7			@ 6± feet, trace Asphaltic Concrete fragments		5					
		8			ALLUVIUM: Brown fine Sand, some Silt, trace medium to coarse Sand, loose-damp		8			11		
10												
		10			Dark Gray Brown Silty fine Sand, medium dense-very moist		19			35		
15												
		2			Gray Silty Clay, soft-very moist		34	36	22	92		
20												
		12			Gray Brown fine Sandy Silt to Silty fine Sand, loose-very moist	103	22			51		
		7			Gray Silty Clay, medium stiff to very stiff-very moist		38	33	22	93		
25												
		16			@ 28½± feet, trace fine Sand		31			80		
30												
		14			Dark Gray Silty fine Sand, medium dense-very moist to wet		28			26		

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-4a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-20

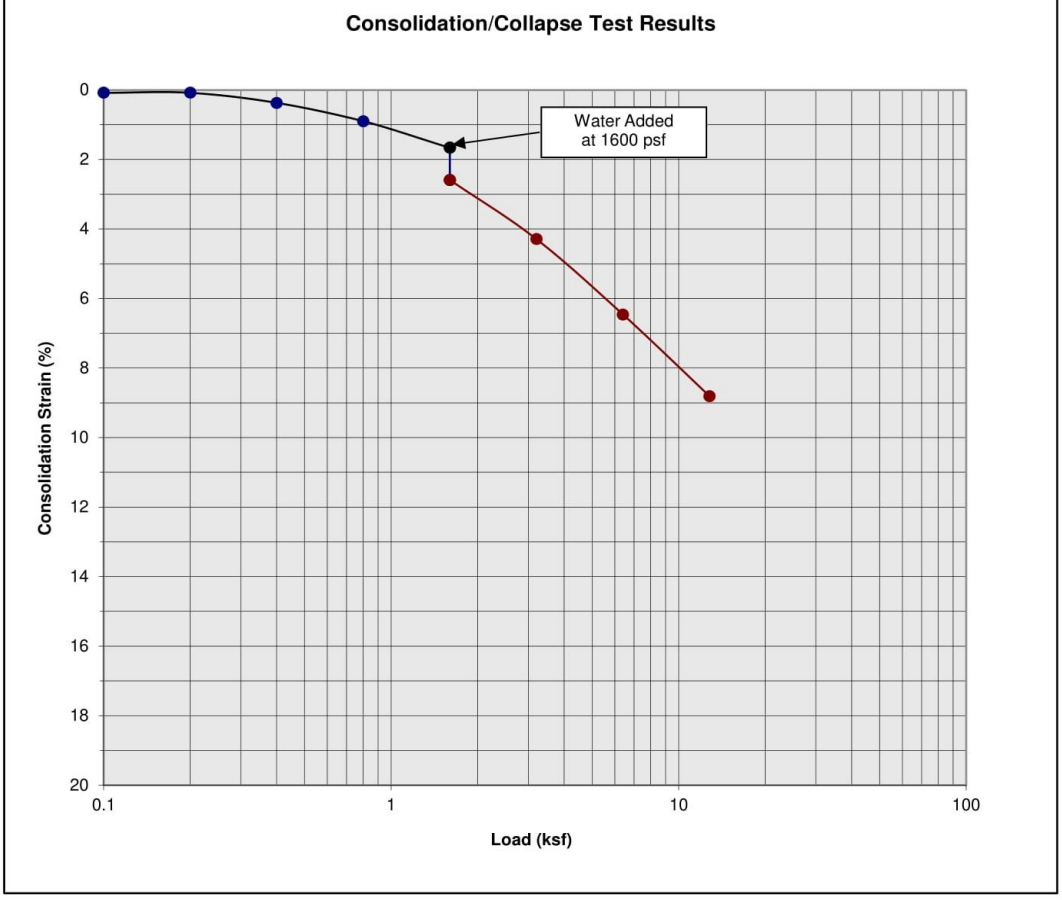
JOB NO.: 21G103-1 DRILLING DATE: 1/12/21 WATER DEPTH: 37.5 feet
PROJECT: Proposed Commercial/Industrial Building DRILLING METHOD: Hollow Stem Auger CAVE DEPTH: 32 feet
LOCATION: South Gate, California LOGGED BY: Ryan Bremer READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Dark Gray Silty fine Sand, medium dense-very moist to wet							
40		16			@ 38½± feet, trace medium to coarse Sand		23			43		
45		16					29			26		
50		19					28			35		
					Boring Terminated at 50'							

TBL 21G103-1.GPJ SOCALGEO.GDT 2/1/21

TEST BORING LOG **PLATE B-4b**

APPENDIX C

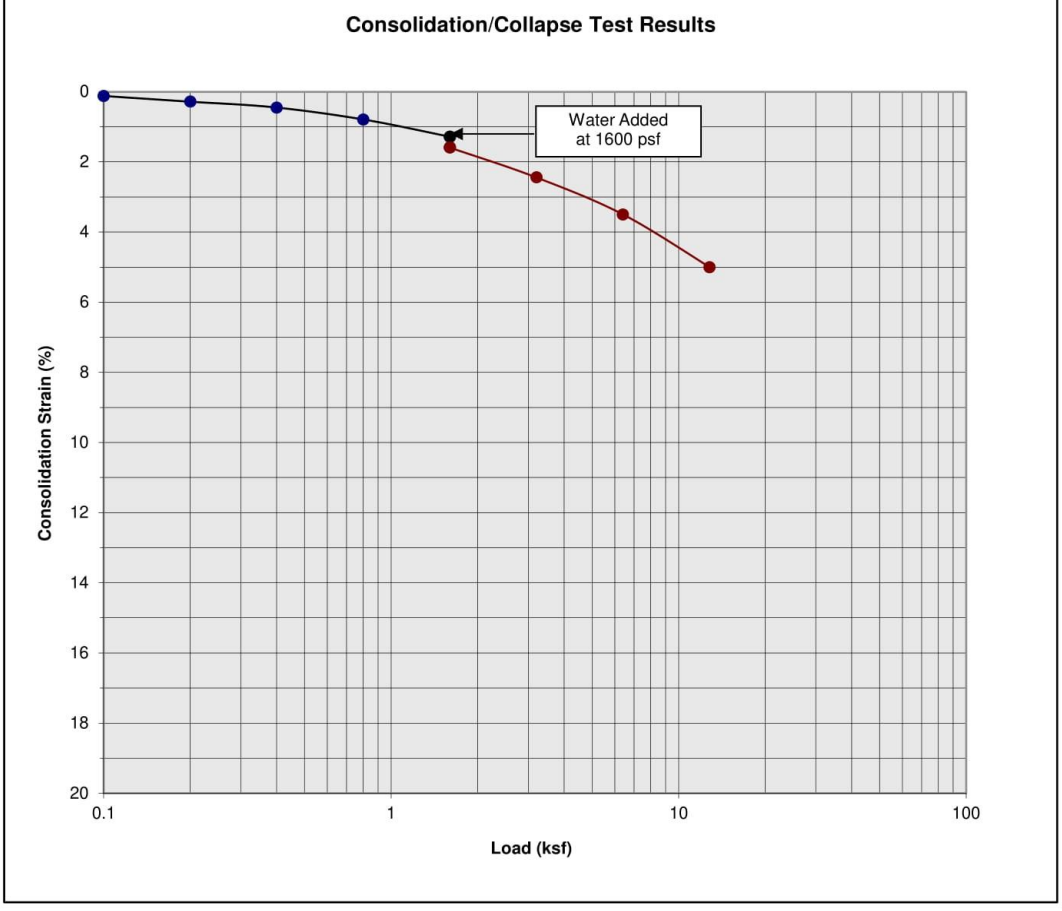


Classification: FILL: Dark Brown Silty fine Sand

Boring Number:	B-19	Initial Moisture Content (%)	14
Sample Number:	---	Final Moisture Content (%)	27
Depth (ft)	3 to 4	Initial Dry Density (pcf)	99.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	108.3
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.93

Proposed Commercial/Industrial Development
Southgate, California
Project No. 21G103-1
PLATE C-1

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL
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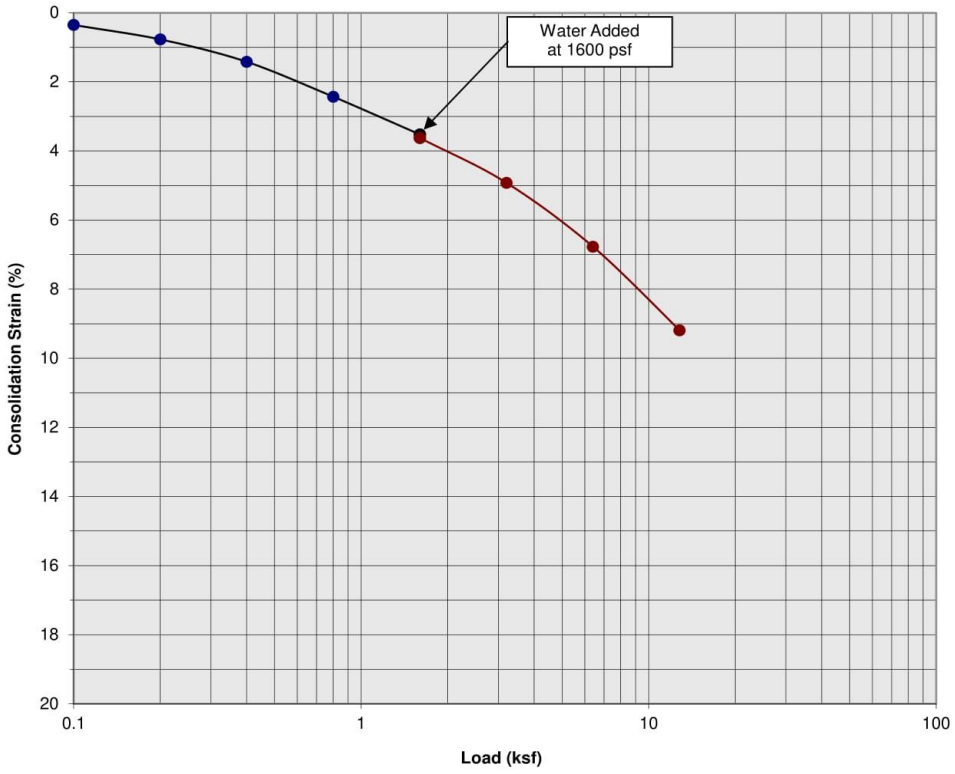
Classification: Gray Brown fine Sand, little Silt

Boring Number:	B-19	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	26
Depth (ft)	5 to 6	Initial Dry Density (pcf)	92.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	97.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.31

Proposed Commercial/Industrial Development
Southgate, California
Project No. 21G103-1
PLATE C-2

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



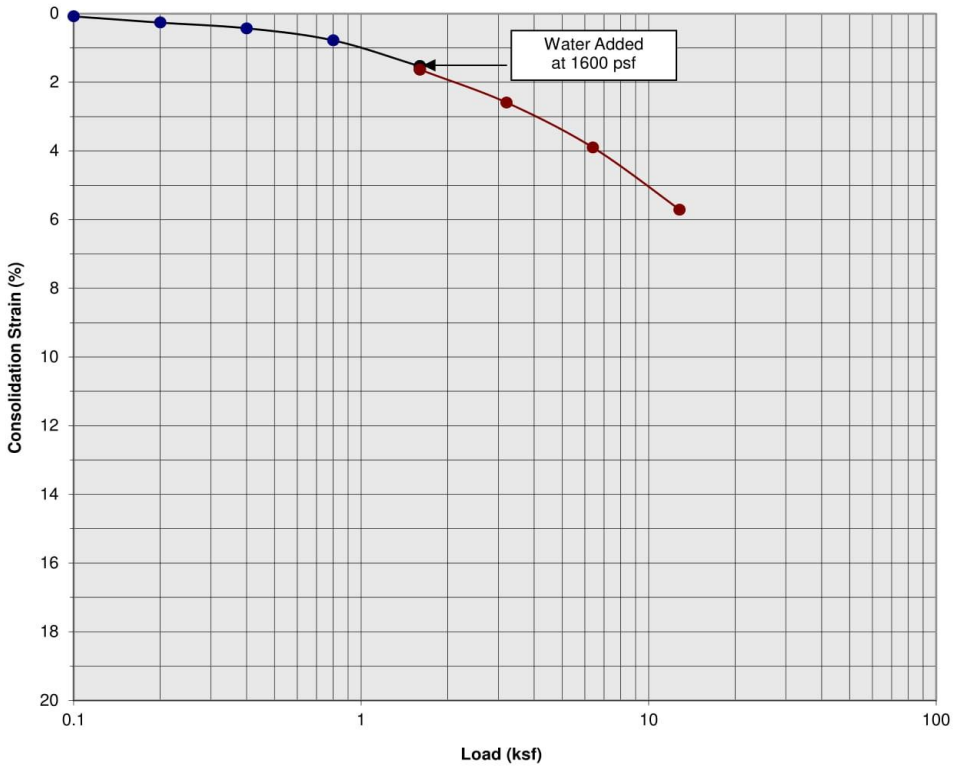
Classification: Dark Brown fine Sandy Silt, trace Clay

Boring Number:	B-19	Initial Moisture Content (%)	22
Sample Number:	---	Final Moisture Content (%)	22
Depth (ft)	7 to 8	Initial Dry Density (pcf)	98.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	107.8
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.10

Proposed Commercial/Industrial Development
Southgate, California
Project No. 21G103-1
PLATE C-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results

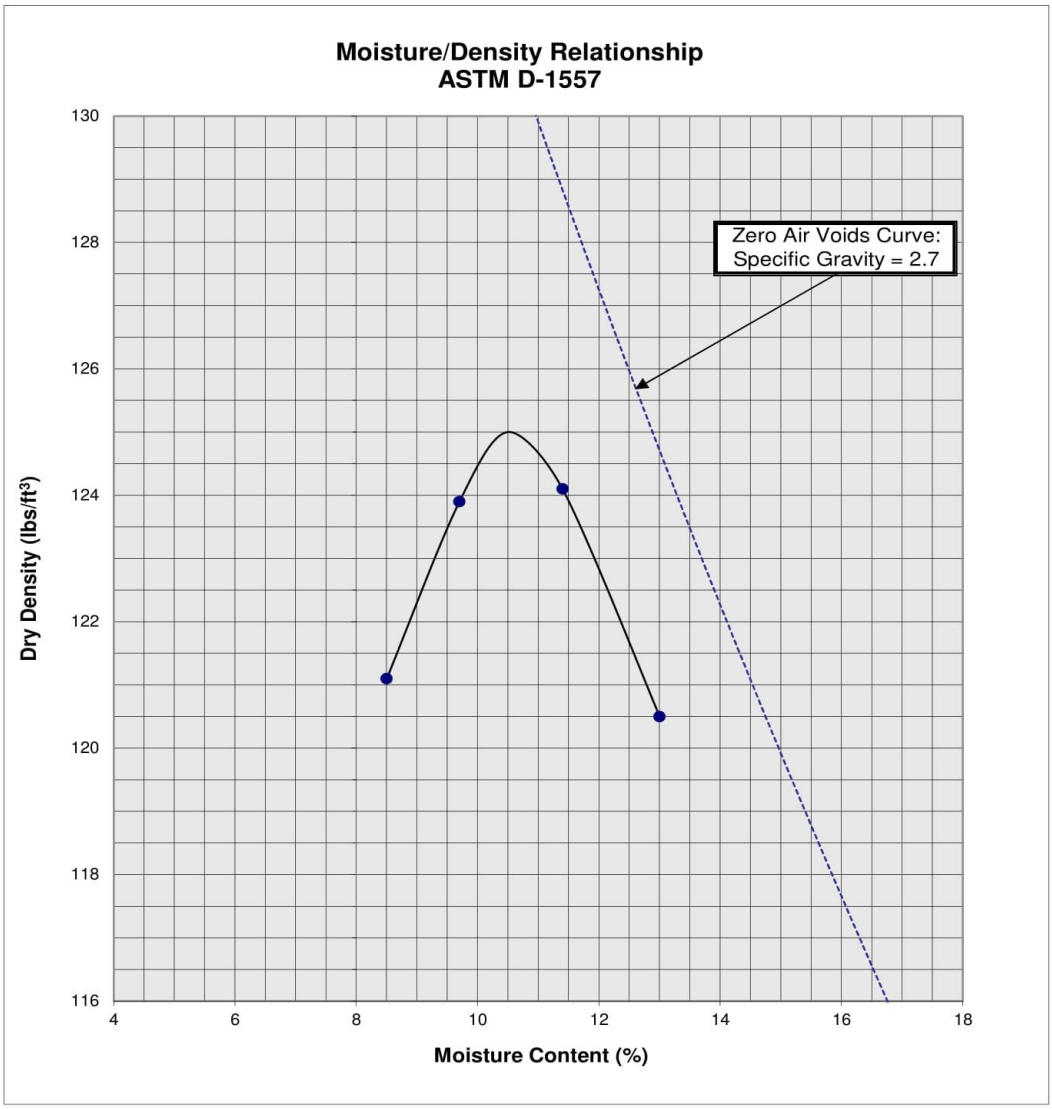


Classification: Dark Brown fine Sandy Silt, trace Clay

Boring Number:	B-19	Initial Moisture Content (%)	22
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	9 to 10	Initial Dry Density (pcf)	97.2
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	103.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.10

Proposed Commercial/Industrial Development
Southgate, California
Project No. 21G103-1
PLATE C-4

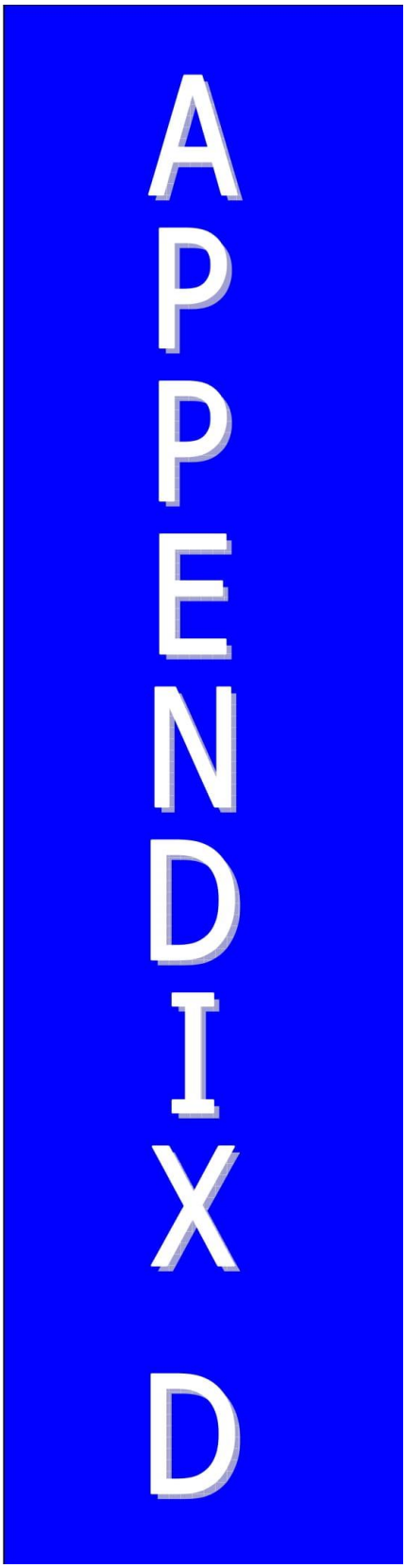
SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL
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Soil ID Number	B-19 @ 0 to 5'
Optimum Moisture (%)	10.5
Maximum Dry Density (pcf)	125
Soil Classification	Dark Brown Silty fine Sand

Proposed Warehouse
Perris, California
Project No. 20G245-1
PLATE C-5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation


APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.
- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.
- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.
- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.
- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.
- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.
- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as "contaminated," and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.
- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.
- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core
- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.
- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.
- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).
- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.
- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.
- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.
- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

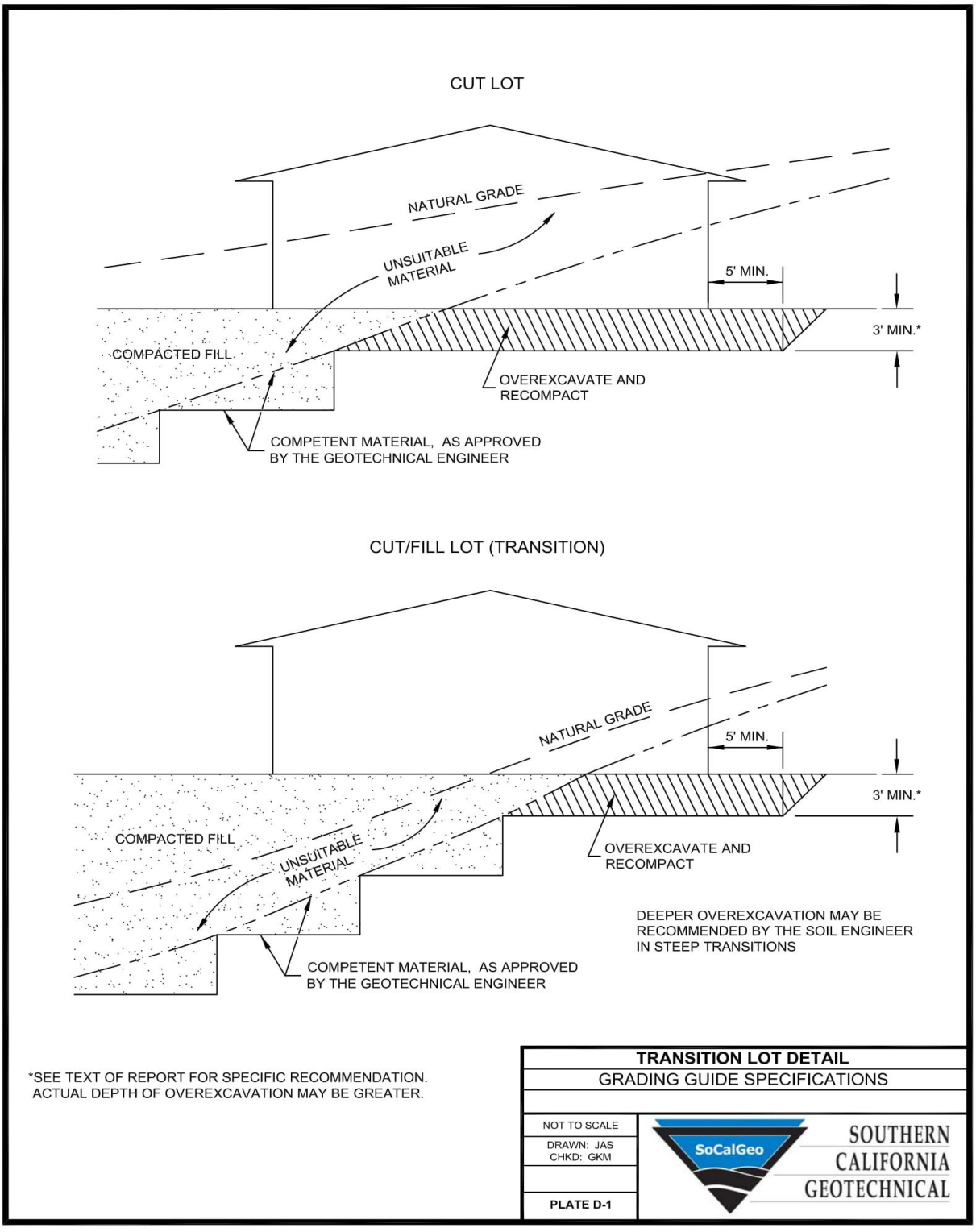
- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

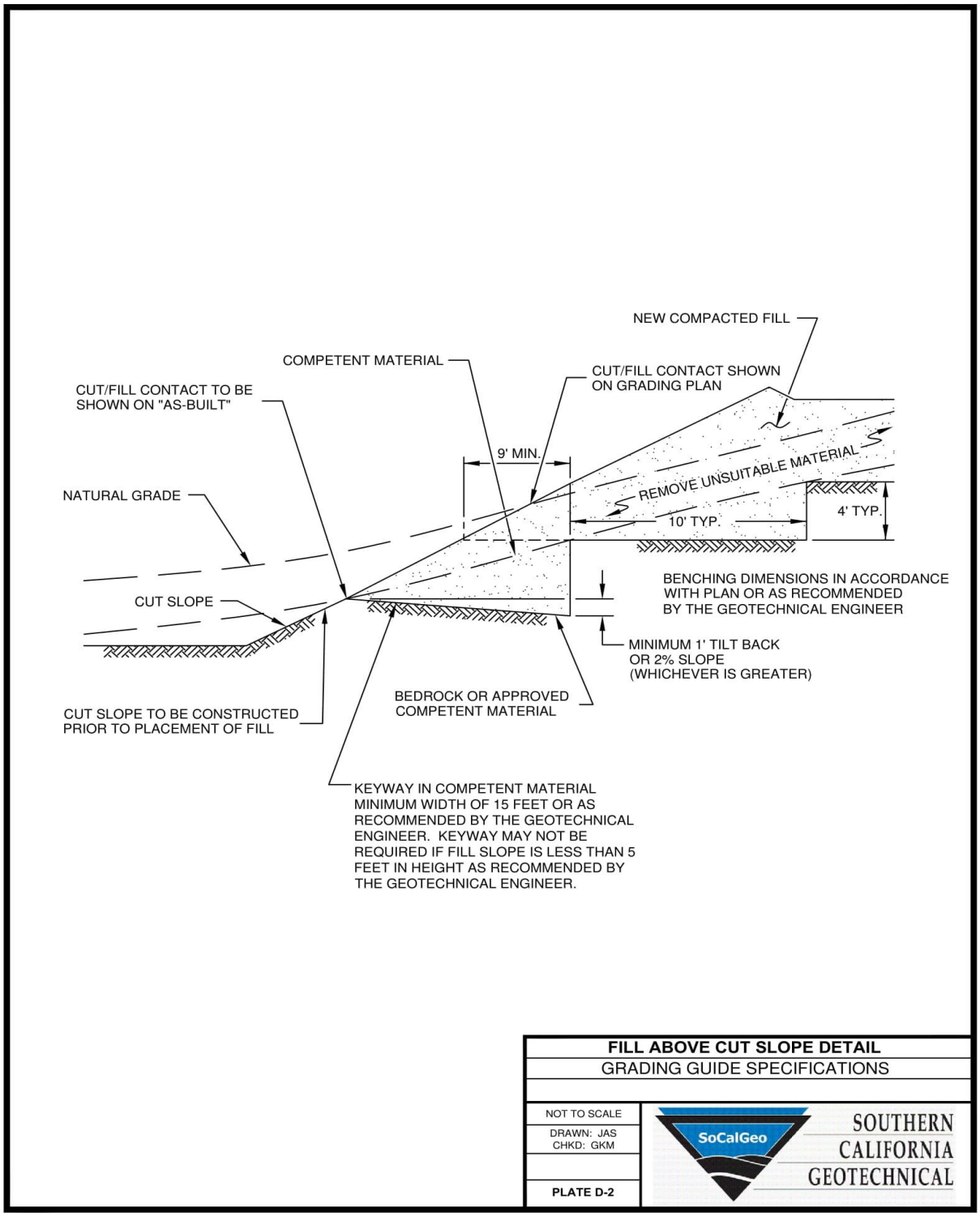
Subdrains

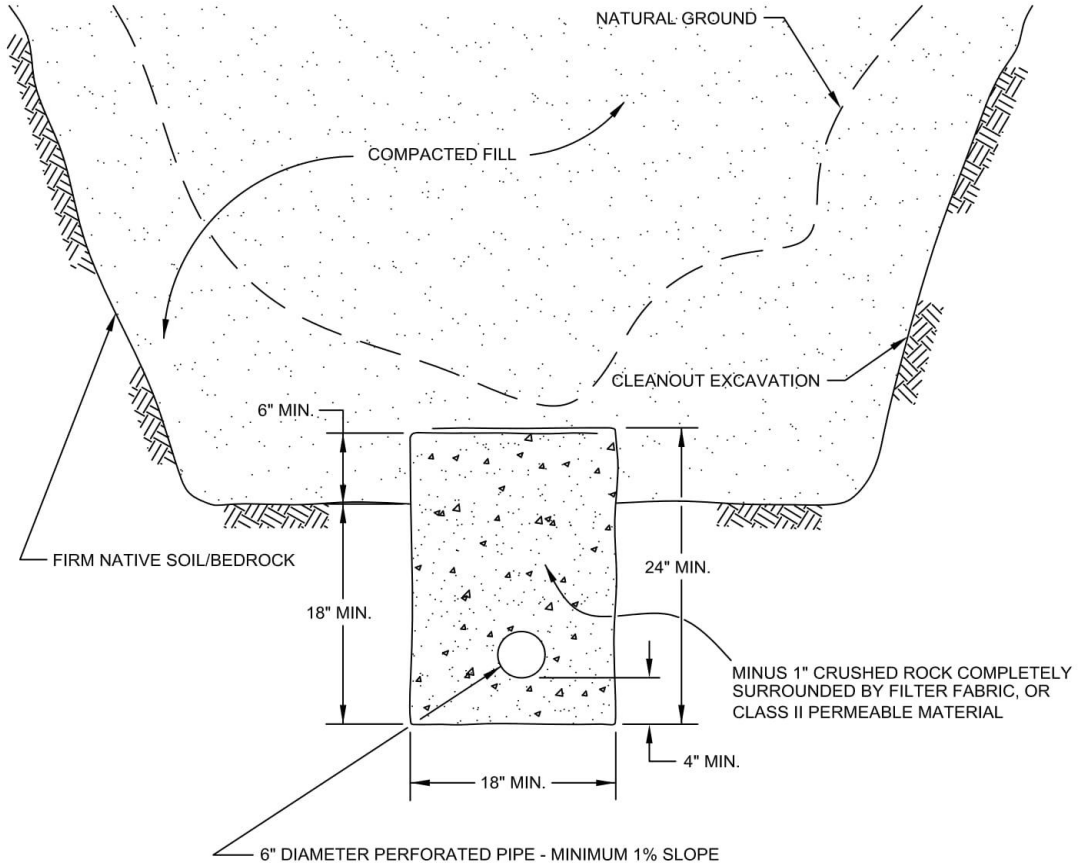
- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.


CUT LOT
NATURAL GRADE
UNSUITABLE MATERIAL
5' MIN.
3' MIN.*
COMPACTED FILL
OVEREXCAVATE AND RECOMPACT
COMPETENT MATERIAL, AS APPROVED BY THE GEOTECHNICAL ENGINEER
CUT/FILL LOT (TRANSITION)
NATURAL GRADE
5' MIN.
3' MIN.*
COMPACTED FILL
UNSUITABLE MATERIAL
OVEREXCAVATE AND RECOMPACT
DEEPER OVEREXCAVATION MAY BE RECOMMENDED BY THE SOIL ENGINEER IN STEEP TRANSITIONS
COMPETENT MATERIAL, AS APPROVED BY THE GEOTECHNICAL ENGINEER
*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION.
ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.
TRANSITION LOT DETAIL
GRADING GUIDE SPECIFICATIONS
NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-1
SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL


NEW COMPACTED FILL
COMPETENT MATERIAL
CUT/FILL CONTACT SHOWN ON GRADING PLAN
CUT/FILL CONTACT TO BE SHOWN ON "AS-BUILT"
9' MIN.
REMOVE UNSUITABLE MATERIAL
NATURAL GRADE
10' TYP.
4' TYP.
BENCHING DIMENSIONS IN ACCORDANCE WITH PLAN OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER
CUT SLOPE
MINIMUM 1' TILT BACK OR 2% SLOPE (WHICHEVER IS GREATER)
BEDROCK OR APPROVED COMPETENT MATERIAL
CUT SLOPE TO BE CONSTRUCTED PRIOR TO PLACEMENT OF FILL
KEYWAY IN COMPETENT MATERIAL MINIMUM WIDTH OF 15 FEET OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. KEYWAY MAY NOT BE REQUIRED IF FILL SLOPE IS LESS THAN 5 FEET IN HEIGHT AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
FILL ABOVE CUT SLOPE DETAIL
GRADING GUIDE SPECIFICATIONS
NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-2
SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



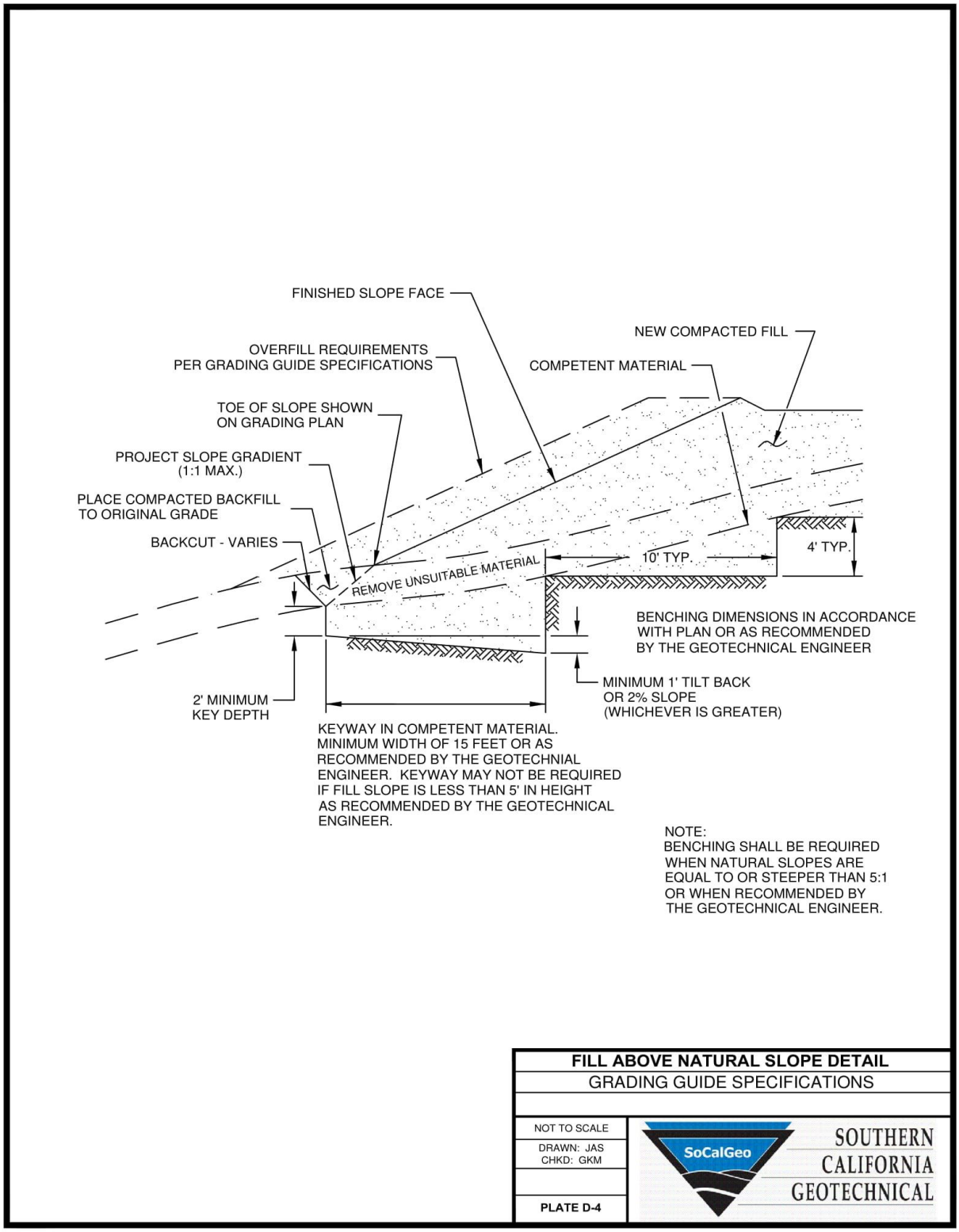
PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

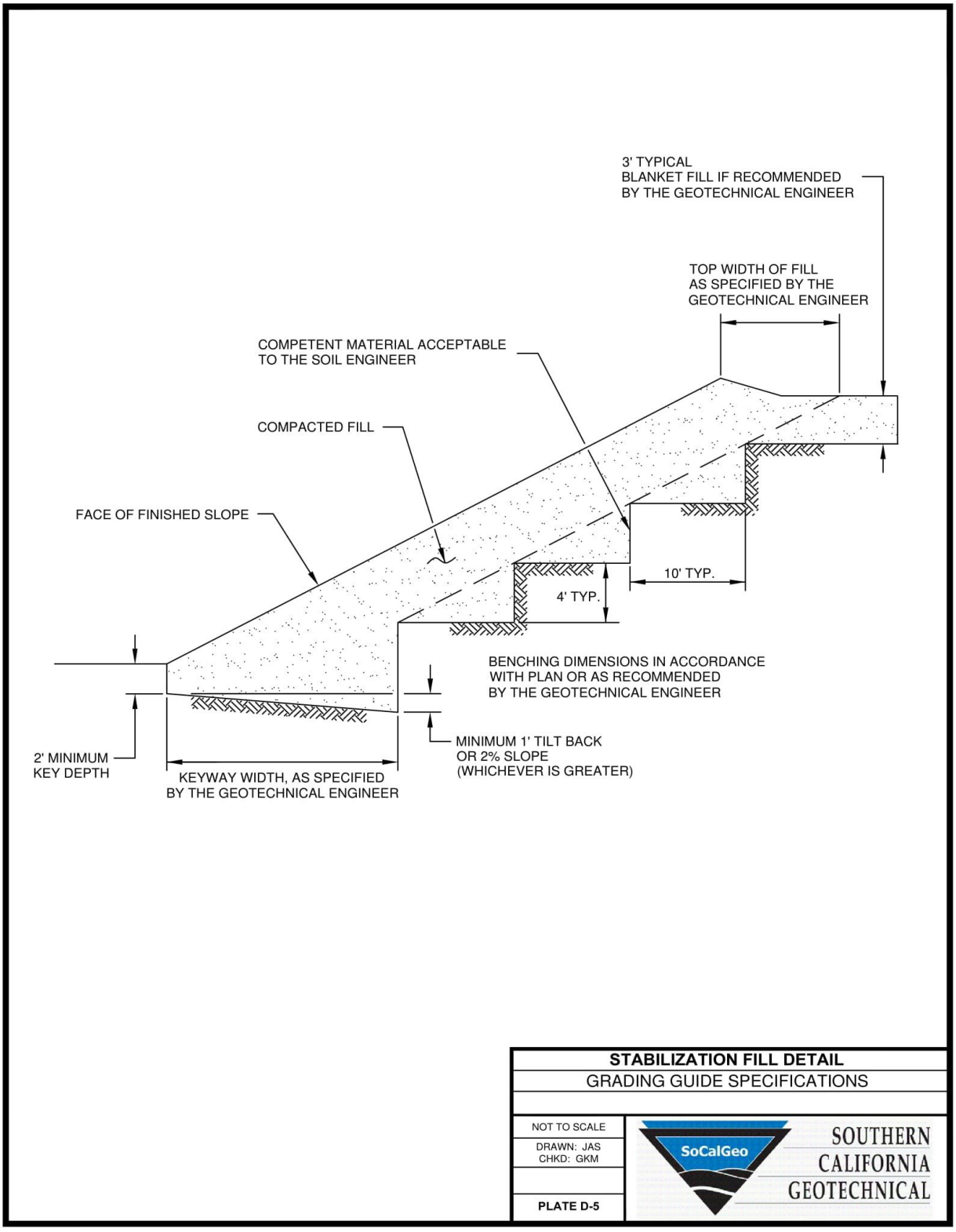
SCHEMATIC ONLY
NOT TO SCALE

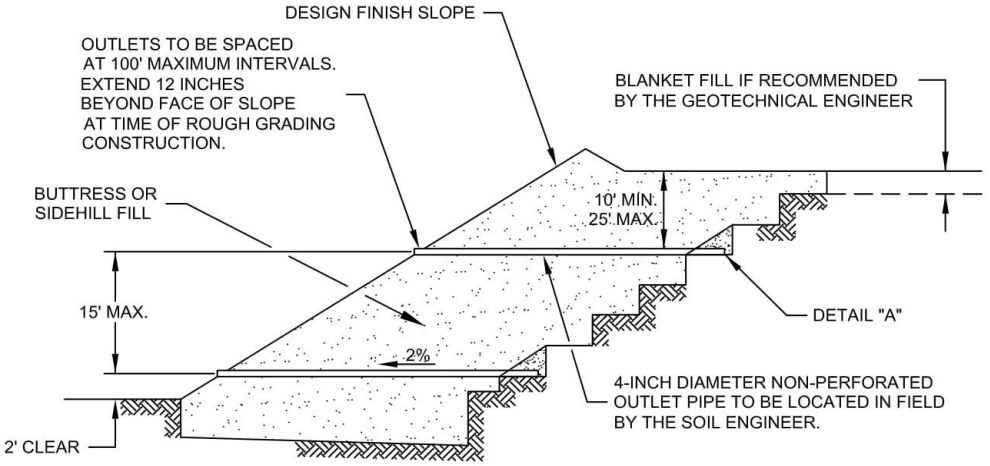
CANYON SUBDRAIN DETAIL
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL


FINISHED SLOPE FACE
NEW COMPACTED FILL
OVERFILL REQUIREMENTS
PER GRADING GUIDE SPECIFICATIONS
COMPETENT MATERIAL
TOE OF SLOPE SHOWN
ON GRADING PLAN
PROJECT SLOPE GRADIENT
(1:1 MAX.)
PLACE COMPACTED BACKFILL
TO ORIGINAL GRADE
BACKCUT - VARIES
REMOVE UNSUITABLE MATERIAL
10' TYP.
4' TYP.
BENCHING DIMENSIONS IN ACCORDANCE
WITH PLAN OR AS RECOMMENDED
BY THE GEOTECHNICAL ENGINEER
MINIMUM 1' TILT BACK
OR 2% SLOPE
(WHICHEVER IS GREATER)
2' MINIMUM
KEY DEPTH
KEYWAY IN COMPETENT MATERIAL.
MINIMUM WIDTH OF 15 FEET OR AS
RECOMMENDED BY THE GEOTECHNIAL
ENGINEER. KEYWAY MAY NOT BE REQUIRED
IF FILL SLOPE IS LESS THAN 5' IN HEIGHT
AS RECOMMENDED BY THE GEOTECHNICAL
ENGINEER.
NOTE:
BENCHING SHALL BE REQUIRED
WHEN NATURAL SLOPES ARE
EQUAL TO OR STEEPER THAN 5:1
OR WHEN RECOMMENDED BY
THE GEOTECHNICAL ENGINEER.
FILL ABOVE NATURAL SLOPE DETAIL
GRADING GUIDE SPECIFICATIONS
NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-4
SoCalGeo
SOUTHERN
CALIFORNIA
GEOTECHNICAL


3' TYPICAL
BLANKET FILL IF RECOMMENDED
BY THE GEOTECHNICAL ENGINEER
TOP WIDTH OF FILL
AS SPECIFIED BY THE
GEOTECHNICAL ENGINEER
COMPETENT MATERIAL ACCEPTABLE
TO THE SOIL ENGINEER
COMPACTED FILL
FACE OF FINISHED SLOPE
10' TYP.
4' TYP.
BENCHING DIMENSIONS IN ACCORDANCE
WITH PLAN OR AS RECOMMENDED
BY THE GEOTECHNICAL ENGINEER
MINIMUM 1' TILT BACK
OR 2% SLOPE
(WHICHEVER IS GREATER)
2' MINIMUM
KEY DEPTH
KEYWAY WIDTH, AS SPECIFIED
BY THE GEOTECHNICAL ENGINEER
STABILIZATION FILL DETAIL
GRADING GUIDE SPECIFICATIONS
NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-5
SoCalGeo
SOUTHERN
CALIFORNIA
GEOTECHNICAL



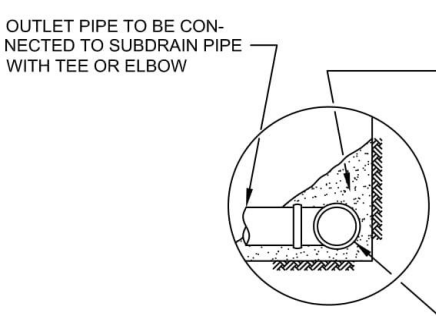
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



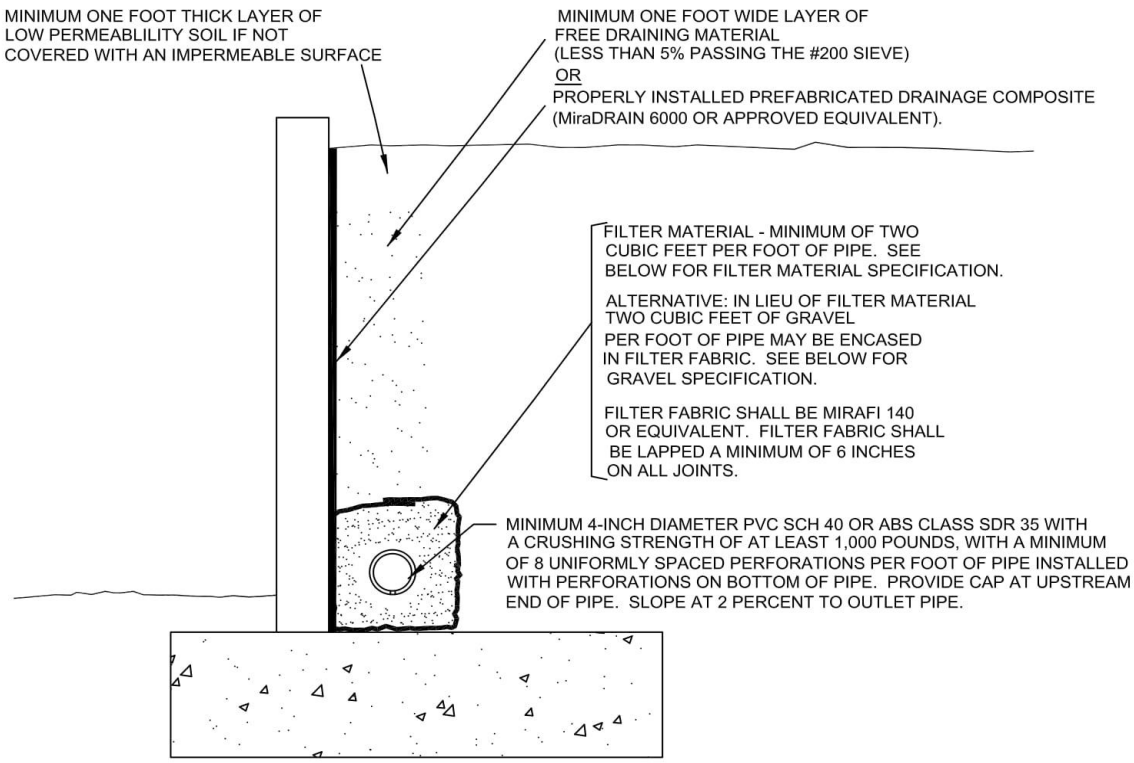
DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE
DRAWN: JAS
CHKD: GKM
PLATE D-6

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

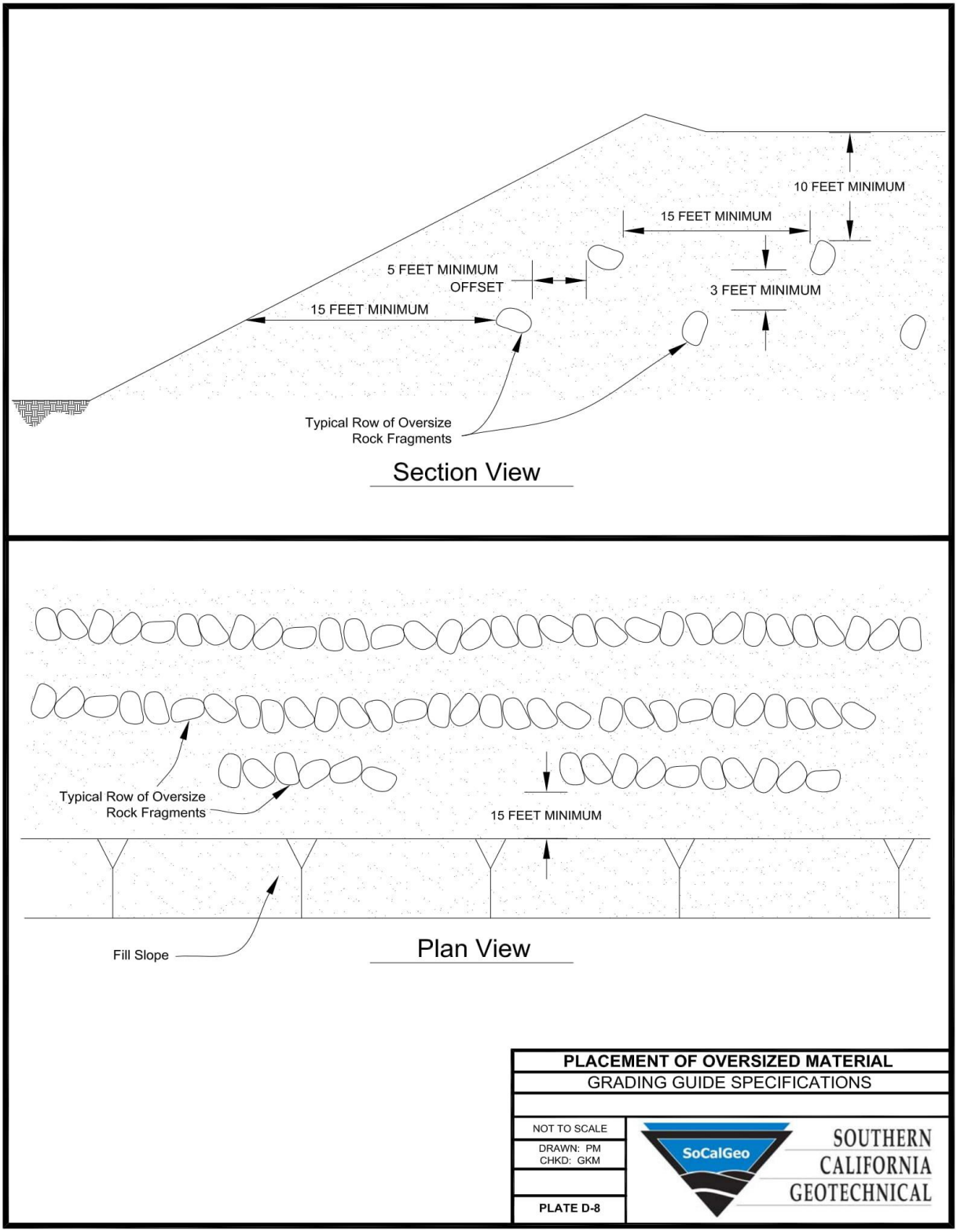
SAND EQUIVALENT = MINIMUM OF 50

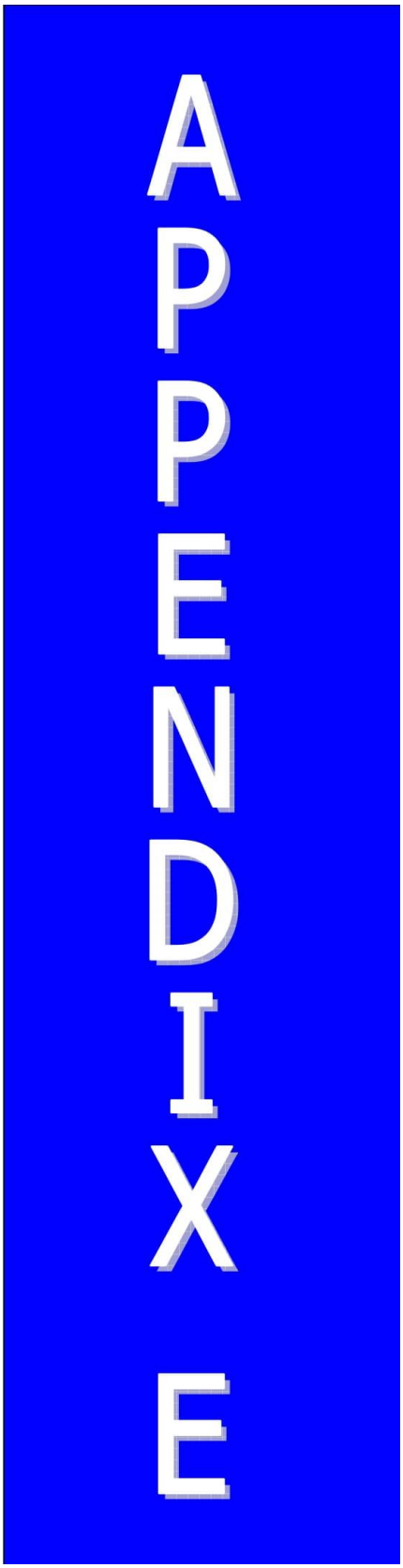
RETAINING WALL BACKDRAINS
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE
DRAWN: JAS
CHKD: GKM

PLATE D-7

SOUTHERN CALIFORNIA GEOTECHNICAL


10 FEET MINIMUM
15 FEET MINIMUM
5 FEET MINIMUM
OFFSET
3 FEET MINIMUM
15 FEET MINIMUM
Typical Row of Oversize
Rock Fragments
Section View
Typical Row of Oversize
Rock Fragments
15 FEET MINIMUM
Fill Slope
Plan View
PLACEMENT OF OVERSIZED MATERIAL
GRADING GUIDE SPECIFICATIONS
NOT TO SCALE
DRAWN: PM
CHKD: GKM
PLATE D-8
SoCalGeo
SOUTHERN
CALIFORNIA
GEOTECHNICAL


APPENDIX E

OSHPD

5037 Patata St, South Gate, CA 90280, USA

Latitude, Longitude: 33.9554078, -118.1769951



Date	1/27/2021, 2:34:04 PM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.745	MCE_R ground motion. (for 0.2 second period)
S_1	0.623	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.745	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.163	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.746	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.82	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.745	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.922	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.396	Factored deterministic acceleration value. (0.2 second)
S1RT	0.623	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.69	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.802	Factored deterministic acceleration value. (1.0 second)
PGAd	0.967	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.908	Mapped value of the risk coefficient at short periods

SOURCE: SEAOC/OSHPD Seismic Design Maps Tool
<https://seismicmaps.org/>

SEISMIC DESIGN PARAMETERS - 2020 CBC
PROPOSED COMMERCIAL/INDUSTRIAL DEVELOPMENT
SOUTH GATE, CALIFORNIA

DRAWN: MD
CHKD: GKM
SCG PROJECT 21G103-1
PLATE E-1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL

This software is licensed to: Southern California Geotechnical CPT name: CPT-1

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
80.48	254.00	2.00	0.00	1.00	0.00	80.54	254.00	2.00	0.00	1.00	0.00
80.62	254.00	2.00	0.00	1.00	0.00	80.65	254.00	2.00	0.00	1.00	0.00
80.75	254.00	2.00	0.00	1.00	0.00	80.82	252.41	2.00	0.00	1.00	0.00
80.86	237.08	2.00	0.00	1.00	0.00	80.93	246.96	2.00	0.00	1.00	0.00
81.01	254.00	2.00	0.00	1.00	0.00	81.06	254.00	2.00	0.00	1.00	0.00
81.17	254.00	2.00	0.00	1.00	0.00	81.19	254.00	2.00	0.00	1.00	0.00
81.24	254.00	2.00	0.00	1.00	0.00	81.32	254.00	2.00	0.00	1.00	0.00
81.39	254.00	2.00	0.00	1.00	0.00	81.46	254.00	2.00	0.00	1.00	0.00
81.50	254.00	2.00	0.00	1.00	0.00	81.59	254.00	2.00	0.00	1.00	0.00
81.64	243.31	2.00	0.00	1.00	0.00	81.70	229.86	2.00	0.00	1.00	0.00
81.80	189.53	2.00	0.00	1.00	0.00	81.83	175.16	2.00	0.00	1.00	0.00
81.91	163.34	2.00	0.00	1.00	0.00	81.99	161.40	2.00	0.00	1.00	0.00
82.08	162.19	2.00	0.00	1.00	0.00	82.12	161.88	2.00	0.00	1.00	0.00
82.17	161.98	2.00	0.00	1.00	0.00	82.23	160.43	2.00	0.00	1.00	0.00
82.33	163.06	2.00	0.00	1.00	0.00	82.38	167.20	2.00	0.00	1.00	0.00
82.43	181.90	2.00	0.00	1.00	0.00	82.52	207.58	2.00	0.00	1.00	0.00
82.58	210.46	2.00	0.00	1.00	0.00	82.63	211.72	2.00	0.00	1.00	0.00
82.74	226.57	2.00	0.00	1.00	0.00	82.87	234.81	2.00	0.00	1.00	0.00
82.90	234.92	2.00	0.00	1.00	0.00	83.00	226.22	2.00	0.00	1.00	0.00
83.04	220.35	2.00	0.00	1.00	0.00	83.08	216.33	2.00	0.00	1.00	0.00
83.17	215.31	2.00	0.00	1.00	0.00	83.26	222.44	2.00	0.00	1.00	0.00
83.31	223.50	2.00	0.00	1.00	0.00	83.39	227.98	2.00	0.00	1.00	0.00
83.43	230.96	2.00	0.00	1.00	0.00	83.47	229.98	2.00	0.00	1.00	0.00
83.55	235.93	2.00	0.00	1.00	0.00	83.62	237.36	2.00	0.00	1.00	0.00
83.66	237.23	2.00	0.00	1.00	0.00	83.75	239.80	2.00	0.00	1.00	0.00
83.83	240.70	2.00	0.00	1.00	0.00	83.92	238.60	2.00	0.00	1.00	0.00
83.95	239.29	2.00	0.00	1.00	0.00	83.99	240.02	2.00	0.00	1.00	0.00
84.07	243.97	2.00	0.00	1.00	0.00	84.15	244.83	2.00	0.00	1.00	0.00
84.19	246.74	2.00	0.00	1.00	0.00	84.26	253.90	2.00	0.00	1.00	0.00
84.34	254.00	2.00	0.00	1.00	0.00	84.41	254.00	2.00	0.00	1.00	0.00
84.46	254.00	2.00	0.00	1.00	0.00	84.54	254.00	2.00	0.00	1.00	0.00
84.59	254.00	2.00	0.00	1.00	0.00	84.68	254.00	2.00	0.00	1.00	0.00
84.72	254.00	2.00	0.00	1.00	0.00	84.81	254.00	2.00	0.00	1.00	0.00
84.86	254.00	2.00	0.00	1.00	0.00	84.95	254.00	2.00	0.00	1.00	0.00
85.00	254.00	2.00	0.00	1.00	0.00	85.08	254.00	2.00	0.00	1.00	0.00
85.12	254.00	2.00	0.00	1.00	0.00	85.21	254.00	2.00	0.00	1.00	0.00
85.26	254.00	2.00	0.00	1.00	0.00	85.30	254.00	2.00	0.00	1.00	0.00
85.39	254.00	2.00	0.00	1.00	0.00	85.45	254.00	2.00	0.00	1.00	0.00
85.55	254.00	2.00	0.00	1.00	0.00	85.62	254.00	2.00	0.00	1.00	0.00
85.67	254.00	2.00	0.00	1.00	0.00	85.73	254.00	2.00	0.00	1.00	0.00
85.77	254.00	2.00	0.00	1.00	0.00	85.84	254.00	2.00	0.00	1.00	0.00
85.92	254.00	2.00	0.00	1.00	0.00	85.98	254.00	2.00	0.00	1.00	0.00
86.05	254.00	2.00	0.00	1.00	0.00	86.09	254.00	2.00	0.00	1.00	0.00
86.19	254.00	2.00	0.00	1.00	0.00	86.23	254.00	2.00	0.00	1.00	0.00
86.31	254.00	2.00	0.00	1.00	0.00	86.41	254.00	2.00	0.00	1.00	0.00
86.45	244.35	2.00	0.00	1.00	0.00	86.50	224.91	2.00	0.00	1.00	0.00
86.59	181.38	2.00	0.00	1.00	0.00	86.64	177.69	2.00	0.00	1.00	0.00
86.69	203.52	2.00	0.00	1.00	0.00	86.79	160.51	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
86.85	63.47	2.00	0.00	1.00	0.00	86.90	48.60	2.00	0.00	1.00	0.00
86.98	35.92	2.00	0.00	1.00	0.00	87.03	32.16	2.00	0.00	1.00	0.00
87.16	21.23	2.00	0.00	1.00	0.00	87.21	19.51	2.00	0.00	1.00	0.00
87.26	19.92	2.00	0.00	1.00	0.00	87.38	21.59	2.00	0.00	1.00	0.00
87.42	22.65	2.00	0.00	1.00	0.00	87.48	24.07	2.00	0.00	1.00	0.00
87.56	24.14	2.00	0.00	1.00	0.00	87.61	23.02	2.00	0.00	1.00	0.00
87.66	20.72	2.00	0.00	1.00	0.00	87.72	18.02	2.00	0.00	1.00	0.00
87.78	15.62	2.00	0.00	1.00	0.00	87.83	14.26	2.00	0.00	1.00	0.00
87.91	13.39	2.00	0.00	1.00	0.00	87.96	13.07	2.00	0.00	1.00	0.00
88.00	13.23	2.00	0.00	1.00	0.00	88.07	13.14	2.00	0.00	1.00	0.00
88.14	13.06	2.00	0.00	1.00	0.00	88.23	13.12	2.00	0.00	1.00	0.00
88.31	13.09	2.00	0.00	1.00	0.00	88.36	14.58	2.00	0.00	1.00	0.00
88.43	19.49	2.00	0.00	1.00	0.00	88.49	28.22	2.00	0.00	1.00	0.00
88.54	43.57	2.00	0.00	1.00	0.00	88.59	61.66	2.00	0.00	1.00	0.00
88.66	155.08	2.00	0.00	1.00	0.00	88.77	183.47	2.00	0.00	1.00	0.00
88.83	185.96	2.00	0.00	1.00	0.00	88.93	181.98	2.00	0.00	1.00	0.00
88.99	178.72	2.00	0.00	1.00	0.00	89.11	173.16	2.00	0.00	1.00	0.00
89.15	170.28	2.00	0.00	1.00	0.00	89.28	167.14	2.00	0.00	1.00	0.00
89.33	167.25	2.00	0.00	1.00	0.00	89.38	167.28	2.00	0.00	1.00	0.00
89.44	167.99	2.00	0.00	1.00	0.00	89.49	168.80	2.00	0.00	1.00	0.00
89.55	168.75	2.00	0.00	1.00	0.00	89.59	165.12	2.00	0.00	1.00	0.00
89.65	170.74	2.00	0.00	1.00	0.00	89.71	171.77	2.00	0.00	1.00	0.00
89.77	170.80	2.00	0.00	1.00	0.00	89.84	167.93	2.00	0.00	1.00	0.00
89.94	161.24	2.00	0.00	1.00	0.00	90.01	157.97	2.00	0.00	1.00	0.00
90.07	156.68	2.00	0.00	1.00	0.00	90.11	155.32	2.00	0.00	1.00	0.00
90.17	155.32	2.00	0.00	1.00	0.00	90.25	153.75	2.00	0.00	1.00	0.00
90.29	151.91	2.00	0.00	1.00	0.00	90.38	147.18	2.00	0.00	1.00	0.00
90.42	71.20	2.00	0.00	1.00	0.00	90.51	60.60	2.00	0.00	1.00	0.00
90.55	52.48	2.00	0.00	1.00	0.00	90.65	36.01	2.00	0.00	1.00	0.00
90.78	25.47	2.00	0.00	1.00	0.00	90.86	19.76	2.00	0.00	1.00	0.00
90.91	17.55	2.00	0.00	1.00	0.00	90.97	16.07	2.00	0.00	1.00	0.00
91.03	15.03	2.00	0.00	1.00	0.00	91.08	13.85	2.00	0.00	1.00	0.00
91.18	12.42	2.00	0.00	1.00	0.00	91.22	12.30	2.00	0.00	1.00	0.00
91.31	11.95	2.00	0.00	1.00	0.00	91.35	11.80	2.00	0.00	1.00	0.00
91.47	11.33	2.00	0.00	1.00	0.00	91.52	10.95	2.00	0.00	1.00	0.00
91.57	10.35	2.00	0.00	1.00	0.00	91.63	9.97	2.00	0.00	1.00	0.00
91.69	9.97	2.00	0.00	1.00	0.00	91.75	9.97	2.00	0.00	1.00	0.00
91.87	9.97	2.00	0.00	1.00	0.00	91.92	10.19	2.00	0.00	1.00	0.00
91.97	10.37	2.00	0.00	1.00	0.00	92.10	10.59	2.00	0.00	1.00	0.00
92.15	10.59	2.00	0.00	1.00	0.00	92.23	10.59	2.00	0.00	1.00	0.00
92.29	10.58	2.00	0.00	1.00	0.00	92.34	10.62	2.00	0.00	1.00	0.00
92.41	10.69	2.00	0.00	1.00	0.00	92.46	10.69	2.00	0.00	1.00	0.00
92.52	10.54	2.00	0.00	1.00	0.00	92.59	10.46	2.00	0.00	1.00	0.00
92.63	10.01	2.00	0.00	1.00	0.00	92.67	10.01	2.00	0.00	1.00	0.00
92.75	10.23	2.00	0.00	1.00	0.00	92.80	10.26	2.00	0.00	1.00	0.00
92.88	10.56	2.00	0.00	1.00	0.00	92.93	10.86	2.00	0.00	1.00	0.00
93.01	12.64	2.00	0.00	1.00	0.00	93.05	14.57	2.00	0.00	1.00	0.00
93.13	22.87	2.00	0.00	1.00	0.00	93.20	40.17	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
93.29	132.98	2.00	0.00	1.00	0.00	93.33	147.39	2.00	0.00	1.00	0.00
93.38	158.91	2.00	0.00	1.00	0.00	93.47	171.85	2.00	0.00	1.00	0.00
93.52	176.15	2.00	0.00	1.00	0.00	93.58	180.06	2.00	0.00	1.00	0.00
93.64	182.69	2.00	0.00	1.00	0.00	93.73	185.10	2.00	0.00	1.00	0.00
93.77	186.35	2.00	0.00	1.00	0.00	93.86	187.81	2.00	0.00	1.00	0.00
93.91	188.50	2.00	0.00	1.00	0.00	94.06	192.00	2.00	0.00	1.00	0.00
94.12	193.32	2.00	0.00	1.00	0.00	94.17	194.56	2.00	0.00	1.00	0.00
94.21	195.72	2.00	0.00	1.00	0.00	94.30	197.00	2.00	0.00	1.00	0.00
94.39	199.06	2.00	0.00	1.00	0.00	94.44	200.38	2.00	0.00	1.00	0.00
94.57	201.67	2.00	0.00	1.00	0.00	94.62	198.50	2.00	0.00	1.00	0.00
94.67	194.71	2.00	0.00	1.00	0.00	94.70	189.48	2.00	0.00	1.00	0.00
94.77	184.10	2.00	0.00	1.00	0.00	94.88	169.51	2.00	0.00	1.00	0.00
94.92	161.95	2.00	0.00	1.00	0.00	94.96	155.83	2.00	0.00	1.00	0.00
95.05	73.79	2.00	0.00	1.00	0.00	95.11	71.65	2.00	0.00	1.00	0.00
95.17	70.16	2.00	0.00	1.00	0.00	95.22	69.29	2.00	0.00	1.00	0.00
95.30	69.09	2.00	0.00	1.00	0.00	95.35	68.92	2.00	0.00	1.00	0.00
95.44	66.97	2.00	0.00	1.00	0.00	95.49	65.05	2.00	0.00	1.00	0.00
95.59	60.14	2.00	0.00	1.00	0.00	95.63	56.77	2.00	0.00	1.00	0.00
95.67	52.87	2.00	0.00	1.00	0.00	95.76	38.59	2.00	0.00	1.00	0.00
95.82	36.67	2.00	0.00	1.00	0.00	95.90	31.69	2.00	0.00	1.00	0.00
95.97	25.52	2.00	0.00	1.00	0.00	96.01	23.65	2.00	0.00	1.00	0.00
96.09	19.93	2.00	0.00	1.00	0.00	96.14	18.24	2.00	0.00	1.00	0.00
96.22	17.24	2.00	0.00	1.00	0.00	96.26	16.56	2.00	0.00	1.00	0.00
96.33	14.96	2.00	0.00	1.00	0.00	96.41	13.69	2.00	0.00	1.00	0.00
96.49	12.85	2.00	0.00	1.00	0.00	96.53	12.51	2.00	0.00	1.00	0.00
96.60	11.79	2.00	0.00	1.00	0.00	96.67	11.23	2.00	0.00	1.00	0.00
96.74	10.90	2.00	0.00	1.00	0.00	96.80	10.74	2.00	0.00	1.00	0.00
96.90	10.52	2.00	0.00	1.00	0.00	96.97	10.48	2.00	0.00	1.00	0.00
97.02	10.44	2.00	0.00	1.00	0.00	97.08	10.40	2.00	0.00	1.00	0.00
97.13	10.33	2.00	0.00	1.00	0.00	97.19	10.22	2.00	0.00	1.00	0.00
97.29	10.25	2.00	0.00	1.00	0.00	97.33	10.28	2.00	0.00	1.00	0.00
97.38	10.43	2.00	0.00	1.00	0.00	97.48	10.76	2.00	0.00	1.00	0.00
97.52	10.87	2.00	0.00	1.00	0.00	97.61	11.38	2.00	0.00	1.00	0.00
97.66	12.35	2.00	0.00	1.00	0.00	97.74	16.98	2.00	0.00	1.00	0.00
97.83	22.14	2.00	0.00	1.00	0.00	97.89	23.59	2.00	0.00	1.00	0.00
97.93	23.46	2.00	0.00	1.00	0.00	97.98	22.93	2.00	0.00	1.00	0.00
98.08	21.28	2.00	0.00	1.00	0.00	98.13	19.74	2.00	0.00	1.00	0.00
98.17	17.87	2.00	0.00	1.00	0.00	98.27	14.74	2.00	0.00	1.00	0.00
98.30	12.77	2.00	0.00	1.00	0.00	98.39	12.61	2.00	0.00	1.00	0.00
98.43	11.90	2.00	0.00	1.00	0.00	98.53	11.30	2.00	0.00	1.00	0.00
98.61	11.19	2.00	0.00	1.00	0.00	98.66	11.19	2.00	0.00	1.00	0.00
98.70	11.11	2.00	0.00	1.00	0.00	98.81	11.25	2.00	0.00	1.00	0.00
98.83	11.24	2.00	0.00	1.00	0.00	98.92	11.44	2.00	0.00	1.00	0.00
98.99	11.21	2.00	0.00	1.00	0.00	99.06	10.95	2.00	0.00	1.00	0.00
99.11	10.84	2.00	0.00	1.00	0.00	99.19	10.58	2.00	0.00	1.00	0.00
99.24	10.58	2.00	0.00	1.00	0.00	99.31	10.58	2.00	0.00	1.00	0.00
99.37	10.57	2.00	0.00	1.00	0.00	99.42	10.94	2.00	0.00	1.00	0.00
99.54	11.60	2.00	0.00	1.00	0.00	99.63	11.74	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
99.67	11.89	2.00	0.00	1.00	0.00	99.73	11.96	2.00	0.00	1.00	0.00
99.81	11.96	2.00	0.00	1.00	0.00	99.86	11.92	2.00	0.00	1.00	0.00
99.94	12.51	2.00	0.00	1.00	0.00	100.08	13.18	2.00	0.00	1.00	0.00
100.16	13.33	2.00	0.00	1.00	0.00	100.21	13.33	2.00	0.00	1.00	0.00
100.25	12.06	2.00	0.00	1.00	0.00						

Total estimated settlement: 3.18

Abbreviations

$Q_{c1n,cs}$: Equivalent dean sand normalized cone resistance
FS: Factor of safety against liquefaction
e_v (%): Post-liquefaction volumentric strain
DF: e_v depth weighting factor
Settlement: Calculated settlement

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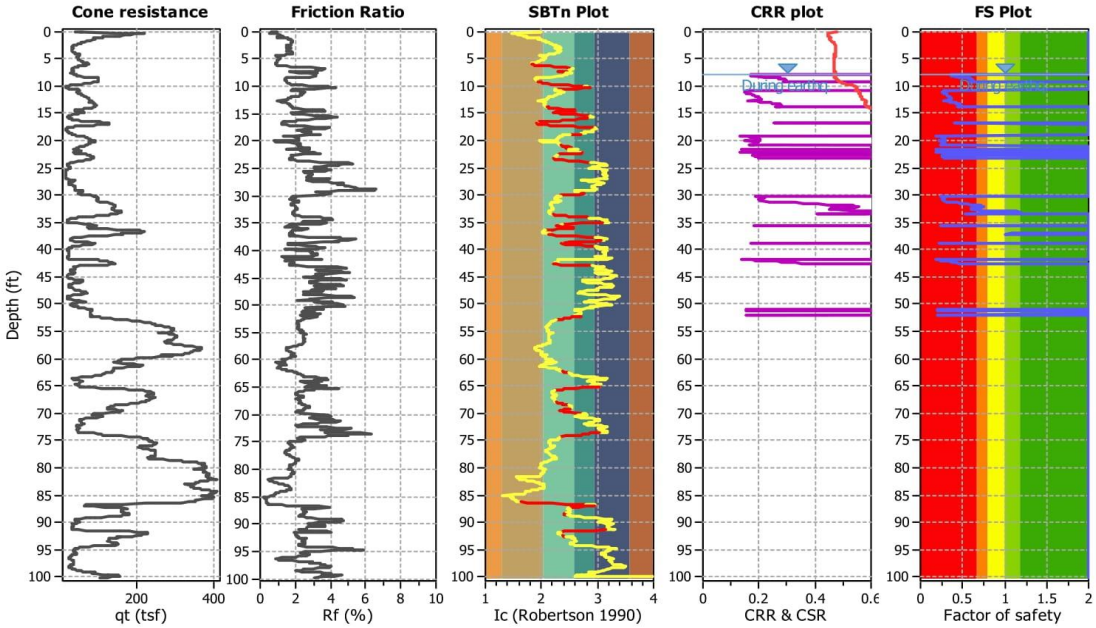
LIQUEFACTION ANALYSIS REPORT

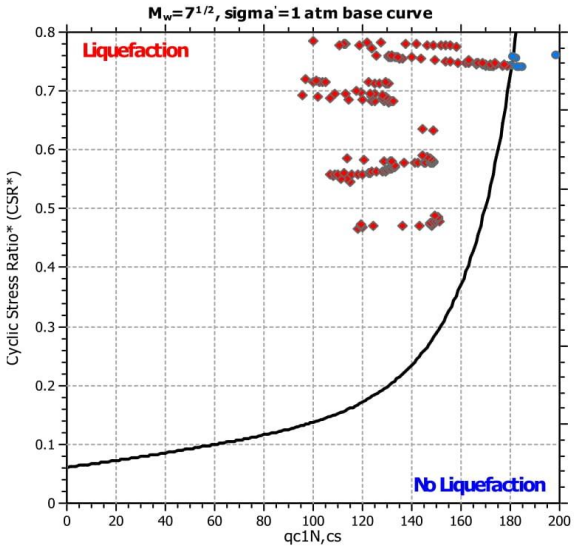
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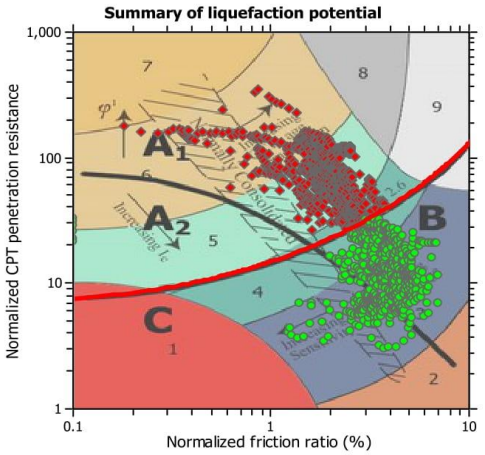
CPT file : CPT-2

Input parameters and analysis data

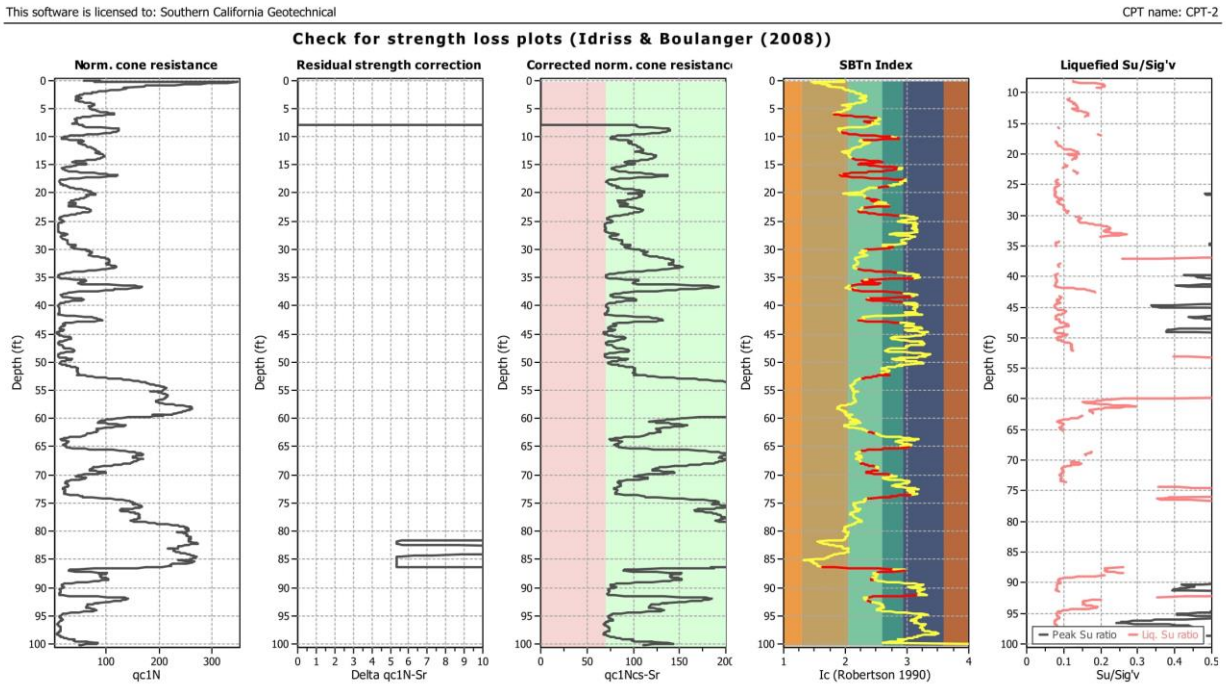
Analysis method:	B&I (2014)	G.W.T. (in-situ):	43.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	1	Fill weight:	N/A	Limit depth:	55.00 ft
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry



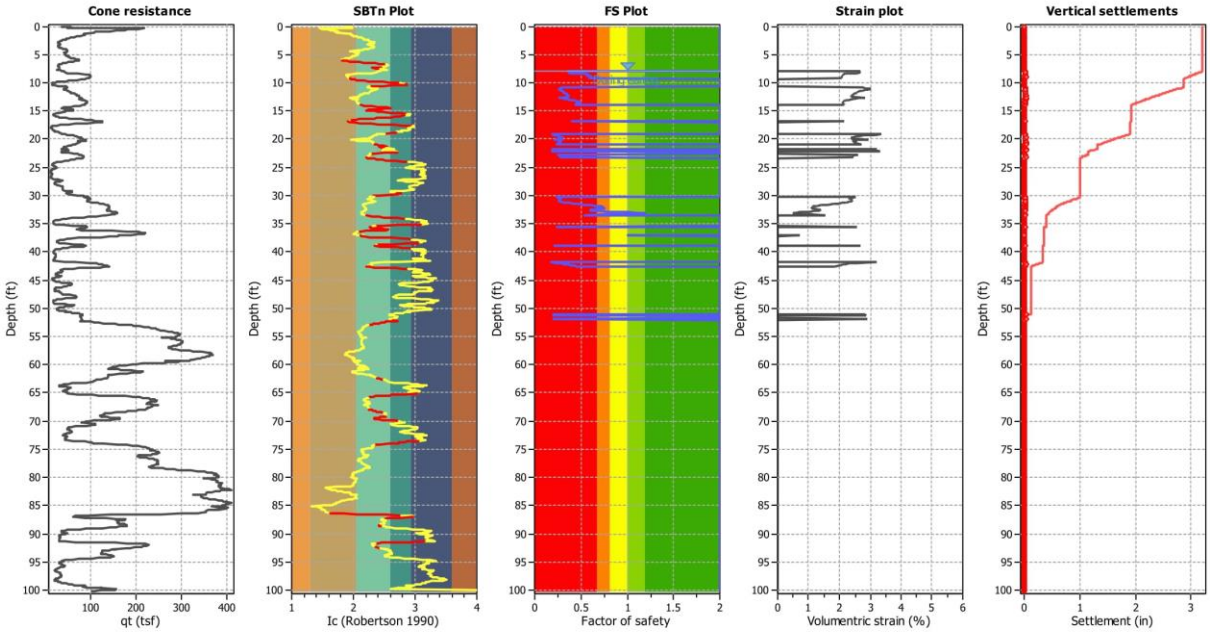
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	8.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	43.00 ft	Fill height:	N/A	Limit depth:	55.00 ft

CLiq v.3.0.3.2 - CPT Liquefaction Assessment Software - Report created on: 9/3/2020, 5:17:23 PM 20
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Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

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:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
8.01	118.41	0.36	2.69	1.00	0.01	8.09	120.02	0.37	2.65	1.00	0.03
8.16	119.28	0.36	2.67	1.00	0.02	8.23	119.06	0.36	2.68	1.00	0.02
8.29	124.49	0.39	2.55	1.00	0.02	8.36	136.15	0.46	2.31	1.00	0.02
8.41	143.10	0.53	2.19	1.00	0.01	8.47	147.81	0.58	2.11	1.00	0.02
8.55	147.61	0.58	2.11	1.00	0.02	8.63	147.26	0.57	2.12	1.00	0.02
8.67	147.33	0.57	2.12	1.00	0.01	8.76	149.02	0.59	2.09	1.00	0.02
8.80	150.20	0.61	2.07	1.00	0.01	8.87	151.17	0.62	2.06	1.00	0.02
9.01	150.91	0.61	2.06	1.00	0.03	9.06	150.90	0.61	2.06	1.00	0.01
9.11	150.73	0.60	2.06	1.00	0.01	9.16	150.58	0.60	2.07	1.00	0.01
9.20	149.64	0.59	2.08	1.00	0.01	9.30	147.50	2.00	0.00	1.00	0.00
9.35	144.85	2.00	0.00	1.00	0.00	9.39	142.17	2.00	0.00	1.00	0.00
9.51	133.02	2.00	0.00	1.00	0.00	9.56	126.80	2.00	0.00	1.00	0.00
9.64	118.88	2.00	0.00	1.00	0.00	9.69	112.76	2.00	0.00	1.00	0.00
9.74	105.65	2.00	0.00	1.00	0.00	9.80	97.99	2.00	0.00	1.00	0.00
9.86	90.97	2.00	0.00	1.00	0.00	9.92	86.26	2.00	0.00	1.00	0.00
9.99	22.75	2.00	0.00	1.00	0.00	10.05	19.98	2.00	0.00	1.00	0.00
10.12	18.17	2.00	0.00	1.00	0.00	10.21	17.43	2.00	0.00	1.00	0.00
10.27	17.32	2.00	0.00	1.00	0.00	10.31	17.23	2.00	0.00	1.00	0.00
10.39	20.39	2.00	0.00	1.00	0.00	10.44	25.64	2.00	0.00	1.00	0.00
10.53	91.43	2.00	0.00	1.00	0.00	10.60	100.15	2.00	0.00	1.00	0.00
10.66	107.68	2.00	0.00	1.00	0.00	10.71	110.13	2.00	0.00	1.00	0.00
10.79	114.70	0.29	2.79	1.00	0.03	10.84	115.09	0.29	2.78	1.00	0.02
10.93	113.69	0.29	2.81	1.00	0.03	10.97	111.30	0.28	2.88	1.00	0.01
11.06	107.89	0.27	2.97	1.00	0.03	11.12	106.81	0.26	3.00	1.00	0.02
11.19	108.98	0.27	2.94	1.00	0.03	11.24	109.70	0.27	2.92	1.00	0.02
11.33	112.56	0.28	2.84	1.00	0.03	11.36	115.48	0.29	2.77	1.00	0.01
11.44	118.07	0.30	2.70	1.00	0.03	11.50	119.80	0.31	2.66	1.00	0.02
11.59	122.36	0.32	2.60	1.00	0.03	11.64	123.02	0.32	2.58	1.00	0.01
11.68	123.42	0.32	2.58	1.00	0.01	11.75	123.58	0.32	2.57	1.00	0.02
11.83	125.50	0.33	2.53	1.00	0.02	11.90	127.94	0.34	2.48	1.00	0.02
11.99	129.26	0.35	2.45	1.00	0.03	12.03	129.43	0.35	2.45	1.00	0.01
12.09	129.95	0.35	2.44	1.00	0.02	12.20	130.65	0.35	2.42	1.00	0.03
12.26	131.21	0.35	2.41	1.00	0.01	12.30	131.94	0.36	2.40	1.00	0.01
12.36	132.57	0.36	2.38	1.00	0.02	12.43	132.74	0.36	2.38	1.00	0.02
12.48	132.92	0.36	2.38	1.00	0.01	12.54	133.02	0.36	2.37	1.00	0.02
12.60	113.53	0.27	2.82	1.00	0.02	12.71	120.64	0.30	2.64	1.00	0.04
12.83	128.53	0.33	2.47	1.00	0.03	12.92	131.10	0.35	2.41	1.00	0.03
12.94	131.74	0.35	2.40	1.00	0.01	13.00	137.07	0.38	2.30	1.00	0.02
13.09	141.12	0.41	2.22	1.00	0.02	13.14	142.64	0.43	2.20	1.00	0.01
13.23	145.19	0.45	2.15	1.00	0.02	13.26	145.93	0.46	2.14	1.00	0.01
13.36	147.71	0.47	2.11	1.00	0.03	13.40	148.23	0.48	2.10	1.00	0.01
13.45	148.75	0.49	2.10	1.00	0.01	13.54	148.75	0.48	2.10	1.00	0.02
13.59	148.29	0.48	2.10	1.00	0.01	13.67	147.98	0.47	2.11	1.00	0.02
13.72	147.42	0.47	2.12	1.00	0.01	13.79	146.07	0.45	2.14	1.00	0.02
13.87	144.48	0.43	2.17	1.00	0.02	13.94	142.97	2.00	0.00	1.00	0.00
13.98	140.96	2.00	0.00	1.00	0.00	14.05	138.38	2.00	0.00	1.00	0.00
14.11	134.52	2.00	0.00	1.00	0.00	14.20	127.18	2.00	0.00	1.00	0.00
14.26	120.72	2.00	0.00	1.00	0.00	14.32	113.09	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
14.38	105.24	2.00	0.00	1.00	0.00	14.46	37.06	2.00	0.00	1.00	0.00
14.52	98.15	2.00	0.00	1.00	0.00	14.60	101.71	2.00	0.00	1.00	0.00
14.64	105.79	2.00	0.00	1.00	0.00	14.73	117.17	2.00	0.00	1.00	0.00
14.77	119.91	2.00	0.00	1.00	0.00	14.84	118.81	2.00	0.00	1.00	0.00
14.95	113.04	2.00	0.00	1.00	0.00	14.99	109.78	2.00	0.00	1.00	0.00
15.04	106.31	2.00	0.00	1.00	0.00	15.11	103.46	2.00	0.00	1.00	0.00
15.17	100.36	2.00	0.00	1.00	0.00	15.27	31.99	2.00	0.00	1.00	0.00
15.40	24.61	2.00	0.00	1.00	0.00	15.50	19.38	2.00	0.00	1.00	0.00
15.57	17.94	2.00	0.00	1.00	0.00	15.66	16.93	2.00	0.00	1.00	0.00
15.75	18.10	2.00	0.00	1.00	0.00	15.79	19.88	2.00	0.00	1.00	0.00
15.85	20.62	2.00	0.00	1.00	0.00	15.97	23.56	2.00	0.00	1.00	0.00
16.02	26.26	2.00	0.00	1.00	0.00	16.10	89.69	2.00	0.00	1.00	0.00
16.14	93.45	2.00	0.00	1.00	0.00	16.21	98.24	2.00	0.00	1.00	0.00
16.27	104.46	2.00	0.00	1.00	0.00	16.37	110.86	2.00	0.00	1.00	0.00
16.44	129.78	2.00	0.00	1.00	0.00	16.49	134.04	2.00	0.00	1.00	0.00
16.57	136.53	2.00	0.00	1.00	0.00	16.63	138.60	2.00	0.00	1.00	0.00
16.71	141.59	2.00	0.00	1.00	0.00	16.77	143.23	2.00	0.00	1.00	0.00
16.80	144.42	0.40	2.17	1.00	0.01	16.89	148.82	0.44	2.09	1.00	0.02
16.97	152.71	2.00	0.00	1.00	0.00	17.00	153.24	2.00	0.00	1.00	0.00
17.07	152.08	2.00	0.00	1.00	0.00	17.15	143.72	2.00	0.00	1.00	0.00
17.20	138.24	2.00	0.00	1.00	0.00	17.28	124.05	2.00	0.00	1.00	0.00
17.34	110.36	2.00	0.00	1.00	0.00	17.41	97.51	2.00	0.00	1.00	0.00
17.46	30.83	2.00	0.00	1.00	0.00	17.54	22.78	2.00	0.00	1.00	0.00
17.60	17.90	2.00	0.00	1.00	0.00	17.68	14.83	2.00	0.00	1.00	0.00
17.72	13.58	2.00	0.00	1.00	0.00	17.81	12.00	2.00	0.00	1.00	0.00
17.88	11.39	2.00	0.00	1.00	0.00	17.92	11.38	2.00	0.00	1.00	0.00
17.99	11.60	2.00	0.00	1.00	0.00	18.08	12.23	2.00	0.00	1.00	0.00
18.11	12.62	2.00	0.00	1.00	0.00	18.18	13.24	2.00	0.00	1.00	0.00
18.26	13.61	2.00	0.00	1.00	0.00	18.35	15.03	2.00	0.00	1.00	0.00
18.44	18.04	2.00	0.00	1.00	0.00	18.50	18.88	2.00	0.00	1.00	0.00
18.56	19.33	2.00	0.00	1.00	0.00	18.61	20.35	2.00	0.00	1.00	0.00
18.66	22.17	2.00	0.00	1.00	0.00	18.72	24.84	2.00	0.00	1.00	0.00
18.79	26.62	2.00	0.00	1.00	0.00	18.88	28.47	2.00	0.00	1.00	0.00
18.93	29.86	2.00	0.00	1.00	0.00	19.00	90.04	2.00	0.00	1.00	0.00
19.05	90.89	2.00	0.00	1.00	0.00	19.12	95.73	0.19	3.36	1.00	0.03
19.18	101.75	0.20	3.16	1.00	0.02	19.23	107.06	0.21	3.00	1.00	0.02
19.31	114.67	0.23	2.79	1.00	0.03	19.39	119.94	0.25	2.66	1.00	0.02
19.47	123.57	0.26	2.57	1.00	0.02	19.51	124.74	0.27	2.55	1.00	0.01
19.65	128.94	0.29	2.46	1.00	0.04	19.70	130.82	0.29	2.42	1.00	0.01
19.78	132.06	0.30	2.39	1.00	0.03	19.88	131.34	0.30	2.41	1.00	0.03
19.92	132.47	0.30	2.38	1.00	0.01	19.98	129.45	0.29	2.45	1.00	0.02
20.04	108.45	0.21	2.95	1.00	0.02	20.08	113.27	0.23	2.82	1.00	0.01
20.17	123.74	0.26	2.57	1.00	0.03	20.22	128.13	0.28	2.47	1.00	0.01
20.31	130.13	0.29	2.43	1.00	0.03	20.38	124.10	0.26	2.56	1.00	0.02
20.50	129.16	0.28	2.45	1.00	0.04	20.55	128.04	0.28	2.48	1.00	0.01
20.65	124.96	0.26	2.54	1.00	0.03	20.72	123.29	0.26	2.58	1.00	0.02
20.83	119.53	0.24	2.67	1.00	0.04	20.89	117.74	0.24	2.71	1.00	0.02
20.96	115.72	2.00	0.00	1.00	0.00	21.01	113.62	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
21.07	110.79	2.00	0.00	1.00	0.00	21.14	107.69	2.00	0.00	1.00	0.00
21.18	104.74	2.00	0.00	1.00	0.00	21.31	99.72	2.00	0.00	1.00	0.00
21.41	92.35	2.00	0.00	1.00	0.00	21.49	92.44	2.00	0.00	1.00	0.00
21.53	92.59	2.00	0.00	1.00	0.00	21.59	93.35	2.00	0.00	1.00	0.00
21.66	29.10	2.00	0.00	1.00	0.00	21.74	99.78	0.19	3.22	1.00	0.03
21.82	102.59	0.20	3.13	1.00	0.03	21.87	103.98	0.20	3.09	1.00	0.02
21.98	104.98	0.20	3.06	1.00	0.04	22.05	101.40	0.19	3.17	1.00	0.03
22.10	96.73	0.19	3.32	1.00	0.02	22.15	32.18	2.00	0.00	1.00	0.00
22.21	30.20	2.00	0.00	1.00	0.00	22.28	28.90	2.00	0.00	1.00	0.00
22.32	29.76	2.00	0.00	1.00	0.00	22.39	34.15	2.00	0.00	1.00	0.00
22.45	103.14	2.00	0.00	1.00	0.00	22.55	114.64	2.00	0.00	1.00	0.00
22.63	117.32	2.00	0.00	1.00	0.00	22.68	119.84	2.00	0.00	1.00	0.00
22.73	122.44	0.25	2.60	1.00	0.02	22.80	124.77	0.26	2.55	1.00	0.02
22.85	126.61	0.26	2.51	1.00	0.02	22.95	129.61	0.28	2.44	1.00	0.03
23.03	130.29	0.28	2.43	1.00	0.02	23.07	130.71	0.28	2.42	1.00	0.01
23.20	129.34	0.27	2.45	1.00	0.04	23.30	125.58	2.00	0.00	1.00	0.00
23.38	123.24	2.00	0.00	1.00	0.00	23.43	120.34	2.00	0.00	1.00	0.00
23.48	116.75	2.00	0.00	1.00	0.00	23.56	113.28	2.00	0.00	1.00	0.00
23.65	107.64	2.00	0.00	1.00	0.00	23.72	104.49	2.00	0.00	1.00	0.00
23.82	34.69	2.00	0.00	1.00	0.00	23.94	27.58	2.00	0.00	1.00	0.00
24.00	23.99	2.00	0.00	1.00	0.00	24.05	20.92	2.00	0.00	1.00	0.00
24.18	15.65	2.00	0.00	1.00	0.00	24.22	14.45	2.00	0.00	1.00	0.00
24.28	13.88	2.00	0.00	1.00	0.00	24.35	12.81	2.00	0.00	1.00	0.00
24.40	11.77	2.00	0.00	1.00	0.00	24.50	11.26	2.00	0.00	1.00	0.00
24.57	11.52	2.00	0.00	1.00	0.00	24.62	11.98	2.00	0.00	1.00	0.00
24.67	13.14	2.00	0.00	1.00	0.00	24.80	15.99	2.00	0.00	1.00	0.00
24.84	17.63	2.00	0.00	1.00	0.00	24.93	17.18	2.00	0.00	1.00	0.00
24.94	15.60	2.00	0.00	1.00	0.00	25.03	20.11	2.00	0.00	1.00	0.00
25.08	19.54	2.00	0.00	1.00	0.00	25.18	15.86	2.00	0.00	1.00	0.00
25.23	14.20	2.00	0.00	1.00	0.00	25.29	12.82	2.00	0.00	1.00	0.00
25.35	11.58	2.00	0.00	1.00	0.00	25.42	10.69	2.00	0.00	1.00	0.00
25.47	10.14	2.00	0.00	1.00	0.00	25.57	9.79	2.00	0.00	1.00	0.00
25.65	9.77	2.00	0.00	1.00	0.00	25.75	9.61	2.00	0.00	1.00	0.00
25.87	9.52	2.00	0.00	1.00	0.00	25.97	9.50	2.00	0.00	1.00	0.00
26.02	9.49	2.00	0.00	1.00	0.00	26.06	9.75	2.00	0.00	1.00	0.00
26.12	10.20	2.00	0.00	1.00	0.00	26.18	10.52	2.00	0.00	1.00	0.00
26.27	10.63	2.00	0.00	1.00	0.00	26.32	10.42	2.00	0.00	1.00	0.00
26.41	9.94	2.00	0.00	1.00	0.00	26.45	9.54	2.00	0.00	1.00	0.00
26.53	9.20	2.00	0.00	1.00	0.00	26.60	9.51	2.00	0.00	1.00	0.00
26.64	9.24	2.00	0.00	1.00	0.00	26.73	9.49	2.00	0.00	1.00	0.00
26.78	9.67	2.00	0.00	1.00	0.00	26.86	9.98	2.00	0.00	1.00	0.00
26.93	10.56	2.00	0.00	1.00	0.00	26.98	11.20	2.00	0.00	1.00	0.00
27.06	13.61	2.00	0.00	1.00	0.00	27.14	17.88	2.00	0.00	1.00	0.00
27.17	20.86	2.00	0.00	1.00	0.00	27.26	26.65	2.00	0.00	1.00	0.00
27.35	27.83	2.00	0.00	1.00	0.00	27.39	26.20	2.00	0.00	1.00	0.00
27.44	23.90	2.00	0.00	1.00	0.00	27.52	19.54	2.00	0.00	1.00	0.00
27.61	16.34	2.00	0.00	1.00	0.00	27.70	14.41	2.00	0.00	1.00	0.00
27.73	13.81	2.00	0.00	1.00	0.00	27.79	13.67	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
27.83	14.04	2.00	0.00	1.00	0.00	27.92	15.38	2.00	0.00	1.00	0.00
27.97	15.89	2.00	0.00	1.00	0.00	28.06	17.69	2.00	0.00	1.00	0.00
28.10	19.25	2.00	0.00	1.00	0.00	28.15	21.20	2.00	0.00	1.00	0.00
28.27	25.25	2.00	0.00	1.00	0.00	28.32	27.09	2.00	0.00	1.00	0.00
28.39	28.18	2.00	0.00	1.00	0.00	28.50	28.39	2.00	0.00	1.00	0.00
28.57	28.09	2.00	0.00	1.00	0.00	28.63	28.18	2.00	0.00	1.00	0.00
28.68	28.03	2.00	0.00	1.00	0.00	28.73	27.60	2.00	0.00	1.00	0.00
28.76	27.62	2.00	0.00	1.00	0.00	28.82	27.62	2.00	0.00	1.00	0.00
28.90	27.58	2.00	0.00	1.00	0.00	28.95	27.29	2.00	0.00	1.00	0.00
29.03	27.44	2.00	0.00	1.00	0.00	29.08	27.34	2.00	0.00	1.00	0.00
29.16	31.78	2.00	0.00	1.00	0.00	29.21	35.93	2.00	0.00	1.00	0.00
29.27	42.78	2.00	0.00	1.00	0.00	29.35	42.72	2.00	0.00	1.00	0.00
29.43	39.77	2.00	0.00	1.00	0.00	29.47	38.14	2.00	0.00	1.00	0.00
29.54	35.51	2.00	0.00	1.00	0.00	29.60	38.12	2.00	0.00	1.00	0.00
29.70	33.76	2.00	0.00	1.00	0.00	29.82	38.03	2.00	0.00	1.00	0.00
29.99	115.73	2.00	0.00	1.00	0.00	30.05	120.80	2.00	0.00	1.00	0.00
30.10	124.55	2.00	0.00	1.00	0.00	30.16	127.06	2.00	0.00	1.00	0.00
30.26	131.61	2.00	0.00	1.00	0.00	30.31	125.84	0.24	2.52	1.00	0.01
30.33	130.65	0.26	2.42	1.00	0.01	30.39	134.87	0.28	2.34	1.00	0.02
30.48	136.44	0.29	2.31	1.00	0.02	30.56	134.81	0.28	2.34	1.00	0.02
30.61	133.49	0.28	2.36	1.00	0.01	30.65	133.07	0.27	2.37	1.00	0.01
30.73	132.08	0.27	2.39	1.00	0.02	30.80	131.18	0.27	2.41	1.00	0.02
30.85	130.67	0.26	2.42	1.00	0.01	30.95	131.69	0.27	2.40	1.00	0.03
31.01	132.05	0.27	2.39	1.00	0.02	31.08	132.14	0.27	2.39	1.00	0.02
31.12	134.23	0.28	2.35	1.00	0.01	31.21	139.99	0.31	2.24	1.00	0.02
31.24	143.67	0.33	2.18	1.00	0.01	31.31	149.48	0.38	2.08	1.00	0.02
31.39	153.70	0.42	2.02	1.00	0.02	31.43	155.35	0.44	1.99	1.00	0.01
31.52	158.54	0.48	1.81	1.00	0.02	31.61	161.94	0.53	1.62	1.00	0.02
31.64	163.20	0.55	1.55	1.00	0.01	31.73	166.32	0.60	1.39	1.00	0.01
31.80	168.76	0.65	1.28	1.00	0.01	31.84	169.75	0.67	1.23	1.00	0.01
31.92	171.23	0.71	1.17	1.00	0.01	31.97	171.75	0.72	1.15	1.00	0.01
32.05	172.39	0.74	1.13	1.00	0.01	32.14	172.84	0.75	1.11	1.00	0.01
32.18	172.86	0.75	1.11	1.00	0.01	32.22	172.94	0.75	1.10	1.00	0.01
32.30	171.87	0.72	1.15	1.00	0.01	32.38	170.06	0.68	1.22	1.00	0.01
32.43	168.94	0.65	1.27	1.00	0.01	32.51	167.14	0.61	1.35	1.00	0.01
32.58	166.48	0.60	1.38	1.00	0.01	32.62	166.84	0.61	1.37	1.00	0.01
32.71	168.48	0.64	1.29	1.00	0.01	32.80	171.73	0.72	1.15	1.00	0.01
32.84	174.09	0.78	1.06	1.00	0.01	32.89	176.59	0.86	0.97	1.00	0.01
32.96	180.67	1.01	0.72	1.00	0.01	33.03	183.48	1.13	0.56	1.00	0.01
33.07	184.77	1.20	0.49	1.00	0.00	33.16	183.36	1.13	0.57	1.00	0.01
33.25	178.83	0.93	0.84	1.00	0.01	33.29	177.40	0.88	0.93	1.00	0.00
33.38	174.05	0.78	1.06	1.00	0.01	33.47	163.20	0.54	1.55	1.00	0.02
33.57	161.20	2.00	0.00	1.00	0.00	33.62	157.90	2.00	0.00	1.00	0.00
33.70	147.07	2.00	0.00	1.00	0.00	33.75	140.58	2.00	0.00	1.00	0.00
33.81	133.34	2.00	0.00	1.00	0.00	33.86	125.17	2.00	0.00	1.00	0.00
33.96	45.13	2.00	0.00	1.00	0.00	34.01	39.35	2.00	0.00	1.00	0.00
34.10	31.30	2.00	0.00	1.00	0.00	34.15	27.53	2.00	0.00	1.00	0.00
34.19	24.36	2.00	0.00	1.00	0.00	34.29	18.88	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
34.34	16.86	2.00	0.00	1.00	0.00	34.44	14.15	2.00	0.00	1.00	0.00
34.52	11.77	2.00	0.00	1.00	0.00	34.58	10.85	2.00	0.00	1.00	0.00
34.62	10.50	2.00	0.00	1.00	0.00	34.67	10.49	2.00	0.00	1.00	0.00
34.72	10.49	2.00	0.00	1.00	0.00	34.80	10.58	2.00	0.00	1.00	0.00
34.85	10.58	2.00	0.00	1.00	0.00	34.94	10.73	2.00	0.00	1.00	0.00
34.98	11.00	2.00	0.00	1.00	0.00	35.08	13.61	2.00	0.00	1.00	0.00
35.15	18.04	2.00	0.00	1.00	0.00	35.17	25.18	2.00	0.00	1.00	0.00
35.29	101.92	2.00	0.00	1.00	0.00	35.34	108.33	2.00	0.00	1.00	0.00
35.39	114.17	2.00	0.00	1.00	0.00	35.48	122.49	2.00	0.00	1.00	0.00
35.52	124.06	0.23	2.56	1.00	0.01	35.58	123.70	0.23	2.57	1.00	0.02
35.63	121.71	2.00	0.00	1.00	0.00	35.73	118.71	2.00	0.00	1.00	0.00
35.82	115.19	2.00	0.00	1.00	0.00	35.87	113.58	2.00	0.00	1.00	0.00
35.91	111.99	2.00	0.00	1.00	0.00	36.00	110.12	2.00	0.00	1.00	0.00
36.05	112.03	2.00	0.00	1.00	0.00	36.11	117.84	2.00	0.00	1.00	0.00
36.19	138.54	2.00	0.00	1.00	0.00	36.25	154.52	2.00	0.00	1.00	0.00
36.31	172.10	2.00	0.00	1.00	0.00	36.40	198.28	2.00	0.00	1.00	0.00
36.44	207.63	2.00	0.00	1.00	0.00	36.50	215.48	2.00	0.00	1.00	0.00
36.56	221.26	2.00	0.00	1.00	0.00	36.62	225.88	2.00	0.00	1.00	0.00
36.71	227.68	2.00	0.00	1.00	0.00	36.79	218.01	2.00	0.00	1.00	0.00
36.84	214.21	2.00	0.00	1.00	0.00	36.89	210.09	2.00	0.00	1.00	0.00
37.00	198.74	2.00	0.00	1.00	0.00	37.02	182.73	1.08	0.63	1.00	0.00
37.12	181.25	1.01	0.71	1.00	0.01	37.17	175.08	2.00	0.00	1.00	0.00
37.27	162.72	2.00	0.00	1.00	0.00	37.36	150.06	2.00	0.00	1.00	0.00
37.41	142.18	2.00	0.00	1.00	0.00	37.50	123.60	2.00	0.00	1.00	0.00
37.55	48.36	2.00	0.00	1.00	0.00	37.64	34.45	2.00	0.00	1.00	0.00
37.68	29.79	2.00	0.00	1.00	0.00	37.77	25.20	2.00	0.00	1.00	0.00
37.82	23.05	2.00	0.00	1.00	0.00	37.88	20.11	2.00	0.00	1.00	0.00
37.98	15.48	2.00	0.00	1.00	0.00	38.02	15.53	2.00	0.00	1.00	0.00
38.07	15.07	2.00	0.00	1.00	0.00	38.16	15.55	2.00	0.00	1.00	0.00
38.21	15.92	2.00	0.00	1.00	0.00	38.30	16.96	2.00	0.00	1.00	0.00
38.35	17.45	2.00	0.00	1.00	0.00	38.39	18.10	2.00	0.00	1.00	0.00
38.48	22.36	2.00	0.00	1.00	0.00	38.53	26.56	2.00	0.00	1.00	0.00
38.63	39.79	2.00	0.00	1.00	0.00	38.67	108.45	2.00	0.00	1.00	0.00
38.78	115.17	2.00	0.00	1.00	0.00	38.82	117.44	2.00	0.00	1.00	0.00
38.87	118.82	0.22	2.68	1.00	0.02	38.92	118.90	2.00	0.00	1.00	0.00
39.01	116.86	2.00	0.00	1.00	0.00	39.05	113.30	2.00	0.00	1.00	0.00
39.14	40.01	2.00	0.00	1.00	0.00	39.19	35.86	2.00	0.00	1.00	0.00
39.28	29.35	2.00	0.00	1.00	0.00	39.38	23.06	2.00	0.00	1.00	0.00
39.42	20.53	2.00	0.00	1.00	0.00	39.48	18.14	2.00	0.00	1.00	0.00
39.53	15.82	2.00	0.00	1.00	0.00	39.59	13.75	2.00	0.00	1.00	0.00
39.71	11.44	2.00	0.00	1.00	0.00	39.76	11.28	2.00	0.00	1.00	0.00
39.80	11.11	2.00	0.00	1.00	0.00	39.85	9.79	2.00	0.00	1.00	0.00
39.90	10.88	2.00	0.00	1.00	0.00	40.00	10.55	2.00	0.00	1.00	0.00
40.04	10.44	2.00	0.00	1.00	0.00	40.11	10.59	2.00	0.00	1.00	0.00
40.17	10.64	2.00	0.00	1.00	0.00	40.25	11.15	2.00	0.00	1.00	0.00
40.29	11.30	2.00	0.00	1.00	0.00	40.39	11.96	2.00	0.00	1.00	0.00
40.44	12.49	2.00	0.00	1.00	0.00	40.53	12.84	2.00	0.00	1.00	0.00
40.57	12.72	2.00	0.00	1.00	0.00	40.66	12.45	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
40.70	12.49	2.00	0.00	1.00	0.00	40.79	12.58	2.00	0.00	1.00	0.00
40.84	12.47	2.00	0.00	1.00	0.00	40.89	12.35	2.00	0.00	1.00	0.00
41.00	12.23	2.00	0.00	1.00	0.00	41.05	12.12	2.00	0.00	1.00	0.00
41.10	12.11	2.00	0.00	1.00	0.00	41.15	11.94	2.00	0.00	1.00	0.00
41.22	11.41	2.00	0.00	1.00	0.00	41.27	10.93	2.00	0.00	1.00	0.00
41.37	10.10	2.00	0.00	1.00	0.00	41.45	9.68	2.00	0.00	1.00	0.00
41.50	10.16	2.00	0.00	1.00	0.00	41.55	9.46	2.00	0.00	1.00	0.00
41.64	10.21	2.00	0.00	1.00	0.00	41.67	11.50	2.00	0.00	1.00	0.00
41.76	25.84	2.00	0.00	1.00	0.00	41.80	100.23	0.18	3.21	1.00	0.02
41.89	121.78	0.22	2.61	1.00	0.03	41.94	127.26	0.24	2.49	1.00	0.01
42.04	137.30	0.29	2.29	1.00	0.03	42.10	141.88	0.31	2.21	1.00	0.02
42.16	146.13	0.34	2.14	1.00	0.02	42.29	148.61	0.36	2.10	1.00	0.03
42.38	152.02	0.39	2.04	1.00	0.02	42.42	153.75	0.41	2.02	1.00	0.01
42.47	155.52	0.43	1.99	1.00	0.01	42.56	158.11	0.46	1.84	1.00	0.02
42.61	158.51	2.00	0.00	1.00	0.00	42.70	152.65	2.00	0.00	1.00	0.00
42.78	146.26	2.00	0.00	1.00	0.00	42.87	124.07	2.00	0.00	1.00	0.00
42.91	45.76	2.00	0.00	1.00	0.00	42.95	36.19	2.00	0.00	1.00	0.00
43.01	28.86	2.00	0.00	1.00	0.00	43.06	24.02	2.00	0.00	1.00	0.00
43.16	18.15	2.00	0.00	1.00	0.00	43.26	18.83	2.00	0.00	1.00	0.00
43.31	20.52	2.00	0.00	1.00	0.00	43.38	22.07	2.00	0.00	1.00	0.00
43.49	21.14	2.00	0.00	1.00	0.00	43.56	20.16	2.00	0.00	1.00	0.00
43.67	17.82	2.00	0.00	1.00	0.00	43.71	15.94	2.00	0.00	1.00	0.00
43.79	14.74	2.00	0.00	1.00	0.00	43.84	13.19	2.00	0.00	1.00	0.00
43.85	13.19	2.00	0.00	1.00	0.00	43.92	13.18	2.00	0.00	1.00	0.00
43.97	12.88	2.00	0.00	1.00	0.00	44.05	13.32	2.00	0.00	1.00	0.00
44.10	15.22	2.00	0.00	1.00	0.00	44.19	17.66	2.00	0.00	1.00	0.00
44.23	18.81	2.00	0.00	1.00	0.00	44.30	20.07	2.00	0.00	1.00	0.00
44.37	17.80	2.00	0.00	1.00	0.00	44.46	14.42	2.00	0.00	1.00	0.00
44.50	13.03	2.00	0.00	1.00	0.00	44.58	11.15	2.00	0.00	1.00	0.00
44.63	9.50	2.00	0.00	1.00	0.00	44.72	8.41	2.00	0.00	1.00	0.00
44.76	8.31	2.00	0.00	1.00	0.00	44.85	8.35	2.00	0.00	1.00	0.00
44.90	8.45	2.00	0.00	1.00	0.00	44.99	8.84	2.00	0.00	1.00	0.00
45.07	9.28	2.00	0.00	1.00	0.00	45.11	9.93	2.00	0.00	1.00	0.00
45.17	11.52	2.00	0.00	1.00	0.00	45.25	13.08	2.00	0.00	1.00	0.00
45.29	13.84	2.00	0.00	1.00	0.00	45.38	16.34	2.00	0.00	1.00	0.00
45.43	20.79	2.00	0.00	1.00	0.00	45.51	28.52	2.00	0.00	1.00	0.00
45.56	32.16	2.00	0.00	1.00	0.00	45.60	34.52	2.00	0.00	1.00	0.00
45.69	34.44	2.00	0.00	1.00	0.00	45.78	33.76	2.00	0.00	1.00	0.00
45.83	33.36	2.00	0.00	1.00	0.00	45.88	32.47	2.00	0.00	1.00	0.00
46.00	29.34	2.00	0.00	1.00	0.00	46.12	25.59	2.00	0.00	1.00	0.00
46.18	22.65	2.00	0.00	1.00	0.00	46.24	19.37	2.00	0.00	1.00	0.00
46.31	16.55	2.00	0.00	1.00	0.00	46.36	14.35	2.00	0.00	1.00	0.00
46.42	12.72	2.00	0.00	1.00	0.00	46.48	11.92	2.00	0.00	1.00	0.00
46.54	11.02	2.00	0.00	1.00	0.00	46.60	10.62	2.00	0.00	1.00	0.00
46.66	10.56	2.00	0.00	1.00	0.00	46.78	10.90	2.00	0.00	1.00	0.00
46.84	11.59	2.00	0.00	1.00	0.00	46.89	11.54	2.00	0.00	1.00	0.00
46.92	13.84	2.00	0.00	1.00	0.00	46.99	16.59	2.00	0.00	1.00	0.00
47.05	17.51	2.00	0.00	1.00	0.00	47.14	17.80	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
47.19	18.16	2.00	0.00	1.00	0.00	47.28	19.29	2.00	0.00	1.00	0.00
47.32	19.71	2.00	0.00	1.00	0.00	47.38	19.96	2.00	0.00	1.00	0.00
47.50	21.84	2.00	0.00	1.00	0.00	47.57	27.00	2.00	0.00	1.00	0.00
47.59	30.99	2.00	0.00	1.00	0.00	47.67	37.34	2.00	0.00	1.00	0.00
47.71	38.29	2.00	0.00	1.00	0.00	47.79	38.35	2.00	0.00	1.00	0.00
47.86	39.01	2.00	0.00	1.00	0.00	47.94	40.31	2.00	0.00	1.00	0.00
47.99	40.68	2.00	0.00	1.00	0.00	48.03	40.51	2.00	0.00	1.00	0.00
48.11	38.22	2.00	0.00	1.00	0.00	48.18	31.60	2.00	0.00	1.00	0.00
48.25	25.29	2.00	0.00	1.00	0.00	48.34	19.37	2.00	0.00	1.00	0.00
48.36	17.36	2.00	0.00	1.00	0.00	48.44	14.41	2.00	0.00	1.00	0.00
48.51	11.91	2.00	0.00	1.00	0.00	48.57	10.14	2.00	0.00	1.00	0.00
48.63	9.65	2.00	0.00	1.00	0.00	48.70	9.45	2.00	0.00	1.00	0.00
48.79	9.49	2.00	0.00	1.00	0.00	48.83	9.49	2.00	0.00	1.00	0.00
48.92	9.39	2.00	0.00	1.00	0.00	48.98	9.39	2.00	0.00	1.00	0.00
49.07	9.68	2.00	0.00	1.00	0.00	49.11	11.13	2.00	0.00	1.00	0.00
49.17	13.70	2.00	0.00	1.00	0.00	49.26	20.46	2.00	0.00	1.00	0.00
49.30	24.73	2.00	0.00	1.00	0.00	49.35	28.29	2.00	0.00	1.00	0.00
49.44	26.07	2.00	0.00	1.00	0.00	49.49	37.25	2.00	0.00	1.00	0.00
49.58	33.34	2.00	0.00	1.00	0.00	49.64	28.49	2.00	0.00	1.00	0.00
49.71	24.75	2.00	0.00	1.00	0.00	49.75	22.85	2.00	0.00	1.00	0.00
49.81	18.89	2.00	0.00	1.00	0.00	49.88	16.08	2.00	0.00	1.00	0.00
49.97	15.02	2.00	0.00	1.00	0.00	50.03	13.82	2.00	0.00	1.00	0.00
50.07	13.12	2.00	0.00	1.00	0.00	50.15	12.87	2.00	0.00	1.00	0.00
50.23	13.56	2.00	0.00	1.00	0.00	50.26	14.05	2.00	0.00	1.00	0.00
50.37	17.15	2.00	0.00	1.00	0.00	50.42	19.13	2.00	0.00	1.00	0.00
50.49	24.33	2.00	0.00	1.00	0.00	50.55	24.97	2.00	0.00	1.00	0.00
50.60	24.29	2.00	0.00	1.00	0.00	50.68	28.67	2.00	0.00	1.00	0.00
50.73	31.25	2.00	0.00	1.00	0.00	50.81	34.20	2.00	0.00	1.00	0.00
50.86	39.01	2.00	0.00	1.00	0.00	50.94	43.68	2.00	0.00	1.00	0.00
50.99	45.83	2.00	0.00	1.00	0.00	51.08	112.50	0.20	2.84	1.00	0.03
51.17	112.84	0.20	2.83	1.00	0.03	51.20	112.25	0.20	2.85	1.00	0.01
51.26	46.64	2.00	0.00	1.00	0.00	51.34	44.71	2.00	0.00	1.00	0.00
51.41	44.58	2.00	0.00	1.00	0.00	51.45	44.58	2.00	0.00	1.00	0.00
51.55	44.44	2.00	0.00	1.00	0.00	51.59	45.12	2.00	0.00	1.00	0.00
51.67	46.24	2.00	0.00	1.00	0.00	51.74	46.09	2.00	0.00	1.00	0.00
51.78	46.07	2.00	0.00	1.00	0.00	51.91	110.67	0.20	2.89	1.00	0.04
52.01	47.50	2.00	0.00	1.00	0.00	52.14	48.04	2.00	0.00	1.00	0.00
52.19	48.34	2.00	0.00	1.00	0.00	52.23	44.06	2.00	0.00	1.00	0.00
52.24	51.40	2.00	0.00	1.00	0.00	52.31	125.08	2.00	0.00	1.00	0.00
52.38	128.54	2.00	0.00	1.00	0.00	52.46	132.60	2.00	0.00	1.00	0.00
52.50	135.16	2.00	0.00	1.00	0.00	52.58	142.04	2.00	0.00	1.00	0.00
52.65	151.06	2.00	0.00	1.00	0.00	52.73	161.01	2.00	0.00	1.00	0.00
52.81	171.33	2.00	0.00	1.00	0.00	52.86	177.23	2.00	0.00	1.00	0.00
52.94	190.17	2.00	0.00	1.00	0.00	53.01	201.18	2.00	0.00	1.00	0.00
53.05	206.31	2.00	0.00	1.00	0.00	53.09	211.20	2.00	0.00	1.00	0.00
53.16	217.46	2.00	0.00	1.00	0.00	53.26	227.04	2.00	0.00	1.00	0.00
53.32	232.64	2.00	0.00	1.00	0.00	53.38	237.86	2.00	0.00	1.00	0.00
53.45	242.41	2.00	0.00	1.00	0.00	53.48	244.72	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
53.57	249.66	2.00	0.00	1.00	0.00	53.64	253.54	2.00	0.00	1.00	0.00
53.68	254.00	2.00	0.00	1.00	0.00	53.75	254.00	2.00	0.00	1.00	0.00
53.83	254.00	2.00	0.00	1.00	0.00	53.90	254.00	2.00	0.00	1.00	0.00
53.97	254.00	2.00	0.00	1.00	0.00	54.01	254.00	2.00	0.00	1.00	0.00
54.10	254.00	2.00	0.00	1.00	0.00	54.15	254.00	2.00	0.00	1.00	0.00
54.21	254.00	2.00	0.00	1.00	0.00	54.28	254.00	2.00	0.00	1.00	0.00
54.37	254.00	2.00	0.00	1.00	0.00	54.45	254.00	2.00	0.00	1.00	0.00
54.47	254.00	2.00	0.00	1.00	0.00	54.55	254.00	2.00	0.00	1.00	0.00
54.63	254.00	2.00	0.00	1.00	0.00	54.67	254.00	2.00	0.00	1.00	0.00
54.76	254.00	2.00	0.00	1.00	0.00	54.82	254.00	2.00	0.00	1.00	0.00
54.87	254.00	2.00	0.00	1.00	0.00	54.94	254.00	2.00	0.00	1.00	0.00
55.03	254.00	2.00	0.00	1.00	0.00	55.06	254.00	2.00	0.00	1.00	0.00
55.12	254.00	2.00	0.00	1.00	0.00	55.20	254.00	2.00	0.00	1.00	0.00
55.25	254.00	2.00	0.00	1.00	0.00	55.32	254.00	2.00	0.00	1.00	0.00
55.38	254.00	2.00	0.00	1.00	0.00	55.45	254.00	2.00	0.00	1.00	0.00
55.52	254.00	2.00	0.00	1.00	0.00	55.58	254.00	2.00	0.00	1.00	0.00
55.65	254.00	2.00	0.00	1.00	0.00	55.74	254.00	2.00	0.00	1.00	0.00
55.78	254.00	2.00	0.00	1.00	0.00	55.87	254.00	2.00	0.00	1.00	0.00
55.92	254.00	2.00	0.00	1.00	0.00	56.00	254.00	2.00	0.00	1.00	0.00
56.05	254.00	2.00	0.00	1.00	0.00	56.14	254.00	2.00	0.00	1.00	0.00
56.18	254.00	2.00	0.00	1.00	0.00	56.27	254.00	2.00	0.00	1.00	0.00
56.31	254.00	2.00	0.00	1.00	0.00	56.37	254.00	2.00	0.00	1.00	0.00
56.45	254.00	2.00	0.00	1.00	0.00	56.50	254.00	2.00	0.00	1.00	0.00
56.57	254.00	2.00	0.00	1.00	0.00	56.64	254.00	2.00	0.00	1.00	0.00
56.70	254.00	2.00	0.00	1.00	0.00	56.80	254.00	2.00	0.00	1.00	0.00
56.85	254.00	2.00	0.00	1.00	0.00	56.93	254.00	2.00	0.00	1.00	0.00
56.97	254.00	2.00	0.00	1.00	0.00	57.07	254.00	2.00	0.00	1.00	0.00
57.11	254.00	2.00	0.00	1.00	0.00	57.17	254.00	2.00	0.00	1.00	0.00
57.27	254.00	2.00	0.00	1.00	0.00	57.37	254.00	2.00	0.00	1.00	0.00
57.46	254.00	2.00	0.00	1.00	0.00	57.53	254.00	2.00	0.00	1.00	0.00
57.59	254.00	2.00	0.00	1.00	0.00	57.69	254.00	2.00	0.00	1.00	0.00
57.73	254.00	2.00	0.00	1.00	0.00	57.83	254.00	2.00	0.00	1.00	0.00
57.90	254.00	2.00	0.00	1.00	0.00	57.99	254.00	2.00	0.00	1.00	0.00
58.01	254.00	2.00	0.00	1.00	0.00	58.08	254.00	2.00	0.00	1.00	0.00
58.16	254.00	2.00	0.00	1.00	0.00	58.21	254.00	2.00	0.00	1.00	0.00
58.30	254.00	2.00	0.00	1.00	0.00	58.36	254.00	2.00	0.00	1.00	0.00
58.43	254.00	2.00	0.00	1.00	0.00	58.49	254.00	2.00	0.00	1.00	0.00
58.56	254.00	2.00	0.00	1.00	0.00	58.61	254.00	2.00	0.00	1.00	0.00
58.70	254.00	2.00	0.00	1.00	0.00	58.74	254.00	2.00	0.00	1.00	0.00
58.83	254.00	2.00	0.00	1.00	0.00	58.88	254.00	2.00	0.00	1.00	0.00
58.96	254.00	2.00	0.00	1.00	0.00	59.06	254.00	2.00	0.00	1.00	0.00
59.18	254.00	2.00	0.00	1.00	0.00	59.23	254.00	2.00	0.00	1.00	0.00
59.27	254.00	2.00	0.00	1.00	0.00	59.32	254.00	2.00	0.00	1.00	0.00
59.39	254.00	2.00	0.00	1.00	0.00	59.48	254.00	2.00	0.00	1.00	0.00
59.54	254.00	2.00	0.00	1.00	0.00	59.61	254.00	2.00	0.00	1.00	0.00
59.66	252.94	2.00	0.00	1.00	0.00	59.74	233.14	2.00	0.00	1.00	0.00
59.78	221.72	2.00	0.00	1.00	0.00	59.84	204.31	2.00	0.00	1.00	0.00
59.94	186.59	2.00	0.00	1.00	0.00	59.98	181.52	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
60.07	172.58	2.00	0.00	1.00	0.00	60.12	168.96	2.00	0.00	1.00	0.00
60.23	162.77	2.00	0.00	1.00	0.00	60.27	160.54	2.00	0.00	1.00	0.00
60.32	158.62	2.00	0.00	1.00	0.00	60.40	155.58	2.00	0.00	1.00	0.00
60.45	153.07	2.00	0.00	1.00	0.00	60.52	139.92	2.00	0.00	1.00	0.00
60.58	145.35	2.00	0.00	1.00	0.00	60.67	149.65	2.00	0.00	1.00	0.00
60.71	148.36	2.00	0.00	1.00	0.00	60.80	164.35	2.00	0.00	1.00	0.00
60.85	165.82	2.00	0.00	1.00	0.00	60.93	169.70	2.00	0.00	1.00	0.00
60.98	174.51	2.00	0.00	1.00	0.00	61.03	179.17	2.00	0.00	1.00	0.00
61.11	182.42	2.00	0.00	1.00	0.00	61.16	183.95	2.00	0.00	1.00	0.00
61.24	182.00	2.00	0.00	1.00	0.00	61.33	176.49	2.00	0.00	1.00	0.00
61.36	173.26	2.00	0.00	1.00	0.00	61.43	170.17	2.00	0.00	1.00	0.00
61.51	166.71	2.00	0.00	1.00	0.00	61.55	164.74	2.00	0.00	1.00	0.00
61.63	160.78	2.00	0.00	1.00	0.00	61.72	152.06	2.00	0.00	1.00	0.00
61.76	149.91	2.00	0.00	1.00	0.00	61.85	148.54	2.00	0.00	1.00	0.00
61.89	148.46	2.00	0.00	1.00	0.00	61.95	149.33	2.00	0.00	1.00	0.00
62.01	150.17	2.00	0.00	1.00	0.00	62.12	151.53	2.00	0.00	1.00	0.00
62.15	151.88	2.00	0.00	1.00	0.00	62.25	152.06	2.00	0.00	1.00	0.00
62.29	152.01	2.00	0.00	1.00	0.00	62.34	151.37	2.00	0.00	1.00	0.00
62.41	150.08	2.00	0.00	1.00	0.00	62.47	147.41	2.00	0.00	1.00	0.00
62.56	141.08	2.00	0.00	1.00	0.00	62.64	137.11	2.00	0.00	1.00	0.00
62.69	134.34	2.00	0.00	1.00	0.00	62.73	133.46	2.00	0.00	1.00	0.00
62.82	131.84	2.00	0.00	1.00	0.00	62.90	130.55	2.00	0.00	1.00	0.00
62.94	129.76	2.00	0.00	1.00	0.00	63.01	127.04	2.00	0.00	1.00	0.00
63.06	125.67	2.00	0.00	1.00	0.00	63.17	50.52	2.00	0.00	1.00	0.00
63.22	44.30	2.00	0.00	1.00	0.00	63.28	37.06	2.00	0.00	1.00	0.00
63.34	30.97	2.00	0.00	1.00	0.00	63.40	26.69	2.00	0.00	1.00	0.00
63.52	20.73	2.00	0.00	1.00	0.00	63.57	18.19	2.00	0.00	1.00	0.00
63.68	14.63	2.00	0.00	1.00	0.00	63.74	17.85	2.00	0.00	1.00	0.00
63.80	15.41	2.00	0.00	1.00	0.00	63.85	17.50	2.00	0.00	1.00	0.00
63.91	20.83	2.00	0.00	1.00	0.00	63.96	23.60	2.00	0.00	1.00	0.00
64.01	27.56	2.00	0.00	1.00	0.00	64.13	29.66	2.00	0.00	1.00	0.00
64.24	26.63	2.00	0.00	1.00	0.00	64.31	25.44	2.00	0.00	1.00	0.00
64.37	24.80	2.00	0.00	1.00	0.00	64.41	24.31	2.00	0.00	1.00	0.00
64.47	24.11	2.00	0.00	1.00	0.00	64.54	23.77	2.00	0.00	1.00	0.00
64.59	22.20	2.00	0.00	1.00	0.00	64.63	19.37	2.00	0.00	1.00	0.00
64.72	20.31	2.00	0.00	1.00	0.00	64.78	20.59	2.00	0.00	1.00	0.00
64.87	23.02	2.00	0.00	1.00	0.00	64.91	24.36	2.00	0.00	1.00	0.00
64.99	24.42	2.00	0.00	1.00	0.00	65.06	24.48	2.00	0.00	1.00	0.00
65.11	24.48	2.00	0.00	1.00	0.00	65.18	24.52	2.00	0.00	1.00	0.00
65.27	38.43	2.00	0.00	1.00	0.00	65.31	47.80	2.00	0.00	1.00	0.00
65.36	59.77	2.00	0.00	1.00	0.00	65.44	139.01	2.00	0.00	1.00	0.00
65.49	147.66	2.00	0.00	1.00	0.00	65.58	180.21	2.00	0.00	1.00	0.00
65.62	189.34	2.00	0.00	1.00	0.00	65.71	205.22	2.00	0.00	1.00	0.00
65.79	214.73	2.00	0.00	1.00	0.00	65.85	222.44	2.00	0.00	1.00	0.00
65.93	228.32	2.00	0.00	1.00	0.00	65.98	230.12	2.00	0.00	1.00	0.00
66.02	232.34	2.00	0.00	1.00	0.00	66.08	235.40	2.00	0.00	1.00	0.00
66.16	239.71	2.00	0.00	1.00	0.00	66.24	244.50	2.00	0.00	1.00	0.00
66.28	247.11	2.00	0.00	1.00	0.00	66.37	249.99	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
66.41	250.33	2.00	0.00	1.00	0.00	66.50	250.35	2.00	0.00	1.00	0.00
66.55	247.65	2.00	0.00	1.00	0.00	66.64	239.36	2.00	0.00	1.00	0.00
66.69	236.38	2.00	0.00	1.00	0.00	66.75	233.94	2.00	0.00	1.00	0.00
66.85	235.79	2.00	0.00	1.00	0.00	66.90	233.83	2.00	0.00	1.00	0.00
66.95	233.20	2.00	0.00	1.00	0.00	67.04	234.70	2.00	0.00	1.00	0.00
67.08	239.55	2.00	0.00	1.00	0.00	67.18	249.90	2.00	0.00	1.00	0.00
67.23	251.38	2.00	0.00	1.00	0.00	67.27	244.04	2.00	0.00	1.00	0.00
67.33	243.29	2.00	0.00	1.00	0.00	67.39	241.30	2.00	0.00	1.00	0.00
67.48	241.62	2.00	0.00	1.00	0.00	67.52	237.69	2.00	0.00	1.00	0.00
67.60	234.22	2.00	0.00	1.00	0.00	67.66	232.61	2.00	0.00	1.00	0.00
67.74	231.63	2.00	0.00	1.00	0.00	67.80	231.31	2.00	0.00	1.00	0.00
67.88	228.89	2.00	0.00	1.00	0.00	67.92	227.34	2.00	0.00	1.00	0.00
68.01	220.34	2.00	0.00	1.00	0.00	68.10	212.35	2.00	0.00	1.00	0.00
68.14	207.48	2.00	0.00	1.00	0.00	68.19	202.24	2.00	0.00	1.00	0.00
68.27	192.23	2.00	0.00	1.00	0.00	68.32	187.14	2.00	0.00	1.00	0.00
68.40	175.34	2.00	0.00	1.00	0.00	68.45	169.66	2.00	0.00	1.00	0.00
68.54	158.90	2.00	0.00	1.00	0.00	68.59	154.42	2.00	0.00	1.00	0.00
68.68	148.09	2.00	0.00	1.00	0.00	68.73	146.42	2.00	0.00	1.00	0.00
68.78	145.97	2.00	0.00	1.00	0.00	68.87	144.03	2.00	0.00	1.00	0.00
68.96	140.28	2.00	0.00	1.00	0.00	69.00	138.78	2.00	0.00	1.00	0.00
69.05	138.31	2.00	0.00	1.00	0.00	69.14	139.27	2.00	0.00	1.00	0.00
69.20	140.70	2.00	0.00	1.00	0.00	69.24	142.74	2.00	0.00	1.00	0.00
69.33	149.81	2.00	0.00	1.00	0.00	69.38	155.29	2.00	0.00	1.00	0.00
69.42	161.30	2.00	0.00	1.00	0.00	69.52	170.37	2.00	0.00	1.00	0.00
69.56	172.29	2.00	0.00	1.00	0.00	69.65	170.10	2.00	0.00	1.00	0.00
69.71	166.37	2.00	0.00	1.00	0.00	69.82	154.73	2.00	0.00	1.00	0.00
69.95	60.36	2.00	0.00	1.00	0.00	70.00	51.66	2.00	0.00	1.00	0.00
70.02	48.57	2.00	0.00	1.00	0.00	70.08	48.15	2.00	0.00	1.00	0.00
70.18	45.49	2.00	0.00	1.00	0.00	70.24	42.88	2.00	0.00	1.00	0.00
70.31	42.54	2.00	0.00	1.00	0.00	70.35	42.95	2.00	0.00	1.00	0.00
70.45	57.53	2.00	0.00	1.00	0.00	70.52	60.26	2.00	0.00	1.00	0.00
70.58	61.66	2.00	0.00	1.00	0.00	70.62	61.08	2.00	0.00	1.00	0.00
70.68	58.39	2.00	0.00	1.00	0.00	70.80	49.97	2.00	0.00	1.00	0.00
70.82	41.99	2.00	0.00	1.00	0.00	70.89	42.43	2.00	0.00	1.00	0.00
70.98	33.57	2.00	0.00	1.00	0.00	71.09	28.54	2.00	0.00	1.00	0.00
71.15	24.99	2.00	0.00	1.00	0.00	71.20	24.65	2.00	0.00	1.00	0.00
71.24	24.64	2.00	0.00	1.00	0.00	71.29	24.30	2.00	0.00	1.00	0.00
71.36	23.29	2.00	0.00	1.00	0.00	71.41	23.77	2.00	0.00	1.00	0.00
71.47	25.47	2.00	0.00	1.00	0.00	71.53	26.37	2.00	0.00	1.00	0.00
71.60	26.21	2.00	0.00	1.00	0.00	71.69	26.33	2.00	0.00	1.00	0.00
71.76	26.33	2.00	0.00	1.00	0.00	71.82	28.27	2.00	0.00	1.00	0.00
71.87	29.94	2.00	0.00	1.00	0.00	71.93	29.92	2.00	0.00	1.00	0.00
71.99	28.76	2.00	0.00	1.00	0.00	72.09	26.70	2.00	0.00	1.00	0.00
72.15	25.12	2.00	0.00	1.00	0.00	72.22	23.50	2.00	0.00	1.00	0.00
72.26	21.64	2.00	0.00	1.00	0.00	72.32	20.20	2.00	0.00	1.00	0.00
72.39	19.28	2.00	0.00	1.00	0.00	72.44	19.27	2.00	0.00	1.00	0.00
72.53	18.90	2.00	0.00	1.00	0.00	72.62	22.12	2.00	0.00	1.00	0.00
72.69	22.57	2.00	0.00	1.00	0.00	72.75	23.32	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
72.80	23.27	2.00	0.00	1.00	0.00	72.84	22.70	2.00	0.00	1.00	0.00
72.93	22.22	2.00	0.00	1.00	0.00	72.97	21.71	2.00	0.00	1.00	0.00
73.04	21.23	2.00	0.00	1.00	0.00	73.10	20.67	2.00	0.00	1.00	0.00
73.20	21.91	2.00	0.00	1.00	0.00	73.26	21.95	2.00	0.00	1.00	0.00
73.32	21.57	2.00	0.00	1.00	0.00	73.37	21.10	2.00	0.00	1.00	0.00
73.44	22.68	2.00	0.00	1.00	0.00	73.54	31.02	2.00	0.00	1.00	0.00
73.58	38.80	2.00	0.00	1.00	0.00	73.64	46.16	2.00	0.00	1.00	0.00
73.75	51.87	2.00	0.00	1.00	0.00	73.80	54.15	2.00	0.00	1.00	0.00
73.87	55.61	2.00	0.00	1.00	0.00	73.91	56.86	2.00	0.00	1.00	0.00
73.97	59.12	2.00	0.00	1.00	0.00	74.04	64.21	2.00	0.00	1.00	0.00
74.09	144.29	2.00	0.00	1.00	0.00	74.17	167.05	2.00	0.00	1.00	0.00
74.23	183.65	2.00	0.00	1.00	0.00	74.31	195.49	2.00	0.00	1.00	0.00
74.35	199.84	2.00	0.00	1.00	0.00	74.44	207.15	2.00	0.00	1.00	0.00
74.48	211.57	2.00	0.00	1.00	0.00	74.56	222.24	2.00	0.00	1.00	0.00
74.62	227.91	2.00	0.00	1.00	0.00	74.72	232.83	2.00	0.00	1.00	0.00
74.79	232.91	2.00	0.00	1.00	0.00	74.84	230.89	2.00	0.00	1.00	0.00
74.93	225.07	2.00	0.00	1.00	0.00	74.97	224.93	2.00	0.00	1.00	0.00
75.09	226.16	2.00	0.00	1.00	0.00	75.14	227.39	2.00	0.00	1.00	0.00
75.18	223.31	2.00	0.00	1.00	0.00	75.22	229.38	2.00	0.00	1.00	0.00
75.29	231.89	2.00	0.00	1.00	0.00	75.35	235.18	2.00	0.00	1.00	0.00
75.41	237.99	2.00	0.00	1.00	0.00	75.50	242.17	2.00	0.00	1.00	0.00
75.55	243.37	2.00	0.00	1.00	0.00	75.65	245.40	2.00	0.00	1.00	0.00
75.76	238.81	2.00	0.00	1.00	0.00	75.81	236.48	2.00	0.00	1.00	0.00
75.86	233.34	2.00	0.00	1.00	0.00	75.91	230.10	2.00	0.00	1.00	0.00
75.96	226.30	2.00	0.00	1.00	0.00	76.03	205.16	2.00	0.00	1.00	0.00
76.06	204.52	2.00	0.00	1.00	0.00	76.12	206.83	2.00	0.00	1.00	0.00
76.20	201.93	2.00	0.00	1.00	0.00	76.25	200.03	2.00	0.00	1.00	0.00
76.34	200.24	2.00	0.00	1.00	0.00	76.38	201.52	2.00	0.00	1.00	0.00
76.48	207.53	2.00	0.00	1.00	0.00	76.53	211.32	2.00	0.00	1.00	0.00
76.60	215.46	2.00	0.00	1.00	0.00	76.69	219.37	2.00	0.00	1.00	0.00
76.74	221.17	2.00	0.00	1.00	0.00	76.79	222.46	2.00	0.00	1.00	0.00
76.86	224.83	2.00	0.00	1.00	0.00	76.92	227.43	2.00	0.00	1.00	0.00
76.99	229.49	2.00	0.00	1.00	0.00	77.05	230.42	2.00	0.00	1.00	0.00
77.14	232.43	2.00	0.00	1.00	0.00	77.18	233.58	2.00	0.00	1.00	0.00
77.29	234.64	2.00	0.00	1.00	0.00	77.35	235.21	2.00	0.00	1.00	0.00
77.40	235.85	2.00	0.00	1.00	0.00	77.44	237.29	2.00	0.00	1.00	0.00
77.53	238.31	2.00	0.00	1.00	0.00	77.58	239.96	2.00	0.00	1.00	0.00
77.67	241.58	2.00	0.00	1.00	0.00	77.76	241.82	2.00	0.00	1.00	0.00
77.80	240.15	2.00	0.00	1.00	0.00	77.90	236.24	2.00	0.00	1.00	0.00
77.98	233.99	2.00	0.00	1.00	0.00	78.02	231.57	2.00	0.00	1.00	0.00
78.11	228.15	2.00	0.00	1.00	0.00	78.17	228.28	2.00	0.00	1.00	0.00
78.21	229.88	2.00	0.00	1.00	0.00	78.28	233.79	2.00	0.00	1.00	0.00
78.33	239.36	2.00	0.00	1.00	0.00	78.37	247.37	2.00	0.00	1.00	0.00
78.42	254.00	2.00	0.00	1.00	0.00	78.48	254.00	2.00	0.00	1.00	0.00
78.59	254.00	2.00	0.00	1.00	0.00	78.64	254.00	2.00	0.00	1.00	0.00
78.68	254.00	2.00	0.00	1.00	0.00	78.78	254.00	2.00	0.00	1.00	0.00
78.81	254.00	2.00	0.00	1.00	0.00	78.90	254.00	2.00	0.00	1.00	0.00
78.95	254.00	2.00	0.00	1.00	0.00	79.03	254.00	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
79.07	254.00	2.00	0.00	1.00	0.00	79.17	254.00	2.00	0.00	1.00	0.00
79.24	254.00	2.00	0.00	1.00	0.00	79.31	254.00	2.00	0.00	1.00	0.00
79.35	254.00	2.00	0.00	1.00	0.00	79.44	254.00	2.00	0.00	1.00	0.00
79.47	254.00	2.00	0.00	1.00	0.00	79.57	254.00	2.00	0.00	1.00	0.00
79.65	254.00	2.00	0.00	1.00	0.00	79.68	254.00	2.00	0.00	1.00	0.00
79.75	254.00	2.00	0.00	1.00	0.00	79.82	254.00	2.00	0.00	1.00	0.00
79.91	254.00	2.00	0.00	1.00	0.00	79.96	254.00	2.00	0.00	1.00	0.00
80.05	254.00	2.00	0.00	1.00	0.00	80.11	254.00	2.00	0.00	1.00	0.00
80.17	254.00	2.00	0.00	1.00	0.00	80.21	254.00	2.00	0.00	1.00	0.00
80.26	254.00	2.00	0.00	1.00	0.00	80.33	254.00	2.00	0.00	1.00	0.00
80.39	254.00	2.00	0.00	1.00	0.00	80.46	254.00	2.00	0.00	1.00	0.00
80.53	254.00	2.00	0.00	1.00	0.00	80.58	254.00	2.00	0.00	1.00	0.00
80.66	254.00	2.00	0.00	1.00	0.00	80.75	254.00	2.00	0.00	1.00	0.00
80.79	254.00	2.00	0.00	1.00	0.00	80.90	254.00	2.00	0.00	1.00	0.00
80.95	254.00	2.00	0.00	1.00	0.00	81.00	254.00	2.00	0.00	1.00	0.00
81.06	254.00	2.00	0.00	1.00	0.00	81.10	254.00	2.00	0.00	1.00	0.00
81.18	254.00	2.00	0.00	1.00	0.00	81.24	254.00	2.00	0.00	1.00	0.00
81.32	254.00	2.00	0.00	1.00	0.00	81.39	254.00	2.00	0.00	1.00	0.00
81.45	254.00	2.00	0.00	1.00	0.00	81.53	254.00	2.00	0.00	1.00	0.00
81.59	254.00	2.00	0.00	1.00	0.00	81.63	254.00	2.00	0.00	1.00	0.00
81.72	254.00	2.00	0.00	1.00	0.00	81.76	254.00	2.00	0.00	1.00	0.00
81.83	254.00	2.00	0.00	1.00	0.00	81.90	254.00	2.00	0.00	1.00	0.00
81.98	254.00	2.00	0.00	1.00	0.00	82.03	254.00	2.00	0.00	1.00	0.00
82.10	254.00	2.00	0.00	1.00	0.00	82.16	254.00	2.00	0.00	1.00	0.00
82.22	254.00	2.00	0.00	1.00	0.00	82.29	254.00	2.00	0.00	1.00	0.00
82.35	254.00	2.00	0.00	1.00	0.00	82.42	251.46	2.00	0.00	1.00	0.00
82.51	254.00	2.00	0.00	1.00	0.00	82.57	254.00	2.00	0.00	1.00	0.00
82.64	254.00	2.00	0.00	1.00	0.00	82.71	254.00	2.00	0.00	1.00	0.00
82.75	254.00	2.00	0.00	1.00	0.00	82.82	254.00	2.00	0.00	1.00	0.00
82.91	254.00	2.00	0.00	1.00	0.00	82.97	254.00	2.00	0.00	1.00	0.00
83.04	254.00	2.00	0.00	1.00	0.00	83.08	254.00	2.00	0.00	1.00	0.00
83.15	254.00	2.00	0.00	1.00	0.00	83.22	254.00	2.00	0.00	1.00	0.00
83.30	254.00	2.00	0.00	1.00	0.00	83.34	254.00	2.00	0.00	1.00	0.00
83.43	254.00	2.00	0.00	1.00	0.00	83.49	254.00	2.00	0.00	1.00	0.00
83.57	254.00	2.00	0.00	1.00	0.00	83.61	254.00	2.00	0.00	1.00	0.00
83.69	254.00	2.00	0.00	1.00	0.00	83.75	254.00	2.00	0.00	1.00	0.00
83.83	254.00	2.00	0.00	1.00	0.00	83.88	254.00	2.00	0.00	1.00	0.00
83.97	254.00	2.00	0.00	1.00	0.00	84.00	254.00	2.00	0.00	1.00	0.00
84.09	254.00	2.00	0.00	1.00	0.00	84.15	254.00	2.00	0.00	1.00	0.00
84.23	254.00	2.00	0.00	1.00	0.00	84.28	254.00	2.00	0.00	1.00	0.00
84.32	254.00	2.00	0.00	1.00	0.00	84.42	254.00	2.00	0.00	1.00	0.00
84.45	254.00	2.00	0.00	1.00	0.00	84.54	254.00	2.00	0.00	1.00	0.00
84.59	254.00	2.00	0.00	1.00	0.00	84.65	254.00	2.00	0.00	1.00	0.00
84.72	254.00	2.00	0.00	1.00	0.00	84.80	254.00	2.00	0.00	1.00	0.00
84.85	254.00	2.00	0.00	1.00	0.00	84.91	254.00	2.00	0.00	1.00	0.00
84.98	254.00	2.00	0.00	1.00	0.00	85.04	254.00	2.00	0.00	1.00	0.00
85.12	236.74	2.00	0.00	1.00	0.00	85.18	238.88	2.00	0.00	1.00	0.00
85.24	252.69	2.00	0.00	1.00	0.00	85.30	254.00	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
85.38	254.00	2.00	0.00	1.00	0.00	85.44	254.00	2.00	0.00	1.00	0.00
85.51	254.00	2.00	0.00	1.00	0.00	85.57	254.00	2.00	0.00	1.00	0.00
85.64	254.00	2.00	0.00	1.00	0.00	85.72	251.90	2.00	0.00	1.00	0.00
85.76	246.18	2.00	0.00	1.00	0.00	85.84	226.21	2.00	0.00	1.00	0.00
85.90	223.25	2.00	0.00	1.00	0.00	85.96	221.67	2.00	0.00	1.00	0.00
86.03	222.71	2.00	0.00	1.00	0.00	86.12	222.73	2.00	0.00	1.00	0.00
86.17	222.69	2.00	0.00	1.00	0.00	86.25	218.29	2.00	0.00	1.00	0.00
86.30	205.78	2.00	0.00	1.00	0.00	86.37	186.58	2.00	0.00	1.00	0.00
86.42	181.07	2.00	0.00	1.00	0.00	86.52	223.58	2.00	0.00	1.00	0.00
86.56	209.79	2.00	0.00	1.00	0.00	86.66	164.36	2.00	0.00	1.00	0.00
86.68	150.85	2.00	0.00	1.00	0.00	86.79	45.73	2.00	0.00	1.00	0.00
86.88	31.19	2.00	0.00	1.00	0.00	86.92	28.99	2.00	0.00	1.00	0.00
86.96	30.87	2.00	0.00	1.00	0.00	87.05	30.51	2.00	0.00	1.00	0.00
87.14	42.45	2.00	0.00	1.00	0.00	87.23	57.72	2.00	0.00	1.00	0.00
87.28	143.12	2.00	0.00	1.00	0.00	87.34	161.94	2.00	0.00	1.00	0.00
87.45	179.15	2.00	0.00	1.00	0.00	87.49	179.09	2.00	0.00	1.00	0.00
87.54	177.88	2.00	0.00	1.00	0.00	87.63	162.64	2.00	0.00	1.00	0.00
87.67	165.56	2.00	0.00	1.00	0.00	87.76	165.53	2.00	0.00	1.00	0.00
87.80	165.41	2.00	0.00	1.00	0.00	87.89	165.30	2.00	0.00	1.00	0.00
87.94	165.21	2.00	0.00	1.00	0.00	88.02	163.85	2.00	0.00	1.00	0.00
88.07	165.33	2.00	0.00	1.00	0.00	88.13	163.16	2.00	0.00	1.00	0.00
88.19	165.14	2.00	0.00	1.00	0.00	88.28	171.99	2.00	0.00	1.00	0.00
88.33	175.70	2.00	0.00	1.00	0.00	88.39	177.72	2.00	0.00	1.00	0.00
88.47	179.74	2.00	0.00	1.00	0.00	88.55	180.39	2.00	0.00	1.00	0.00
88.61	177.17	2.00	0.00	1.00	0.00	88.67	174.18	2.00	0.00	1.00	0.00
88.74	168.12	2.00	0.00	1.00	0.00	88.82	162.40	2.00	0.00	1.00	0.00
88.87	159.82	2.00	0.00	1.00	0.00	88.95	152.19	2.00	0.00	1.00	0.00
89.02	65.27	2.00	0.00	1.00	0.00	89.08	54.40	2.00	0.00	1.00	0.00
89.13	43.92	2.00	0.00	1.00	0.00	89.18	36.02	2.00	0.00	1.00	0.00
89.24	30.28	2.00	0.00	1.00	0.00	89.35	21.86	2.00	0.00	1.00	0.00
89.42	18.98	2.00	0.00	1.00	0.00	89.47	17.13	2.00	0.00	1.00	0.00
89.53	15.47	2.00	0.00	1.00	0.00	89.58	15.47	2.00	0.00	1.00	0.00
89.67	15.87	2.00	0.00	1.00	0.00	89.74	16.40	2.00	0.00	1.00	0.00
89.80	17.65	2.00	0.00	1.00	0.00	89.84	18.95	2.00	0.00	1.00	0.00
89.95	21.42	2.00	0.00	1.00	0.00	90.06	19.61	2.00	0.00	1.00	0.00
90.13	17.20	2.00	0.00	1.00	0.00	90.18	15.63	2.00	0.00	1.00	0.00
90.24	14.49	2.00	0.00	1.00	0.00	90.33	13.19	2.00	0.00	1.00	0.00
90.37	12.90	2.00	0.00	1.00	0.00	90.48	13.38	2.00	0.00	1.00	0.00
90.55	13.78	2.00	0.00	1.00	0.00	90.60	13.90	2.00	0.00	1.00	0.00
90.65	13.90	2.00	0.00	1.00	0.00	90.72	13.69	2.00	0.00	1.00	0.00
90.82	13.16	2.00	0.00	1.00	0.00	90.86	12.96	2.00	0.00	1.00	0.00
90.90	12.84	2.00	0.00	1.00	0.00	91.03	12.55	2.00	0.00	1.00	0.00
91.08	12.31	2.00	0.00	1.00	0.00	91.14	12.51	2.00	0.00	1.00	0.00
91.21	12.23	2.00	0.00	1.00	0.00	91.26	12.46	2.00	0.00	1.00	0.00
91.31	13.30	2.00	0.00	1.00	0.00	91.42	19.08	2.00	0.00	1.00	0.00
91.48	30.52	2.00	0.00	1.00	0.00	91.53	48.47	2.00	0.00	1.00	0.00
91.59	144.17	2.00	0.00	1.00	0.00	91.61	156.37	2.00	0.00	1.00	0.00
91.70	178.38	2.00	0.00	1.00	0.00	91.74	194.70	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
91.84	215.05	2.00	0.00	1.00	0.00	91.90	219.47	2.00	0.00	1.00	0.00
91.96	221.86	2.00	0.00	1.00	0.00	92.01	222.71	2.00	0.00	1.00	0.00
92.10	219.08	2.00	0.00	1.00	0.00	92.18	215.75	2.00	0.00	1.00	0.00
92.23	211.30	2.00	0.00	1.00	0.00	92.27	208.77	2.00	0.00	1.00	0.00
92.40	198.44	2.00	0.00	1.00	0.00	92.45	194.09	2.00	0.00	1.00	0.00
92.54	184.54	2.00	0.00	1.00	0.00	92.59	179.02	2.00	0.00	1.00	0.00
92.67	153.18	2.00	0.00	1.00	0.00	92.75	159.84	2.00	0.00	1.00	0.00
92.81	151.75	2.00	0.00	1.00	0.00	92.88	147.12	2.00	0.00	1.00	0.00
92.95	139.08	2.00	0.00	1.00	0.00	93.01	137.02	2.00	0.00	1.00	0.00
93.05	65.11	2.00	0.00	1.00	0.00	93.13	63.91	2.00	0.00	1.00	0.00
93.21	134.57	2.00	0.00	1.00	0.00	93.29	134.23	2.00	0.00	1.00	0.00
93.33	134.52	2.00	0.00	1.00	0.00	93.40	64.34	2.00	0.00	1.00	0.00
93.48	63.34	2.00	0.00	1.00	0.00	93.53	63.44	2.00	0.00	1.00	0.00
93.60	136.06	2.00	0.00	1.00	0.00	93.65	139.30	2.00	0.00	1.00	0.00
93.73	145.23	2.00	0.00	1.00	0.00	93.78	147.31	2.00	0.00	1.00	0.00
93.86	150.53	2.00	0.00	1.00	0.00	93.92	152.98	2.00	0.00	1.00	0.00
93.97	154.70	2.00	0.00	1.00	0.00	94.11	153.16	2.00	0.00	1.00	0.00
94.17	76.09	2.00	0.00	1.00	0.00	94.22	68.56	2.00	0.00	1.00	0.00
94.26	59.22	2.00	0.00	1.00	0.00	94.32	50.29	2.00	0.00	1.00	0.00
94.39	41.16	2.00	0.00	1.00	0.00	94.44	34.80	2.00	0.00	1.00	0.00
94.53	26.30	2.00	0.00	1.00	0.00	94.62	23.01	2.00	0.00	1.00	0.00
94.65	20.49	2.00	0.00	1.00	0.00	94.72	18.57	2.00	0.00	1.00	0.00
94.75	15.38	2.00	0.00	1.00	0.00	94.82	17.20	2.00	0.00	1.00	0.00
94.90	15.78	2.00	0.00	1.00	0.00	94.97	14.44	2.00	0.00	1.00	0.00
95.03	13.53	2.00	0.00	1.00	0.00	95.12	12.82	2.00	0.00	1.00	0.00
95.16	13.46	2.00	0.00	1.00	0.00	95.22	12.77	2.00	0.00	1.00	0.00
95.30	13.40	2.00	0.00	1.00	0.00	95.38	14.27	2.00	0.00	1.00	0.00
95.42	14.74	2.00	0.00	1.00	0.00	95.51	16.02	2.00	0.00	1.00	0.00
95.58	16.99	2.00	0.00	1.00	0.00	95.63	17.43	2.00	0.00	1.00	0.00
95.71	18.00	2.00	0.00	1.00	0.00	95.76	17.91	2.00	0.00	1.00	0.00
95.81	17.34	2.00	0.00	1.00	0.00	95.89	15.39	2.00	0.00	1.00	0.00
95.96	13.36	2.00	0.00	1.00	0.00	96.01	12.35	2.00	0.00	1.00	0.00
96.09	11.18	2.00	0.00	1.00	0.00	96.14	10.91	2.00	0.00	1.00	0.00
96.23	10.38	2.00	0.00	1.00	0.00	96.31	9.57	2.00	0.00	1.00	0.00
96.36	9.16	2.00	0.00	1.00	0.00	96.42	8.75	2.00	0.00	1.00	0.00
96.52	9.08	2.00	0.00	1.00	0.00	96.58	8.40	2.00	0.00	1.00	0.00
96.62	9.00	2.00	0.00	1.00	0.00	96.69	9.72	2.00	0.00	1.00	0.00
96.75	10.59	2.00	0.00	1.00	0.00	96.84	12.16	2.00	0.00	1.00	0.00
96.90	12.81	2.00	0.00	1.00	0.00	96.97	13.20	2.00	0.00	1.00	0.00
97.02	13.43	2.00	0.00	1.00	0.00	97.07	13.66	2.00	0.00	1.00	0.00
97.13	13.86	2.00	0.00	1.00	0.00	97.24	13.97	2.00	0.00	1.00	0.00
97.29	14.01	2.00	0.00	1.00	0.00	97.35	14.28	2.00	0.00	1.00	0.00
97.38	13.94	2.00	0.00	1.00	0.00	97.45	14.25	2.00	0.00	1.00	0.00
97.52	14.23	2.00	0.00	1.00	0.00	97.61	14.15	2.00	0.00	1.00	0.00
97.65	13.67	2.00	0.00	1.00	0.00	97.71	12.81	2.00	0.00	1.00	0.00
97.79	12.03	2.00	0.00	1.00	0.00	97.87	10.92	2.00	0.00	1.00	0.00
97.91	10.34	2.00	0.00	1.00	0.00	97.97	9.22	2.00	0.00	1.00	0.00
98.05	8.43	2.00	0.00	1.00	0.00	98.14	7.80	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
98.18	7.76	2.00	0.00	1.00	0.00	98.23	7.61	2.00	0.00	1.00	0.00
98.32	8.01	2.00	0.00	1.00	0.00	98.36	8.87	2.00	0.00	1.00	0.00
98.45	10.74	2.00	0.00	1.00	0.00	98.50	11.62	2.00	0.00	1.00	0.00
98.58	12.54	2.00	0.00	1.00	0.00	98.63	13.43	2.00	0.00	1.00	0.00
98.71	14.88	2.00	0.00	1.00	0.00	98.76	17.39	2.00	0.00	1.00	0.00
98.83	18.90	2.00	0.00	1.00	0.00	98.89	21.43	2.00	0.00	1.00	0.00
98.97	22.60	2.00	0.00	1.00	0.00	99.03	25.42	2.00	0.00	1.00	0.00
99.10	28.62	2.00	0.00	1.00	0.00	99.16	35.25	2.00	0.00	1.00	0.00
99.22	41.00	2.00	0.00	1.00	0.00	99.29	41.41	2.00	0.00	1.00	0.00
99.35	39.62	2.00	0.00	1.00	0.00	99.42	37.94	2.00	0.00	1.00	0.00
99.49	42.80	2.00	0.00	1.00	0.00	99.58	54.01	2.00	0.00	1.00	0.00
99.67	64.03	2.00	0.00	1.00	0.00	99.69	60.57	2.00	0.00	1.00	0.00
99.76	79.49	2.00	0.00	1.00	0.00	99.83	158.64	2.00	0.00	1.00	0.00
99.90	83.34	2.00	0.00	1.00	0.00	99.94	79.11	2.00	0.00	1.00	0.00
100.01	70.10	2.00	0.00	1.00	0.00	100.07	62.11	2.00	0.00	1.00	0.00
100.14	53.13	2.00	0.00	1.00	0.00	100.21	50.07	2.00	0.00	1.00	0.00

Total estimated settlement: 3.20

Abbreviations

$Q_{c1n,cs}$:	Equivalent dean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

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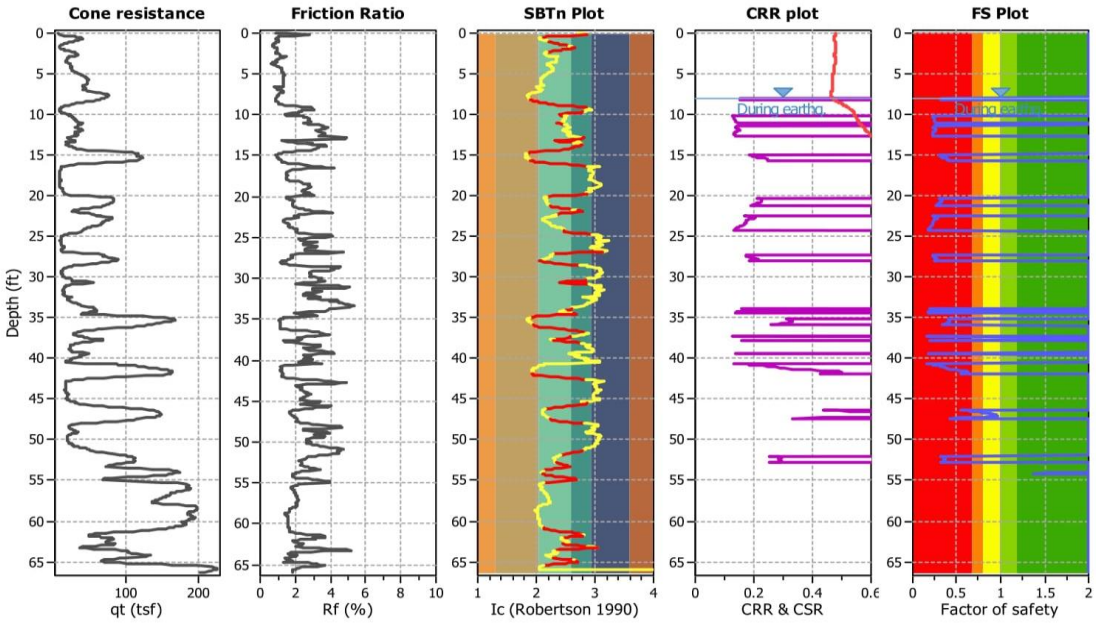
LIQUEFACTION ANALYSIS REPORT

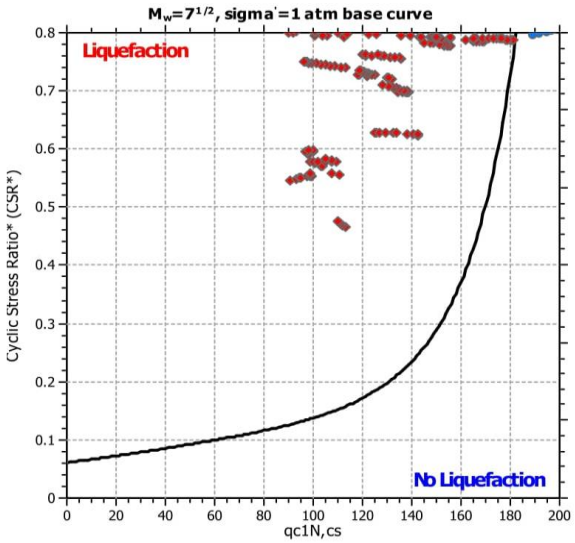
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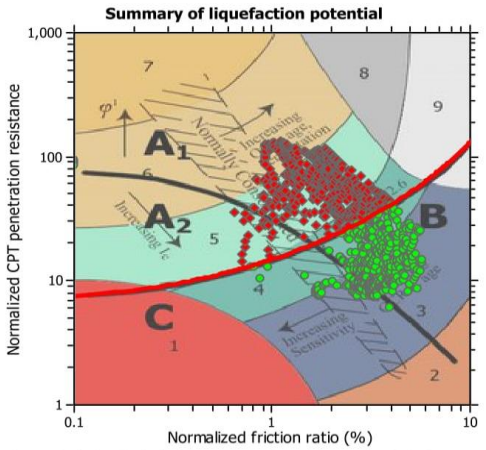
CPT file : CPT-3

Input parameters and analysis data

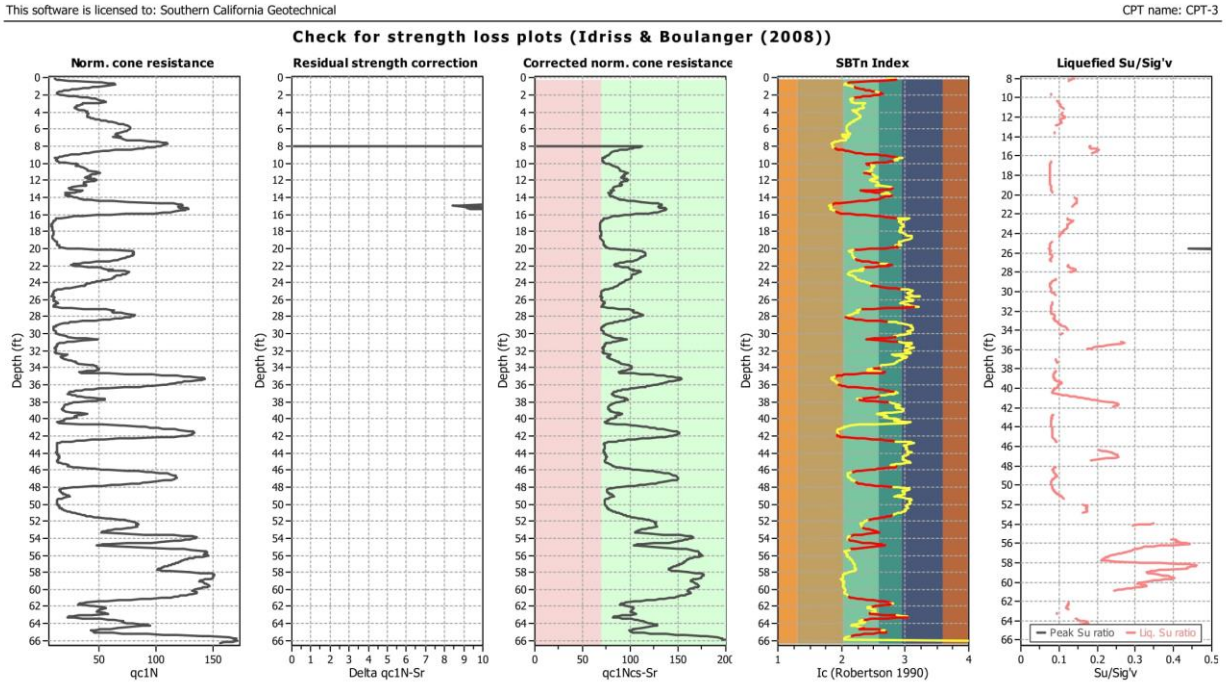
Analysis method:	B&I (2014)	G.W.T. (in-situ):	16.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	1	Fill weight:	N/A	Limit depth:	55.00 ft
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_o applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry



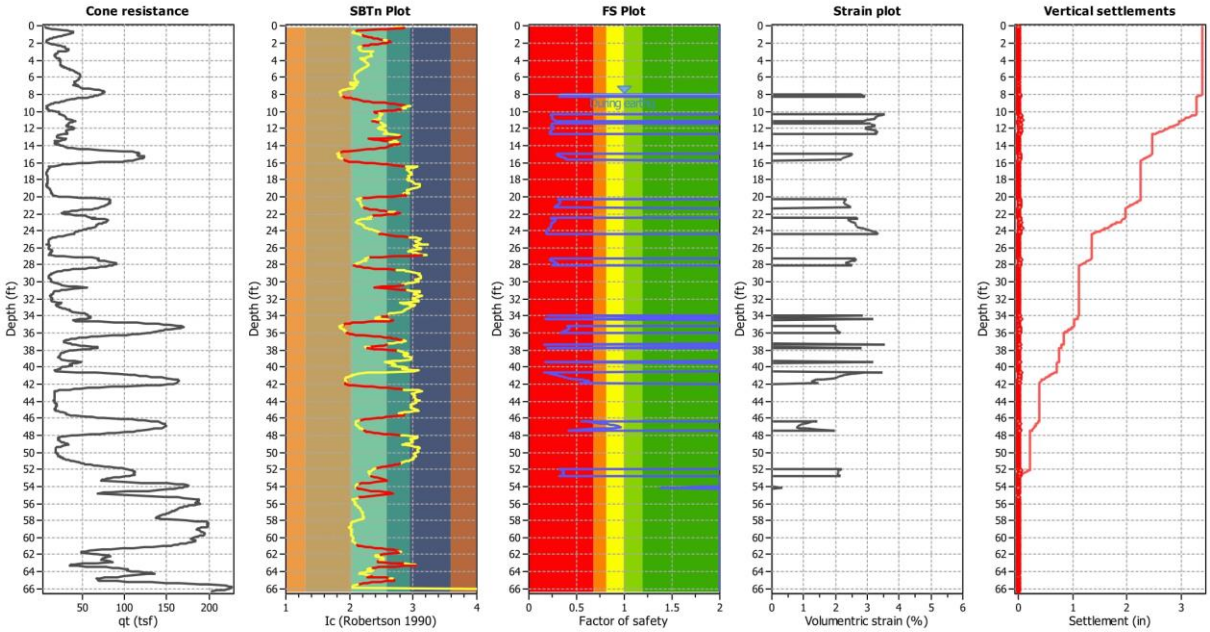
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	8.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	16.00 ft	Fill height:	N/A	Limit depth:	55.00 ft

CLiq v.3.0.3.2 - CPT Liquefaction Assessment Software - Report created on: 9/3/2020, 5:17:25 PM
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Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

CLiq v.3.0.3.2 - CPT Liquefaction Assessment Software - Report created on: 9/3/2020, 5:17:25 PM 39
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:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
8.02	112.97	0.34	2.83	1.00	0.03	8.07	111.82	0.33	2.86	1.00	0.02
8.13	111.20	0.33	2.88	1.00	0.02	8.19	110.65	0.32	2.89	1.00	0.02
8.24	109.79	0.32	2.92	1.00	0.02	8.30	108.34	2.00	0.00	1.00	0.00
8.37	107.58	2.00	0.00	1.00	0.00	8.42	107.52	2.00	0.00	1.00	0.00
8.47	105.52	2.00	0.00	1.00	0.00	8.54	102.65	2.00	0.00	1.00	0.00
8.60	99.89	2.00	0.00	1.00	0.00	8.70	94.93	2.00	0.00	1.00	0.00
8.77	92.51	2.00	0.00	1.00	0.00	8.83	89.96	2.00	0.00	1.00	0.00
8.89	87.22	2.00	0.00	1.00	0.00	8.99	82.13	2.00	0.00	1.00	0.00
9.04	22.21	2.00	0.00	1.00	0.00	9.12	19.75	2.00	0.00	1.00	0.00
9.17	17.31	2.00	0.00	1.00	0.00	9.23	15.34	2.00	0.00	1.00	0.00
9.30	13.96	2.00	0.00	1.00	0.00	9.35	12.72	2.00	0.00	1.00	0.00
9.43	11.35	2.00	0.00	1.00	0.00	9.53	12.73	2.00	0.00	1.00	0.00
9.59	11.49	2.00	0.00	1.00	0.00	9.66	12.76	2.00	0.00	1.00	0.00
9.71	13.20	2.00	0.00	1.00	0.00	9.77	13.50	2.00	0.00	1.00	0.00
9.83	14.16	2.00	0.00	1.00	0.00	9.88	15.41	2.00	0.00	1.00	0.00
9.95	75.23	2.00	0.00	1.00	0.00	10.01	81.67	2.00	0.00	1.00	0.00
10.08	85.75	2.00	0.00	1.00	0.00	10.14	87.20	2.00	0.00	1.00	0.00
10.19	87.59	2.00	0.00	1.00	0.00	10.25	87.51	2.00	0.00	1.00	0.00
10.30	90.49	0.23	3.55	1.00	0.02	10.40	93.23	0.24	3.45	1.00	0.04
10.47	94.39	0.24	3.41	1.00	0.03	10.52	95.18	0.24	3.38	1.00	0.02
10.62	97.33	0.24	3.30	1.00	0.04	10.70	98.65	0.25	3.26	1.00	0.03
10.74	99.26	0.25	3.24	1.00	0.02	10.79	98.94	0.24	3.25	1.00	0.02
10.87	99.06	0.24	3.24	1.00	0.03	11.03	107.52	0.27	2.98	1.00	0.06
11.09	110.80	0.28	2.89	1.00	0.02	11.13	111.29	2.00	0.00	1.00	0.00
11.20	110.01	2.00	0.00	1.00	0.00	11.26	107.34	2.00	0.00	1.00	0.00
11.31	105.03	2.00	0.00	1.00	0.00	11.37	103.04	2.00	0.00	1.00	0.00
11.45	103.13	0.25	3.11	1.00	0.03	11.49	103.58	0.25	3.10	1.00	0.02
11.61	100.54	0.24	3.20	1.00	0.05	11.67	98.94	0.24	3.25	1.00	0.02
11.72	99.74	0.24	3.22	1.00	0.02	11.78	102.09	0.24	3.15	1.00	0.02
11.84	105.12	0.25	3.05	1.00	0.02	11.89	107.22	0.26	2.99	1.00	0.02
12.01	109.60	0.26	2.92	1.00	0.04	12.06	107.77	0.26	2.97	1.00	0.02
12.12	105.09	0.25	3.05	1.00	0.02	12.24	97.92	0.23	3.28	1.00	0.05
12.36	97.40	0.23	3.30	1.00	0.05	12.42	97.30	0.23	3.30	1.00	0.02
12.46	96.98	0.22	3.31	1.00	0.02	12.52	99.83	0.23	3.22	1.00	0.02
12.59	99.70	0.23	3.22	1.00	0.03	12.64	97.82	0.22	3.29	1.00	0.02
12.70	33.03	2.00	0.00	1.00	0.00	12.82	25.77	2.00	0.00	1.00	0.00
12.87	24.04	2.00	0.00	1.00	0.00	12.92	23.20	2.00	0.00	1.00	0.00
12.99	24.31	2.00	0.00	1.00	0.00	13.17	90.90	2.00	0.00	1.00	0.00
13.22	89.70	2.00	0.00	1.00	0.00	13.34	90.17	2.00	0.00	1.00	0.00
13.39	88.31	2.00	0.00	1.00	0.00	13.45	85.70	2.00	0.00	1.00	0.00
13.48	22.34	2.00	0.00	1.00	0.00	13.49	20.39	2.00	0.00	1.00	0.00
13.56	24.47	2.00	0.00	1.00	0.00	13.62	22.77	2.00	0.00	1.00	0.00
13.66	20.81	2.00	0.00	1.00	0.00	13.72	20.00	2.00	0.00	1.00	0.00
13.84	21.72	2.00	0.00	1.00	0.00	13.89	23.09	2.00	0.00	1.00	0.00
13.93	25.60	2.00	0.00	1.00	0.00	14.00	27.79	2.00	0.00	1.00	0.00
14.07	30.23	2.00	0.00	1.00	0.00	14.12	32.40	2.00	0.00	1.00	0.00
14.24	96.61	2.00	0.00	1.00	0.00	14.29	99.12	2.00	0.00	1.00	0.00
14.34	103.03	2.00	0.00	1.00	0.00	14.41	110.56	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
14.46	121.35	2.00	0.00	1.00	0.00	14.51	132.20	2.00	0.00	1.00	0.00
14.64	141.85	2.00	0.00	1.00	0.00	14.68	139.23	2.00	0.00	1.00	0.00
14.74	136.73	2.00	0.00	1.00	0.00	14.82	134.50	2.00	0.00	1.00	0.00
14.86	130.92	2.00	0.00	1.00	0.00	14.91	128.02	2.00	0.00	1.00	0.00
14.99	125.42	0.29	2.53	1.00	0.02	15.04	125.01	0.29	2.54	1.00	0.01
15.10	126.84	0.30	2.50	1.00	0.02	15.17	129.12	0.31	2.45	1.00	0.02
15.27	132.47	0.33	2.38	1.00	0.03	15.31	133.99	0.34	2.35	1.00	0.01
15.39	137.84	0.36	2.28	1.00	0.02	15.44	140.68	0.38	2.23	1.00	0.01
15.50	142.24	0.39	2.20	1.00	0.02	15.57	142.61	0.39	2.20	1.00	0.02
15.68	142.76	0.40	2.19	1.00	0.03	15.74	142.31	2.00	0.00	1.00	0.00
15.80	141.78	2.00	0.00	1.00	0.00	15.87	138.93	2.00	0.00	1.00	0.00
15.92	133.92	2.00	0.00	1.00	0.00	15.98	126.81	2.00	0.00	1.00	0.00
16.05	117.16	2.00	0.00	1.00	0.00	16.10	106.99	2.00	0.00	1.00	0.00
16.16	95.59	2.00	0.00	1.00	0.00	16.23	28.30	2.00	0.00	1.00	0.00
16.28	23.11	2.00	0.00	1.00	0.00	16.41	16.30	2.00	0.00	1.00	0.00
16.45	14.19	2.00	0.00	1.00	0.00	16.50	11.53	2.00	0.00	1.00	0.00
16.54	11.79	2.00	0.00	1.00	0.00	16.62	11.60	2.00	0.00	1.00	0.00
16.68	10.97	2.00	0.00	1.00	0.00	16.79	10.26	2.00	0.00	1.00	0.00
16.85	9.99	2.00	0.00	1.00	0.00	16.90	9.81	2.00	0.00	1.00	0.00
17.01	8.91	2.00	0.00	1.00	0.00	17.08	8.55	2.00	0.00	1.00	0.00
17.16	8.10	2.00	0.00	1.00	0.00	17.25	8.19	2.00	0.00	1.00	0.00
17.31	8.09	2.00	0.00	1.00	0.00	17.37	8.26	2.00	0.00	1.00	0.00
17.43	8.34	2.00	0.00	1.00	0.00	17.48	8.60	2.00	0.00	1.00	0.00
17.54	8.76	2.00	0.00	1.00	0.00	17.60	8.94	2.00	0.00	1.00	0.00
17.73	8.93	2.00	0.00	1.00	0.00	17.78	9.00	2.00	0.00	1.00	0.00
17.83	9.09	2.00	0.00	1.00	0.00	17.88	9.08	2.00	0.00	1.00	0.00
17.96	9.42	2.00	0.00	1.00	0.00	18.00	9.68	2.00	0.00	1.00	0.00
18.07	9.75	2.00	0.00	1.00	0.00	18.14	9.74	2.00	0.00	1.00	0.00
18.19	9.92	2.00	0.00	1.00	0.00	18.27	9.82	2.00	0.00	1.00	0.00
18.31	9.64	2.00	0.00	1.00	0.00	18.45	9.18	2.00	0.00	1.00	0.00
18.54	8.40	2.00	0.00	1.00	0.00	18.62	8.39	2.00	0.00	1.00	0.00
18.67	8.38	2.00	0.00	1.00	0.00	18.73	8.38	2.00	0.00	1.00	0.00
18.80	8.46	2.00	0.00	1.00	0.00	18.85	8.71	2.00	0.00	1.00	0.00
18.91	9.48	2.00	0.00	1.00	0.00	19.08	11.26	2.00	0.00	1.00	0.00
19.15	12.02	2.00	0.00	1.00	0.00	19.21	12.52	2.00	0.00	1.00	0.00
19.28	12.75	2.00	0.00	1.00	0.00	19.34	12.67	2.00	0.00	1.00	0.00
19.42	12.82	2.00	0.00	1.00	0.00	19.47	12.98	2.00	0.00	1.00	0.00
19.51	12.89	2.00	0.00	1.00	0.00	19.56	12.80	2.00	0.00	1.00	0.00
19.66	14.65	2.00	0.00	1.00	0.00	19.71	14.89	2.00	0.00	1.00	0.00
19.76	15.05	2.00	0.00	1.00	0.00	19.84	15.37	2.00	0.00	1.00	0.00
19.90	16.97	2.00	0.00	1.00	0.00	19.97	22.35	2.00	0.00	1.00	0.00
20.02	91.22	2.00	0.00	1.00	0.00	20.10	105.06	2.00	0.00	1.00	0.00
20.15	116.88	2.00	0.00	1.00	0.00	20.27	130.65	2.00	0.00	1.00	0.00
20.33	134.25	0.30	2.35	1.00	0.02	20.40	136.53	0.32	2.31	1.00	0.02
20.45	137.35	0.32	2.29	1.00	0.01	20.50	138.21	0.33	2.28	1.00	0.01
20.57	138.33	0.33	2.27	1.00	0.02	20.64	138.44	0.33	2.27	1.00	0.02
20.74	138.43	0.33	2.27	1.00	0.03	20.80	137.99	0.32	2.28	1.00	0.02
20.86	136.65	0.31	2.30	1.00	0.01	20.92	135.03	0.31	2.33	1.00	0.02

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
20.99	133.54	0.30	2.36	1.00	0.02	21.03	132.58	0.29	2.38	1.00	0.01
21.10	131.60	0.29	2.40	1.00	0.02	21.17	130.41	0.28	2.43	1.00	0.02
21.27	127.83	0.27	2.48	1.00	0.03	21.35	125.39	2.00	0.00	1.00	0.00
21.39	122.81	2.00	0.00	1.00	0.00	21.46	119.53	2.00	0.00	1.00	0.00
21.52	114.73	2.00	0.00	1.00	0.00	21.58	108.51	2.00	0.00	1.00	0.00
21.64	102.43	2.00	0.00	1.00	0.00	21.70	97.26	2.00	0.00	1.00	0.00
21.76	32.57	2.00	0.00	1.00	0.00	21.83	27.53	2.00	0.00	1.00	0.00
21.88	27.79	2.00	0.00	1.00	0.00	21.96	25.02	2.00	0.00	1.00	0.00
22.01	28.04	2.00	0.00	1.00	0.00	22.07	33.74	2.00	0.00	1.00	0.00
22.14	100.83	2.00	0.00	1.00	0.00	22.19	106.59	2.00	0.00	1.00	0.00
22.26	110.98	2.00	0.00	1.00	0.00	22.32	113.17	2.00	0.00	1.00	0.00
22.45	116.91	2.00	0.00	1.00	0.00	22.49	118.97	0.23	2.68	1.00	0.01
22.54	121.57	0.24	2.62	1.00	0.01	22.58	118.34	0.23	2.69	1.00	0.01
22.66	130.06	0.27	2.43	1.00	0.02	22.72	132.08	0.28	2.39	1.00	0.02
22.80	130.92	0.28	2.42	1.00	0.02	22.95	125.11	0.25	2.54	1.00	0.05
22.99	123.72	0.25	2.57	1.00	0.01	23.03	122.72	0.24	2.59	1.00	0.01
23.07	121.95	0.24	2.61	1.00	0.01	23.12	121.37	0.24	2.62	1.00	0.01
23.21	120.55	0.24	2.64	1.00	0.03	23.29	120.40	0.24	2.65	1.00	0.02
23.34	120.26	0.23	2.65	1.00	0.02	23.39	120.26	0.23	2.65	1.00	0.02
23.45	119.65	0.23	2.66	1.00	0.02	23.51	118.59	0.23	2.69	1.00	0.02
23.69	113.07	0.21	2.83	1.00	0.06	23.73	111.08	0.21	2.88	1.00	0.02
23.79	108.96	0.20	2.94	1.00	0.02	23.86	106.85	0.20	3.00	1.00	0.02
23.91	104.87	0.19	3.06	1.00	0.02	23.96	103.06	0.19	3.12	1.00	0.02
24.04	101.36	0.19	3.17	1.00	0.03	24.09	99.47	0.18	3.23	1.00	0.02
24.15	98.35	0.18	3.27	1.00	0.02	24.21	97.43	0.18	3.30	1.00	0.03
24.27	96.69	0.18	3.33	1.00	0.02	24.32	96.30	0.18	3.34	1.00	0.02
24.39	95.33	2.00	0.00	1.00	0.00	24.44	93.96	2.00	0.00	1.00	0.00
24.56	29.11	2.00	0.00	1.00	0.00	24.62	24.49	2.00	0.00	1.00	0.00
24.68	20.20	2.00	0.00	1.00	0.00	24.74	17.25	2.00	0.00	1.00	0.00
24.80	15.34	2.00	0.00	1.00	0.00	24.84	13.28	2.00	0.00	1.00	0.00
24.91	11.69	2.00	0.00	1.00	0.00	24.97	10.74	2.00	0.00	1.00	0.00
25.09	9.86	2.00	0.00	1.00	0.00	25.15	9.85	2.00	0.00	1.00	0.00
25.21	9.77	2.00	0.00	1.00	0.00	25.28	9.53	2.00	0.00	1.00	0.00
25.33	9.37	2.00	0.00	1.00	0.00	25.39	9.28	2.00	0.00	1.00	0.00
25.46	9.20	2.00	0.00	1.00	0.00	25.50	9.12	2.00	0.00	1.00	0.00
25.56	8.95	2.00	0.00	1.00	0.00	25.59	7.78	2.00	0.00	1.00	0.00
25.67	9.80	2.00	0.00	1.00	0.00	25.76	10.72	2.00	0.00	1.00	0.00
25.81	10.56	2.00	0.00	1.00	0.00	25.85	10.09	2.00	0.00	1.00	0.00
25.94	9.85	2.00	0.00	1.00	0.00	25.99	9.84	2.00	0.00	1.00	0.00
26.08	9.83	2.00	0.00	1.00	0.00	26.14	10.14	2.00	0.00	1.00	0.00
26.20	10.83	2.00	0.00	1.00	0.00	26.31	13.37	2.00	0.00	1.00	0.00
26.37	13.75	2.00	0.00	1.00	0.00	26.43	13.05	2.00	0.00	1.00	0.00
26.49	12.18	2.00	0.00	1.00	0.00	26.56	11.47	2.00	0.00	1.00	0.00
26.61	10.70	2.00	0.00	1.00	0.00	26.65	10.31	2.00	0.00	1.00	0.00
26.77	10.06	2.00	0.00	1.00	0.00	26.82	10.36	2.00	0.00	1.00	0.00
26.89	12.05	2.00	0.00	1.00	0.00	26.96	16.67	2.00	0.00	1.00	0.00
27.01	25.56	2.00	0.00	1.00	0.00	27.06	96.32	2.00	0.00	1.00	0.00
27.12	106.40	2.00	0.00	1.00	0.00	27.18	114.57	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
27.23	120.12	2.00	0.00	1.00	0.00	27.30	121.48	0.23	2.62	1.00	0.02
27.41	120.12	0.23	2.65	1.00	0.03	27.48	121.30	0.23	2.62	1.00	0.02
27.53	123.94	0.24	2.56	1.00	0.02	27.58	127.53	0.25	2.49	1.00	0.02
27.66	131.34	0.27	2.41	1.00	0.02	27.77	135.84	0.29	2.32	1.00	0.03
27.83	135.29	0.28	2.33	1.00	0.02	27.89	132.98	0.27	2.37	1.00	0.02
27.95	129.04	0.26	2.45	1.00	0.02	28.02	126.25	0.24	2.51	1.00	0.02
28.07	123.89	2.00	0.00	1.00	0.00	28.11	123.00	2.00	0.00	1.00	0.00
28.19	121.63	2.00	0.00	1.00	0.00	28.24	119.54	2.00	0.00	1.00	0.00
28.29	115.84	2.00	0.00	1.00	0.00	28.37	111.13	2.00	0.00	1.00	0.00
28.42	106.24	2.00	0.00	1.00	0.00	28.52	35.17	2.00	0.00	1.00	0.00
28.59	29.39	2.00	0.00	1.00	0.00	28.61	24.35	2.00	0.00	1.00	0.00
28.70	23.03	2.00	0.00	1.00	0.00	28.76	20.81	2.00	0.00	1.00	0.00
28.81	19.13	2.00	0.00	1.00	0.00	28.93	14.95	2.00	0.00	1.00	0.00
28.98	13.13	2.00	0.00	1.00	0.00	29.04	11.93	2.00	0.00	1.00	0.00
29.10	11.47	2.00	0.00	1.00	0.00	29.16	10.93	2.00	0.00	1.00	0.00
29.21	10.25	2.00	0.00	1.00	0.00	29.34	9.64	2.00	0.00	1.00	0.00
29.38	9.64	2.00	0.00	1.00	0.00	29.43	9.63	2.00	0.00	1.00	0.00
29.51	9.63	2.00	0.00	1.00	0.00	29.56	10.07	2.00	0.00	1.00	0.00
29.66	11.47	2.00	0.00	1.00	0.00	29.74	11.76	2.00	0.00	1.00	0.00
29.78	11.68	2.00	0.00	1.00	0.00	29.85	11.75	2.00	0.00	1.00	0.00
29.91	11.59	2.00	0.00	1.00	0.00	29.96	11.73	2.00	0.00	1.00	0.00
30.01	12.70	2.00	0.00	1.00	0.00	30.09	14.54	2.00	0.00	1.00	0.00
30.14	16.10	2.00	0.00	1.00	0.00	30.25	19.88	2.00	0.00	1.00	0.00
30.31	21.14	2.00	0.00	1.00	0.00	30.36	21.57	2.00	0.00	1.00	0.00
30.44	21.86	2.00	0.00	1.00	0.00	30.53	29.09	2.00	0.00	1.00	0.00
30.59	98.71	2.00	0.00	1.00	0.00	30.66	107.51	2.00	0.00	1.00	0.00
30.71	109.20	2.00	0.00	1.00	0.00	30.84	34.02	2.00	0.00	1.00	0.00
30.89	26.89	2.00	0.00	1.00	0.00	30.94	22.32	2.00	0.00	1.00	0.00
31.02	19.11	2.00	0.00	1.00	0.00	31.11	14.66	2.00	0.00	1.00	0.00
31.17	13.91	2.00	0.00	1.00	0.00	31.24	13.23	2.00	0.00	1.00	0.00
31.30	13.08	2.00	0.00	1.00	0.00	31.37	13.07	2.00	0.00	1.00	0.00
31.42	12.77	2.00	0.00	1.00	0.00	31.47	12.32	2.00	0.00	1.00	0.00
31.54	11.65	2.00	0.00	1.00	0.00	31.60	11.47	2.00	0.00	1.00	0.00
31.63	10.55	2.00	0.00	1.00	0.00	31.72	11.27	2.00	0.00	1.00	0.00
31.76	11.41	2.00	0.00	1.00	0.00	31.85	11.77	2.00	0.00	1.00	0.00
31.89	12.05	2.00	0.00	1.00	0.00	31.99	12.19	2.00	0.00	1.00	0.00
32.04	11.81	2.00	0.00	1.00	0.00	32.11	11.52	2.00	0.00	1.00	0.00
32.16	11.22	2.00	0.00	1.00	0.00	32.25	11.94	2.00	0.00	1.00	0.00
32.29	13.16	2.00	0.00	1.00	0.00	32.41	18.68	2.00	0.00	1.00	0.00
32.47	21.59	2.00	0.00	1.00	0.00	32.51	21.65	2.00	0.00	1.00	0.00
32.56	19.96	2.00	0.00	1.00	0.00	32.62	18.21	2.00	0.00	1.00	0.00
32.72	15.71	2.00	0.00	1.00	0.00	32.78	18.24	2.00	0.00	1.00	0.00
32.83	16.56	2.00	0.00	1.00	0.00	32.91	18.29	2.00	0.00	1.00	0.00
32.97	19.37	2.00	0.00	1.00	0.00	33.02	20.38	2.00	0.00	1.00	0.00
33.11	23.06	2.00	0.00	1.00	0.00	33.18	25.16	2.00	0.00	1.00	0.00
33.22	26.75	2.00	0.00	1.00	0.00	33.32	28.93	2.00	0.00	1.00	0.00
33.37	29.65	2.00	0.00	1.00	0.00	33.43	30.50	2.00	0.00	1.00	0.00
33.49	31.52	2.00	0.00	1.00	0.00	33.67	41.55	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
33.72	44.34	2.00	0.00	1.00	0.00	33.78	46.10	2.00	0.00	1.00	0.00
33.82	47.20	2.00	0.00	1.00	0.00	33.93	47.88	2.00	0.00	1.00	0.00
33.98	112.67	0.20	2.84	1.00	0.02	34.02	112.92	2.00	0.00	1.00	0.00
34.07	113.43	2.00	0.00	1.00	0.00	34.12	113.27	2.00	0.00	1.00	0.00
34.19	111.20	2.00	0.00	1.00	0.00	34.29	105.89	0.18	3.03	1.00	0.04
34.33	104.02	0.18	3.09	1.00	0.02	34.39	100.62	0.17	3.19	1.00	0.02
34.48	33.96	2.00	0.00	1.00	0.00	34.55	32.19	2.00	0.00	1.00	0.00
34.59	34.50	2.00	0.00	1.00	0.00	34.69	119.53	2.00	0.00	1.00	0.00
34.73	132.03	2.00	0.00	1.00	0.00	34.82	146.60	2.00	0.00	1.00	0.00
34.86	149.54	2.00	0.00	1.00	0.00	34.95	151.44	2.00	0.00	1.00	0.00
34.99	152.14	2.00	0.00	1.00	0.00	35.04	152.79	2.00	0.00	1.00	0.00
35.13	152.38	2.00	0.00	1.00	0.00	35.17	153.20	0.40	2.03	1.00	0.01
35.26	155.24	0.42	2.00	1.00	0.02	35.30	154.99	0.42	2.00	1.00	0.01
35.40	155.52	0.42	1.99	1.00	0.02	35.44	155.91	0.43	1.98	1.00	0.01
35.55	154.24	0.41	2.01	1.00	0.03	35.62	153.64	0.40	2.02	1.00	0.02
35.66	152.48	0.39	2.04	1.00	0.01	35.70	151.19	0.38	2.06	1.00	0.01
35.79	148.78	0.36	2.09	1.00	0.02	35.84	147.68	0.35	2.11	1.00	0.01
35.93	144.79	0.33	2.16	1.00	0.02	35.97	143.34	2.00	0.00	1.00	0.00
36.11	140.21	2.00	0.00	1.00	0.00	36.15	139.75	2.00	0.00	1.00	0.00
36.20	138.80	2.00	0.00	1.00	0.00	36.24	136.38	2.00	0.00	1.00	0.00
36.29	131.92	2.00	0.00	1.00	0.00	36.39	119.44	2.00	0.00	1.00	0.00
36.43	113.00	2.00	0.00	1.00	0.00	36.49	107.46	2.00	0.00	1.00	0.00
36.57	37.03	2.00	0.00	1.00	0.00	36.62	34.44	2.00	0.00	1.00	0.00
36.72	29.55	2.00	0.00	1.00	0.00	36.77	27.33	2.00	0.00	1.00	0.00
36.85	24.57	2.00	0.00	1.00	0.00	36.89	22.66	2.00	0.00	1.00	0.00
37.03	24.30	2.00	0.00	1.00	0.00	37.07	22.53	2.00	0.00	1.00	0.00
37.14	24.05	2.00	0.00	1.00	0.00	37.20	26.62	2.00	0.00	1.00	0.00
37.25	28.92	2.00	0.00	1.00	0.00	37.30	90.19	0.16	3.57	1.00	0.02
37.35	92.01	0.16	3.49	1.00	0.02	37.40	93.91	2.00	0.00	1.00	0.00
37.51	99.21	2.00	0.00	1.00	0.00	37.56	102.60	2.00	0.00	1.00	0.00
37.62	111.27	2.00	0.00	1.00	0.00	37.67	111.89	2.00	0.00	1.00	0.00
37.76	113.64	0.20	2.81	1.00	0.03	37.80	108.64	2.00	0.00	1.00	0.00
37.86	106.62	2.00	0.00	1.00	0.00	37.93	102.74	2.00	0.00	1.00	0.00
38.05	31.53	2.00	0.00	1.00	0.00	38.11	27.59	2.00	0.00	1.00	0.00
38.16	24.99	2.00	0.00	1.00	0.00	38.22	23.86	2.00	0.00	1.00	0.00
38.29	22.32	2.00	0.00	1.00	0.00	38.34	20.44	2.00	0.00	1.00	0.00
38.40	18.78	2.00	0.00	1.00	0.00	38.45	18.77	2.00	0.00	1.00	0.00
38.56	18.74	2.00	0.00	1.00	0.00	38.62	18.73	2.00	0.00	1.00	0.00
38.66	18.17	2.00	0.00	1.00	0.00	38.75	18.16	2.00	0.00	1.00	0.00
38.79	17.54	2.00	0.00	1.00	0.00	38.88	17.05	2.00	0.00	1.00	0.00
38.91	17.59	2.00	0.00	1.00	0.00	39.01	18.47	2.00	0.00	1.00	0.00
39.05	19.01	2.00	0.00	1.00	0.00	39.14	19.74	2.00	0.00	1.00	0.00
39.18	20.35	2.00	0.00	1.00	0.00	39.27	26.58	2.00	0.00	1.00	0.00
39.32	32.05	2.00	0.00	1.00	0.00	39.41	100.61	0.17	3.19	1.00	0.03
39.46	100.59	0.17	3.19	1.00	0.02	39.54	33.86	2.00	0.00	1.00	0.00
39.58	31.06	2.00	0.00	1.00	0.00	39.68	27.91	2.00	0.00	1.00	0.00
39.73	28.93	2.00	0.00	1.00	0.00	39.78	30.22	2.00	0.00	1.00	0.00
39.83	29.80	2.00	0.00	1.00	0.00	39.93	24.00	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
39.97	20.99	2.00	0.00	1.00	0.00	40.06	18.59	2.00	0.00	1.00	0.00
40.14	19.04	2.00	0.00	1.00	0.00	40.19	18.56	2.00	0.00	1.00	0.00
40.24	17.27	2.00	0.00	1.00	0.00	40.32	13.97	2.00	0.00	1.00	0.00
40.37	13.23	2.00	0.00	1.00	0.00	40.43	13.10	2.00	0.00	1.00	0.00
40.50	14.42	2.00	0.00	1.00	0.00	40.61	92.99	0.16	3.46	1.00	0.04
40.68	110.26	0.19	2.90	1.00	0.02	40.72	122.33	0.22	2.60	1.00	0.01
40.77	125.81	0.23	2.52	1.00	0.01	40.85	135.72	0.27	2.32	1.00	0.02
40.90	139.13	0.29	2.26	1.00	0.02	40.99	143.07	0.31	2.19	1.00	0.02
41.07	147.75	0.35	2.11	1.00	0.02	41.12	149.77	0.36	2.08	1.00	0.01
41.17	150.76	0.37	2.06	1.00	0.01	41.22	152.11	0.38	2.04	1.00	0.01
41.30	155.49	0.42	1.99	1.00	0.02	41.40	161.92	0.50	1.62	1.00	0.02
41.47	164.71	0.54	1.47	1.00	0.01	41.52	166.03	0.56	1.40	1.00	0.01
41.58	167.61	0.59	1.33	1.00	0.01	41.64	168.97	0.62	1.27	1.00	0.01
41.70	169.64	0.63	1.24	1.00	0.01	41.75	168.74	0.62	1.28	1.00	0.01
41.82	166.28	0.57	1.39	1.00	0.01	41.87	164.76	0.54	1.47	1.00	0.01
41.99	161.37	2.00	0.00	1.00	0.00	42.05	160.73	2.00	0.00	1.00	0.00
42.09	159.92	2.00	0.00	1.00	0.00	42.15	156.43	2.00	0.00	1.00	0.00
42.27	142.63	2.00	0.00	1.00	0.00	42.31	131.24	2.00	0.00	1.00	0.00
42.36	118.83	2.00	0.00	1.00	0.00	42.45	43.75	2.00	0.00	1.00	0.00
42.49	36.07	2.00	0.00	1.00	0.00	42.55	30.65	2.00	0.00	1.00	0.00
42.62	26.50	2.00	0.00	1.00	0.00	42.67	21.01	2.00	0.00	1.00	0.00
42.73	16.89	2.00	0.00	1.00	0.00	42.80	14.64	2.00	0.00	1.00	0.00
42.85	13.26	2.00	0.00	1.00	0.00	42.98	12.47	2.00	0.00	1.00	0.00
43.02	12.60	2.00	0.00	1.00	0.00	43.15	12.84	2.00	0.00	1.00	0.00
43.20	12.83	2.00	0.00	1.00	0.00	43.25	12.77	2.00	0.00	1.00	0.00
43.32	12.63	2.00	0.00	1.00	0.00	43.38	12.62	2.00	0.00	1.00	0.00
43.43	12.61	2.00	0.00	1.00	0.00	43.49	12.67	2.00	0.00	1.00	0.00
43.55	12.60	2.00	0.00	1.00	0.00	43.61	12.53	2.00	0.00	1.00	0.00
43.68	12.46	2.00	0.00	1.00	0.00	43.84	12.38	2.00	0.00	1.00	0.00
43.87	12.51	2.00	0.00	1.00	0.00	43.91	11.40	2.00	0.00	1.00	0.00
43.97	12.62	2.00	0.00	1.00	0.00	44.05	13.00	2.00	0.00	1.00	0.00
44.15	13.31	2.00	0.00	1.00	0.00	44.18	13.57	2.00	0.00	1.00	0.00
44.23	13.88	2.00	0.00	1.00	0.00	44.29	14.26	2.00	0.00	1.00	0.00
44.38	14.90	2.00	0.00	1.00	0.00	44.43	15.02	2.00	0.00	1.00	0.00
44.52	14.82	2.00	0.00	1.00	0.00	44.56	14.48	2.00	0.00	1.00	0.00
44.66	14.15	2.00	0.00	1.00	0.00	44.70	14.15	2.00	0.00	1.00	0.00
44.84	13.62	2.00	0.00	1.00	0.00	44.88	13.49	2.00	0.00	1.00	0.00
44.93	13.22	2.00	0.00	1.00	0.00	44.98	13.15	2.00	0.00	1.00	0.00
45.02	13.34	2.00	0.00	1.00	0.00	45.09	13.91	2.00	0.00	1.00	0.00
45.18	16.02	2.00	0.00	1.00	0.00	45.23	17.82	2.00	0.00	1.00	0.00
45.28	19.75	2.00	0.00	1.00	0.00	45.37	22.79	2.00	0.00	1.00	0.00
45.41	22.85	2.00	0.00	1.00	0.00	45.50	22.52	2.00	0.00	1.00	0.00
45.55	23.50	2.00	0.00	1.00	0.00	45.66	27.36	2.00	0.00	1.00	0.00
45.72	31.07	2.00	0.00	1.00	0.00	45.81	41.79	2.00	0.00	1.00	0.00
45.85	109.71	2.00	0.00	1.00	0.00	45.90	115.49	2.00	0.00	1.00	0.00
45.94	122.31	2.00	0.00	1.00	0.00	46.05	138.89	2.00	0.00	1.00	0.00
46.11	147.13	2.00	0.00	1.00	0.00	46.17	153.29	2.00	0.00	1.00	0.00
46.21	156.89	2.00	0.00	1.00	0.00	46.31	162.13	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
46.37	165.48	0.55	1.43	1.00	0.01	46.42	168.72	0.61	1.28	1.00	0.01
46.47	171.29	0.67	1.17	1.00	0.01	46.58	174.67	0.75	1.04	1.00	0.01
46.65	175.92	0.79	0.99	1.00	0.01	46.70	177.00	0.82	0.96	1.00	0.01
46.74	177.91	0.85	0.92	1.00	0.00	46.80	178.88	0.88	0.89	1.00	0.01
46.85	180.31	0.93	0.83	1.00	0.01	46.93	180.52	0.94	0.82	1.00	0.01
47.02	180.64	0.95	0.81	1.00	0.01	47.07	181.04	0.96	0.78	1.00	0.00
47.16	178.88	0.88	0.89	1.00	0.01	47.20	176.47	0.80	0.97	1.00	0.00
47.24	172.86	0.70	1.11	1.00	0.01	47.33	165.29	0.55	1.44	1.00	0.02
47.46	155.79	0.42	1.99	1.00	0.03	47.51	153.66	2.00	0.00	1.00	0.00
47.55	150.91	2.00	0.00	1.00	0.00	47.60	147.61	2.00	0.00	1.00	0.00
47.64	143.79	2.00	0.00	1.00	0.00	47.73	132.71	2.00	0.00	1.00	0.00
47.78	125.93	2.00	0.00	1.00	0.00	47.84	117.61	2.00	0.00	1.00	0.00
47.91	44.46	2.00	0.00	1.00	0.00	47.99	31.48	2.00	0.00	1.00	0.00
48.04	27.24	2.00	0.00	1.00	0.00	48.14	20.08	2.00	0.00	1.00	0.00
48.19	18.11	2.00	0.00	1.00	0.00	48.33	15.32	2.00	0.00	1.00	0.00
48.39	15.19	2.00	0.00	1.00	0.00	48.44	15.56	2.00	0.00	1.00	0.00
48.48	15.67	2.00	0.00	1.00	0.00	48.53	15.48	2.00	0.00	1.00	0.00
48.57	15.60	2.00	0.00	1.00	0.00	48.67	17.02	2.00	0.00	1.00	0.00
48.72	17.58	2.00	0.00	1.00	0.00	48.76	18.27	2.00	0.00	1.00	0.00
48.87	20.08	2.00	0.00	1.00	0.00	48.92	21.47	2.00	0.00	1.00	0.00
48.97	22.85	2.00	0.00	1.00	0.00	49.06	24.22	2.00	0.00	1.00	0.00
49.10	24.09	2.00	0.00	1.00	0.00	49.15	22.74	2.00	0.00	1.00	0.00
49.25	18.57	2.00	0.00	1.00	0.00	49.31	16.62	2.00	0.00	1.00	0.00
49.36	15.24	2.00	0.00	1.00	0.00	49.41	14.24	2.00	0.00	1.00	0.00
49.50	13.00	2.00	0.00	1.00	0.00	49.55	12.75	2.00	0.00	1.00	0.00
49.66	12.73	2.00	0.00	1.00	0.00	49.71	12.79	2.00	0.00	1.00	0.00
49.75	12.67	2.00	0.00	1.00	0.00	49.82	12.66	2.00	0.00	1.00	0.00
49.90	12.65	2.00	0.00	1.00	0.00	49.95	12.70	2.00	0.00	1.00	0.00
50.03	13.25	2.00	0.00	1.00	0.00	50.08	13.73	2.00	0.00	1.00	0.00
50.13	13.98	2.00	0.00	1.00	0.00	50.22	14.64	2.00	0.00	1.00	0.00
50.31	15.00	2.00	0.00	1.00	0.00	50.35	15.12	2.00	0.00	1.00	0.00
50.40	15.30	2.00	0.00	1.00	0.00	50.49	16.46	2.00	0.00	1.00	0.00
50.54	17.13	2.00	0.00	1.00	0.00	50.61	18.36	2.00	0.00	1.00	0.00
50.68	19.23	2.00	0.00	1.00	0.00	50.76	19.90	2.00	0.00	1.00	0.00
50.86	22.14	2.00	0.00	1.00	0.00	50.89	23.71	2.00	0.00	1.00	0.00
50.96	25.78	2.00	0.00	1.00	0.00	51.00	28.12	2.00	0.00	1.00	0.00
51.08	31.30	2.00	0.00	1.00	0.00	51.13	32.58	2.00	0.00	1.00	0.00
51.22	35.21	2.00	0.00	1.00	0.00	51.31	36.55	2.00	0.00	1.00	0.00
51.35	37.25	2.00	0.00	1.00	0.00	51.40	38.27	2.00	0.00	1.00	0.00
51.49	42.63	2.00	0.00	1.00	0.00	51.53	45.92	2.00	0.00	1.00	0.00
51.58	48.96	2.00	0.00	1.00	0.00	51.66	123.48	2.00	0.00	1.00	0.00
51.71	126.75	2.00	0.00	1.00	0.00	51.80	135.43	2.00	0.00	1.00	0.00
51.84	139.23	2.00	0.00	1.00	0.00	51.93	142.85	2.00	0.00	1.00	0.00
51.97	143.50	0.32	2.18	1.00	0.01	52.11	148.19	0.35	2.10	1.00	0.03
52.15	149.29	0.36	2.09	1.00	0.01	52.20	150.11	0.37	2.07	1.00	0.01
52.25	149.55	0.36	2.08	1.00	0.01	52.32	150.52	0.37	2.07	1.00	0.02
52.38	149.68	0.36	2.08	1.00	0.01	52.44	149.15	0.36	2.09	1.00	0.02
52.55	149.99	0.36	2.08	1.00	0.03	52.57	150.03	0.37	2.07	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
52.66	150.73	0.37	2.06	1.00	0.02	52.70	149.69	0.36	2.08	1.00	0.01
52.79	143.99	0.32	2.17	1.00	0.02	52.84	140.79	2.00	0.00	1.00	0.00
52.92	134.88	2.00	0.00	1.00	0.00	52.97	129.90	2.00	0.00	1.00	0.00
53.06	125.18	2.00	0.00	1.00	0.00	53.10	123.41	2.00	0.00	1.00	0.00
53.19	120.89	2.00	0.00	1.00	0.00	53.23	118.55	2.00	0.00	1.00	0.00
53.30	117.52	2.00	0.00	1.00	0.00	53.37	119.87	2.00	0.00	1.00	0.00
53.46	141.73	2.00	0.00	1.00	0.00	53.54	158.53	2.00	0.00	1.00	0.00
53.59	172.41	2.00	0.00	1.00	0.00	53.64	183.36	2.00	0.00	1.00	0.00
53.71	191.28	2.00	0.00	1.00	0.00	53.77	195.61	2.00	0.00	1.00	0.00
53.81	197.11	2.00	0.00	1.00	0.00	53.94	198.39	2.00	0.00	1.00	0.00
53.99	196.85	1.98	0.01	1.00	0.00	54.03	194.83	1.79	0.09	1.00	0.00
54.09	192.04	1.56	0.21	1.00	0.00	54.14	189.37	1.38	0.33	1.00	0.00
54.25	185.37	2.00	0.00	1.00	0.00	54.30	184.59	2.00	0.00	1.00	0.00
54.34	182.93	2.00	0.00	1.00	0.00	54.43	175.54	2.00	0.00	1.00	0.00
54.50	167.03	2.00	0.00	1.00	0.00	54.56	155.56	2.00	0.00	1.00	0.00
54.60	144.23	2.00	0.00	1.00	0.00	54.71	125.68	2.00	0.00	1.00	0.00
54.76	53.06	2.00	0.00	1.00	0.00	54.81	49.46	2.00	0.00	1.00	0.00
54.87	48.07	2.00	0.00	1.00	0.00	55.19	181.17	2.00	0.00	1.00	0.00
55.25	185.75	2.00	0.00	1.00	0.00	55.31	190.90	2.00	0.00	1.00	0.00
55.36	196.22	2.00	0.00	1.00	0.00	55.52	200.35	2.00	0.00	1.00	0.00
55.58	202.79	2.00	0.00	1.00	0.00	55.63	204.51	2.00	0.00	1.00	0.00
55.69	205.31	2.00	0.00	1.00	0.00	55.76	205.85	2.00	0.00	1.00	0.00
55.80	206.94	2.00	0.00	1.00	0.00	55.87	206.32	2.00	0.00	1.00	0.00
55.95	208.09	2.00	0.00	1.00	0.00	55.99	208.91	2.00	0.00	1.00	0.00
56.07	209.91	2.00	0.00	1.00	0.00	56.11	209.36	2.00	0.00	1.00	0.00
56.18	205.88	2.00	0.00	1.00	0.00	56.26	201.26	2.00	0.00	1.00	0.00
56.30	198.85	2.00	0.00	1.00	0.00	56.39	195.43	2.00	0.00	1.00	0.00
56.43	194.00	2.00	0.00	1.00	0.00	56.52	192.25	2.00	0.00	1.00	0.00
56.60	191.02	2.00	0.00	1.00	0.00	56.63	190.67	2.00	0.00	1.00	0.00
56.71	189.63	2.00	0.00	1.00	0.00	56.79	188.66	2.00	0.00	1.00	0.00
56.83	187.80	2.00	0.00	1.00	0.00	56.92	186.00	2.00	0.00	1.00	0.00
56.97	184.82	2.00	0.00	1.00	0.00	57.05	182.67	2.00	0.00	1.00	0.00
57.09	181.46	2.00	0.00	1.00	0.00	57.19	178.97	2.00	0.00	1.00	0.00
57.23	177.63	2.00	0.00	1.00	0.00	57.32	174.77	2.00	0.00	1.00	0.00
57.39	172.94	2.00	0.00	1.00	0.00	57.45	171.39	2.00	0.00	1.00	0.00
57.50	170.40	2.00	0.00	1.00	0.00	57.61	168.61	2.00	0.00	1.00	0.00
57.66	167.93	2.00	0.00	1.00	0.00	57.72	167.63	2.00	0.00	1.00	0.00
57.76	168.94	2.00	0.00	1.00	0.00	57.83	172.84	2.00	0.00	1.00	0.00
57.89	178.67	2.00	0.00	1.00	0.00	57.99	193.56	2.00	0.00	1.00	0.00
58.06	200.70	2.00	0.00	1.00	0.00	58.12	204.77	2.00	0.00	1.00	0.00
58.16	207.34	2.00	0.00	1.00	0.00	58.23	208.80	2.00	0.00	1.00	0.00
58.27	209.10	2.00	0.00	1.00	0.00	58.33	208.61	2.00	0.00	1.00	0.00
58.43	207.34	2.00	0.00	1.00	0.00	58.51	206.53	2.00	0.00	1.00	0.00
58.55	206.29	2.00	0.00	1.00	0.00	58.61	205.62	2.00	0.00	1.00	0.00
58.73	195.45	2.00	0.00	1.00	0.00	58.78	193.84	2.00	0.00	1.00	0.00
58.85	193.94	2.00	0.00	1.00	0.00	58.89	192.98	2.00	0.00	1.00	0.00
58.96	192.30	2.00	0.00	1.00	0.00	59.00	192.45	2.00	0.00	1.00	0.00
59.09	193.29	2.00	0.00	1.00	0.00	59.13	194.49	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
59.20	196.87	2.00	0.00	1.00	0.00	59.28	198.87	2.00	0.00	1.00	0.00
59.33	199.89	2.00	0.00	1.00	0.00	59.39	201.03	2.00	0.00	1.00	0.00
59.53	202.02	2.00	0.00	1.00	0.00	59.59	202.08	2.00	0.00	1.00	0.00
59.65	201.77	2.00	0.00	1.00	0.00	59.71	201.08	2.00	0.00	1.00	0.00
59.75	199.99	2.00	0.00	1.00	0.00	59.81	198.35	2.00	0.00	1.00	0.00
59.86	196.15	2.00	0.00	1.00	0.00	59.93	194.26	2.00	0.00	1.00	0.00
60.02	191.39	2.00	0.00	1.00	0.00	60.10	190.55	2.00	0.00	1.00	0.00
60.15	190.31	2.00	0.00	1.00	0.00	60.20	190.80	2.00	0.00	1.00	0.00
60.25	191.78	2.00	0.00	1.00	0.00	60.32	193.00	2.00	0.00	1.00	0.00
60.38	193.82	2.00	0.00	1.00	0.00	60.53	191.57	2.00	0.00	1.00	0.00
60.59	189.98	2.00	0.00	1.00	0.00	60.64	187.93	2.00	0.00	1.00	0.00
60.69	185.68	2.00	0.00	1.00	0.00	60.74	183.12	2.00	0.00	1.00	0.00
60.81	180.53	2.00	0.00	1.00	0.00	60.86	178.17	2.00	0.00	1.00	0.00
60.91	175.82	2.00	0.00	1.00	0.00	60.97	172.78	2.00	0.00	1.00	0.00
61.03	169.77	2.00	0.00	1.00	0.00	61.13	161.45	2.00	0.00	1.00	0.00
61.18	155.00	2.00	0.00	1.00	0.00	61.26	146.09	2.00	0.00	1.00	0.00
61.31	134.80	2.00	0.00	1.00	0.00	61.38	124.30	2.00	0.00	1.00	0.00
61.44	49.16	2.00	0.00	1.00	0.00	61.54	38.26	2.00	0.00	1.00	0.00
61.61	34.50	2.00	0.00	1.00	0.00	61.66	32.08	2.00	0.00	1.00	0.00
61.73	34.25	2.00	0.00	1.00	0.00	61.79	31.77	2.00	0.00	1.00	0.00
61.82	34.05	2.00	0.00	1.00	0.00	61.91	104.85	2.00	0.00	1.00	0.00
61.95	106.95	2.00	0.00	1.00	0.00	62.04	114.22	2.00	0.00	1.00	0.00
62.09	116.76	2.00	0.00	1.00	0.00	62.15	118.66	2.00	0.00	1.00	0.00
62.21	118.76	2.00	0.00	1.00	0.00	62.30	115.77	2.00	0.00	1.00	0.00
62.35	114.58	2.00	0.00	1.00	0.00	62.44	113.43	2.00	0.00	1.00	0.00
62.49	112.68	2.00	0.00	1.00	0.00	62.58	112.82	2.00	0.00	1.00	0.00
62.63	111.42	2.00	0.00	1.00	0.00	62.68	112.53	2.00	0.00	1.00	0.00
62.77	118.71	2.00	0.00	1.00	0.00	62.83	121.55	2.00	0.00	1.00	0.00
62.88	120.58	2.00	0.00	1.00	0.00	62.97	43.74	2.00	0.00	1.00	0.00
63.02	36.97	2.00	0.00	1.00	0.00	63.06	32.31	2.00	0.00	1.00	0.00
63.15	26.10	2.00	0.00	1.00	0.00	63.20	23.25	2.00	0.00	1.00	0.00
63.26	22.20	2.00	0.00	1.00	0.00	63.34	28.60	2.00	0.00	1.00	0.00
63.41	35.13	2.00	0.00	1.00	0.00	63.50	114.57	2.00	0.00	1.00	0.00
63.54	120.51	2.00	0.00	1.00	0.00	63.59	125.12	2.00	0.00	1.00	0.00
63.68	130.90	2.00	0.00	1.00	0.00	63.75	133.70	2.00	0.00	1.00	0.00
63.84	135.53	2.00	0.00	1.00	0.00	63.89	135.75	2.00	0.00	1.00	0.00
63.98	139.62	2.00	0.00	1.00	0.00	64.03	144.24	2.00	0.00	1.00	0.00
64.08	149.75	2.00	0.00	1.00	0.00	64.15	152.88	2.00	0.00	1.00	0.00
64.20	154.12	2.00	0.00	1.00	0.00	64.25	153.04	2.00	0.00	1.00	0.00
64.32	150.79	2.00	0.00	1.00	0.00	64.55	130.17	2.00	0.00	1.00	0.00
64.61	119.96	2.00	0.00	1.00	0.00	64.65	119.15	2.00	0.00	1.00	0.00
64.71	115.67	2.00	0.00	1.00	0.00	64.78	46.64	2.00	0.00	1.00	0.00
64.83	42.97	2.00	0.00	1.00	0.00	64.90	46.13	2.00	0.00	1.00	0.00
64.96	44.29	2.00	0.00	1.00	0.00	65.04	45.64	2.00	0.00	1.00	0.00
65.14	129.63	2.00	0.00	1.00	0.00	65.18	138.86	2.00	0.00	1.00	0.00
65.27	163.27	2.00	0.00	1.00	0.00	65.31	177.18	2.00	0.00	1.00	0.00
65.36	189.67	2.00	0.00	1.00	0.00	65.45	209.78	2.00	0.00	1.00	0.00
65.49	216.55	2.00	0.00	1.00	0.00	65.64	228.82	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction ::(continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
65.71	231.37	2.00	0.00	1.00	0.00	65.76	233.01	2.00	0.00	1.00	0.00
65.81	233.75	2.00	0.00	1.00	0.00	65.88	233.68	2.00	0.00	1.00	0.00
65.93	233.07	2.00	0.00	1.00	0.00	65.98	171.18	2.00	0.00	1.00	0.00
66.03	169.91	2.00	0.00	1.00	0.00	66.11	167.38	2.00	0.00	1.00	0.00
66.15	164.33	2.00	0.00	1.00	0.00	66.23	160.21	2.00	0.00	1.00	0.00
66.31	155.43	2.00	0.00	1.00	0.00						

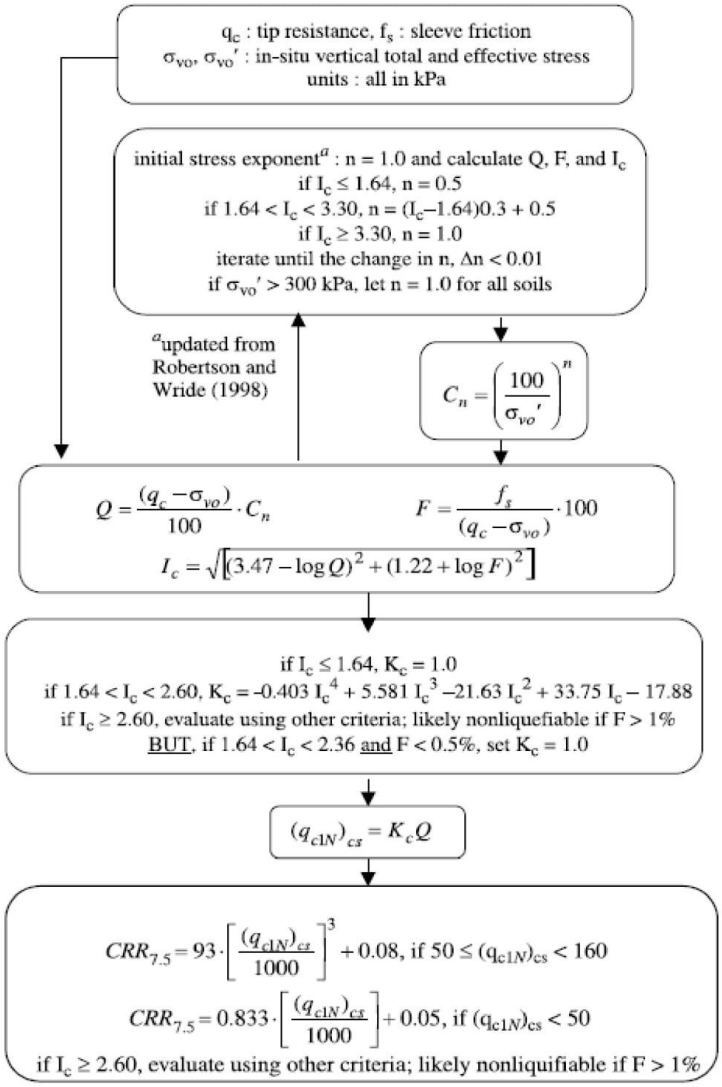
Total estimated settlement: 3.39

Abbreviations

$Q_{tn,cs}$:	Equivalent dean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

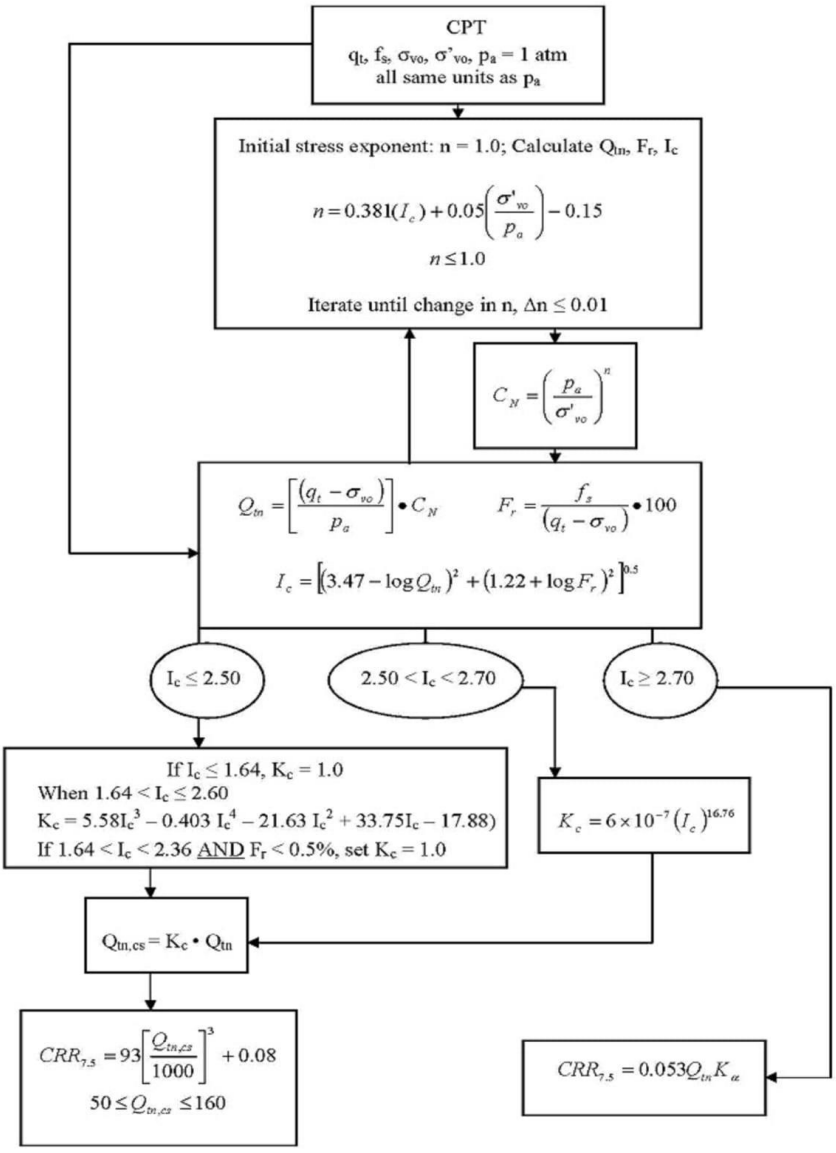
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

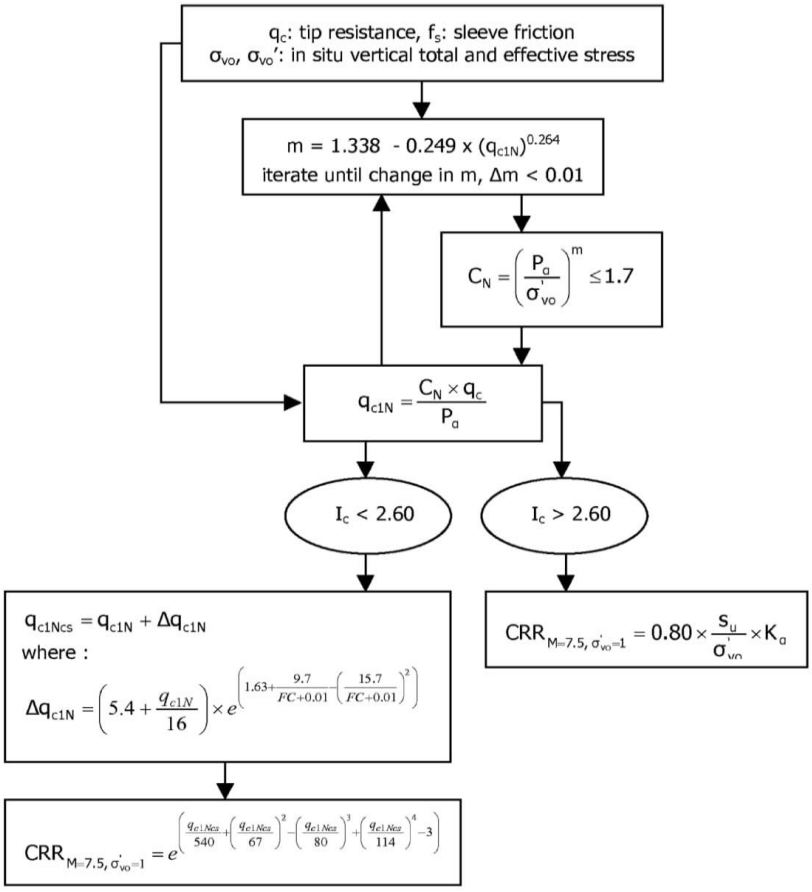
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:

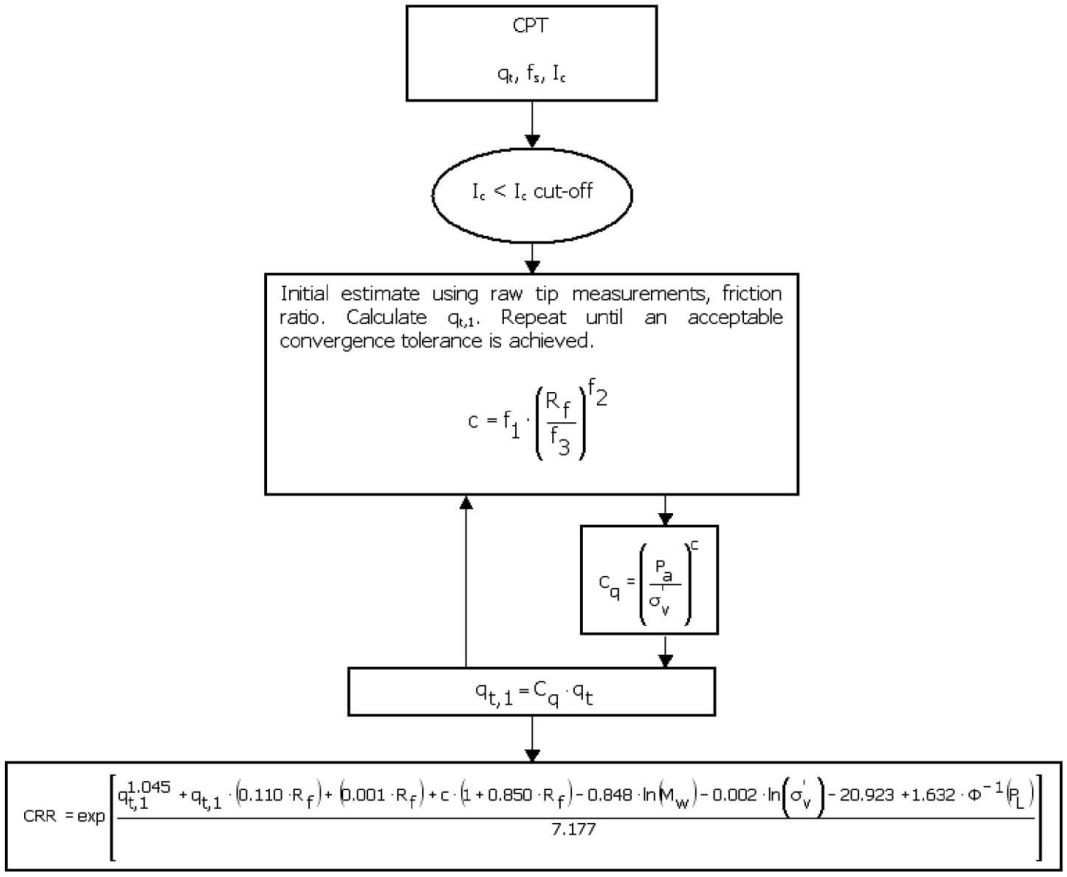


[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

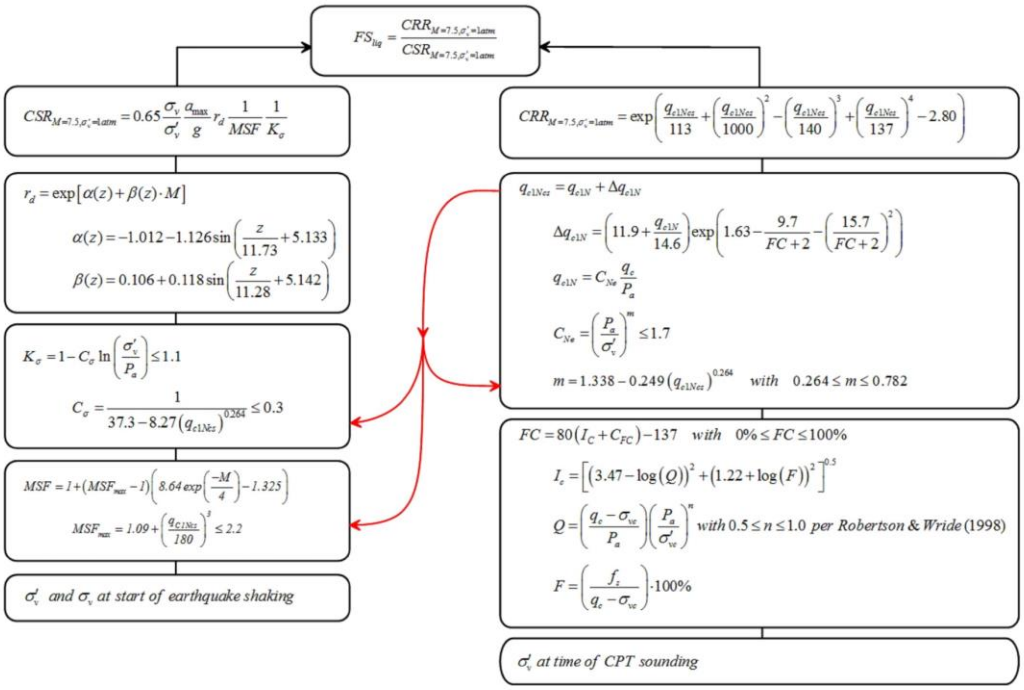
Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



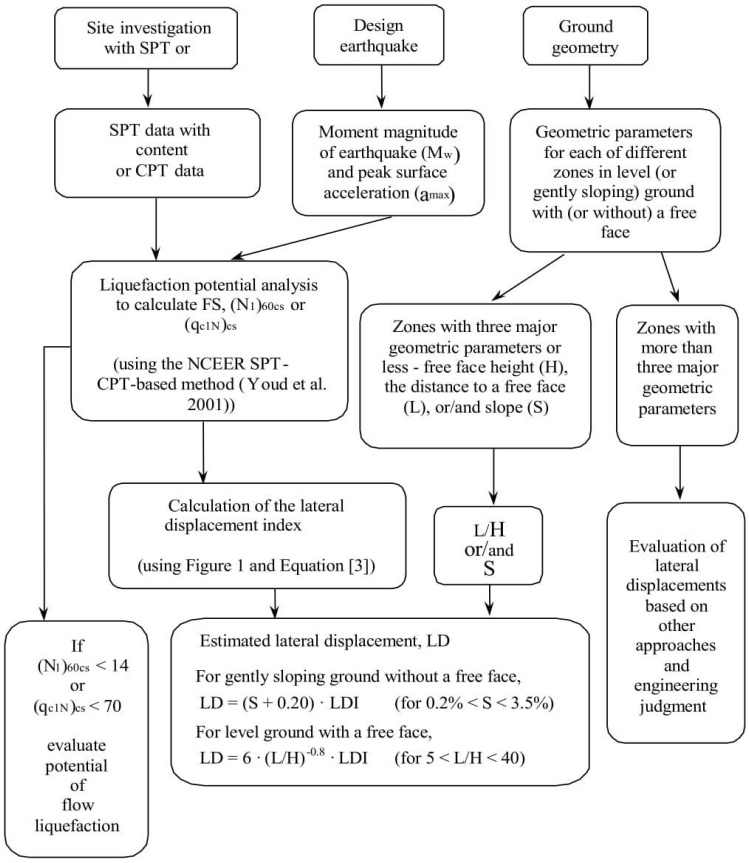
Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



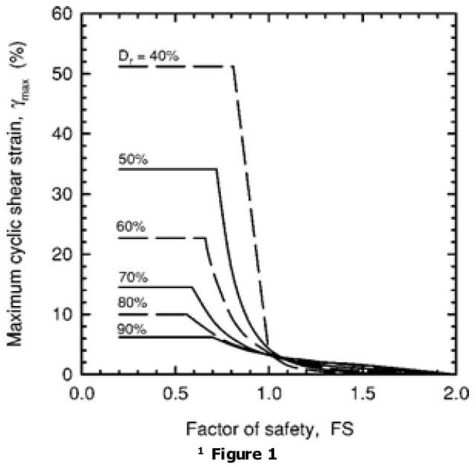
Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)



Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



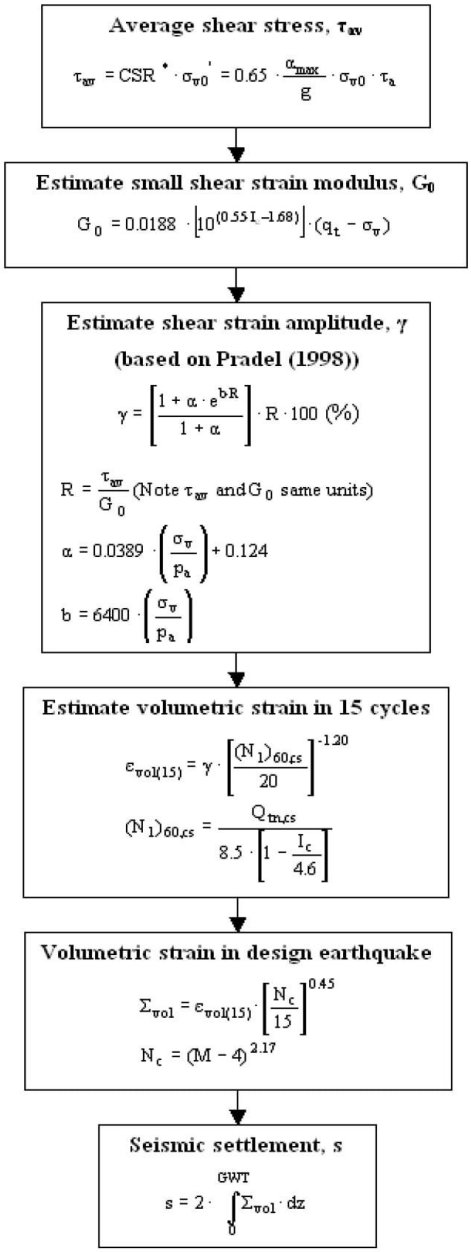
[1] **Figure 1**

$$LDI = \int_0^{z_{max}} \gamma_{max} dz$$

[1] **Equation [3]**

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands



Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

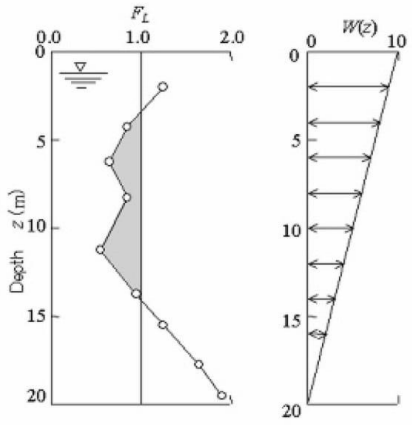
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\mathbf{LPI} = \int_0^{20} (10 - 0{,}5_Z) \times F_L \times d_z$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

Shear-Induced Building Settlement (Ds) calculation procedure

The shear-induced building settlement (Ds) due to liquefaction below the building can be estimated using the relationship developed by Bray and Macedo (2017):

$$Ln(Ds) = c1 + c2 * LBS + 0.58 * Ln\left(Tanh\left(\frac{HL}{6}\right)\right) + 4.59 * Ln(Q) - 0.42 * Ln(Q)^2 - 0.02 * B + 0.84 * Ln(CAVdp) + 0.41 * Ln(Sa1) + \varepsilon$$

where Ds is in the units of mm, c1= -8.35 and c2= 0.072 for LBS ≤ 16, and c1= -7.48 and c2= 0.014 otherwise. Q is the building contact pressure in units of kPa, HL is the cumulative thickness of the liquefiable layers in the units of m, B is the building width in the units of m, CAVdp is a standardized version of the cumulative absolute velocity in the units of g-s, Sa1 is 5%-damped pseudo-acceleration response spectral value at a period of 1 s in the units of g, and ε is a normal random variable with zero mean and 0.50 standard deviation in Ln units. The liquefaction-induced building settlement index (LBS) is:

$$LBS = \sum W * \frac{\varepsilon_{shear}}{z} dz$$

where z (m) is the depth measured from the ground surface > 0, W is a foundation-weighting factor wherein W = 0.0 for z less than Df, which is the embedment depth of the foundation, and W = 1.0 otherwise. The shear strain parameter (ε_shear) is the liquefaction-induced free-field shear strain (in %) estimated using Zhang et al. (2004). It is calculated based on the estimated Dr of the liquefied soil layer and the calculated safety factor against liquefaction triggering (FSL).

References

- Lunne, T., Robertson, P.K., and Powell, J.J.M 1997. Cone penetration testing in geotechnical practice, E & FN Spon Routledge, 352 p, ISBN 0-7514-0393-8.
- Boulanger, R.W. and Idriss, I. M., 2007. Evaluation of Cyclic Softening in Silts and Clays. ASCE Journal of Geotechnical and Geoenvironmental Engineering June, Vol. 133, No. 6 pp 641 -652
- Boulanger, R.W. and Idriss, I. M., 20 14. CPT AND SPT BASED LIQUEFACTION TRIGGERING PROCEDURES. DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING COLLEGE OF ENGINEERING UNIVERSITY OF CALIFORNIA AT DAVIS
- Robertson, P.K. and Cabal, K.L., 2007 , Guide to Cone Penetration Testing for Geotechnical Engineering. Available at no cost at http://www.geologismiki.gr/
- Robertson, P.K. 1990. Soil classification using the cone penetration test. Canadian Geotechnical Journal, 27 (1), 151 -8.
- Robertson, P.K. and Wride, C.E., 1998. Cyclic Liquefaction and its Evaluation based on the CPT Canadian Geotechnical Journal, 1998, Vol. 35, August.
- Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, W.D.L., Harder, L.F., Hynes , M.E., Ishihara, K., Koester, J., Liao, S., Marcuson III, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Rober tson, P.K., Seed, R., and Stokoe, K.H., Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshop on Evaluation of Liquefaction Resistance of Soils, ASCE, Journal of Geotechnical & Geoenvironmental Engineering, Vol. 127, October, pp 817 -833
- Zhang, G., Robertson. P.K., Brachman, R., 2002, Estimating Liquefaction Induced Ground Settlements from the CPT, Canadian Geotechnical Journal, 39: pp 1168 -1180
- Zhang, G., Robertson. P.K., Brachman, R., 2004, Estimating Liquefaction Induced Lateral Displacements using the SPT and CPT, ASCE, Journal of Geotechnical & Geoenvironmental Engineering, Vol. 130, No. 8, 861 -871
- Pradel, D., 1998, Procedure to Evaluate Earthquake -Induced Settlements in Dry Sandy Soils, ASCE, Journal of Geotechnical & Geoenvironmental Engineering, Vol. 124, No. 4, 364-368
- Iwasaki, T., 1986, Soil liquefaction studies in Japan: state -of-the-art, Soil Dynamics and Earthquake Engineering, Vol. 5, No. 1, 2-70
- Papathanassiou G., 2008, LPI-based approach for calibrating the severity of liquefaction -induced failures and for assessing the probability of liquefaction surface evidence, Eng. Geol. 96:94 –104
- P.K. Robertson, 2009, Interpretation of Cone Penetration Tests - a unified approach., Canadian Geotechnical Journal, Vol. 46, No. 11, pp 1337-1355
- P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering - from case history to practice, IS-Tokyo, June 2009
- Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, *Symposium in honor of professor I. M. Idriss,* SAN diego, CA
- R. E. S. Moss, R. B. Seed, R. E. Kayen, J. P. Stewart, A. Der Kiureghian, K. O. Cetin, CPT -Based Probabilistic and Deterministic Assessment of In Situ Seismic Soil Liquefaction Potential, Journal of Geotechnical and Geoenvironmental Engineering, Vol. 132, No. 8, August 1, 2006
- I. M. Idriss and R. W. Boulanger, 2008. Soil liquefaction during earthquakes, Earthquake Engineering Research Institute MNO-12
- Jonathan D. Bray & Jorge Macedo, Department of Civil & Environmental Engineering, Univ. of California, Berkeley, CA, USA, Simplified procedure for estimating liquefaction -induced building settlement, *Proceedings of the 19th International Conference*

APPENDIX H

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 14 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: 1 hr after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 112 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		5			ALLUVIUM: Dark Gray Brown Silty fine Sand, trace fine root fibers, loose-damp to moist		8					
		5			Gray Brown Silty fine Sand, loose-moist		10					
5		6			Light Gray fine Sand, trace medium Sand, loose-dry to damp		4					
		2			Dark Gray Silt, trace fine Sand, trace Iron oxide staining, very soft-very moist to wet		37			83		
10												
		6			Dark Gray fine Sandy Silt, trace Iron oxide staining, loose-very moist to wet		27			65		
15												
		2	1.0		Gray Silty Clay, little fine Sand, trace Iron oxide staining, very soft-very moist to wet		34	41	22	86		
20												
		10			Gray Silt, trace fine Sand, medium stiff-very moist to wet		35			95		
25												
		7			Dark Gray fine Sandy Silt, trace Iron oxide staining, loose-very moist to wet		29			71		
30												
		12					27			66		

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-1a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 14 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: 1 hr after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Dark Gray fine Sandy Silt, trace Iron oxide staining, loose-very moist to wet							
					Dark Gray Silty Clay, little fine Sand, stiff-very moist to wet							
40		14	2.5				23	31	18	87		
45		9	2.5				26			84		
50		9	2.0				30			90		
					Gray fine Sandy Silt, little Iron oxide staining, medium dense-very moist							
55		21					22			60		
					Boring Terminated at 55'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-1b**

APPENDIX F

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

5037 Patata Street
South Gate, CA
August 19, 2020

Prepared for:

Mr. Daryl Kas
Southern California Geotechnical, Inc.
22885 E. Savi Ranch Parkway, Ste E
Yorba Linda, CA 92887
Office (714) 685-1115 / Fax (714) 685-1118

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
Office (714) 901-7270 / Fax (714) 901-7289
www.kehoetesting.com

TABLE OF CONTENTS

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
- Summary of Shear Wave Velocities
- CPT Data Files (sent via email)

SUMMARY
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the project located at 5037 Patata Street in South Gate, California. The work was performed by Kehoe Testing & Engineering (KTE) on August 19, 2020. The scope of work was performed as directed by Southern California Geotechnical, Inc. personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at three locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	100	
CPT-2	100	
CPT-3	66	

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

At location CPT-1, shear wave measurements were obtained at approximately 10-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

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 behavior type on the CPT plots is derived from the attached CPT SBT plot (Robertson, "Interpretation of Cone Penetration Test…", 2009) 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.

The CPT data files have also been provided. These files can be imported in CPeT-IT (software by GeoLogismiki) and other programs to calculate various geotechnical parameters.

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

Steven P. Kehoe
President

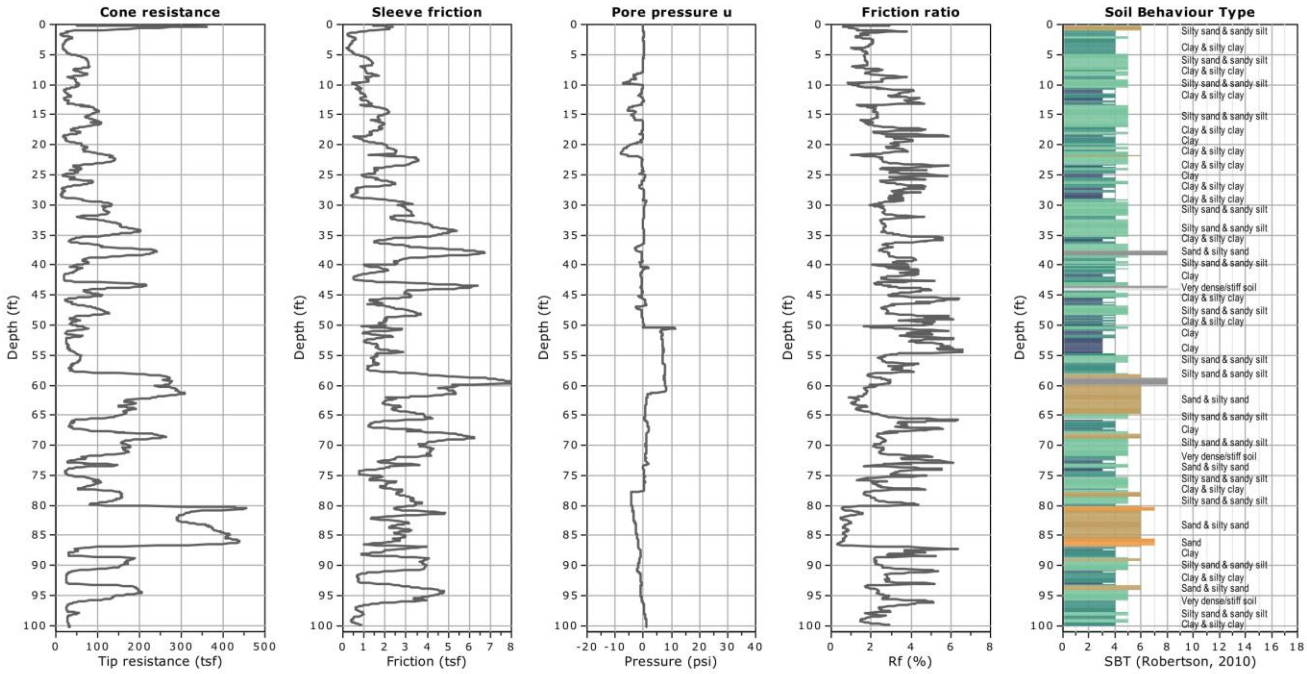
08/21/20-wt-2031

APPENDIX

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Southern California Geotechnical
Location: 5037 Palata St, South Gate, CA

CPT-1
Total depth: 100.25 ft, Date: 8/19/2020



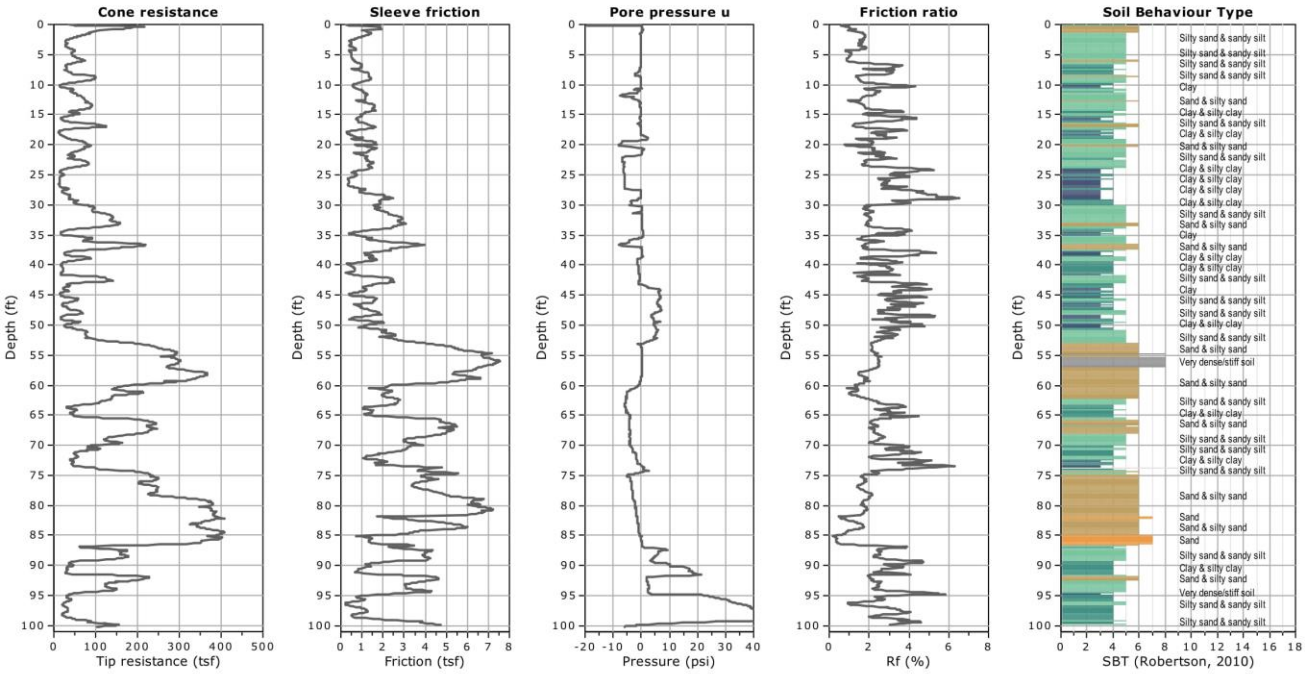
CPeT-IT v.2.3.1.9 - CPTU data presentation & interpretation software - Report created on: 8/20/2020, 1:22:12 PM
Project file:

1

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Southern California Geotechnical
Location: 5037 Palata St, South Gate, CA

CPT-2
Total depth: 100.21 ft, Date: 8/19/2020

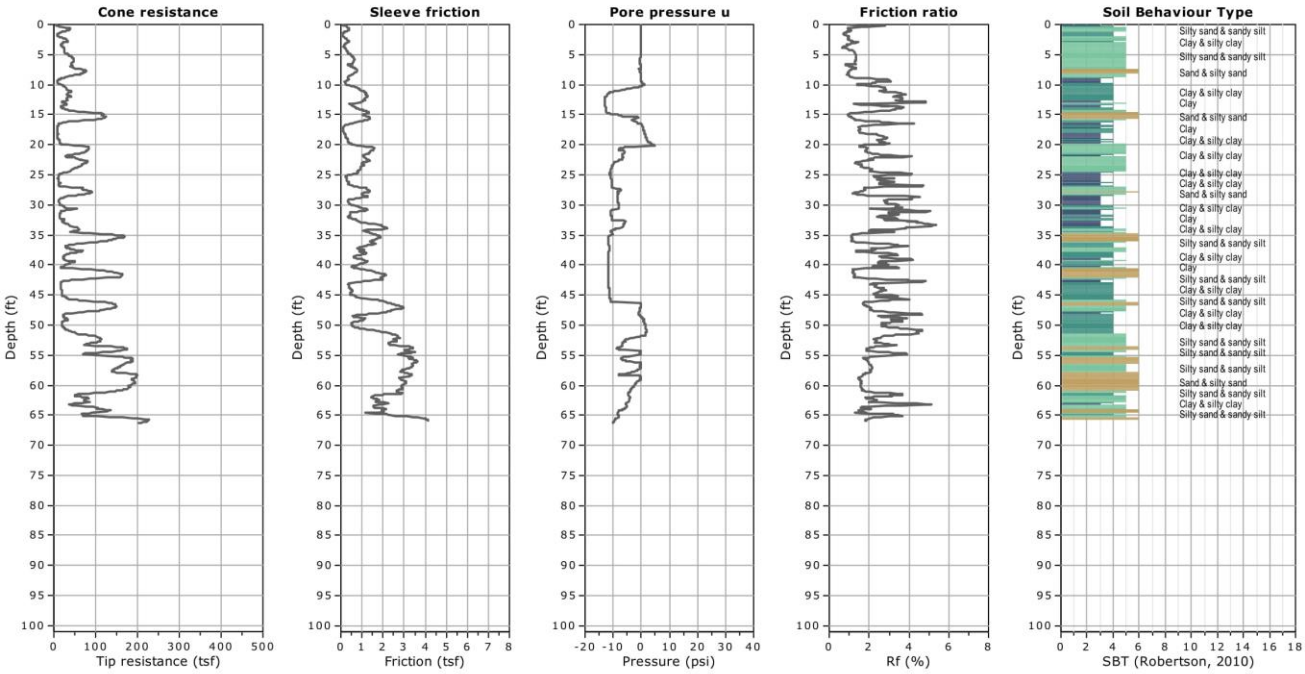


CPeT-IT v.2.3.1.9 - CPTU data presentation & interpretation software - Report created on: 8/20/2020, 1:22:46 PM
Project file:

Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: Southern California Geotechnical
Location: 5037 Palata St, South Gate, CA

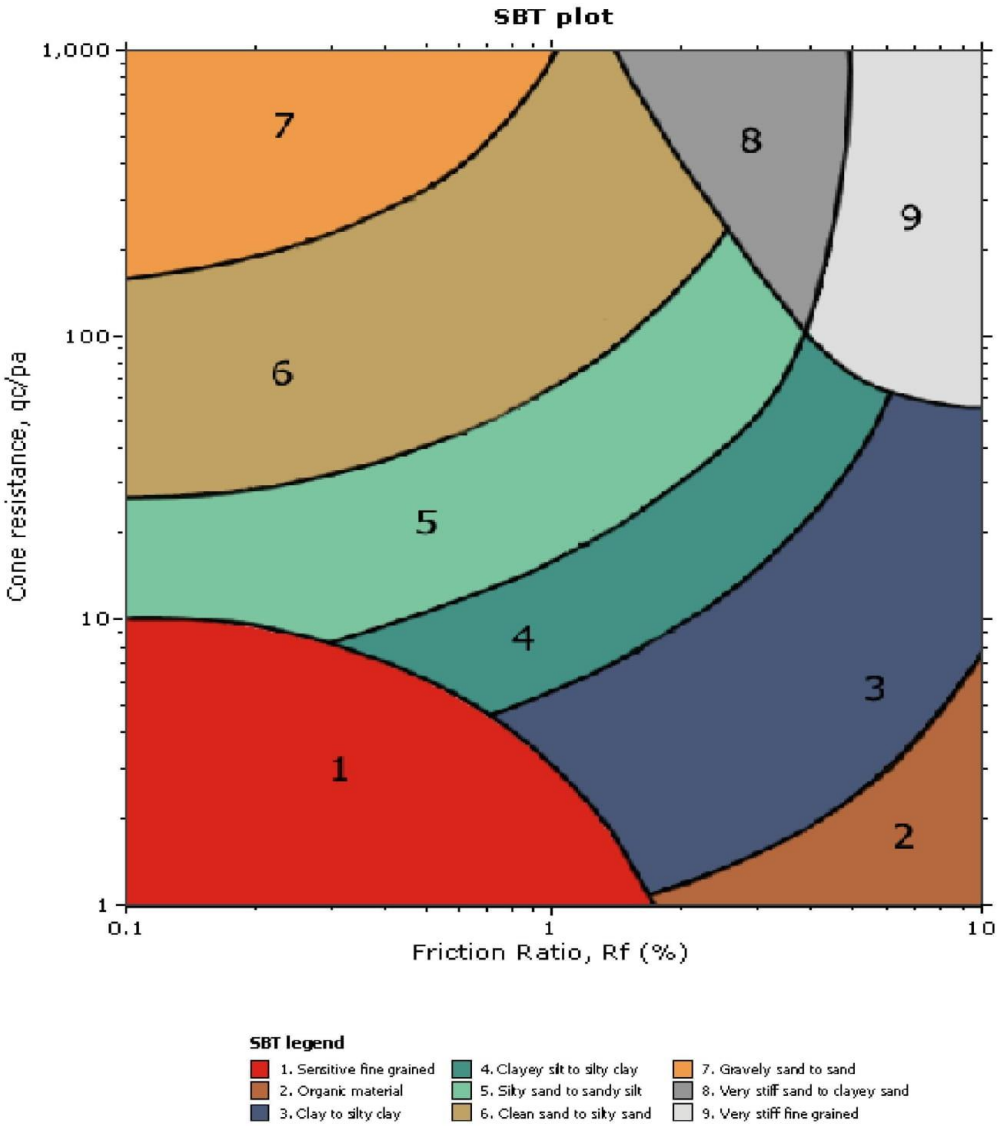
CPT-3
Total depth: 66.31 ft, Date: 8/19/2020



CPeT-IT v.2.3.1.9 - CPTU data presentation & interpretation software - Report created on: 8/20/2020, 1:23:10 PM
Project file:

1

Kehoe Testing & Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com



Southern California Geotechnical
5037 Palata St.
South Gate, CA

CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-1	10.07	9.07	9.29	14.34	648	
	20.08	19.08	19.18	28.36	676	706
	30.25	29.25	29.32	43.56	673	667
	40.12	39.12	39.17	54.80	715	877
	50.07	49.07	49.11	66.68	737	837
	60.10	59.10	59.13	77.92	759	892
	70.14	69.14	69.17	87.56	790	1041
	80.09	79.09	79.12	98.04	807	949
	90.03	89.03	89.05	108.12	824	986
	100.26	99.26	99.28	119.36	832	910

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

APPENDIX G

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 19 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 111.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		8			ALLUVIUM: Gray Brown Silty fine Sand, slightly porous, trace fine root fibers, loose-dry to damp	91	5					
		9				93	6					
5		10			Gray Brown Silty fine Sand, loose-moist	96	13					
		13			Gray Brown Silty fine Sand to fine Sandy Silt, little Iron oxide staining, slightly porous, loose-moist	101	14					
		5	2.0		Gray Silty Clay, trace fine Sand, trace Iron oxide staining, soft-very moist to wet	90	32					
10												
15		13	3.5			92	29					
					Gray Clayey Silt, trace to little fine Sand, medium stiff-very moist to wet							
		9	2.0			95	29					
20					Light Gray Silt, trace fine Sand, little Iron oxide staining, medium stiff-moist							
		10	2.5			84	36					
25					Boring Terminated at 25'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-2**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 12.5 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					SURFACE ELEVATION: 110.5 feet MSL							
		4			ALLUVIUM: Light Gray Brown Silty fine Sand, very loose to loose-dry to damp		3					
		7			Gray fine Sand, trace Silt, trace medium Sand, loose-damp		5					
5		9					6					
		7	2.0		Dark Gray Clayey Silt, trace fine Sand, medium stiff-very moist		26					
10					Dark Gray Silt, little fine Sand, trace Clay, stiff-very moist							
		13	4.0				20					
15					Boring Terminated at 15'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-3**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 13 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 111 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		11			FILL: Gray Brown Silty fine Sand, trace fine root fibers, loose-damp	97	7					
		12			FILL: Dark Brown Silty fine Sand, trace Paper, 6 to 12" laye of unknown white Carbonate material, loose-moist	112	17					
5		10				102	13					
		5			ALLUVIUM: Dark Gray Brown Silty fine Sand, trace Iron oxide staining, very loose-very moist	98	22					
		22			Gray Silty fine Sand to fine Sandy Silt, trace Iron oxide staining, medium dense-very moist	96	21					
10												
		12				83	25					
15					Boring Terminated at 15'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-4**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-5

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 18 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 112.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		12			FILL: Gray Brown Silty fine Sand, little medium Sand, trace fine root fibers, trace Tile fragments, loose-damp	87	5					
		9			ALLUVIUM: Gray Brown Silty fine Sand, loose-moist	94	9					
5		12	3.5		Dark Gray Brown Clayey Silt, trace fine Sand, medium stiff to stiff-very moist	87	31					
		8			Gray Brown Silty fine Sand, loose-moist	96	11					
		11			Light Gray fine Sand, trace Silt, loose-very moist	96	19					
10												
		10			Dark Gray fine Sandy Silt, loose to medium dense-very moist		19					
15												
		4			Light Gray Silty fine Sand, very loose to loose-very moist to wet		26					
20			0.5		Dark Gray Silty Clay, soft-very moist to wet		35					
		20			Gray fine Sandy Silt, trace Iron oxide staining, medium dense-very moist to wet	100	25					
25					Boring Terminated at 25'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-5**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-6

JOB NO.: 17G144
PROJECT: Proposed C/I Building
LOCATION: South Gate, California

DRILLING DATE: 5/8/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Scott McCann

WATER DEPTH: Dry
CAVE DEPTH: 18 feet
READING TAKEN: 3 hrs after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 111 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		3			FILL: Dark Gray Brown Silty fine Sand, trace Clay, very loose-very moist		24					
		5			ALLUVIUM: Light Gray Silty fine Sand, loose-moist		13					
5		5			Gray Silty fine Sand to fine Sandy Silt, loose-very moist		22					
		3			Gray Silt, little fine Sand, soft-wet		27			81		
10												
					Gray fine Sandy Silt, trace Iron oxide staining, loose-very moist to wet							
		6					32			65		
15												
					Gray Silty fine Sand, loose-very moist to wet							
		7					29			27		
20					Gray fine Sandy Silt, medium stiff-very moist to wet		21			54		
					Gray Silty Clay, trace fine Sand, trace Iron oxide staining, medium stiff to stiff-very moist to wet							
		8	2.0				35			93		
25												
					Gray fine Sandy Silt, medium dense-very moist to wet							
		17					22			52		
30												
					Dark Gray Silty Clay, trace fine Sand, medium stiff-very moist to wet							
		7					33	35	18	90		

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-6a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-6

JOB NO.: 17G144
PROJECT: Proposed C/I Building
LOCATION: South Gate, California

DRILLING DATE: 5/8/17
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Scott McCann

WATER DEPTH: Dry
CAVE DEPTH: 18 feet
READING TAKEN: 3 hrs after Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Dark Gray Silty Clay, trace fine Sand, medium stiff-very moist to wet							
					Gray Brown fine Sandy Silt, stiff-very moist							
40		10					25			64		
					Gray Silty Clay, trace to little fine Sand, medium stiff to stiff-very moist to wet							
45		6	1.0				32			83		
50		11	1.0				33			71		
					Gray fine Sandy Silt, trace Iron oxide staining, medium dense-very moist to wet							
55		18					31			67		
					Boring Terminated at 55'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-6b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-7

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 4 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 111 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		16			ALLUVIUM: Gray Brown Silty fine Sand, slightly porous, trace fine root fibers, medium dense-damp		8					
		12			Gray Silty fine Sand, trace medium Sand, medium dense-damp		13					
5					Boring Terminated at 5'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-7**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-8

JOB NO.: 17G144 | DRILLING DATE: 5/8/17 | WATER DEPTH: Dry
PROJECT: Proposed C/I Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 3 feet
LOCATION: South Gate, California | LOGGED BY: Scott McCann | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: 111.5 feet MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		2			ALLUVIUM: Gray Silty fine Sand, trace medium Sand, trace fine root fibers, very loose to loose-moist		10					
		5					12					
5					Boring Terminated at 5'							

TBL 17G144.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-8**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-9

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: Dry
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 38 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					3± inches Asphaltic Concrete; 3± inches Aggregate Base							
		11			FILL: Dark Brown Silty fine Sand, trace Asphaltic concrete fragments, slightly mottled, loose-moist to very moist	104	10					
		10				101	15					
5		16			ALLUVIUM: Gray Brown fine Sand, trace Iron oxide staining, medium dense-damp	96	6					
		16			Gray Brown Silty fine Sand, trace Iron oxide staining, medium dense-very moist	105	15					
10		10			Gray Brown fine Sandy Silt, little Iron oxide staining, loose-very moist	99	21			76		
		16			Gray Brown Silty fine Sand to fine Sandy Silt, 3-inch lense of fine Sand, medium dense-moist		18					
15												
		18					14			55		
20												
		15			Light Gray Brown Silt, little fine Sand, little to some Iron oxide staining, medium dense-very moist		21			90		
25												
		22			Gray Silty fine Sand, medium dense-very moist		16					
30												
		14			Dark Gray fine Sandy Silt, medium dense-very moist		23			84		

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-1a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-9

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: Dry
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 38 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					(Continued)							
					Dark Gray fine Sandy Silt, medium dense-very moist							
40		14			@ 38½ to 45 feet, interbedded lenses of Silty fine Sand, trace Clay		24			91		
45		14					24			79		
50		20					20					
					Boring Terminated at 50'							

TBL_20G182-1.GPJ_SOCALGEO.GDT_1/29/21

TEST BORING LOG **PLATE B-1b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-10

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: 43 feet
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 48 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: 2 Hours After Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					2± inches Crushed Aggregate Base							
		22			FILL: Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel, medium dense-very moist	104	22					
		19			ALLUVIUM: Gray Brown Silty fine Sand, medium dense-damp	94	7					
5		11			Light Gray Brown fine Sand, trace medium Sand, trace Iron oxide staining, loose-damp	94	3					
		22			Gray Brown Silty fine Sand, trace Calcareous veining, little Iron oxide staining, medium dense-very moist	104	22					
		17			Gray Brown fine Sandy Silt, trace Iron oxide staining, trace Calcareous veining, medium dense-very moist	107	20			73		
10												
		12					22					
15												
		15					25					
20												
		11			Dark Gray Brown to Brown Silty Clay with thinly interbedded lenses of fine Sandy Silt, stiff-wet		31	42	25	95		
25												
		16			Dark Gray Silty fine Sand with occasional thinly interbedded Silty Clay lenses, medium dense-very moist		19					
30												
		19			Dark Gray fine Sandy Silt with occasional thinly interbedded Silty Clay lenses, medium dense-very moist to wet		18					

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-2a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-10

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: 43 feet
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 48 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: 2 Hours After Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
40		13			Dark Gray fine Sandy Silt with occasional thinly interbedded Silty Clay lenses, medium dense-very moist to wet		28			95		
45		15					22			70		
50		19					23					
					Boring Terminated at 50'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-2b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-11

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: 16 feet
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 37 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: 2 Hours After Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		8			ALLUVIUM: Gray Brown fine Sand, little Silt, trace Fine root fibers, loose-damp to moist	93	4					
		11			@ 3 feet, trace Calcareous nodules	98	6					
5		15			Dark Brown Silty fine Sand, little Calcareous veining and nodules, loose to medium dense-very moist	100	8					
		21			@ 7 feet, Gray Brown, trace Iron oxide staining	105	18					
		10			Dark Brown fine Sandy Silt, little Clay, trace Iron oxide staining, loose-very moist	96	25			78		
10												
		19			Gray Brown Silty fine Sand, little Iron oxide staining, medium dense-very moist		25					
15												
		15			Gray Brown fine Sandy Silt, trace to little Clay, medium dense-very moist		24			70		
20												
		4			Gray Brown Silty Clay, soft to medium stiff-wet		36	47	30	98		
25		7			Gray fine Sandy Silt, little Iron oxide staining, loose-very moist		25			62		
		12			@ 28½ feet, Groundwater encountered during drilling		29			72		
30												
		21			Gray Silty fine Sand, medium dense-wet		24			40		

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-3a**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-11

JOB NO.: 20G182-1 | DRILLING DATE: 8/17/20 | WATER DEPTH: 16 feet
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 37 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: 2 Hours After Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION (Continued)	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					Gray Silty fine Sand, medium dense-wet							
40		21			@ 38½ to 40 feet, occasionally thinly interbedded Silty Clay lenses		32					
					Gray Silty Clay, little fine Sand, very stiff-wet							
45		15					29			82		
					Gray fine Sandy Silt, trace Clay, medium dense-wet							
		16					24			68		
50					Gray fine Sandy Clay, little Calcareous veining and nodules, very stiff-wet		37	45	27	76		
					Boring Terminated at 50'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-3b**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-12

JOB NO.: 20G182-1 | DRILLING DATE: 8/18/20 | WATER DEPTH: Dry
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 18 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					3± inches Asphaltic Concrete; 7± inches Aggregate Base							
		18			FILL: Dark Brown Silty fine Sand, trace medium to coarse Sand, trace fine to coarse Gravel, medium dense-moist		10					
		18			@ 3½ feet, trace wood fragments		13					
5												
		9			ALLUVIUM: Gray Brown fine Sandy Silt, little Clay, loose to medium dense-very moist to wet		28					
		10			@ 8½ feet, trace Iron oxide staining		24					
10												
		13			@ 13½ feet, 4-inch lense Gray Brown fine Sand, little Iron oxide staining		19					
15												
		20					17					
20												
					Light Gray Brown fine Sandy Silt, trace Iron oxide staining, medium dense-moist							
		17					13					
25												
					Boring Terminated at 25'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-4**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-13

JOB NO.: 20G182-1 | DRILLING DATE: 8/18/20 | WATER DEPTH: 18 feet
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 22 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete; 7± inches Aggregate Base							
		5			FILL: Dark Brown Silty fine Sand, loose-moist		11					
		10			ALLUVIUM: Light Gray Brown fine Sand, trace Fine root fibers, loose to medium dense-moist		7					
5		13			Gray Brown Silty fine Sand, trace Iron oxide staining, medium dense-moist to very moist		9					
		11			@ 8½ feet, 2-inch Clayey Silt lense		16					
10					Gray Brown Silty Clay, loose to medium dense-very moist to wet							
		10					27					
15					Gray fine Sandy Silt, little to some Clay, medium dense-wet							
		18					21					
20					Gray Brown fine Sandy Silt, medium dense-wet							
		13					34					
25					Boring Terminated at 25'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-5**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-14

JOB NO.: 20G182-1 | DRILLING DATE: 8/18/20 | WATER DEPTH: Dry
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 8 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete; 7± inches Aggregate Base							
		4			FILL: Dark Brown Silty fine Sand, trace Clay nodules, trace fine Gravel, very loose to loose-moist to very moist		14					
		12			ALLUVIUM: Gray Brown fine Sand, medium dense-damp		4					
5												
		8			Gray Brown fine Sandy Silt, trace Iron oxide staining, loose to medium dense-very moist		19					
		12			@ 8½ feet, trace Clay, very moist		21					
10												
					Boring Terminated at 10'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-6**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-15

JOB NO.: 20G182-1 | DRILLING DATE: 8/18/20 | WATER DEPTH: Dry
PROJECT: Proposed Industrial Building | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: 8 feet
LOCATION: South Gate, California | LOGGED BY: Jamie Hayward | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete; 7± inches Aggregate Base							
		8			FILL: Dark Brown fine Sandy Silt with occasionally thinly interbedded Silty fine Sand lenses, slightly mottled, loose-very moist		15					
		9			ALLUVIUM: Dark Brown Silty fine Sand, loose to medium dense-moist to very moist		12					
5												
		14					13					
		11					10					
10					Boring Terminated at 10'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-7**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-16

JOB NO.: 20G182-1
PROJECT: Proposed Industrial Building
LOCATION: South Gate, California

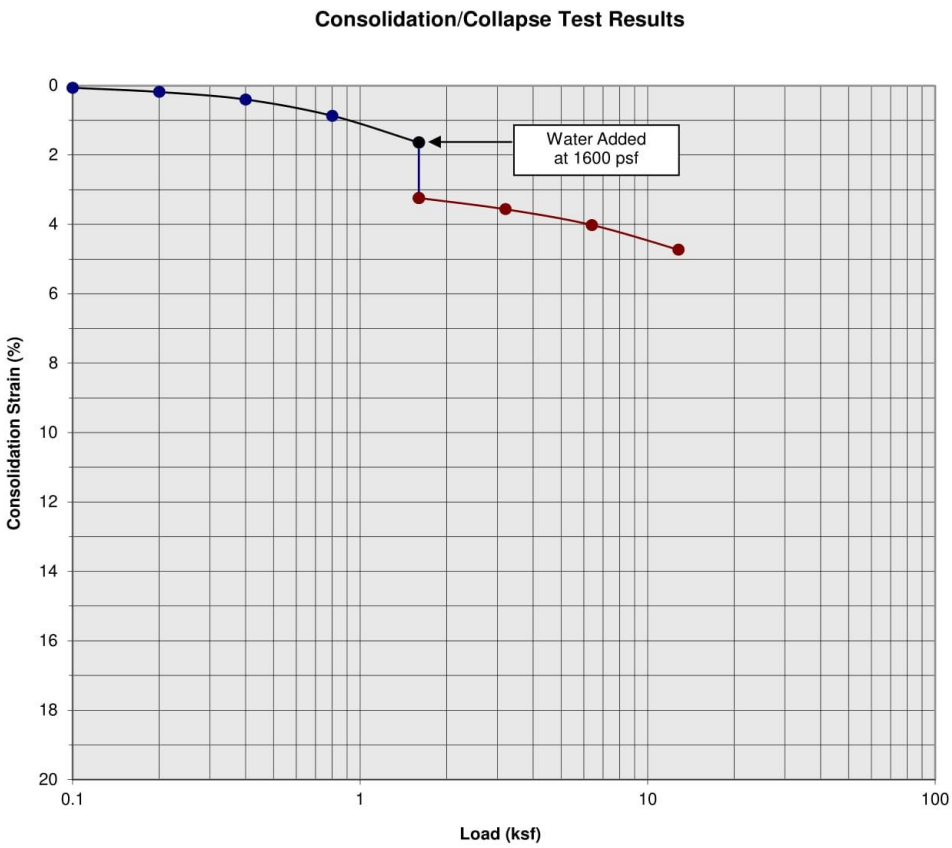
DRILLING DATE: 8/18/20
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jamie Hayward

WATER DEPTH: Dry
CAVE DEPTH: 6½ feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
					4± inches Asphaltic Concrete; 7± inches Aggregate Base							
					ALLUVIUM: Gray Brown Silty fine Sand, loose-moist							
							9					
5							9					
		17			Light Gray Brown fine Sand, little Silt, medium dense-damp		5					
		13			Dark Gray Brown fine Sandy Silt, little Clay, little Iron oxide staining, medium dense-very moist		24					
10												
					Boring Terminated at 10'							

TBL 20G182-1.GPJ SOCALGEO.GDT 1/29/21

TEST BORING LOG **PLATE B-8**

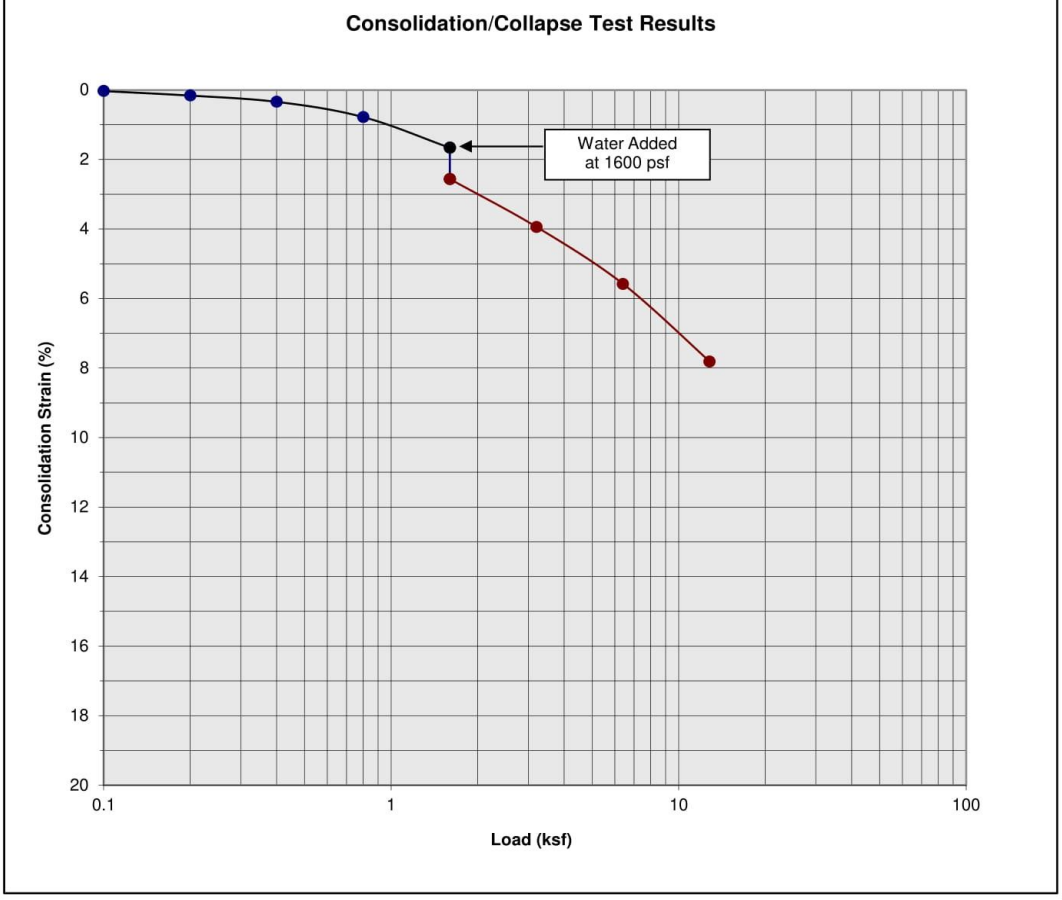


Classification: Gray Brown Silty fine Sand

Boring Number:	B-2	Initial Moisture Content (%)	5
Sample Number:	---	Final Moisture Content (%)	27
Depth (ft)	3 to 4	Initial Dry Density (pcf)	91.3
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	95.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	1.60

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 1

SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL
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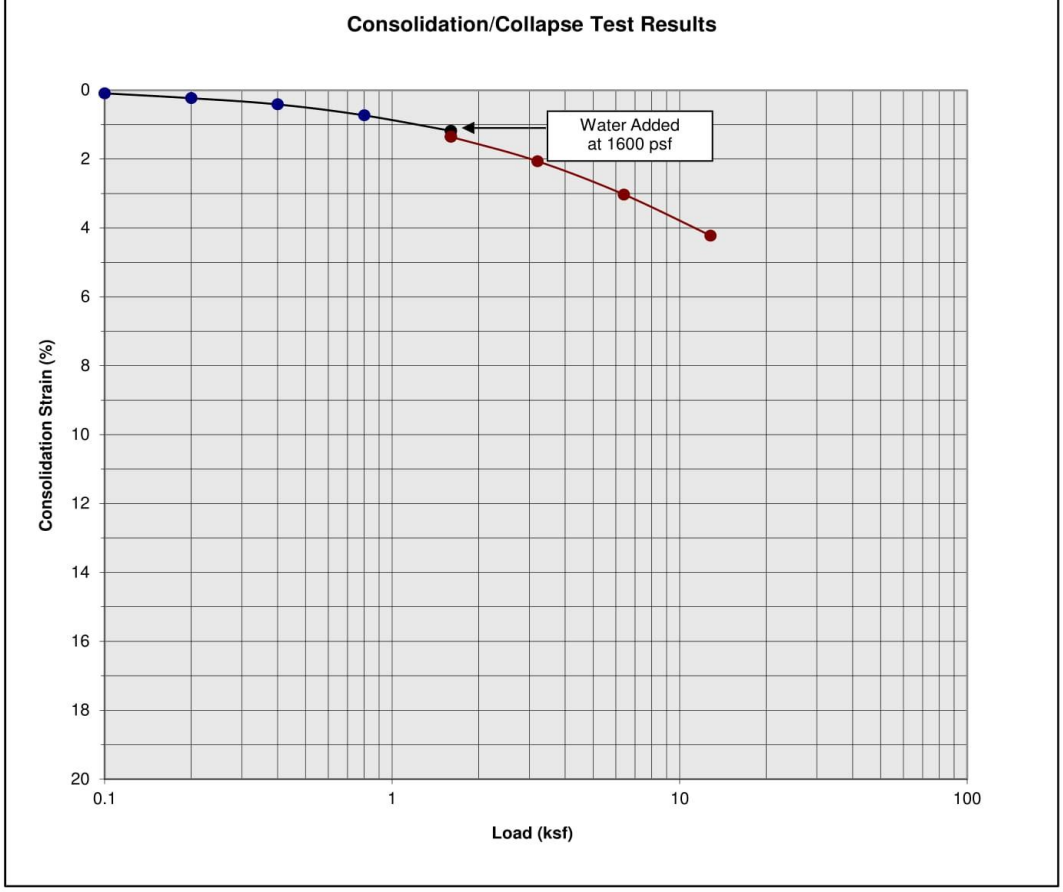


Classification: Gray Brown Silty fine Sand

Boring Number:	B-2	Initial Moisture Content (%)	6
Sample Number:	---	Final Moisture Content (%)	27
Depth (ft)	5 to 6	Initial Dry Density (pcf)	93.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	101.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.90

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 2

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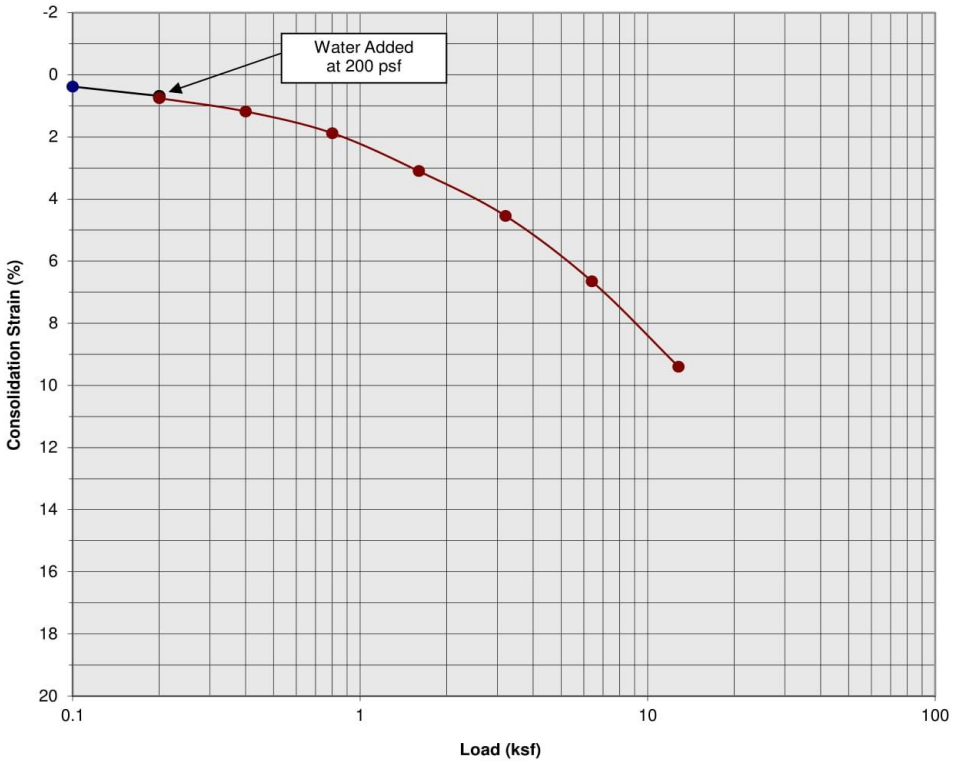
Classification: Gray Brown Silty fine Sand to fine Sandy Silt

Boring Number:	B-2	Initial Moisture Content (%)	13
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	7 to 8	Initial Dry Density (pcf)	97.9
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	102.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.17

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 3

SoCalGeo
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Consolidation/Collapse Test Results

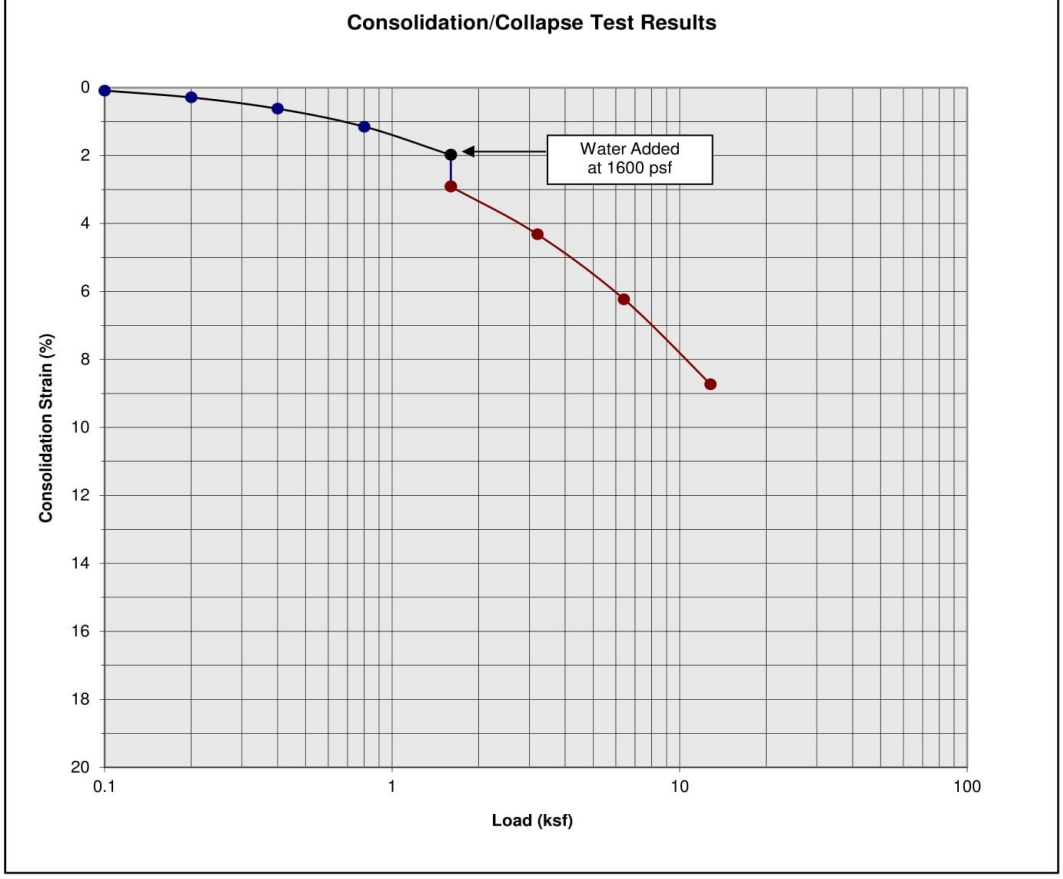


Classification: Gray Silty Clay, trace fine Sand

Boring Number:	B-2	Initial Moisture Content (%)	32
Sample Number:	---	Final Moisture Content (%)	30
Depth (ft)	9 to 10	Initial Dry Density (pcf)	88.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	97.6
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.07

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 4

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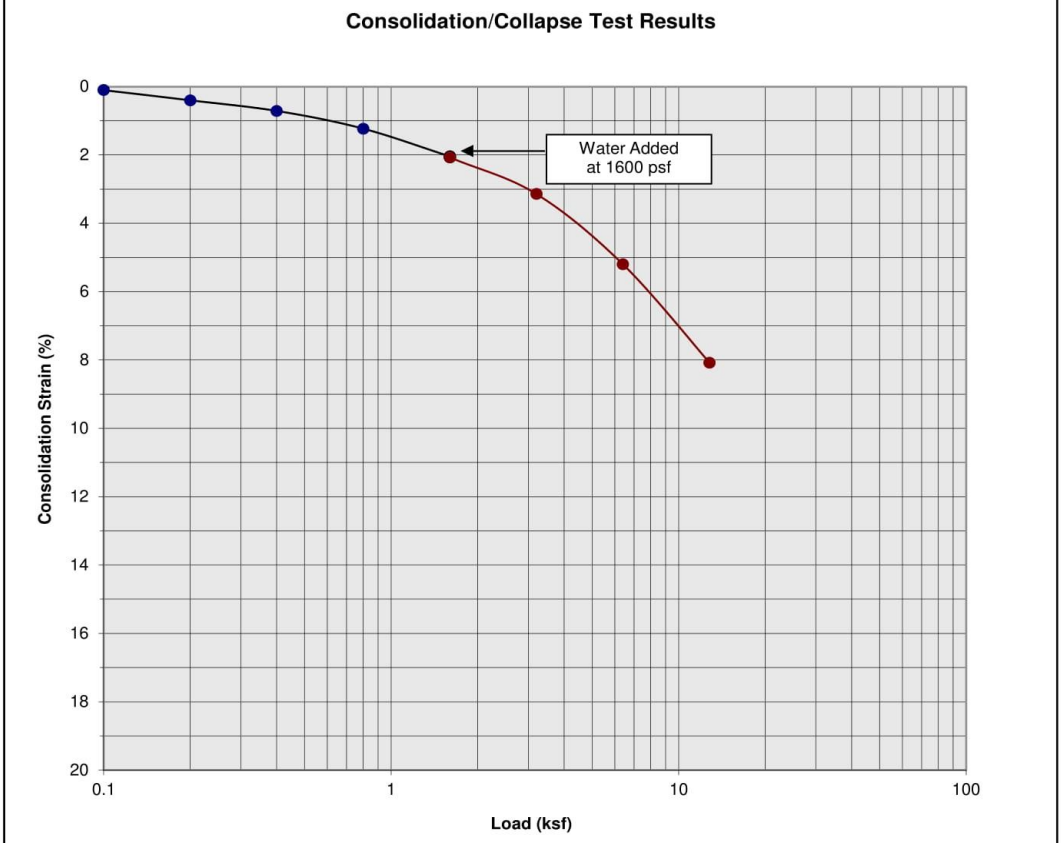


Classification: Gray Brown Silty fine Sand

Boring Number:	B-5	Initial Moisture Content (%)	9
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	3 to 4	Initial Dry Density (pcf)	94.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	103.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.93

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 5

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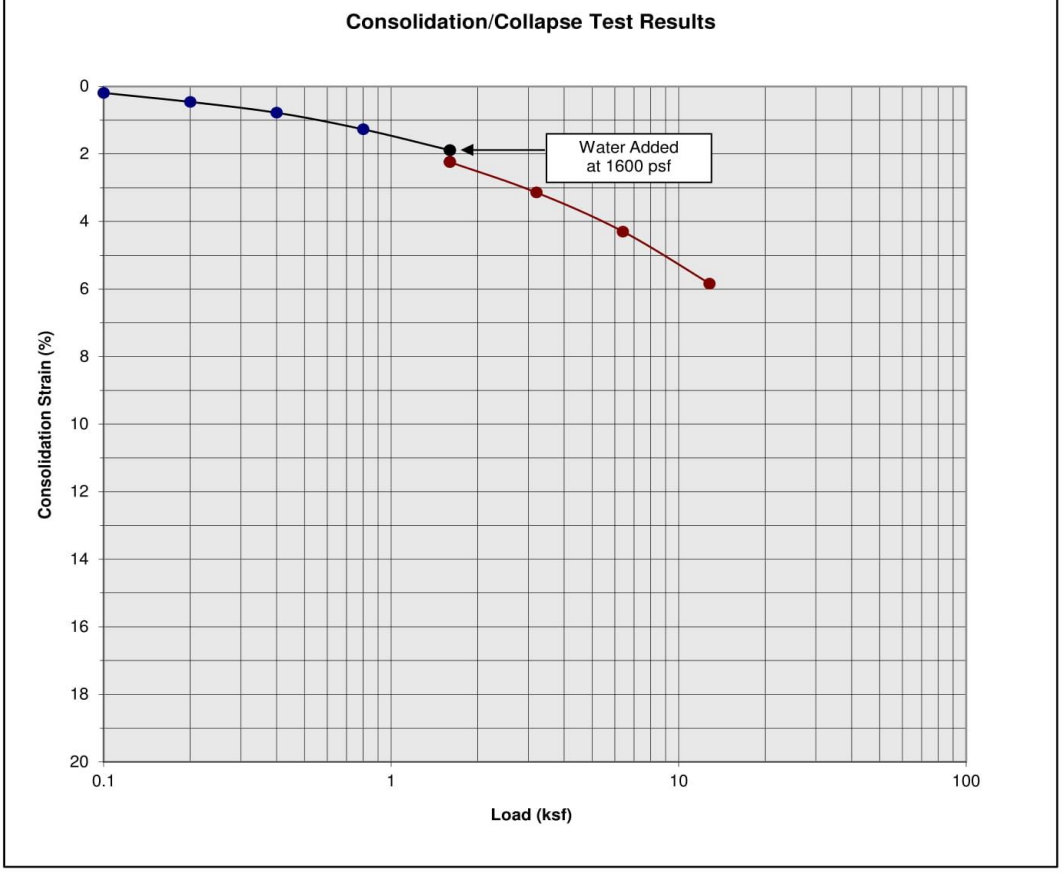


Classification: Dark Gray Brown Clayey Silt, trace fine Sand

Boring Number:	B-5	Initial Moisture Content (%)	31
Sample Number:	---	Final Moisture Content (%)	29
Depth (ft)	5 to 6	Initial Dry Density (pcf)	87.3
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	94.8
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.03

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 6

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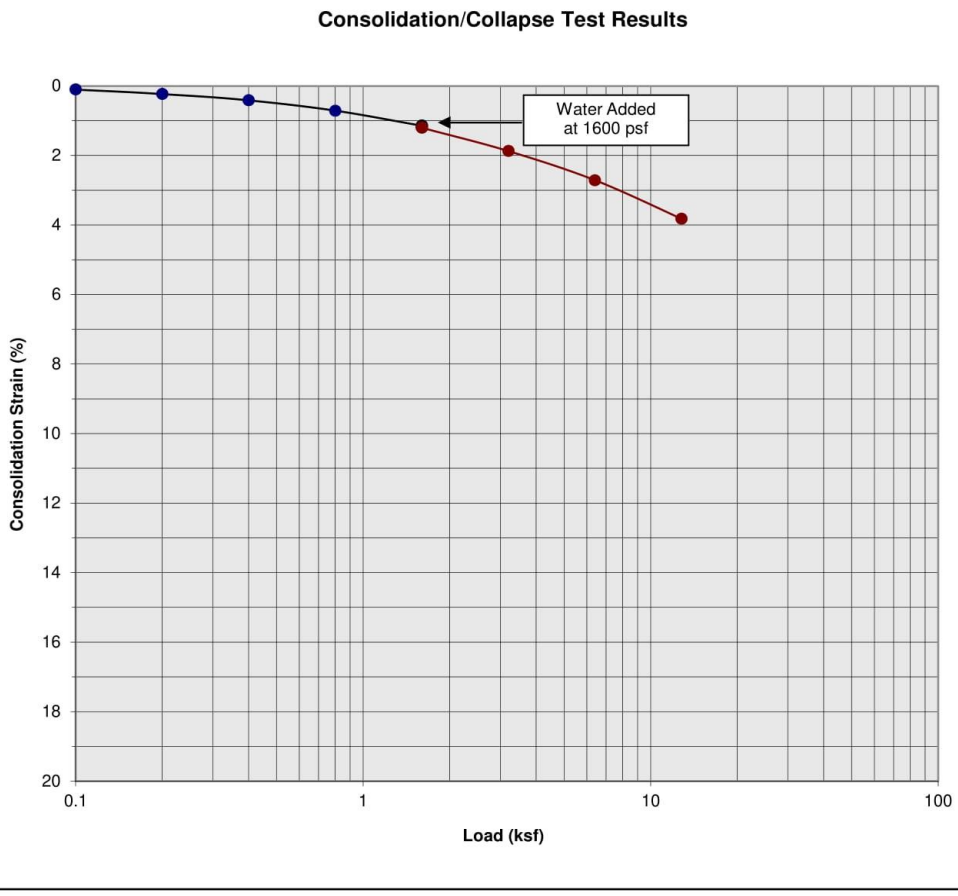


Classification: Gray Brown Silty fine Sand

Boring Number:	B-5	Initial Moisture Content (%)	11
Sample Number:	---	Final Moisture Content (%)	20
Depth (ft)	7 to 8	Initial Dry Density (pcf)	96.2
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	102.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.35

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 7

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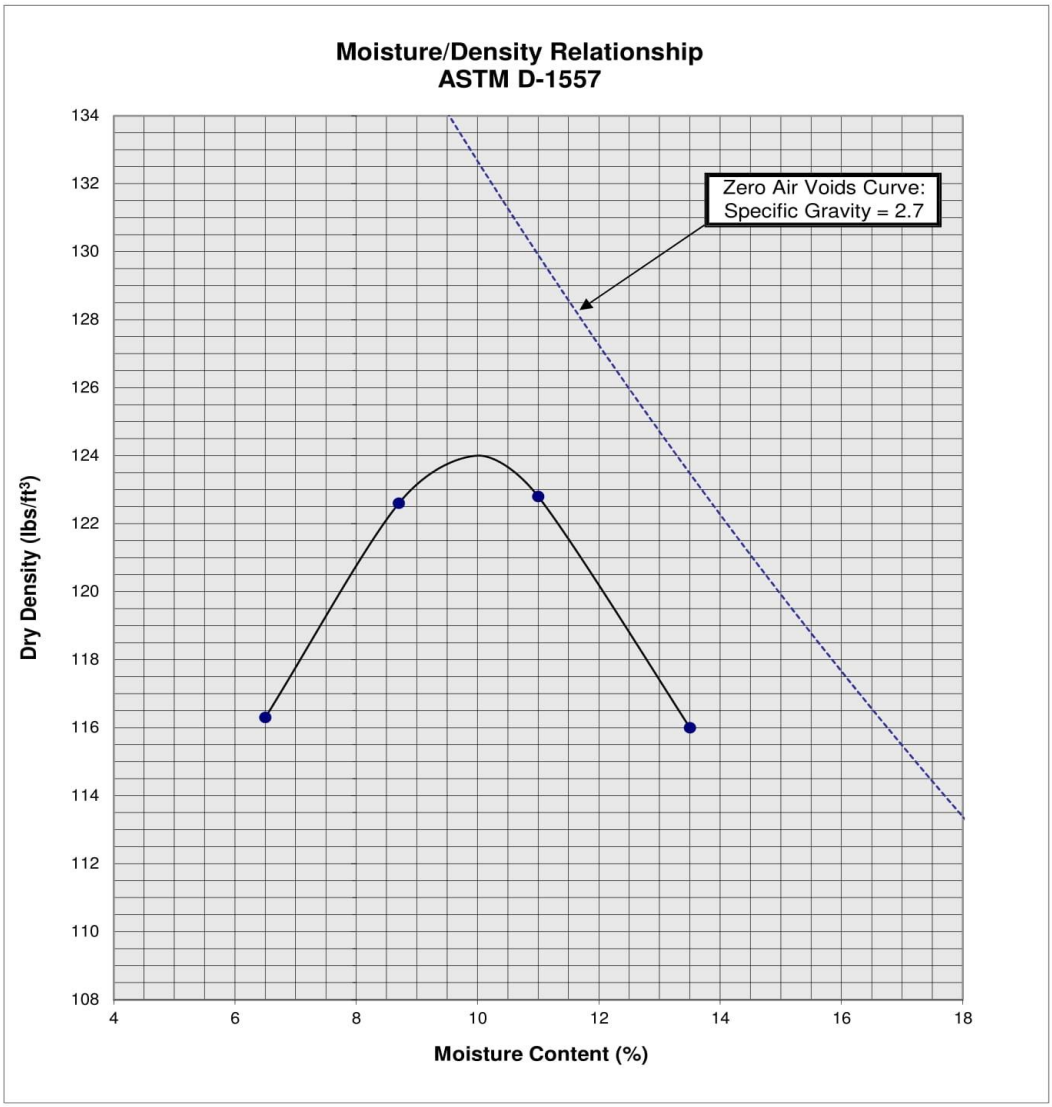


Classification: Light Gray fine Sand, trace Silt

Boring Number:	B-5	Initial Moisture Content (%)	19
Sample Number:	---	Final Moisture Content (%)	24
Depth (ft)	9 to 10	Initial Dry Density (pcf)	95.7
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	99.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.06

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C- 8

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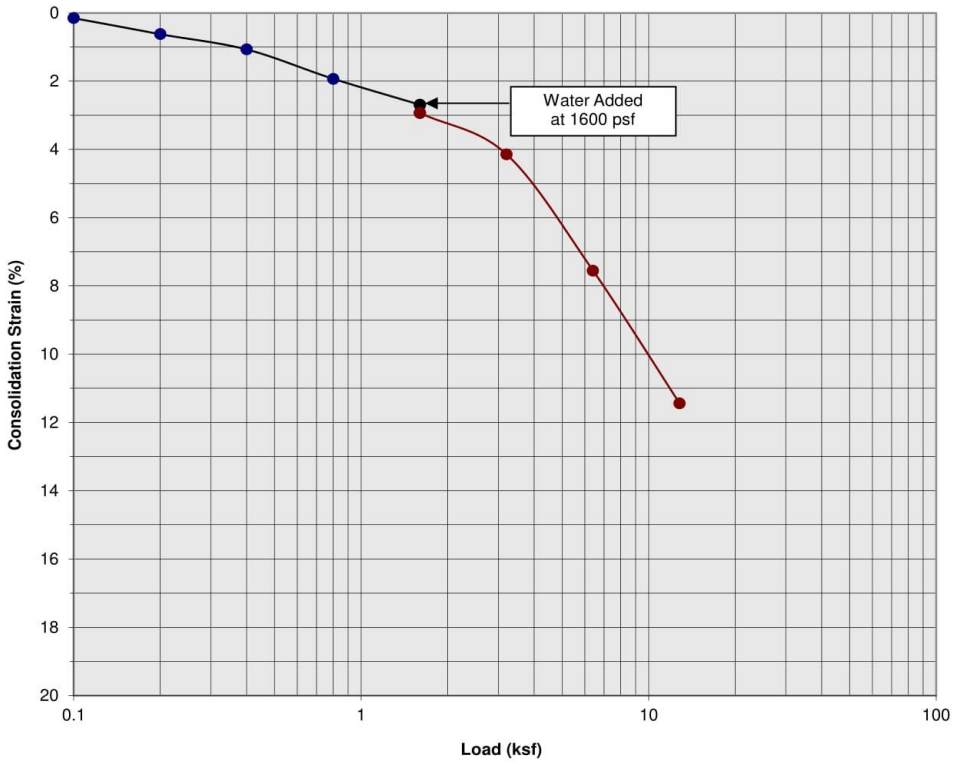


Soil ID Number	B-3 @ 0 to 5'
Optimum Moisture (%)	10
Maximum Dry Density (pcf)	124
Soil Classification	Light Brown Silty fine Sand

Proposed C/I Building
South Gate, California
Project No. 17G144
PLATE C-9

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Consolidation/Collapse Test Results

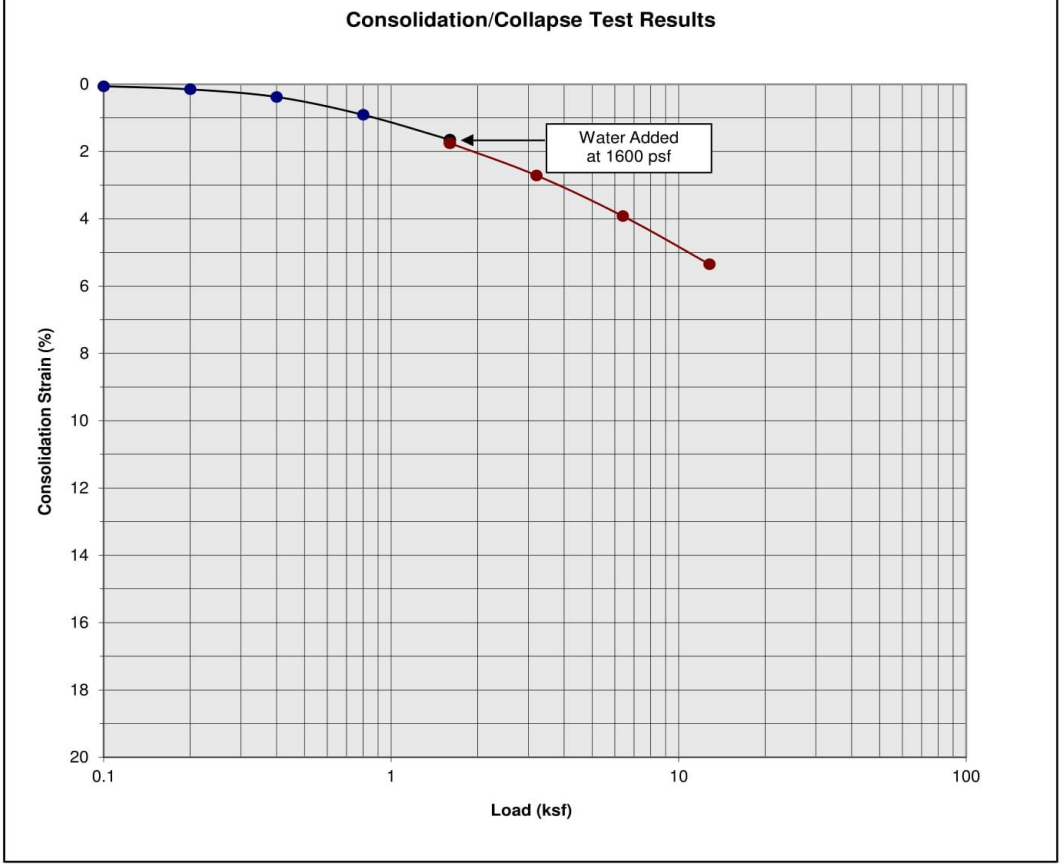


Classification: FILL: Dark Brown Silty fine Sand

Boring Number:	B-9	Initial Moisture Content (%)	15
Sample Number:	---	Final Moisture Content (%)	13
Depth (ft)	3 to 4	Initial Dry Density (pcf)	101.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	114.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.24

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 1

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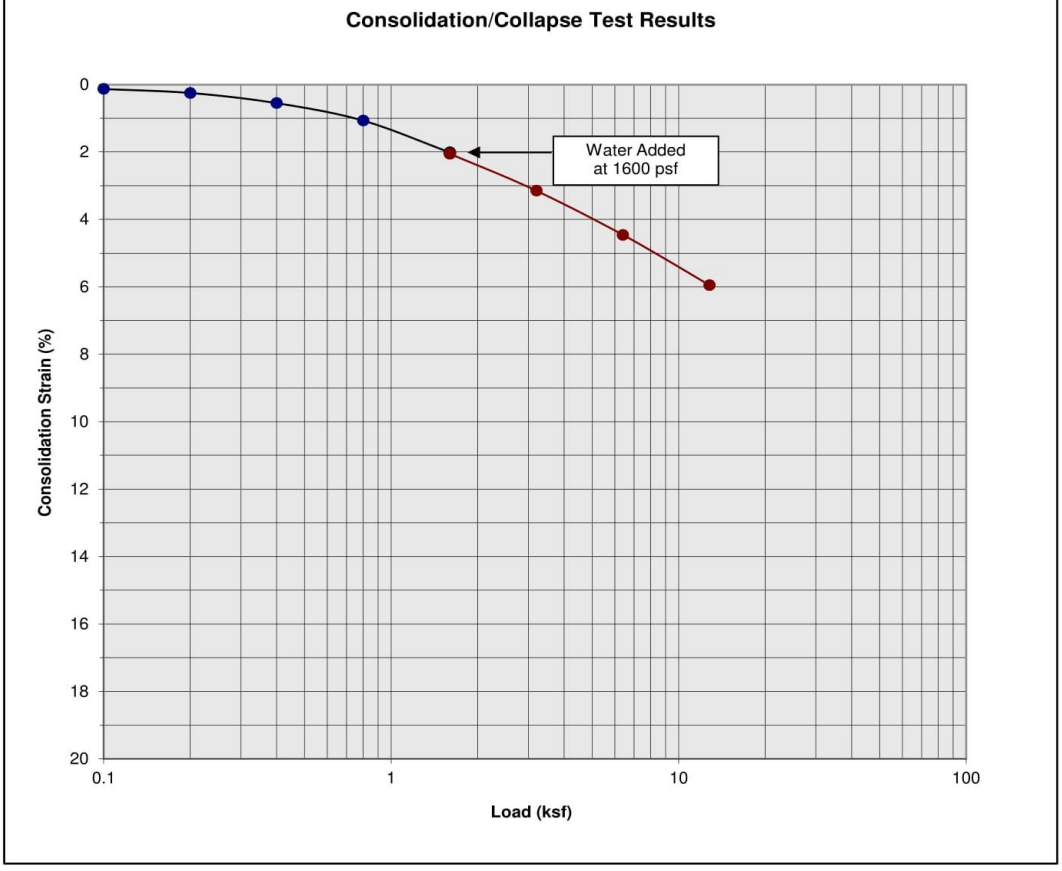


Classification: Gray Brown fine Sand

Boring Number:	B-9	Initial Moisture Content (%)	7
Sample Number:	---	Final Moisture Content (%)	24
Depth (ft)	5 to 6	Initial Dry Density (pcf)	96.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	101.2
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.10

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 2

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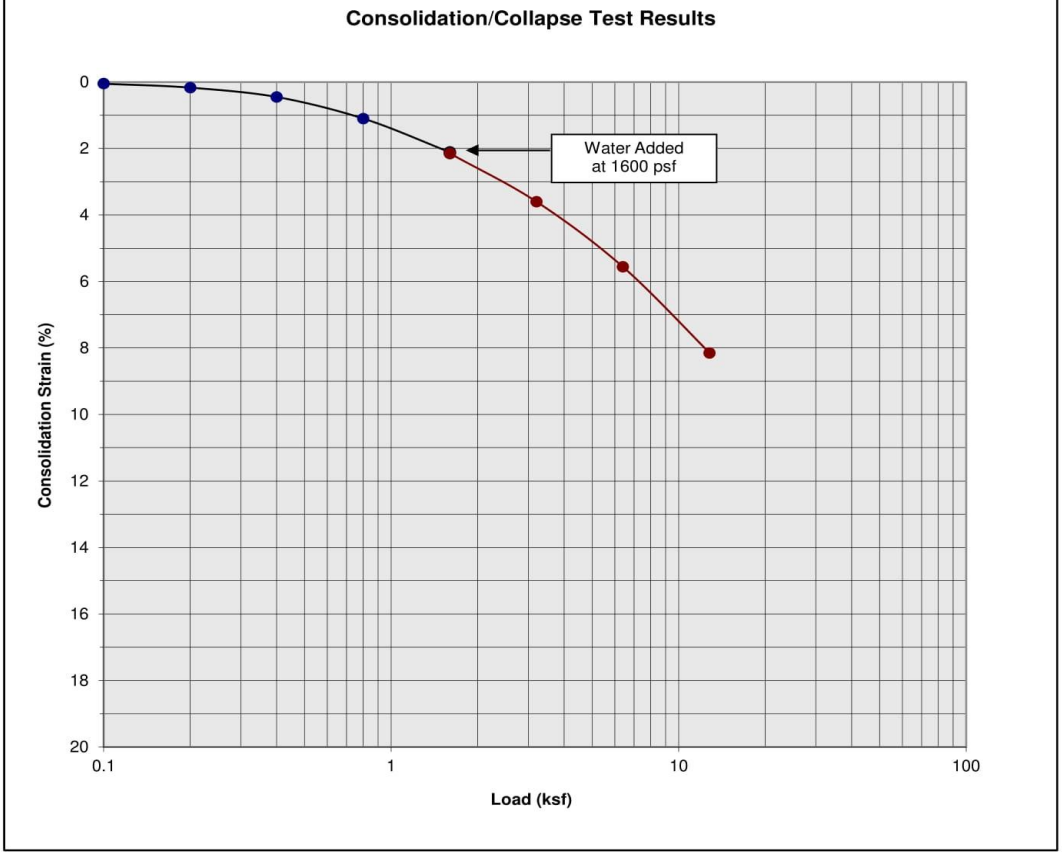


Classification: Gray Brown Silty fine Sand

Boring Number:	B-9	Initial Moisture Content (%)	15
Sample Number:	---	Final Moisture Content (%)	24
Depth (ft)	7 to 8	Initial Dry Density (pcf)	105.1
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	112.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.04

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 3

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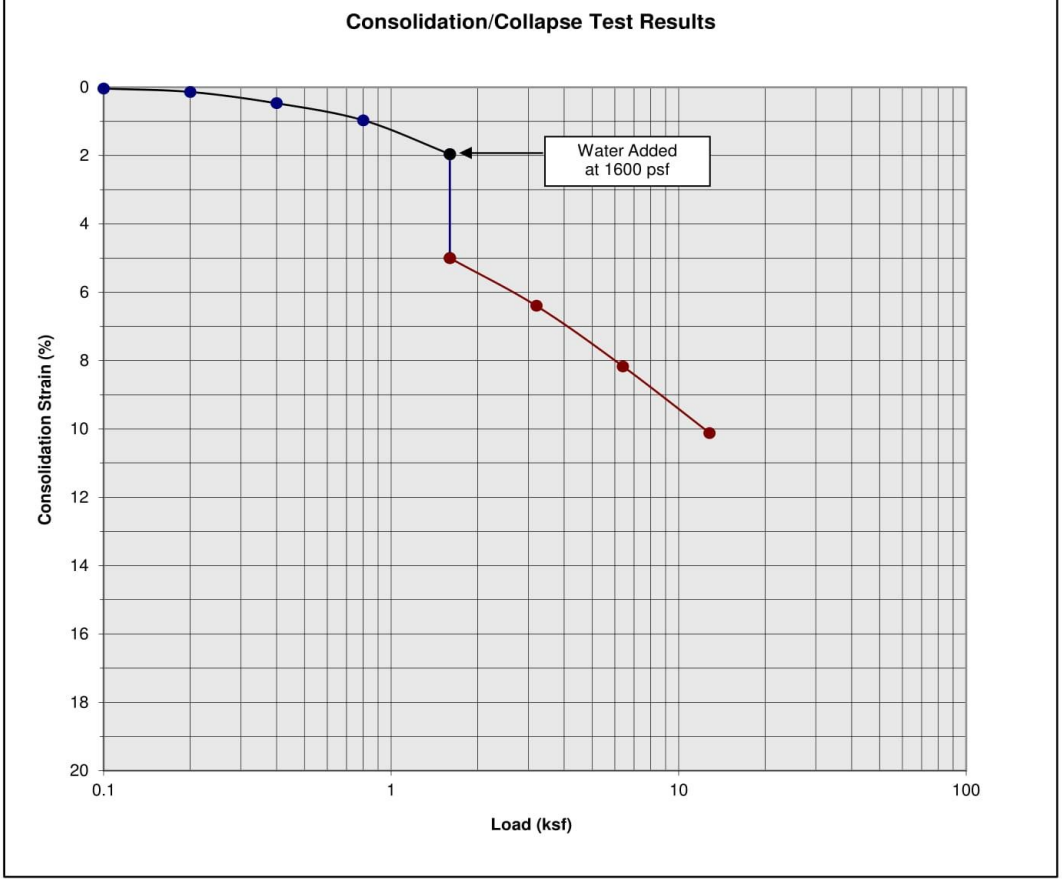


Classification: Gray Brown fine Sandy Silt

Boring Number:	B-9	Initial Moisture Content (%)	22
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	9 to 10	Initial Dry Density (pcf)	98.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	106.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.04

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 4

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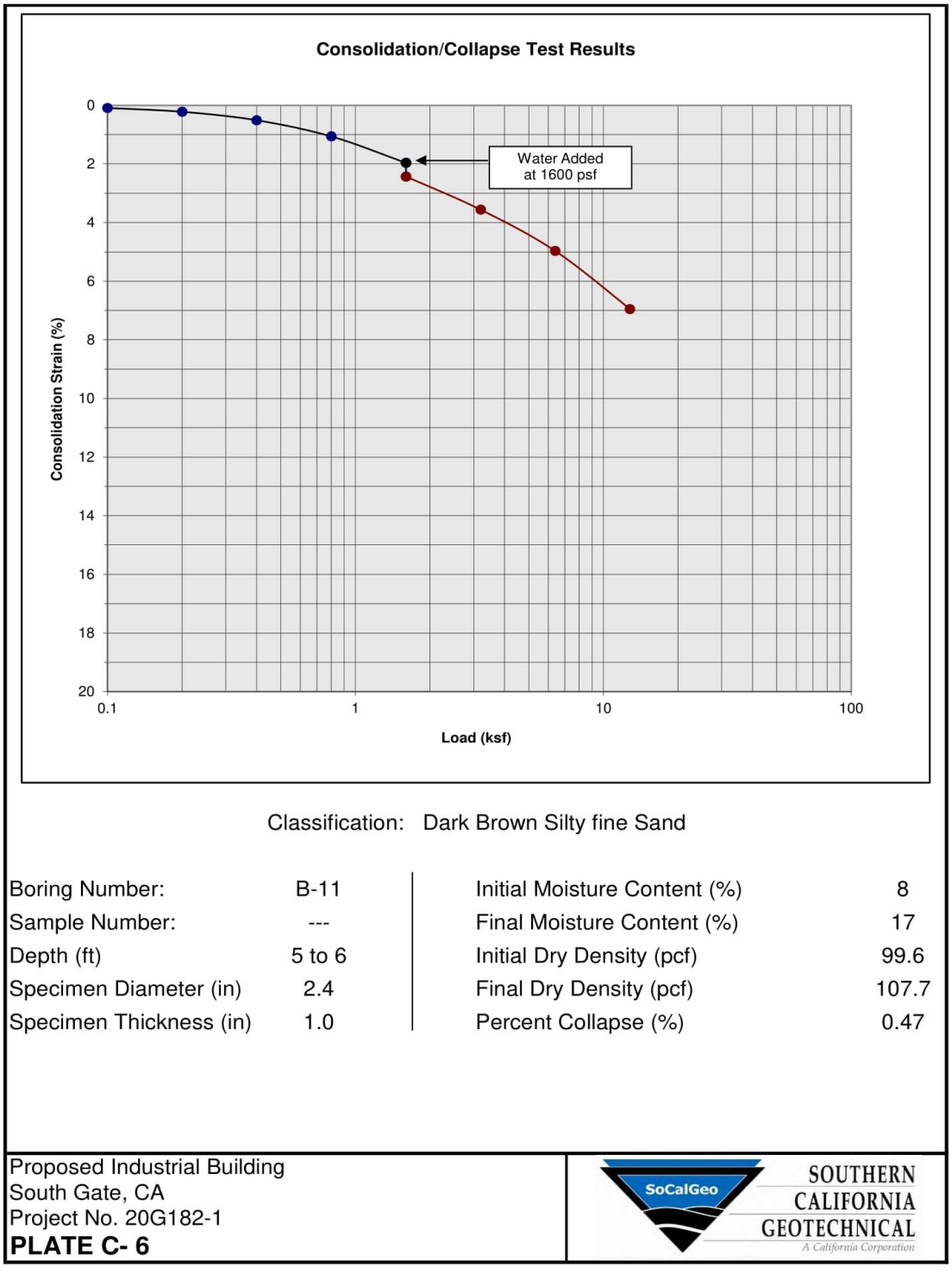


Classification: Gray Brown fine Sand, little Silt

Boring Number:	B-11	Initial Moisture Content (%)	6
Sample Number:	---	Final Moisture Content (%)	17
Depth (ft)	3 to 4	Initial Dry Density (pcf)	98.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	109.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	3.04

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 5

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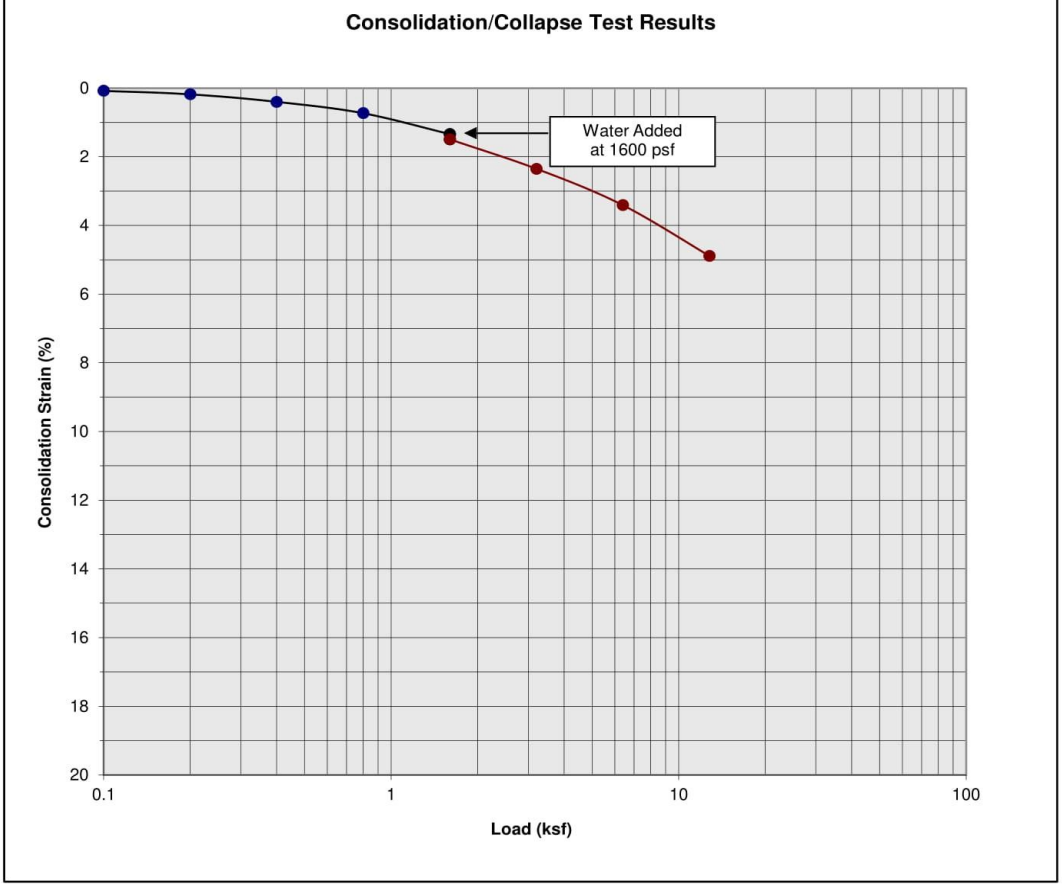


Classification: Dark Brown Silty fine Sand

Boring Number:	B-11	Initial Moisture Content (%)	8
Sample Number:	---	Final Moisture Content (%)	17
Depth (ft)	5 to 6	Initial Dry Density (pcf)	99.6
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	107.7
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.47

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 6

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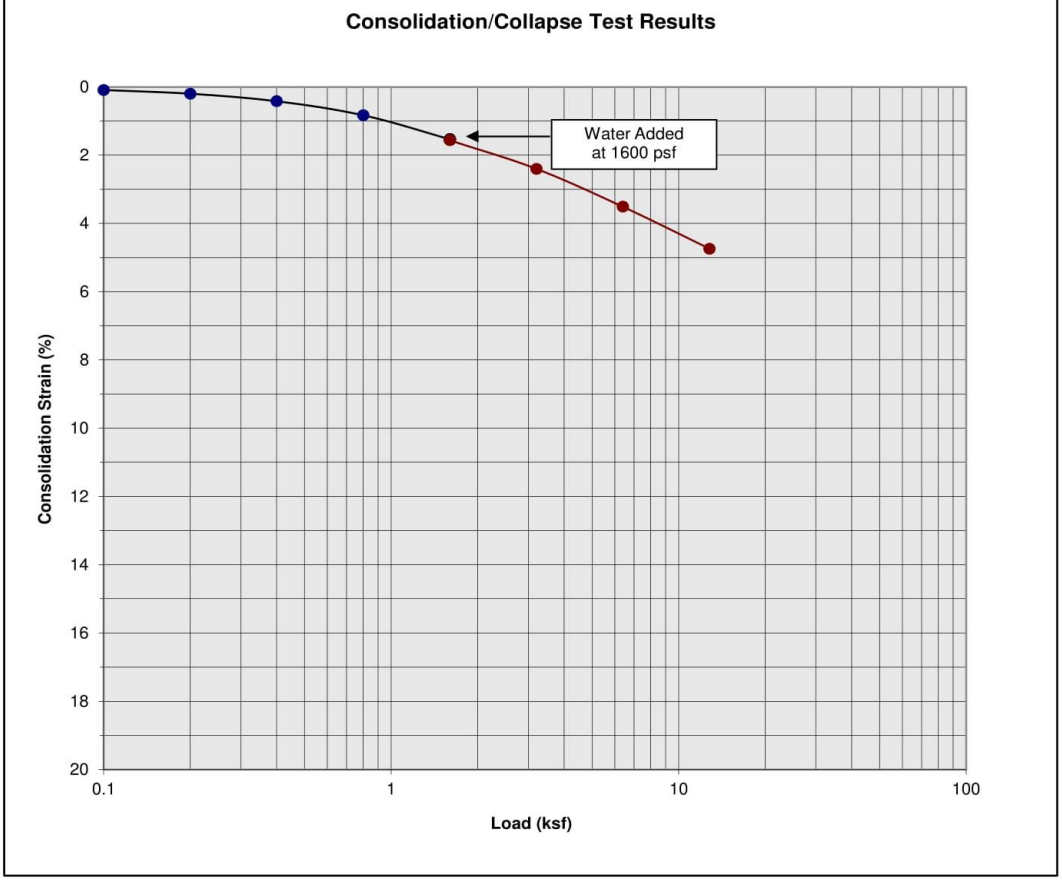


Classification: Dark Brown Silty fine Sand

Boring Number:	B-11	Initial Moisture Content (%)	17
Sample Number:	---	Final Moisture Content (%)	23
Depth (ft)	7 to 8	Initial Dry Density (pcf)	104.5
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	109.4
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.15

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 7

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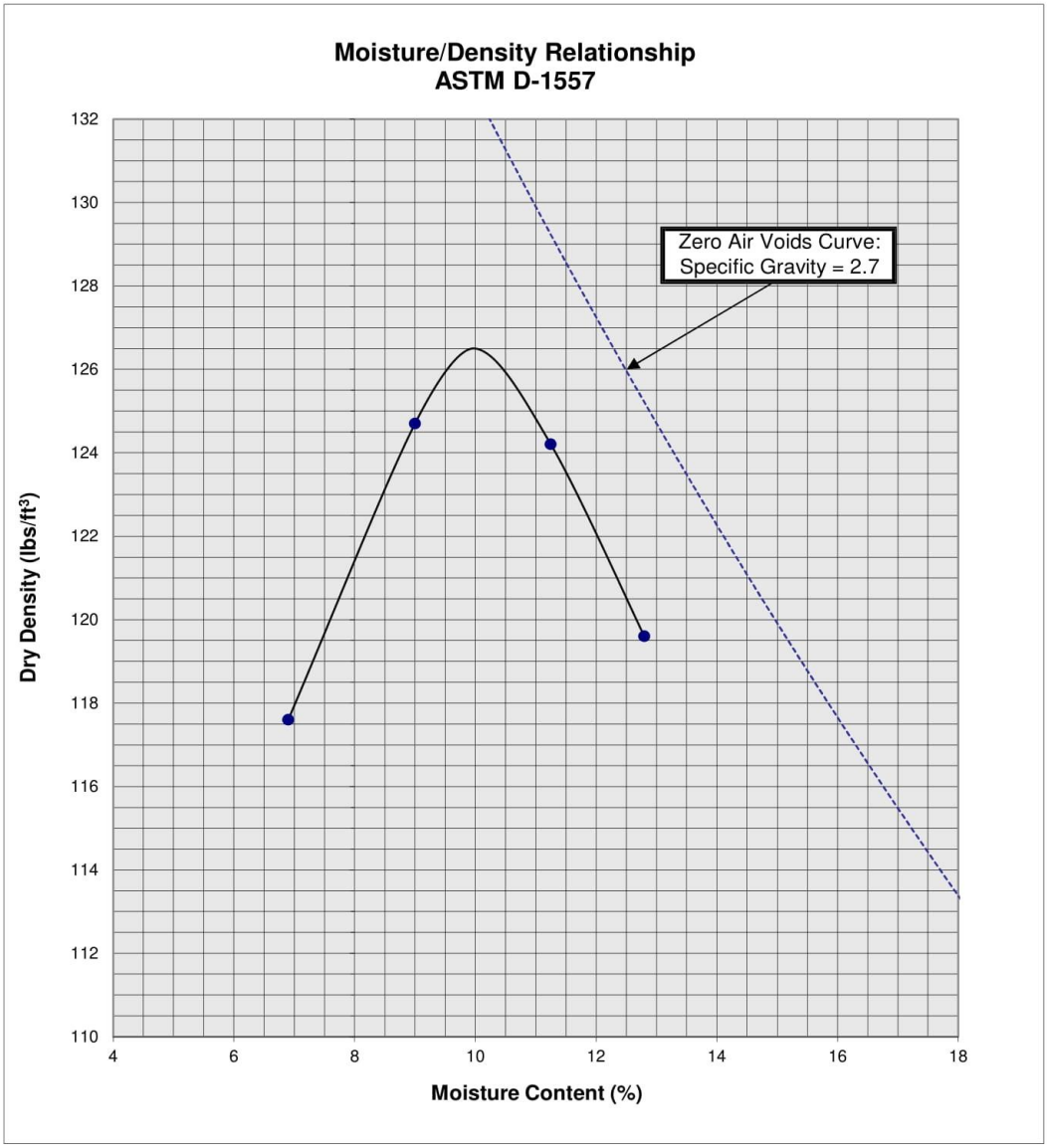


Classification: Dark Brown fine Sandy Silt

Boring Number:	B-11	Initial Moisture Content (%)	25
Sample Number:	---	Final Moisture Content (%)	27
Depth (ft)	9 to 10	Initial Dry Density (pcf)	96.4
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	101.1
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.03

Proposed Industrial Building
South Gate, CA
Project No. 20G182-1
PLATE C- 8

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Soil ID Number	B-10 @ 0-5'
Optimum Moisture (%)	10
Maximum Dry Density (pcf)	126.5
Soil Classification	Gray Brown to Dark Brown Silty fine Sand, trace Asphaltic Concrete fragments

Proposed Industrial Building
South Gate, California
Project No. 20G182
PLATE C-9

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Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

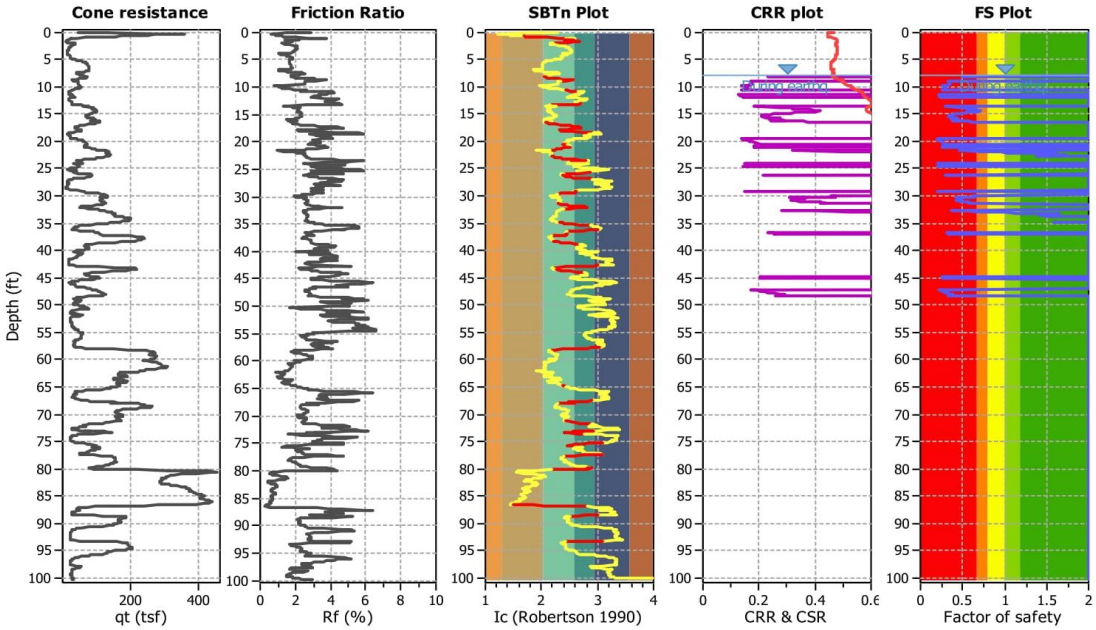
LIQUEFACTION ANALYSIS REPORT

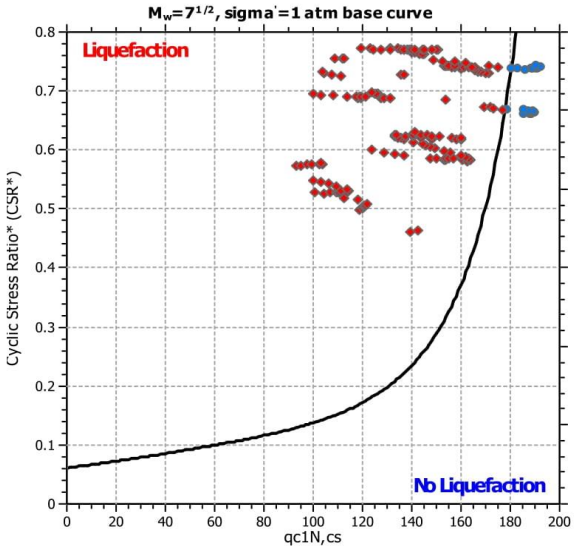
Project title : Southern California Geotechnical **Location : 5037 Palata St, South Gate, CA**

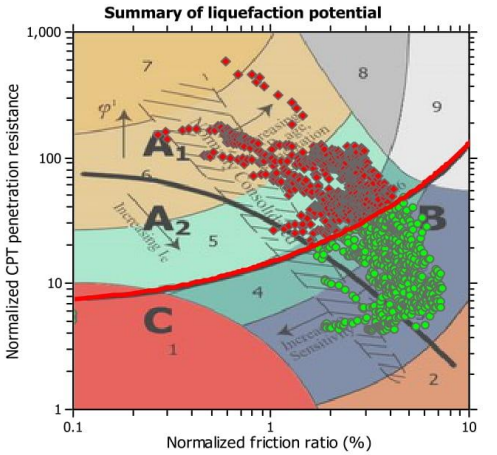
CPT file : CPT-1

Input parameters and analysis data

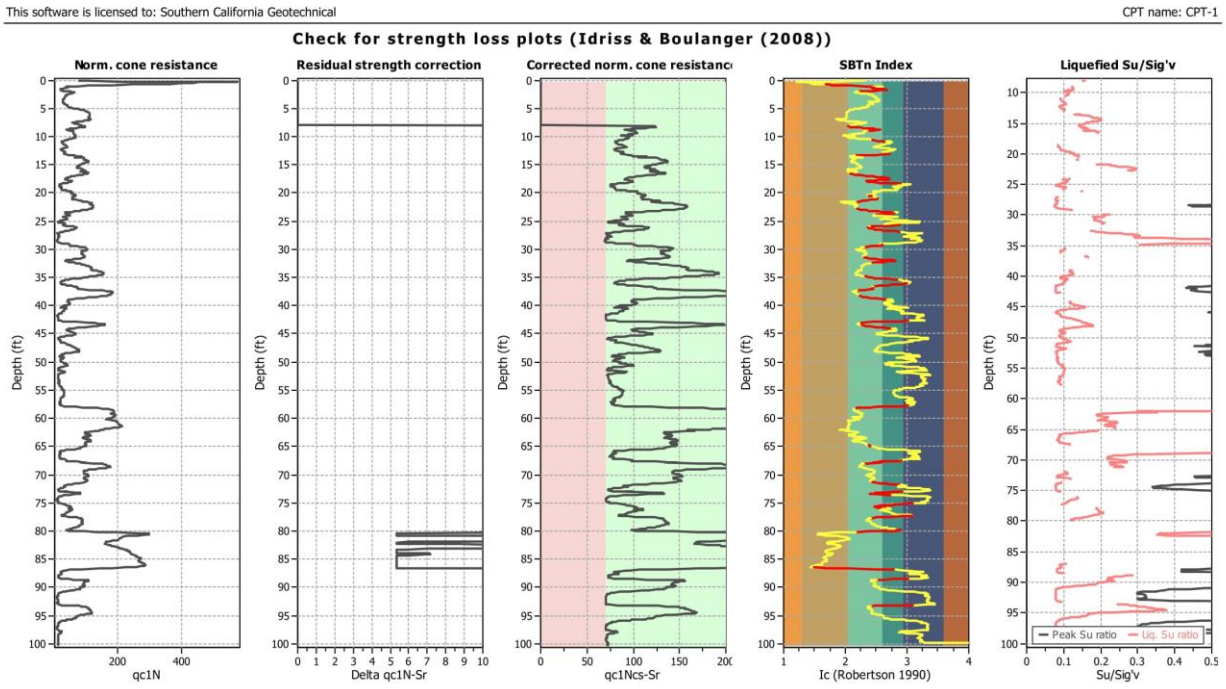
Analysis method:	B&I (2014)	G.W.T. (in-situ):	50.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A	Limit depth applied:	Yes
Points to test:	Based on Ic value	Average results interval:	1	Fill weight:	N/A	Limit depth:	55.00 ft
Earthquake magnitude M_w:	7.30	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.82	Unit weight calculation:	Based on SBT	K_α applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry



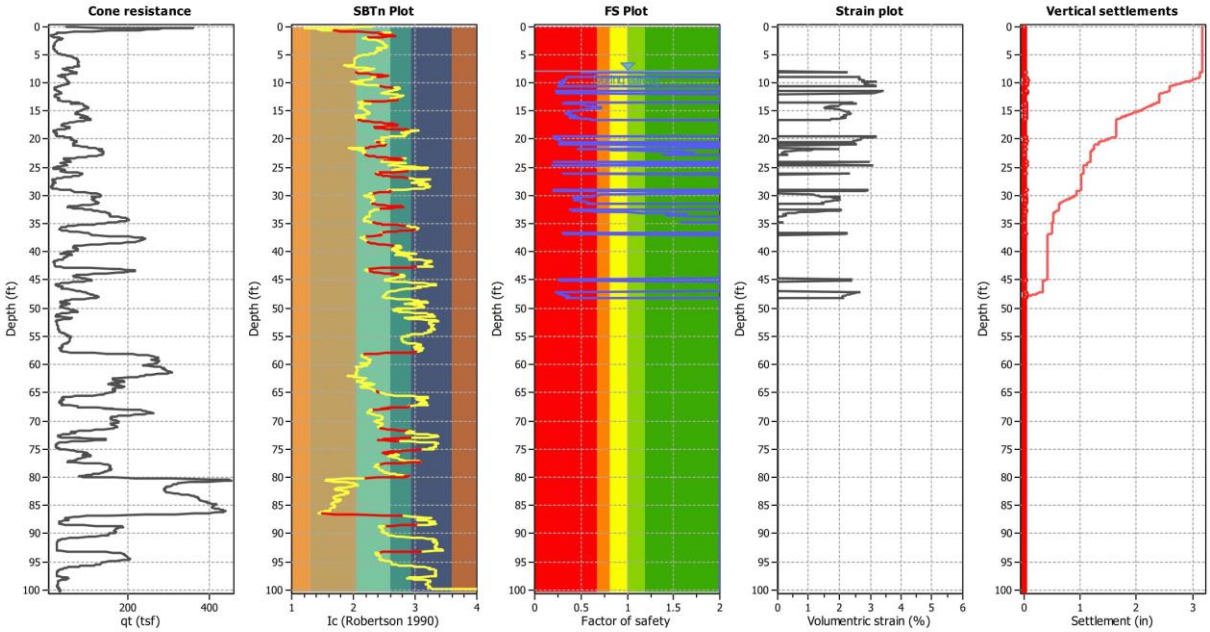
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	8.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	1	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.30	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.82	Use fill:	No	Limit depth applied:	Yes
Depth to water table (insitu):	50.00 ft	Fill height:	N/A	Limit depth:	55.00 ft

CLiq v.3.0.3.2 - CPT Liquefaction Assessment Software - Report created on: 9/3/2020, 5:17:22 PM 2
Project file:

This software is licensed to: Southern California Geotechnical CPT name: CPT-1

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

This software is licensed to: Southern California Geotechnical — CPT name: CPT-1

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
8.06	139.27	0.50	2.26	1.00	0.03	8.13	142.66	0.53	2.20	1.00	0.02
8.23	146.93	2.00	0.00	1.00	0.00	8.30	149.00	2.00	0.00	1.00	0.00
8.34	148.33	2.00	0.00	1.00	0.00	8.46	140.37	2.00	0.00	1.00	0.00
8.51	131.83	2.00	0.00	1.00	0.00	8.59	121.49	2.00	0.00	1.00	0.00
8.63	112.44	2.00	0.00	1.00	0.00	8.68	106.24	2.00	0.00	1.00	0.00
8.76	102.04	2.00	0.00	1.00	0.00	8.81	99.11	2.00	0.00	1.00	0.00
8.91	108.82	2.00	0.00	1.00	0.00	8.96	113.67	2.00	0.00	1.00	0.00
9.03	116.94	2.00	0.00	1.00	0.00	9.07	118.84	0.34	2.68	1.00	0.01
9.21	120.05	0.34	2.65	1.00	0.04	9.25	120.38	0.34	2.65	1.00	0.01
9.38	120.69	0.34	2.64	1.00	0.04	9.43	121.06	0.34	2.63	1.00	0.02
9.49	121.65	0.34	2.62	1.00	0.02	9.66	112.66	0.30	2.84	1.00	0.06
9.73	118.19	0.32	2.70	1.00	0.03	9.78	100.57	0.26	3.19	1.00	0.02
9.83	104.08	0.27	3.08	1.00	0.02	9.89	106.63	0.28	3.01	1.00	0.02
9.96	109.62	0.29	2.92	1.00	0.03	9.97	110.03	0.29	2.91	1.00	0.00
9.99	110.82	0.29	2.89	1.00	0.01	10.09	113.95	0.30	2.81	1.00	0.03
10.13	110.97	0.29	2.88	1.00	0.01	10.17	114.51	0.30	2.79	1.00	0.01
10.30	113.90	0.30	2.81	1.00	0.04	10.40	109.37	0.28	2.93	1.00	0.03
10.45	106.30	0.27	3.02	1.00	0.02	10.53	102.84	0.26	3.12	1.00	0.03
10.58	99.81	0.25	3.22	1.00	0.02	10.71	92.34	2.00	0.00	1.00	0.00
10.76	90.31	2.00	0.00	1.00	0.00	10.82	88.42	2.00	0.00	1.00	0.00
10.88	26.63	2.00	0.00	1.00	0.00	10.93	23.89	2.00	0.00	1.00	0.00
10.98	23.62	2.00	0.00	1.00	0.00	11.03	25.31	2.00	0.00	1.00	0.00
11.11	24.81	2.00	0.00	1.00	0.00	11.17	25.45	2.00	0.00	1.00	0.00
11.26	26.66	2.00	0.00	1.00	0.00	11.29	27.04	2.00	0.00	1.00	0.00
11.38	29.64	2.00	0.00	1.00	0.00	11.42	30.48	2.00	0.00	1.00	0.00
11.51	93.19	0.23	3.45	1.00	0.04	11.56	95.06	0.23	3.38	1.00	0.02
11.65	97.72	0.23	3.29	1.00	0.04	11.73	99.47	0.24	3.23	1.00	0.03
11.81	102.30	0.24	3.14	1.00	0.03	11.85	103.95	0.25	3.09	1.00	0.02
11.94	103.20	0.25	3.11	1.00	0.03	12.05	31.40	2.00	0.00	1.00	0.00
12.14	26.13	2.00	0.00	1.00	0.00	12.18	24.13	2.00	0.00	1.00	0.00
12.23	22.41	2.00	0.00	1.00	0.00	12.28	21.49	2.00	0.00	1.00	0.00
12.37	22.47	2.00	0.00	1.00	0.00	12.45	23.28	2.00	0.00	1.00	0.00
12.50	24.49	2.00	0.00	1.00	0.00	12.54	25.79	2.00	0.00	1.00	0.00
12.62	31.25	2.00	0.00	1.00	0.00	12.67	33.66	2.00	0.00	1.00	0.00
12.75	35.33	2.00	0.00	1.00	0.00	12.80	34.80	2.00	0.00	1.00	0.00
12.89	31.37	2.00	0.00	1.00	0.00	12.99	31.35	2.00	0.00	1.00	0.00
13.04	31.29	2.00	0.00	1.00	0.00	13.13	31.26	2.00	0.00	1.00	0.00
13.17	34.94	2.00	0.00	1.00	0.00	13.24	107.04	2.00	0.00	1.00	0.00
13.29	111.39	2.00	0.00	1.00	0.00	13.39	116.38	2.00	0.00	1.00	0.00
13.43	118.51	2.00	0.00	1.00	0.00	13.52	128.61	0.32	2.46	1.00	0.02
13.56	133.09	0.35	2.37	1.00	0.01	13.61	136.86	0.37	2.30	1.00	0.01
13.65	124.01	0.30	2.56	1.00	0.01	13.77	147.71	0.47	2.11	1.00	0.03
13.80	149.77	0.49	2.08	1.00	0.01	13.89	153.33	0.54	2.02	1.00	0.02
13.93	153.86	0.54	2.02	1.00	0.01	13.98	153.98	0.54	2.01	1.00	0.01
14.07	154.94	0.56	2.00	1.00	0.02	14.12	156.71	0.58	1.93	1.00	0.01
14.22	160.79	0.65	1.68	1.00	0.02	14.26	162.39	0.68	1.59	1.00	0.01
14.32	163.27	0.70	1.54	1.00	0.01	14.41	164.00	0.72	1.51	1.00	0.02
14.46	164.00	0.71	1.51	1.00	0.01	14.55	162.88	0.69	1.56	1.00	0.02

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
14.59	161.61	0.66	1.63	1.00	0.01	14.64	160.02	0.63	1.73	1.00	0.01
14.74	155.55	0.55	1.99	1.00	0.02	14.80	153.14	0.52	2.03	1.00	0.01
14.87	149.52	0.47	2.08	1.00	0.02	14.95	147.27	0.45	2.12	1.00	0.02
14.99	145.84	0.43	2.14	1.00	0.01	15.04	144.35	0.42	2.17	1.00	0.01
15.12	140.70	0.39	2.23	1.00	0.02	15.21	137.07	0.36	2.30	1.00	0.02
15.27	135.39	0.35	2.33	1.00	0.02	15.30	134.17	0.34	2.35	1.00	0.01
15.36	133.17	0.33	2.37	1.00	0.02	15.45	133.10	0.33	2.37	1.00	0.03
15.50	133.77	0.34	2.36	1.00	0.01	15.60	137.37	0.36	2.29	1.00	0.03
15.65	140.52	0.38	2.23	1.00	0.01	15.69	143.76	0.41	2.18	1.00	0.01
15.80	148.00	0.45	2.11	1.00	0.03	15.86	139.90	0.37	2.24	1.00	0.02
15.92	140.44	0.38	2.24	1.00	0.02	15.99	143.94	0.41	2.17	1.00	0.02
16.05	146.06	0.42	2.14	1.00	0.02	16.10	148.12	0.44	2.11	1.00	0.01
16.16	151.27	0.48	2.06	1.00	0.02	16.22	141.17	0.38	2.22	1.00	0.02
16.32	156.30	0.54	1.96	1.00	0.02	16.38	158.36	0.57	1.82	1.00	0.01
16.45	160.02	0.60	1.72	1.00	0.01	16.49	160.28	0.61	1.71	1.00	0.01
16.54	160.06	0.60	1.72	1.00	0.01	16.65	156.32	2.00	0.00	1.00	0.00
16.72	152.56	2.00	0.00	1.00	0.00	16.76	148.43	2.00	0.00	1.00	0.00
16.82	142.35	2.00	0.00	1.00	0.00	16.89	136.44	2.00	0.00	1.00	0.00
16.98	126.24	2.00	0.00	1.00	0.00	17.04	121.20	2.00	0.00	1.00	0.00
17.11	117.05	2.00	0.00	1.00	0.00	17.16	112.82	2.00	0.00	1.00	0.00
17.22	108.72	2.00	0.00	1.00	0.00	17.29	42.33	2.00	0.00	1.00	0.00
17.34	40.79	2.00	0.00	1.00	0.00	17.43	37.65	2.00	0.00	1.00	0.00
17.51	35.10	2.00	0.00	1.00	0.00	17.56	35.05	2.00	0.00	1.00	0.00
17.66	34.95	2.00	0.00	1.00	0.00	17.73	102.85	2.00	0.00	1.00	0.00
17.78	108.44	2.00	0.00	1.00	0.00	17.84	112.80	2.00	0.00	1.00	0.00
17.91	115.35	2.00	0.00	1.00	0.00	18.00	114.11	2.00	0.00	1.00	0.00
18.07	111.64	2.00	0.00	1.00	0.00	18.13	108.35	2.00	0.00	1.00	0.00
18.17	103.29	2.00	0.00	1.00	0.00	18.30	30.30	2.00	0.00	1.00	0.00
18.35	25.20	2.00	0.00	1.00	0.00	18.40	21.39	2.00	0.00	1.00	0.00
18.46	18.80	2.00	0.00	1.00	0.00	18.53	16.93	2.00	0.00	1.00	0.00
18.58	16.03	2.00	0.00	1.00	0.00	18.65	16.87	2.00	0.00	1.00	0.00
18.70	16.36	2.00	0.00	1.00	0.00	18.80	16.80	2.00	0.00	1.00	0.00
18.88	19.29	2.00	0.00	1.00	0.00	18.93	22.03	2.00	0.00	1.00	0.00
18.97	21.68	2.00	0.00	1.00	0.00	19.03	22.43	2.00	0.00	1.00	0.00
19.10	21.06	2.00	0.00	1.00	0.00	19.20	21.93	2.00	0.00	1.00	0.00
19.27	21.97	2.00	0.00	1.00	0.00	19.32	21.55	2.00	0.00	1.00	0.00
19.41	24.00	2.00	0.00	1.00	0.00	19.54	33.67	2.00	0.00	1.00	0.00
19.58	99.91	0.20	3.22	1.00	0.02	19.65	103.02	0.20	3.12	1.00	0.02
19.71	108.24	0.22	2.96	1.00	0.02	19.76	113.47	0.23	2.82	1.00	0.01
19.81	118.00	0.24	2.70	1.00	0.02	19.87	119.22	0.25	2.67	1.00	0.02
19.92	118.54	0.24	2.69	1.00	0.02	19.98	117.74	0.24	2.71	1.00	0.02
20.04	117.81	0.24	2.71	1.00	0.02	20.11	119.10	0.25	2.68	1.00	0.02
20.15	121.15	0.25	2.63	1.00	0.01	20.27	127.28	0.28	2.49	1.00	0.03
20.33	128.86	0.28	2.46	1.00	0.02	20.43	131.31	0.29	2.41	1.00	0.03
20.47	131.35	0.29	2.41	1.00	0.01	20.55	129.97	2.00	0.00	1.00	0.00
20.60	127.85	2.00	0.00	1.00	0.00	20.64	125.56	2.00	0.00	1.00	0.00
20.77	122.86	2.00	0.00	1.00	0.00	20.82	126.12	0.27	2.52	1.00	0.01
20.87	125.17	0.26	2.54	1.00	0.02	20.95	126.31	0.27	2.51	1.00	0.02

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
20.99	125.51	0.27	2.53	1.00	0.01	21.04	123.75	0.26	2.57	1.00	0.02
21.11	124.03	2.00	0.00	1.00	0.00	21.22	134.76	2.00	0.00	1.00	0.00
21.27	143.13	2.00	0.00	1.00	0.00	21.34	148.53	2.00	0.00	1.00	0.00
21.44	152.21	2.00	0.00	1.00	0.00	21.51	154.87	2.00	0.00	1.00	0.00
21.57	155.34	2.00	0.00	1.00	0.00	21.66	131.83	2.00	0.00	1.00	0.00
21.73	154.01	0.46	2.01	1.00	0.02	21.84	169.24	0.73	1.26	1.00	0.02
21.88	171.72	0.79	1.15	1.00	0.01	21.92	172.89	0.83	1.08	1.00	0.00
21.99	176.65	0.95	0.82	1.00	0.01	22.07	178.66	1.03	0.70	1.00	0.01
22.15	185.61	1.39	0.33	1.00	0.00	22.22	188.39	1.58	0.20	1.00	0.00
22.27	188.81	1.61	0.18	1.00	0.00	22.32	188.98	1.62	0.18	1.00	0.00
22.39	189.43	1.65	0.16	1.00	0.00	22.48	190.25	1.72	0.13	1.00	0.00
22.54	190.10	1.70	0.13	1.00	0.00	22.62	189.30	1.64	0.17	1.00	0.00
22.66	187.77	1.52	0.24	1.00	0.00	22.74	185.69	1.38	0.33	1.00	0.00
22.84	180.36	2.00	0.00	1.00	0.00	22.95	172.84	2.00	0.00	1.00	0.00
23.06	162.72	2.00	0.00	1.00	0.00	23.11	156.52	2.00	0.00	1.00	0.00
23.16	150.05	2.00	0.00	1.00	0.00	23.23	141.70	2.00	0.00	1.00	0.00
23.28	132.66	2.00	0.00	1.00	0.00	23.34	55.72	2.00	0.00	1.00	0.00
23.40	47.17	2.00	0.00	1.00	0.00	23.46	38.70	2.00	0.00	1.00	0.00
23.52	33.87	2.00	0.00	1.00	0.00	23.58	38.03	2.00	0.00	1.00	0.00
23.64	34.41	2.00	0.00	1.00	0.00	23.73	37.36	2.00	0.00	1.00	0.00
23.80	38.87	2.00	0.00	1.00	0.00	23.86	104.99	2.00	0.00	1.00	0.00
23.91	109.67	2.00	0.00	1.00	0.00	23.97	111.40	2.00	0.00	1.00	0.00
24.03	111.38	0.21	2.87	1.00	0.02	24.14	107.32	0.20	2.99	1.00	0.04
24.17	27.61	2.00	0.00	1.00	0.00	24.23	36.93	2.00	0.00	1.00	0.00
24.28	36.78	2.00	0.00	1.00	0.00	24.36	36.71	2.00	0.00	1.00	0.00
24.46	36.53	2.00	0.00	1.00	0.00	24.58	104.41	0.20	3.07	1.00	0.04
24.63	103.56	0.19	3.10	1.00	0.02	24.68	38.06	2.00	0.00	1.00	0.00
24.74	33.28	2.00	0.00	1.00	0.00	24.80	27.71	2.00	0.00	1.00	0.00
24.85	22.89	2.00	0.00	1.00	0.00	24.91	20.11	2.00	0.00	1.00	0.00
25.02	15.06	2.00	0.00	1.00	0.00	25.07	13.35	2.00	0.00	1.00	0.00
25.13	12.32	2.00	0.00	1.00	0.00	25.25	12.83	2.00	0.00	1.00	0.00
25.29	17.69	2.00	0.00	1.00	0.00	25.37	26.88	2.00	0.00	1.00	0.00
25.42	35.10	2.00	0.00	1.00	0.00	25.60	34.79	2.00	0.00	1.00	0.00
25.65	29.76	2.00	0.00	1.00	0.00	25.73	25.94	2.00	0.00	1.00	0.00
25.78	25.85	2.00	0.00	1.00	0.00	25.88	38.12	2.00	0.00	1.00	0.00
25.95	115.23	2.00	0.00	1.00	0.00	26.00	126.04	2.00	0.00	1.00	0.00
26.05	132.21	2.00	0.00	1.00	0.00	26.09	135.42	0.30	2.33	1.00	0.01
26.18	136.71	0.30	2.30	1.00	0.02	26.29	135.01	2.00	0.00	1.00	0.00
26.35	133.16	2.00	0.00	1.00	0.00	26.40	130.78	2.00	0.00	1.00	0.00
26.44	128.16	2.00	0.00	1.00	0.00	26.50	125.70	2.00	0.00	1.00	0.00
26.57	122.35	2.00	0.00	1.00	0.00	26.62	116.96	2.00	0.00	1.00	0.00
26.67	45.65	2.00	0.00	1.00	0.00	26.75	39.13	2.00	0.00	1.00	0.00
26.80	32.66	2.00	0.00	1.00	0.00	26.86	27.20	2.00	0.00	1.00	0.00
26.92	23.34	2.00	0.00	1.00	0.00	26.97	20.00	2.00	0.00	1.00	0.00
27.10	16.01	2.00	0.00	1.00	0.00	27.15	14.10	2.00	0.00	1.00	0.00
27.20	12.14	2.00	0.00	1.00	0.00	27.24	10.08	2.00	0.00	1.00	0.00
27.33	12.21	2.00	0.00	1.00	0.00	27.37	11.27	2.00	0.00	1.00	0.00
27.51	12.26	2.00	0.00	1.00	0.00	27.55	13.34	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
27.60	14.75	2.00	0.00	1.00	0.00	27.68	16.47	2.00	0.00	1.00	0.00
27.73	15.94	2.00	0.00	1.00	0.00	27.78	13.86	2.00	0.00	1.00	0.00
27.83	12.44	2.00	0.00	1.00	0.00	27.91	10.83	2.00	0.00	1.00	0.00
27.95	12.53	2.00	0.00	1.00	0.00	28.08	12.95	2.00	0.00	1.00	0.00
28.13	12.62	2.00	0.00	1.00	0.00	28.24	10.57	2.00	0.00	1.00	0.00
28.30	9.36	2.00	0.00	1.00	0.00	28.35	8.66	2.00	0.00	1.00	0.00
28.41	9.34	2.00	0.00	1.00	0.00	28.53	8.89	2.00	0.00	1.00	0.00
28.57	9.31	2.00	0.00	1.00	0.00	28.64	10.05	2.00	0.00	1.00	0.00
28.70	10.98	2.00	0.00	1.00	0.00	28.75	12.03	2.00	0.00	1.00	0.00
28.88	17.37	2.00	0.00	1.00	0.00	28.92	23.69	2.00	0.00	1.00	0.00
28.98	32.26	2.00	0.00	1.00	0.00	29.10	108.63	0.20	2.95	1.00	0.04
29.15	111.72	0.21	2.86	1.00	0.02	29.20	112.44	0.21	2.85	1.00	0.02
29.27	48.04	2.00	0.00	1.00	0.00	29.32	116.10	2.00	0.00	1.00	0.00
29.43	129.78	2.00	0.00	1.00	0.00	29.50	139.57	2.00	0.00	1.00	0.00
29.55	149.94	2.00	0.00	1.00	0.00	29.60	156.46	2.00	0.00	1.00	0.00
29.73	163.33	2.00	0.00	1.00	0.00	29.89	171.29	0.72	1.17	1.00	0.02
29.94	169.82	0.68	1.23	1.00	0.01	30.00	166.82	0.62	1.37	1.00	0.01
30.06	167.96	0.64	1.31	1.00	0.01	30.12	168.14	0.65	1.30	1.00	0.01
30.16	167.16	0.63	1.35	1.00	0.01	30.22	165.58	0.60	1.43	1.00	0.01
30.25	152.82	0.42	2.03	1.00	0.01	30.34	159.89	0.50	1.73	1.00	0.02
30.39	159.12	0.49	1.78	1.00	0.01	30.45	157.60	0.47	1.87	1.00	0.02
30.51	156.44	0.46	1.95	1.00	0.01	30.61	154.53	0.43	2.01	1.00	0.02
30.68	154.06	0.43	2.01	1.00	0.02	30.73	153.65	0.42	2.02	1.00	0.01
30.78	153.88	0.43	2.02	1.00	0.01	30.84	154.89	0.44	2.00	1.00	0.02
30.96	157.72	0.47	1.86	1.00	0.03	31.06	161.07	0.52	1.66	1.00	0.02
31.13	162.87	0.54	1.57	1.00	0.01	31.18	164.25	0.57	1.49	1.00	0.01
31.24	165.39	0.59	1.44	1.00	0.01	31.30	165.83	0.60	1.41	1.00	0.01
31.41	164.27	0.57	1.49	1.00	0.02	31.54	159.32	2.00	0.00	1.00	0.00
31.63	150.40	2.00	0.00	1.00	0.00	31.70	143.17	2.00	0.00	1.00	0.00
31.75	131.65	2.00	0.00	1.00	0.00	31.82	120.13	2.00	0.00	1.00	0.00
31.89	45.44	2.00	0.00	1.00	0.00	31.93	38.27	2.00	0.00	1.00	0.00
32.01	35.43	2.00	0.00	1.00	0.00	32.07	35.13	2.00	0.00	1.00	0.00
32.14	42.31	2.00	0.00	1.00	0.00	32.21	47.05	2.00	0.00	1.00	0.00
32.30	122.04	2.00	0.00	1.00	0.00	32.36	129.14	2.00	0.00	1.00	0.00
32.42	134.90	2.00	0.00	1.00	0.00	32.53	144.78	2.00	0.00	1.00	0.00
32.58	149.05	0.38	2.09	1.00	0.01	32.64	152.70	0.41	2.03	1.00	0.01
32.70	157.23	0.46	1.90	1.00	0.01	32.75	162.14	0.53	1.60	1.00	0.01
32.88	171.12	0.70	1.18	1.00	0.02	32.92	174.86	0.81	1.03	1.00	0.01
33.03	180.69	1.01	0.71	1.00	0.01	33.09	183.35	1.13	0.56	1.00	0.00
33.14	186.00	1.27	0.42	1.00	0.00	33.22	188.66	1.43	0.29	1.00	0.00
33.27	190.45	1.56	0.21	1.00	0.00	33.32	191.54	1.64	0.16	1.00	0.00
33.38	191.26	1.62	0.18	1.00	0.00	33.45	190.38	1.55	0.22	1.00	0.00
33.49	189.46	1.49	0.26	1.00	0.00	33.56	188.44	1.42	0.31	1.00	0.00
33.63	189.54	1.49	0.26	1.00	0.00	33.67	192.36	1.71	0.13	1.00	0.00
33.79	202.77	2.00	0.00	1.00	0.00	33.85	209.52	2.00	0.00	1.00	0.00
33.90	216.70	2.00	0.00	1.00	0.00	34.03	225.66	2.00	0.00	1.00	0.00
34.07	228.81	2.00	0.00	1.00	0.00	34.15	230.88	2.00	0.00	1.00	0.00
34.20	232.26	2.00	0.00	1.00	0.00	34.30	233.42	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
34.37	232.84	2.00	0.00	1.00	0.00	34.42	228.37	2.00	0.00	1.00	0.00
34.49	226.01	2.00	0.00	1.00	0.00	34.55	222.81	2.00	0.00	1.00	0.00
34.60	218.45	2.00	0.00	1.00	0.00	34.66	212.99	2.00	0.00	1.00	0.00
34.72	204.70	2.00	0.00	1.00	0.00	34.78	190.75	1.57	0.21	1.00	0.00
34.85	186.80	2.00	0.00	1.00	0.00	34.92	178.88	2.00	0.00	1.00	0.00
34.97	172.89	2.00	0.00	1.00	0.00	35.06	164.91	2.00	0.00	1.00	0.00
35.11	156.40	2.00	0.00	1.00	0.00	35.19	144.14	2.00	0.00	1.00	0.00
35.27	55.86	2.00	0.00	1.00	0.00	35.32	44.96	2.00	0.00	1.00	0.00
35.39	37.60	2.00	0.00	1.00	0.00	35.45	33.73	2.00	0.00	1.00	0.00
35.52	30.96	2.00	0.00	1.00	0.00	35.57	29.91	2.00	0.00	1.00	0.00
35.64	28.03	2.00	0.00	1.00	0.00	35.72	24.62	2.00	0.00	1.00	0.00
35.79	22.49	2.00	0.00	1.00	0.00	35.85	21.19	2.00	0.00	1.00	0.00
35.90	20.76	2.00	0.00	1.00	0.00	35.98	21.14	2.00	0.00	1.00	0.00
36.07	19.79	2.00	0.00	1.00	0.00	36.11	21.10	2.00	0.00	1.00	0.00
36.16	23.22	2.00	0.00	1.00	0.00	36.25	28.31	2.00	0.00	1.00	0.00
36.33	33.68	2.00	0.00	1.00	0.00	36.38	37.54	2.00	0.00	1.00	0.00
36.44	111.02	2.00	0.00	1.00	0.00	36.49	117.25	2.00	0.00	1.00	0.00
36.58	129.95	2.00	0.00	1.00	0.00	36.63	134.88	2.00	0.00	1.00	0.00
36.74	139.76	0.31	2.25	1.00	0.03	36.78	141.28	0.31	2.22	1.00	0.01
36.83	143.40	0.33	2.18	1.00	0.01	36.88	145.14	0.34	2.15	1.00	0.01
36.95	144.29	0.33	2.17	1.00	0.02	37.06	145.93	2.00	0.00	1.00	0.00
37.12	154.24	2.00	0.00	1.00	0.00	37.23	185.43	2.00	0.00	1.00	0.00
37.30	209.08	2.00	0.00	1.00	0.00	37.35	229.15	2.00	0.00	1.00	0.00
37.40	242.81	2.00	0.00	1.00	0.00	37.46	252.94	2.00	0.00	1.00	0.00
37.58	254.00	2.00	0.00	1.00	0.00	37.68	254.00	2.00	0.00	1.00	0.00
37.75	254.00	2.00	0.00	1.00	0.00	37.80	254.00	2.00	0.00	1.00	0.00
37.88	254.00	2.00	0.00	1.00	0.00	37.94	254.00	2.00	0.00	1.00	0.00
38.02	254.00	2.00	0.00	1.00	0.00	38.06	254.00	2.00	0.00	1.00	0.00
38.15	254.00	2.00	0.00	1.00	0.00	38.21	247.01	2.00	0.00	1.00	0.00
38.30	234.33	2.00	0.00	1.00	0.00	38.33	227.86	2.00	0.00	1.00	0.00
38.42	212.03	2.00	0.00	1.00	0.00	38.46	203.49	2.00	0.00	1.00	0.00
38.55	184.78	2.00	0.00	1.00	0.00	38.64	164.63	2.00	0.00	1.00	0.00
38.68	153.49	2.00	0.00	1.00	0.00	38.73	142.79	2.00	0.00	1.00	0.00
38.82	57.04	2.00	0.00	1.00	0.00	38.86	51.95	2.00	0.00	1.00	0.00
38.95	45.82	2.00	0.00	1.00	0.00	38.99	44.33	2.00	0.00	1.00	0.00
39.08	41.26	2.00	0.00	1.00	0.00	39.13	41.21	2.00	0.00	1.00	0.00
39.22	41.15	2.00	0.00	1.00	0.00	39.26	41.09	2.00	0.00	1.00	0.00
39.34	44.91	2.00	0.00	1.00	0.00	39.38	46.86	2.00	0.00	1.00	0.00
39.46	49.04	2.00	0.00	1.00	0.00	39.50	49.68	2.00	0.00	1.00	0.00
39.60	49.81	2.00	0.00	1.00	0.00	39.65	49.00	2.00	0.00	1.00	0.00
39.72	46.30	2.00	0.00	1.00	0.00	39.78	44.78	2.00	0.00	1.00	0.00
39.85	40.45	2.00	0.00	1.00	0.00	39.94	33.59	2.00	0.00	1.00	0.00
39.98	30.40	2.00	0.00	1.00	0.00	40.06	26.13	2.00	0.00	1.00	0.00
40.14	25.50	2.00	0.00	1.00	0.00	40.24	27.42	2.00	0.00	1.00	0.00
40.27	19.69	2.00	0.00	1.00	0.00	40.30	20.55	2.00	0.00	1.00	0.00
40.39	30.54	2.00	0.00	1.00	0.00	40.44	36.52	2.00	0.00	1.00	0.00
40.52	39.11	2.00	0.00	1.00	0.00	40.57	36.85	2.00	0.00	1.00	0.00
40.62	34.56	2.00	0.00	1.00	0.00	40.70	31.23	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
40.77	29.47	2.00	0.00	1.00	0.00	40.82	29.22	2.00	0.00	1.00	0.00
40.90	29.91	2.00	0.00	1.00	0.00	40.95	29.67	2.00	0.00	1.00	0.00
41.08	26.28	2.00	0.00	1.00	0.00	41.17	25.03	2.00	0.00	1.00	0.00
41.23	24.94	2.00	0.00	1.00	0.00	41.30	24.15	2.00	0.00	1.00	0.00
41.35	21.49	2.00	0.00	1.00	0.00	41.48	15.86	2.00	0.00	1.00	0.00
41.52	13.83	2.00	0.00	1.00	0.00	41.58	11.96	2.00	0.00	1.00	0.00
41.64	11.04	2.00	0.00	1.00	0.00	41.70	10.78	2.00	0.00	1.00	0.00
41.75	10.36	2.00	0.00	1.00	0.00	41.81	10.76	2.00	0.00	1.00	0.00
41.87	10.20	2.00	0.00	1.00	0.00	41.97	10.74	2.00	0.00	1.00	0.00
42.01	10.73	2.00	0.00	1.00	0.00	42.14	10.87	2.00	0.00	1.00	0.00
42.29	10.54	2.00	0.00	1.00	0.00	42.45	10.97	2.00	0.00	1.00	0.00
42.63	11.95	2.00	0.00	1.00	0.00	42.72	19.99	2.00	0.00	1.00	0.00
42.77	25.22	2.00	0.00	1.00	0.00	42.83	34.00	2.00	0.00	1.00	0.00
42.90	47.33	2.00	0.00	1.00	0.00	42.94	133.10	2.00	0.00	1.00	0.00
43.06	180.57	2.00	0.00	1.00	0.00	43.11	197.52	2.00	0.00	1.00	0.00
43.16	213.94	2.00	0.00	1.00	0.00	43.21	225.50	2.00	0.00	1.00	0.00
43.29	234.18	2.00	0.00	1.00	0.00	43.34	238.63	2.00	0.00	1.00	0.00
43.38	240.33	2.00	0.00	1.00	0.00	43.46	240.67	2.00	0.00	1.00	0.00
43.56	228.85	2.00	0.00	1.00	0.00	43.66	215.07	2.00	0.00	1.00	0.00
43.74	203.02	2.00	0.00	1.00	0.00	43.83	175.23	2.00	0.00	1.00	0.00
43.87	80.00	2.00	0.00	1.00	0.00	43.91	75.33	2.00	0.00	1.00	0.00
44.00	61.86	2.00	0.00	1.00	0.00	44.04	53.97	2.00	0.00	1.00	0.00
44.12	45.14	2.00	0.00	1.00	0.00	44.21	41.37	2.00	0.00	1.00	0.00
44.25	40.48	2.00	0.00	1.00	0.00	44.32	41.15	2.00	0.00	1.00	0.00
44.39	39.33	2.00	0.00	1.00	0.00	44.43	40.95	2.00	0.00	1.00	0.00
44.52	44.84	2.00	0.00	1.00	0.00	44.58	48.04	2.00	0.00	1.00	0.00
44.66	51.45	2.00	0.00	1.00	0.00	44.70	53.37	2.00	0.00	1.00	0.00
44.79	57.79	2.00	0.00	1.00	0.00	44.86	131.47	0.26	2.40	1.00	0.02
44.89	134.11	0.27	2.35	1.00	0.01	44.96	138.10	0.29	2.28	1.00	0.02
45.05	138.48	0.30	2.27	1.00	0.02	45.09	136.61	0.29	2.31	1.00	0.01
45.15	131.17	0.26	2.41	1.00	0.02	45.23	55.98	2.00	0.00	1.00	0.00
45.30	47.78	2.00	0.00	1.00	0.00	45.36	38.38	2.00	0.00	1.00	0.00
45.45	30.79	2.00	0.00	1.00	0.00	45.49	26.58	2.00	0.00	1.00	0.00
45.55	20.08	2.00	0.00	1.00	0.00	45.63	16.42	2.00	0.00	1.00	0.00
45.68	14.81	2.00	0.00	1.00	0.00	45.76	12.44	2.00	0.00	1.00	0.00
45.84	11.95	2.00	0.00	1.00	0.00	45.90	12.18	2.00	0.00	1.00	0.00
45.98	12.99	2.00	0.00	1.00	0.00	46.02	14.21	2.00	0.00	1.00	0.00
46.07	15.73	2.00	0.00	1.00	0.00	46.18	20.28	2.00	0.00	1.00	0.00
46.20	21.20	2.00	0.00	1.00	0.00	46.29	20.61	2.00	0.00	1.00	0.00
46.33	20.09	2.00	0.00	1.00	0.00	46.40	20.63	2.00	0.00	1.00	0.00
46.47	20.66	2.00	0.00	1.00	0.00	46.57	23.81	2.00	0.00	1.00	0.00
46.60	26.17	2.00	0.00	1.00	0.00	46.65	29.10	2.00	0.00	1.00	0.00
46.76	36.62	2.00	0.00	1.00	0.00	46.80	37.59	2.00	0.00	1.00	0.00
46.89	42.82	2.00	0.00	1.00	0.00	46.92	44.49	2.00	0.00	1.00	0.00
47.00	49.38	2.00	0.00	1.00	0.00	47.09	119.60	0.22	2.66	1.00	0.03
47.17	123.09	0.23	2.58	1.00	0.02	47.22	124.50	0.24	2.55	1.00	0.02
47.30	127.62	0.25	2.48	1.00	0.02	47.39	131.07	0.26	2.41	1.00	0.03
47.51	135.60	0.28	2.32	1.00	0.03	47.55	136.65	0.29	2.30	1.00	0.01

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
47.64	139.19	0.30	2.26	1.00	0.02	47.68	140.24	0.31	2.24	1.00	0.01
47.73	141.34	0.31	2.22	1.00	0.01	47.81	144.25	0.33	2.17	1.00	0.02
47.90	147.83	0.36	2.11	1.00	0.02	47.98	150.75	0.38	2.06	1.00	0.02
48.07	150.02	0.38	2.08	1.00	0.02	48.12	147.96	0.36	2.11	1.00	0.01
48.16	144.69	0.33	2.16	1.00	0.01	48.24	65.49	2.00	0.00	1.00	0.00
48.33	52.97	2.00	0.00	1.00	0.00	48.38	46.19	2.00	0.00	1.00	0.00
48.47	34.61	2.00	0.00	1.00	0.00	48.52	30.02	2.00	0.00	1.00	0.00
48.56	27.08	2.00	0.00	1.00	0.00	48.66	24.37	2.00	0.00	1.00	0.00
48.74	24.20	2.00	0.00	1.00	0.00	48.82	21.70	2.00	0.00	1.00	0.00
48.87	19.95	2.00	0.00	1.00	0.00	48.91	17.97	2.00	0.00	1.00	0.00
48.96	17.23	2.00	0.00	1.00	0.00	49.05	22.55	2.00	0.00	1.00	0.00
49.10	25.83	2.00	0.00	1.00	0.00	49.17	31.70	2.00	0.00	1.00	0.00
49.23	31.78	2.00	0.00	1.00	0.00	49.32	28.61	2.00	0.00	1.00	0.00
49.37	25.39	2.00	0.00	1.00	0.00	49.49	20.14	2.00	0.00	1.00	0.00
49.54	20.82	2.00	0.00	1.00	0.00	49.62	20.21	2.00	0.00	1.00	0.00
49.70	19.36	2.00	0.00	1.00	0.00	49.76	18.61	2.00	0.00	1.00	0.00
49.84	17.92	2.00	0.00	1.00	0.00	49.89	18.19	2.00	0.00	1.00	0.00
49.96	21.21	2.00	0.00	1.00	0.00	50.02	26.32	2.00	0.00	1.00	0.00
50.11	27.46	2.00	0.00	1.00	0.00	50.16	28.66	2.00	0.00	1.00	0.00
50.21	30.21	2.00	0.00	1.00	0.00	50.29	34.90	2.00	0.00	1.00	0.00
50.33	36.73	2.00	0.00	1.00	0.00	50.41	39.29	2.00	0.00	1.00	0.00
50.47	36.29	2.00	0.00	1.00	0.00	50.56	42.33	2.00	0.00	1.00	0.00
50.60	43.22	2.00	0.00	1.00	0.00	50.68	42.19	2.00	0.00	1.00	0.00
50.78	34.27	2.00	0.00	1.00	0.00	50.83	27.67	2.00	0.00	1.00	0.00
50.96	18.55	2.00	0.00	1.00	0.00	51.00	16.67	2.00	0.00	1.00	0.00
51.06	14.40	2.00	0.00	1.00	0.00	51.13	12.44	2.00	0.00	1.00	0.00
51.18	12.37	2.00	0.00	1.00	0.00	51.23	12.37	2.00	0.00	1.00	0.00
51.31	12.29	2.00	0.00	1.00	0.00	51.35	12.06	2.00	0.00	1.00	0.00
51.40	11.60	2.00	0.00	1.00	0.00	51.45	11.82	2.00	0.00	1.00	0.00
51.53	14.04	2.00	0.00	1.00	0.00	51.58	18.92	2.00	0.00	1.00	0.00
51.69	30.31	2.00	0.00	1.00	0.00	51.80	34.30	2.00	0.00	1.00	0.00
51.86	31.64	2.00	0.00	1.00	0.00	51.93	26.95	2.00	0.00	1.00	0.00
51.97	21.75	2.00	0.00	1.00	0.00	52.07	16.57	2.00	0.00	1.00	0.00
52.15	14.55	2.00	0.00	1.00	0.00	52.19	12.92	2.00	0.00	1.00	0.00
52.26	11.95	2.00	0.00	1.00	0.00	52.34	12.36	2.00	0.00	1.00	0.00
52.42	12.58	2.00	0.00	1.00	0.00	52.47	12.62	2.00	0.00	1.00	0.00
52.56	12.89	2.00	0.00	1.00	0.00	52.68	12.89	2.00	0.00	1.00	0.00
52.74	12.65	2.00	0.00	1.00	0.00	52.80	12.37	2.00	0.00	1.00	0.00
52.86	12.67	2.00	0.00	1.00	0.00	52.90	12.46	2.00	0.00	1.00	0.00
52.97	12.68	2.00	0.00	1.00	0.00	53.03	12.86	2.00	0.00	1.00	0.00
53.14	13.86	2.00	0.00	1.00	0.00	53.21	14.47	2.00	0.00	1.00	0.00
53.30	14.46	2.00	0.00	1.00	0.00	53.36	14.82	2.00	0.00	1.00	0.00
53.48	14.91	2.00	0.00	1.00	0.00	53.54	14.71	2.00	0.00	1.00	0.00
53.59	13.83	2.00	0.00	1.00	0.00	53.66	13.80	2.00	0.00	1.00	0.00
53.76	13.79	2.00	0.00	1.00	0.00	53.83	13.77	2.00	0.00	1.00	0.00
53.88	15.34	2.00	0.00	1.00	0.00	53.93	16.36	2.00	0.00	1.00	0.00
54.00	16.54	2.00	0.00	1.00	0.00	54.10	16.21	2.00	0.00	1.00	0.00
54.17	16.62	2.00	0.00	1.00	0.00	54.23	17.51	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
54.32	19.45	2.00	0.00	1.00	0.00	54.37	20.40	2.00	0.00	1.00	0.00
54.45	21.41	2.00	0.00	1.00	0.00	54.50	22.52	2.00	0.00	1.00	0.00
54.55	23.60	2.00	0.00	1.00	0.00	54.61	24.38	2.00	0.00	1.00	0.00
54.68	24.70	2.00	0.00	1.00	0.00	54.73	25.18	2.00	0.00	1.00	0.00
54.80	25.95	2.00	0.00	1.00	0.00	54.90	27.91	2.00	0.00	1.00	0.00
54.94	26.42	2.00	0.00	1.00	0.00	55.00	31.45	2.00	0.00	1.00	0.00
55.08	32.09	2.00	0.00	1.00	0.00	55.12	32.09	2.00	0.00	1.00	0.00
55.21	31.57	2.00	0.00	1.00	0.00	55.25	31.20	2.00	0.00	1.00	0.00
55.36	30.20	2.00	0.00	1.00	0.00	55.43	30.19	2.00	0.00	1.00	0.00
55.47	30.18	2.00	0.00	1.00	0.00	55.52	30.23	2.00	0.00	1.00	0.00
55.63	30.42	2.00	0.00	1.00	0.00	55.73	30.41	2.00	0.00	1.00	0.00
55.78	30.36	2.00	0.00	1.00	0.00	55.84	30.09	2.00	0.00	1.00	0.00
55.90	29.68	2.00	0.00	1.00	0.00	55.96	29.18	2.00	0.00	1.00	0.00
56.00	28.73	2.00	0.00	1.00	0.00	56.08	28.02	2.00	0.00	1.00	0.00
56.14	27.27	2.00	0.00	1.00	0.00	56.18	26.53	2.00	0.00	1.00	0.00
56.24	25.60	2.00	0.00	1.00	0.00	56.36	22.83	2.00	0.00	1.00	0.00
56.40	19.56	2.00	0.00	1.00	0.00	56.44	19.89	2.00	0.00	1.00	0.00
56.53	20.64	2.00	0.00	1.00	0.00	56.57	19.82	2.00	0.00	1.00	0.00
56.67	18.12	2.00	0.00	1.00	0.00	56.71	20.00	2.00	0.00	1.00	0.00
56.79	18.76	2.00	0.00	1.00	0.00	56.86	20.17	2.00	0.00	1.00	0.00
56.90	20.36	2.00	0.00	1.00	0.00	57.01	18.41	2.00	0.00	1.00	0.00
57.06	17.05	2.00	0.00	1.00	0.00	57.11	15.85	2.00	0.00	1.00	0.00
57.20	16.39	2.00	0.00	1.00	0.00	57.26	17.87	2.00	0.00	1.00	0.00
57.32	19.28	2.00	0.00	1.00	0.00	57.42	18.98	2.00	0.00	1.00	0.00
57.46	18.09	2.00	0.00	1.00	0.00	57.51	17.29	2.00	0.00	1.00	0.00
57.57	17.24	2.00	0.00	1.00	0.00	57.66	20.00	2.00	0.00	1.00	0.00
57.73	22.86	2.00	0.00	1.00	0.00	57.82	30.78	2.00	0.00	1.00	0.00
57.86	37.95	2.00	0.00	1.00	0.00	57.91	49.96	2.00	0.00	1.00	0.00
57.96	136.86	2.00	0.00	1.00	0.00	58.03	162.52	2.00	0.00	1.00	0.00
58.13	199.14	2.00	0.00	1.00	0.00	58.20	212.55	2.00	0.00	1.00	0.00
58.26	224.09	2.00	0.00	1.00	0.00	58.31	235.05	2.00	0.00	1.00	0.00
58.37	244.99	2.00	0.00	1.00	0.00	58.48	254.00	2.00	0.00	1.00	0.00
58.53	254.00	2.00	0.00	1.00	0.00	58.65	254.00	2.00	0.00	1.00	0.00
58.75	254.00	2.00	0.00	1.00	0.00	58.81	254.00	2.00	0.00	1.00	0.00
58.88	254.00	2.00	0.00	1.00	0.00	58.92	254.00	2.00	0.00	1.00	0.00
58.97	254.00	2.00	0.00	1.00	0.00	59.09	254.00	2.00	0.00	1.00	0.00
59.14	254.00	2.00	0.00	1.00	0.00	59.19	254.00	2.00	0.00	1.00	0.00
59.29	254.00	2.00	0.00	1.00	0.00	59.34	254.00	2.00	0.00	1.00	0.00
59.41	254.00	2.00	0.00	1.00	0.00	59.46	254.00	2.00	0.00	1.00	0.00
59.52	254.00	2.00	0.00	1.00	0.00	59.64	254.00	2.00	0.00	1.00	0.00
59.68	254.00	2.00	0.00	1.00	0.00	59.75	254.00	2.00	0.00	1.00	0.00
59.82	254.00	2.00	0.00	1.00	0.00	59.86	254.00	2.00	0.00	1.00	0.00
59.95	254.00	2.00	0.00	1.00	0.00	60.03	254.00	2.00	0.00	1.00	0.00
60.08	254.00	2.00	0.00	1.00	0.00	60.12	244.69	2.00	0.00	1.00	0.00
60.21	250.87	2.00	0.00	1.00	0.00	60.30	254.00	2.00	0.00	1.00	0.00
60.36	254.00	2.00	0.00	1.00	0.00	60.48	254.00	2.00	0.00	1.00	0.00
60.58	254.00	2.00	0.00	1.00	0.00	60.66	254.00	2.00	0.00	1.00	0.00
60.79	254.00	2.00	0.00	1.00	0.00	60.83	254.00	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
60.92	254.00	2.00	0.00	1.00	0.00	61.00	254.00	2.00	0.00	1.00	0.00
61.10	254.00	2.00	0.00	1.00	0.00	61.17	254.00	2.00	0.00	1.00	0.00
61.23	254.00	2.00	0.00	1.00	0.00	61.33	254.00	2.00	0.00	1.00	0.00
61.37	254.00	2.00	0.00	1.00	0.00	61.49	254.00	2.00	0.00	1.00	0.00
61.54	254.00	2.00	0.00	1.00	0.00	61.59	254.00	2.00	0.00	1.00	0.00
61.67	254.00	2.00	0.00	1.00	0.00	61.76	243.07	2.00	0.00	1.00	0.00
61.83	233.46	2.00	0.00	1.00	0.00	61.88	226.51	2.00	0.00	1.00	0.00
61.94	219.96	2.00	0.00	1.00	0.00	62.00	216.87	2.00	0.00	1.00	0.00
62.07	172.25	2.00	0.00	1.00	0.00	62.11	188.86	2.00	0.00	1.00	0.00
62.17	195.62	2.00	0.00	1.00	0.00	62.25	192.19	2.00	0.00	1.00	0.00
62.29	186.98	2.00	0.00	1.00	0.00	62.38	169.58	2.00	0.00	1.00	0.00
62.41	168.75	2.00	0.00	1.00	0.00	62.50	164.72	2.00	0.00	1.00	0.00
62.54	160.05	2.00	0.00	1.00	0.00	62.61	159.87	2.00	0.00	1.00	0.00
62.68	159.85	2.00	0.00	1.00	0.00	62.77	160.14	2.00	0.00	1.00	0.00
62.81	163.04	2.00	0.00	1.00	0.00	62.90	167.03	2.00	0.00	1.00	0.00
62.95	167.12	2.00	0.00	1.00	0.00	63.01	169.33	2.00	0.00	1.00	0.00
63.07	169.76	2.00	0.00	1.00	0.00	63.16	168.87	2.00	0.00	1.00	0.00
63.22	168.61	2.00	0.00	1.00	0.00	63.34	164.76	2.00	0.00	1.00	0.00
63.38	162.61	2.00	0.00	1.00	0.00	63.47	158.39	2.00	0.00	1.00	0.00
63.52	158.24	2.00	0.00	1.00	0.00	63.56	160.27	2.00	0.00	1.00	0.00
63.65	168.41	2.00	0.00	1.00	0.00	63.70	171.92	2.00	0.00	1.00	0.00
63.74	175.08	2.00	0.00	1.00	0.00	63.83	177.73	2.00	0.00	1.00	0.00
63.92	178.27	2.00	0.00	1.00	0.00	64.00	177.55	2.00	0.00	1.00	0.00
64.05	176.58	2.00	0.00	1.00	0.00	64.14	172.29	2.00	0.00	1.00	0.00
64.19	169.95	2.00	0.00	1.00	0.00	64.29	166.09	2.00	0.00	1.00	0.00
64.33	166.34	2.00	0.00	1.00	0.00	64.37	167.10	2.00	0.00	1.00	0.00
64.44	167.99	2.00	0.00	1.00	0.00	64.53	173.17	2.00	0.00	1.00	0.00
64.58	175.12	2.00	0.00	1.00	0.00	64.67	174.60	2.00	0.00	1.00	0.00
64.71	174.24	2.00	0.00	1.00	0.00	64.80	173.84	2.00	0.00	1.00	0.00
64.85	173.13	2.00	0.00	1.00	0.00	64.93	169.87	2.00	0.00	1.00	0.00
64.98	167.64	2.00	0.00	1.00	0.00	65.05	158.05	2.00	0.00	1.00	0.00
65.12	157.33	2.00	0.00	1.00	0.00	65.17	156.22	2.00	0.00	1.00	0.00
65.26	153.71	2.00	0.00	1.00	0.00	65.30	152.29	2.00	0.00	1.00	0.00
65.36	147.02	2.00	0.00	1.00	0.00	65.46	63.20	2.00	0.00	1.00	0.00
65.51	56.83	2.00	0.00	1.00	0.00	65.57	43.51	2.00	0.00	1.00	0.00
65.63	36.69	2.00	0.00	1.00	0.00	65.69	30.46	2.00	0.00	1.00	0.00
65.77	23.55	2.00	0.00	1.00	0.00	65.85	19.80	2.00	0.00	1.00	0.00
65.90	18.85	2.00	0.00	1.00	0.00	65.96	19.65	2.00	0.00	1.00	0.00
66.01	17.76	2.00	0.00	1.00	0.00	66.10	19.51	2.00	0.00	1.00	0.00
66.19	21.19	2.00	0.00	1.00	0.00	66.23	20.77	2.00	0.00	1.00	0.00
66.31	18.63	2.00	0.00	1.00	0.00	66.35	17.59	2.00	0.00	1.00	0.00
66.42	16.43	2.00	0.00	1.00	0.00	66.52	16.42	2.00	0.00	1.00	0.00
66.55	16.38	2.00	0.00	1.00	0.00	66.63	15.32	2.00	0.00	1.00	0.00
66.72	16.28	2.00	0.00	1.00	0.00	66.81	14.78	2.00	0.00	1.00	0.00
66.85	16.18	2.00	0.00	1.00	0.00	66.89	17.73	2.00	0.00	1.00	0.00
66.94	19.02	2.00	0.00	1.00	0.00	67.02	18.61	2.00	0.00	1.00	0.00
67.10	17.71	2.00	0.00	1.00	0.00	67.15	18.20	2.00	0.00	1.00	0.00
67.21	19.94	2.00	0.00	1.00	0.00	67.31	28.91	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
67.42	39.25	2.00	0.00	1.00	0.00	67.48	39.61	2.00	0.00	1.00	0.00
67.54	39.12	2.00	0.00	1.00	0.00	67.60	42.74	2.00	0.00	1.00	0.00
67.65	53.21	2.00	0.00	1.00	0.00	67.72	142.77	2.00	0.00	1.00	0.00
67.77	162.21	2.00	0.00	1.00	0.00	67.82	173.43	2.00	0.00	1.00	0.00
67.86	155.57	2.00	0.00	1.00	0.00	67.95	204.12	2.00	0.00	1.00	0.00
68.05	228.34	2.00	0.00	1.00	0.00	68.11	236.19	2.00	0.00	1.00	0.00
68.17	241.01	2.00	0.00	1.00	0.00	68.22	242.71	2.00	0.00	1.00	0.00
68.26	244.10	2.00	0.00	1.00	0.00	68.33	247.46	2.00	0.00	1.00	0.00
68.39	253.31	2.00	0.00	1.00	0.00	68.44	254.00	2.00	0.00	1.00	0.00
68.57	254.00	2.00	0.00	1.00	0.00	68.62	254.00	2.00	0.00	1.00	0.00
68.69	254.00	2.00	0.00	1.00	0.00	68.74	254.00	2.00	0.00	1.00	0.00
68.79	247.93	2.00	0.00	1.00	0.00	68.87	236.73	2.00	0.00	1.00	0.00
68.93	224.77	2.00	0.00	1.00	0.00	68.97	213.34	2.00	0.00	1.00	0.00
69.10	193.80	2.00	0.00	1.00	0.00	69.15	186.38	2.00	0.00	1.00	0.00
69.19	180.14	2.00	0.00	1.00	0.00	69.24	175.27	2.00	0.00	1.00	0.00
69.31	171.74	2.00	0.00	1.00	0.00	69.37	169.34	2.00	0.00	1.00	0.00
69.47	167.27	2.00	0.00	1.00	0.00	69.59	168.60	2.00	0.00	1.00	0.00
69.64	166.15	2.00	0.00	1.00	0.00	69.76	168.66	2.00	0.00	1.00	0.00
69.81	171.01	2.00	0.00	1.00	0.00	69.87	172.16	2.00	0.00	1.00	0.00
69.99	178.16	2.00	0.00	1.00	0.00	70.03	179.80	2.00	0.00	1.00	0.00
70.11	180.77	2.00	0.00	1.00	0.00	70.16	178.95	2.00	0.00	1.00	0.00
70.24	181.80	2.00	0.00	1.00	0.00	70.29	182.35	2.00	0.00	1.00	0.00
70.39	182.07	2.00	0.00	1.00	0.00	70.42	167.72	2.00	0.00	1.00	0.00
70.48	174.24	2.00	0.00	1.00	0.00	70.56	170.84	2.00	0.00	1.00	0.00
70.64	171.05	2.00	0.00	1.00	0.00	70.73	169.03	2.00	0.00	1.00	0.00
70.78	170.85	2.00	0.00	1.00	0.00	70.82	172.86	2.00	0.00	1.00	0.00
70.89	174.87	2.00	0.00	1.00	0.00	70.99	178.45	2.00	0.00	1.00	0.00
71.08	180.20	2.00	0.00	1.00	0.00	71.12	179.30	2.00	0.00	1.00	0.00
71.17	176.32	2.00	0.00	1.00	0.00	71.24	172.76	2.00	0.00	1.00	0.00
71.30	169.97	2.00	0.00	1.00	0.00	71.49	151.66	2.00	0.00	1.00	0.00
71.56	72.39	2.00	0.00	1.00	0.00	71.61	65.22	2.00	0.00	1.00	0.00
71.67	57.16	2.00	0.00	1.00	0.00	71.74	48.53	2.00	0.00	1.00	0.00
71.80	40.83	2.00	0.00	1.00	0.00	71.86	34.89	2.00	0.00	1.00	0.00
71.97	29.41	2.00	0.00	1.00	0.00	72.04	35.17	2.00	0.00	1.00	0.00
72.10	32.83	2.00	0.00	1.00	0.00	72.15	35.54	2.00	0.00	1.00	0.00
72.22	34.19	2.00	0.00	1.00	0.00	72.27	30.59	2.00	0.00	1.00	0.00
72.34	25.79	2.00	0.00	1.00	0.00	72.41	21.37	2.00	0.00	1.00	0.00
72.46	18.23	2.00	0.00	1.00	0.00	72.53	16.19	2.00	0.00	1.00	0.00
72.65	13.09	2.00	0.00	1.00	0.00	72.71	13.15	2.00	0.00	1.00	0.00
72.77	13.15	2.00	0.00	1.00	0.00	72.84	13.20	2.00	0.00	1.00	0.00
72.89	17.58	2.00	0.00	1.00	0.00	72.95	27.44	2.00	0.00	1.00	0.00
73.02	41.97	2.00	0.00	1.00	0.00	73.04	32.33	2.00	0.00	1.00	0.00
73.13	137.42	2.00	0.00	1.00	0.00	73.21	150.83	2.00	0.00	1.00	0.00
73.26	153.98	2.00	0.00	1.00	0.00	73.30	154.76	2.00	0.00	1.00	0.00
73.39	142.43	2.00	0.00	1.00	0.00	73.44	133.82	2.00	0.00	1.00	0.00
73.53	47.83	2.00	0.00	1.00	0.00	73.56	40.21	2.00	0.00	1.00	0.00
73.66	29.71	2.00	0.00	1.00	0.00	73.72	22.84	2.00	0.00	1.00	0.00
73.77	19.86	2.00	0.00	1.00	0.00	73.85	15.99	2.00	0.00	1.00	0.00

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:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$q_{c1N,cs}$	FS	e_v (%)	DF	Settlement (in)
73.89	14.26	2.00	0.00	1.00	0.00	73.97	12.55	2.00	0.00	1.00	0.00
74.04	12.42	2.00	0.00	1.00	0.00	74.11	11.88	2.00	0.00	1.00	0.00
74.20	11.27	2.00	0.00	1.00	0.00	74.25	10.86	2.00	0.00	1.00	0.00
74.32	10.37	2.00	0.00	1.00	0.00	74.37	10.28	2.00	0.00	1.00	0.00
74.41	10.36	2.00	0.00	1.00	0.00	74.50	10.32	2.00	0.00	1.00	0.00
74.55	10.36	2.00	0.00	1.00	0.00	74.63	10.55	2.00	0.00	1.00	0.00
74.68	10.88	2.00	0.00	1.00	0.00	74.76	11.73	2.00	0.00	1.00	0.00
74.81	12.34	2.00	0.00	1.00	0.00	74.94	13.61	2.00	0.00	1.00	0.00
74.99	13.78	2.00	0.00	1.00	0.00	75.07	16.00	2.00	0.00	1.00	0.00
75.12	18.09	2.00	0.00	1.00	0.00	75.16	21.18	2.00	0.00	1.00	0.00
75.25	29.76	2.00	0.00	1.00	0.00	75.30	32.64	2.00	0.00	1.00	0.00
75.43	36.24	2.00	0.00	1.00	0.00	75.48	38.81	2.00	0.00	1.00	0.00
75.53	105.52	2.00	0.00	1.00	0.00	75.71	115.08	2.00	0.00	1.00	0.00
75.78	117.78	2.00	0.00	1.00	0.00	75.84	117.04	2.00	0.00	1.00	0.00
75.91	49.15	2.00	0.00	1.00	0.00	75.96	46.93	2.00	0.00	1.00	0.00
76.01	44.21	2.00	0.00	1.00	0.00	76.08	54.78	2.00	0.00	1.00	0.00
76.12	124.54	2.00	0.00	1.00	0.00	76.23	124.10	2.00	0.00	1.00	0.00
76.27	122.24	2.00	0.00	1.00	0.00	76.40	51.13	2.00	0.00	1.00	0.00
76.45	48.60	2.00	0.00	1.00	0.00	76.51	46.14	2.00	0.00	1.00	0.00
76.58	44.12	2.00	0.00	1.00	0.00	76.68	40.58	2.00	0.00	1.00	0.00
76.75	38.83	2.00	0.00	1.00	0.00	76.80	37.38	2.00	0.00	1.00	0.00
76.85	36.09	2.00	0.00	1.00	0.00	76.99	33.91	2.00	0.00	1.00	0.00
77.03	32.14	2.00	0.00	1.00	0.00	77.09	29.71	2.00	0.00	1.00	0.00
77.16	27.00	2.00	0.00	1.00	0.00	77.20	24.76	2.00	0.00	1.00	0.00
77.28	24.08	2.00	0.00	1.00	0.00	77.38	33.20	2.00	0.00	1.00	0.00
77.44	46.05	2.00	0.00	1.00	0.00	77.51	59.79	2.00	0.00	1.00	0.00
77.57	141.57	2.00	0.00	1.00	0.00	77.65	149.56	2.00	0.00	1.00	0.00
77.71	152.10	2.00	0.00	1.00	0.00	77.80	155.31	2.00	0.00	1.00	0.00
77.87	156.04	2.00	0.00	1.00	0.00	77.91	156.97	2.00	0.00	1.00	0.00
77.96	157.16	2.00	0.00	1.00	0.00	78.05	157.89	2.00	0.00	1.00	0.00
78.09	158.34	2.00	0.00	1.00	0.00	78.18	158.49	2.00	0.00	1.00	0.00
78.24	158.63	2.00	0.00	1.00	0.00	78.34	158.26	2.00	0.00	1.00	0.00
78.38	159.64	2.00	0.00	1.00	0.00	78.44	159.56	2.00	0.00	1.00	0.00
78.49	160.36	2.00	0.00	1.00	0.00	78.58	161.71	2.00	0.00	1.00	0.00
78.62	162.66	2.00	0.00	1.00	0.00	78.72	161.90	2.00	0.00	1.00	0.00
78.77	160.40	2.00	0.00	1.00	0.00	78.82	157.83	2.00	0.00	1.00	0.00
78.89	155.82	2.00	0.00	1.00	0.00	78.97	152.42	2.00	0.00	1.00	0.00
79.02	150.98	2.00	0.00	1.00	0.00	79.11	148.50	2.00	0.00	1.00	0.00
79.16	147.10	2.00	0.00	1.00	0.00	79.21	145.28	2.00	0.00	1.00	0.00
79.32	139.95	2.00	0.00	1.00	0.00	79.42	63.42	2.00	0.00	1.00	0.00
79.47	60.31	2.00	0.00	1.00	0.00	79.51	57.74	2.00	0.00	1.00	0.00
79.55	54.66	2.00	0.00	1.00	0.00	79.60	50.89	2.00	0.00	1.00	0.00
79.71	44.33	2.00	0.00	1.00	0.00	79.77	41.65	2.00	0.00	1.00	0.00
79.86	44.74	2.00	0.00	1.00	0.00	79.91	38.63	2.00	0.00	1.00	0.00
79.95	45.21	2.00	0.00	1.00	0.00	80.00	62.69	2.00	0.00	1.00	0.00
80.05	170.30	2.00	0.00	1.00	0.00	80.13	202.72	2.00	0.00	1.00	0.00
80.22	212.71	2.00	0.00	1.00	0.00	80.34	254.00	2.00	0.00	1.00	0.00
80.35	254.00	2.00	0.00	1.00	0.00	80.40	254.00	2.00	0.00	1.00	0.00

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APPENDIX F – HAZARDOUS MATERIALS

ASBESTOS SOIL SAMPLING REPORT



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Armstrong Flooring Inc.
5037 Patata Street
South Gate, CA

South Gate Facility

PREPARED FOR

Susan Monroe, Director EHS
Armstrong Flooring, Inc.
2500 Colombia Avenue, PO Box 3025
Lancaster, PA 17604

PREPARED BY

Mr. Abbas Sam
CAC #09-4551

Entech Environmental Group, LLC
6968 El Camino Real, Suite 105
Carlsbad, CA 92009

October 23, 2020
Revised: January 18, 2021

ENTECH

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EXECUTIVE SUMMARY

Entech Environmental Group, LLC (Entech) was requested by Armstrong Flooring, Inc. (AFI) to perform additional sampling of soil and debris as part of the environmental due diligence conducted at the AFI South Gate facility located at 5035 Patata Street, South Gate, California (Project Site). The purpose of the soil sampling was to provide additional data points to better delineate the areas of the Project Site determined to contain or be impacted by asbestos in a previous sampling event completed in September 2020, and to report the presence of any Asbestos Containing Materials (ACM) and Asbestos Containing Construction Materials (ACCM), as part of the environmental due diligence.

Entech performed the additional soil sampling on October 5, 6 and 7, 2020. Entech reviewed, to the extent available, data and previous reports, and conducted a walkthrough to identify additional sampling locations. Entech used this information to create a sampling strategy and select sampling locations that would effectively delineate potentially impacted areas located at the Project Site.

Entech performed a total 49 soil cores: 28 soil cores within the exterior asphalt paved area, 11 soil cores within the concrete slab interior of the buildings, and 10 soil cores within the unpaved portion of the Project Site to the east. Entech collected a total of two hundred ninety-one (291) samples; one hundred eighty-five (185) soil samples and one hundred six (106) bulk samples during the sampling event to identify asbestos concentrations.

The sampling location plans are provided in Appendix B. The volume of impacted soil and debris and estimated remediation costs are provided in Appendix C and summarized below.

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ACM/ACCM Debris and Soil

- Exterior Paved Area
  - Maximum Depth: 2.33'
  - Estimated Soil Excavation Area: 205,229 sf (4.71 ac)
  - Estimated Soil Excavation Volume: 10,905 cy (16,356 tons)
  - Estimated Remediation Cost: $2,984,000

- Interior Paved Area
  - Maximum Depth: 4.5' (1.33' average)
  - Estimated Soil Excavation Area: 68,162 sf (1.56 ac)
  - Estimated Soil Excavation Volume: 3,354 cy (5,031 tons)
  - Estimated Remediation Cost: $916,000

- Exterior Unpaved Area
  - Maximum Depth: 2.4'
  - Estimated Soil Excavation Area: 162,227 sf (3.72 ac)
  - Estimated Soil Excavation Volume: 5,008 cy (7,512 tons)
  - Estimated Remediation Cost: $1,508,000

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ACRONYM GUIDE

ACM	Asbestos-Containing Material
ACCM	Asbestos-Containing Construction Material
Cal OSHA	California Occupational Safety and Health Administration
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CPSC	Consumer Product Safety Commission
DHS	California Department of Health Services
EPA	Environmental Protection Agency
HSG	Homogeneous Sampling Group
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating Ventilation and Air Conditioning
LBP	Lead-Based Paint
LCP	Lead-Containing Paint
NEA	Negative Exposure Assessment
NESHAP	National Emission Standards for Hazardous Air Pollutants
PLM	Polarized Light Microscopy
ppm	Parts per million
PQL	Practical Quantification Limit
RACM	Regulated Asbestos Containing Material
RFT	Resilient Floor Tile
TSI	Thermal System Insulation

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1.0 INTRODUCTION

Entech Environmental Group, LLC (Entech) was requested by Armstrong Flooring, Inc. (AFI) to perform additional sampling of soil and debris as part of the environmental due diligence conducted at the AFI South Gate facility located at 5035 Patata Street, South Gate, California (Project Site). The debris was primarily tile chips from the manufacture of floor tiles. The purpose of the sampling was to provide additional data points to better delineate the areas of the Project Site determined to contain or be impacted by asbestos in a previous sampling event completed in September 2020, and to report the presence of any Asbestos Containing Materials (ACM) and Asbestos Containing Construction Materials (ACCM), as part of the environmental due diligence.

This asbestos sampling was carried out under the general supervision of Abbas Sam (CAC 09-4551) as required by 1529 (b) of Title 8 of the California Code of Regulations (CCR); data collection was conducted by Abbas Sam and Russell Hartranft (CSST 1405200), the report was prepared by Abbas Sam.

Based on Entech's understanding of the client's needs, the following scope of services was conducted:

1. Reviewed documents and previous reports provided by AFI, including facility maps and diagrams.
2. Performed multiple job walks and site inspections.
3. Performed asbestos soil sampling of the Project Site in accordance with the listed criteria in California Occupational Safety and Health Administration (Cal OSHA) standard 8 California Code of Regulations (CCR) 1529, OSHA standard 29 Code of Federal Regulations (CFR) 1926.1101 and Environmental Protection Agency (EPA) standard 40 CFR Part 61.145 (a), including the analysis of soil and bulk samples via polarized light microscopy (PLM) methodology;
4. Evaluated results of previous and current sampling performed at the Project Site to determine any future actions required.
5. Developed cost analysis for the remediation of the soil and debris impacted by asbestos.

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2.0 BACKGROUND

2.1 Site Description

Based on historical use of asbestos (Chrysotile) at the facility for the purpose of manufacturing floor tiles and previous investigations conducted at the Project Site, it was determined that areas of the soil at the facility have been impacted by asbestos containing debris. Entech was retained by AFI to oversee and monitor soil sampling activities performed by Waterstone Environmental, Inc. (Waterstone) in September of 2020 (Phase I), as part of a due diligence evaluation of the Project Site. As part of the oversight, Entech collected approximately 10%-15% of the soil and debris collected by Waterstone for confirmatory purposes. As a follow up, Entech was retained to perform additional soil sampling in October 2020 (Phase II) to delineate impacted soil at the Project Site.

The Project Site is an industrial facility situated in Los Angeles County, located at 5037 Patata Street, South Gate, CA. The Project Site consists of approximately 27-acre lot, comprised of approximately 14.2 acres of exterior asphalt paved area, 7 acres of exterior unpaved area, and 5.6 acres of buildings and structures with mainly concrete slab flooring and foundation.

2.2 Scope of Work

Entech reviewed, to the extent available, prior data and reports and conducted a walkthrough to identify additional sampling locations. Entech used the information to develop a sampling strategy and select sampling locations that would effectively delineate potentially impacted areas located at the Project Site. Entech performed a total 49 soil cores: 28 soil cores within the exterior asphalt paved area, 11 soil cores within the concrete slab interior of the buildings, and 10 soil cores within the unpaved portion of the Project Site to the east.

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3.0 WORK DESCRIPTION: SOIL SAMPLING AND FINDINGS

The sampling of soil and debris was carried out under the general supervision of Abbas Sam (CAC 09-4551) as required by 1529 (b) of Title 8 of the California Code of Regulations (CCR); data collection was conducted by Abbas Sam and Russell Hartranft (CSST 1405200), the report was prepared by Abbas Sam.

3.1 Asbestos Site Inspection/Assessment

Entech reviewed, to the extent available, prior data and reports, and conducted walkthrough to identify additional sampling locations. Entech used the information to develop a sampling strategy and select sampling locations that would effectively delineate potentially impacted areas located at the Project Site.

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3.1.1 Asbestos Soil/Bulk Sampling Collection and Analysis

Entech performed a total 49 soil cores: 28 soil cores within the exterior asphalt paved area, 11 soil cores within the concrete slab interior of the buildings, and 10 soil cores within the unpaved portion of the Project Site to the east. Entech collected a total of two hundred ninety-one (291) samples; one hundred eighty-five (185) soil samples and one hundred six (106) bulk samples of debris throughout the Project Site. Suspect tile chips were removed from the soil prior to placing the soil into the sample bags; debris/tile chips were separately bagged for analysis. The sample locations are shown in Appendix B.

The samples were sent under chain of custody to LA Testing Laboratories (LATL) located in Carson, California. LATL is accredited by the California Environmental Laboratory Accreditation Program and National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program (NVLAP No. 101048-0, CA ELAP 1406). While the EPA Method of Asbestos in Bulk Insulation Samples is defined in 40 CFR 763, Appendix E to Subpart E (EPA Method 600/M4-82-020), the ACM bulk samples were analyzed for asbestos content using the EPA Method 600/R-93/116, 1993. This method is referred to as the "Improved Method" and is recommended by EPA as a preferred substitute to the Interim Method EPA 600/M4-82-020, 1982. All laboratory analytical reports are included in Appendix A.

The EPA regulations define ACM as any material with an asbestos content greater than one percent (>1%). EPA regulations regarding the proper handling of ACMs must be followed for materials containing greater than one percent asbestos. If based on the results of the initial sampling, NESHAP Point Count reanalysis is necessary for positive asbestos results of less than 1%, this quantification can be necessary to establish the most cost-effective abatement practices required for some materials, particularly drywall systems.

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3.1.2 ACM Survey Results and Discussion

Entech performed the additional soil and debris sampling on October 5, 6 and 7, 2020. Entech performed a total 49 soil cores: 28 soil cores within the exterior asphalt paved area, 11 soil cores within the concrete slab interior of the buildings, and 10 soil cores within the unpaved portion of the Project Site to the east. Entech collected a total of two hundred ninety-one (291) samples; one hundred eighty-five (185) soil samples and one hundred six (106) bulk samples during the sampling event to identify asbestos concentrations.

Suspect ACM was generally observed beneath the ground surface along the eastern and southern areas of the Project Site at depths ranging from surface to 2.9 feet below the ground surface (ft-bgs). Based on the borings cored during the Phase I soil sampling, additional borings where cored at intervening locations to refine the ACM delineation. Test boring locations and the depth of the deepest observable suspect ACM at these locations are shown on figures in Appendix B and boring logs in Appendix D.

Most of the suspect ACM consisted of individual floor tile chips dispersed through the soil. ACM was detected mainly on the east and south/southeast portion of the property. Observable suspect ACM was vertically delineated at surface to 3 ft-bgs at the sampled locations.

Based on the soil sampling results and interpretation of the laboratory data, the maximum depth of impacted soil with asbestos debris was determined to be at 2.3 ft in the exterior paved area (14.2 acres), 1.3 ft under the paved footprint of the buildings (5.6 acres), and 2.9 ft in the exterior unpaved area to the east, mainly to northeast and southeast of the 7-acre parcel (Appendix B)

It will be necessary to comply with all applicable provisions of local, EPA, OSHA, Cal/OSHA, and SCAQMD regulations during any removal, demolition, or construction activities that may disturb the asbestos impacted soil.

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4.0 REGULATORY CONSIDERATIONS

4.1.1 Worker Protection and Waste Definitions for Asbestos

Materials (soil/bulk) containing asbestos greater than 1 percent are defined as an Asbestos Containing Material (ACM) and are regulated under both federal and state regulations. Construction materials containing asbestos greater than 0.1% are defined as an Asbestos Containing Construction Material (ACCM) and are regulated by the State of California. Cal/OSHA regulates the removal of both ACM and ACCM.

Please refer to Title 8§1529-*Asbestos* for the regulatory requirements associated with working with both ACM and ACCM. Additionally, refer to §1529(r)-*Report of Use and Asbestos-related Work Registration* for the registration requirement of contractors involved in asbestos-related work involving over 100 square feet of ACCM/ACM. In instances where a material contains asbestos in concentrations below the ACCM regulatory threshold, the employer is required to comply with Cal/OSHA 5194-*Hazard Communication* in addition to pertinent sections of §1529-*Asbestos*.

In California, ACMs that are friable or will become friable during abatement are classified as a California-Hazardous Waste, and require special handling, packaging, and disposal.

Soil remediation activities on the exterior paved and unpaved areas of the Project Site will not require full containment, however an exclusion zone will be demarcated around the work area with barrier tape and warning signs to alert personnel of the abatement activities and the potential hazards. Any impact to the onsite buildings at the Project Site will be addressed after the buildings have been demolished.

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5.0 CONCLUSIONS AND RECOMMENDATIONS

The Subject Property located at 5037 Patata Street, South Gate, California has been sampled and tested for asbestos and the results categorized based on the listed criteria. Asbestos has been detected at areas shown on the maps, exceeding regulatory criteria.

The asbestos soil and bulk analytical laboratory results are provided in Appendix A, sampling location plans are provided in Appendix B. The volume of impacted soil and estimated remediation costs are provided in Appendix C and summarized below.

ACM/ACCM Debris and Soil

- Exterior Paved Area
  - Maximum Depth: 2.33'
  - Estimated Soil Excavation Area: 205,229 sf (4.71 ac)
  - Estimated Soil Excavation Volume: 10,905 cy (16,356 tons)
  - Estimated Remediation Cost: $2,984,000

- Interior Paved Area
  - Maximum Depth: 4.5' (1.33' average)
  - Estimated Soil Excavation Area: 68,162 sf (1.56 ac)
  - Estimated Soil Excavation Volume: 3,354 cy (5,031 tons)
  - Estimated Remediation Cost: $916,000

- Exterior Unpaved Area
  - Maximum Depth: 2.4'
  - Estimated Soil Excavation Area: 162,227 sf (3.72 ac)
  - Estimated Soil Excavation Volume: 5,008 cy (7,512 tons)
  - Estimated Remediation Cost: $1,508,000

Furthermore, based on the soil sampling results and interpretation of the laboratory data, the maximum depth of impacted soil with asbestos debris was determined to be at 2.33 ft in the exterior paved area, 1.33 ft (average) under the paved footprint of the buildings, and 2.9 ft in the exterior unpaved area to the east, mainly to northeast and southeast of the 7-acre parcel (Appendix B)

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To ensure safe handling of material, protection of worker and public health and safety, and compliance with regulatory requirements, we make the following recommendations:

It will be necessary to comply with all applicable provisions of local, EPA, OSHA, Cal/OSHA, and SCAQMD regulations during any removal, demolition, or construction activities that may disturb the asbestos contaminated soil.

We recommend that soil contaminated with asbestos that will be impacted by construction/remediation activities be removed prior at the Project Site in compliance with the asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP), and Cal-OSHA Asbestos in the Construction Industry Standard, 8 CCR 1529. On-site encapsulation also can be considered, however, that will review land use restrictions and compliance with other regulatory requirements.

If additional debris is detected during remediation/demolition activities, Entech recommends said areas to be sampled for asbestos content.

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6.0 Limiting Conditions

Entech conducted the additional soil sampling at the Project Site in October 2020 in general accordance with industry standards for soil and bulk sampling procedures in existence at the time of the project. The conclusions and recommendations presented in this report are based on the applicable standards of our profession at the time this report was prepared. Copies of this report are furnished to provide the factual data that were gathered and summarized in the report.

The analysis and recommendations submitted in this report are based in part on the data obtained from specific and discrete sampling locations. However, the nature and extent of variations between the sampling locations may not become evident until construction/remediation procedures commence. If potential variations are identified during construction/remediation activities, it may be necessary to conduct additional soil /bulk sampling.

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APPENDIX A

Asbestos Soil & Bulk Sample Analytical Laboratory Reports

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Asbestos Soil & Bulk Sample Analytical Laboratory Reports

September 2020 Sampling Event (Phase I)

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LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332016221
Customer ID: 32ENTE54
Customer PO:
Project ID:

Attention: Sam Abbas
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069
Project: AFI - South Gate Soil Sampling Monitoring / 20-27044

Phone: (310) 720-2321
Fax: (619) 552-8630
Received Date: 09/08/2020 12:20 PM
Analysis Date: 09/10/2020
Collected Date: 09/03/2020

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
BH-41-0.5-Debris-VInyl Floor Tile 1 *332016221-0002*	0.5' - Tile chip	Gray Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
BH-41-0.5-Debris-Vinyl Floor Tile 2 *332016221-0002A*	0.5' - Tile chip	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
BH-41-1-Debris-Vinyl Floor Tile 1 *332016221-0003*	1' - Tile chip	Tan Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
BH-41-1-Debris-Vinyl Floor Tile 2 *332016221-0003A*	1' - Tile chip	Gray Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
BH-41-1-Debris-Debris *332016221-0003B*	1' - Tile chip	Brown Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	<1% Chrysotile
This method is designed for relatively homogenous bulk building materials. Use of this method for other sample types can produce results that may not provide the analytical reliability for which the methoc was intended					
BH-46-Asph *332016221-0004*	Asphalt surface - Asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-46-0-Debris *332016221-0005*	Soil surface - Tile chip	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile

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Analyst(s)
Brian Magumcia (7)

Michael Chapman, Laboratory Manager
or Other Approved Signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations . The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore LA Testing recommends gravimetric reduction prior to analysis . Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by LA Testing Huntington Beach, CA NVLAP Lab Code 101384-0, CA ELAP 1406

Initial report from: 09/10/2020 11:06:01

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com gardengrovelab@latesting.com

LA Testing Order: 332016221
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 9/8/2020 12:20 PM
Analysis Date: 9/10/2020
Collected: 9/3/2020

Project: **AFI - South Gate Soil Sampling Monitoring / 20-27044**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
BH-41-1 *332016221-0001*	1' - Soil	Brown Non-Fibrous Heterogeneous	**Chrysotile**	

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Analyst(s)
Brian Magumcia (1)

Michael Chapman, Laboratory Manager
or other approved signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. LA Testing suggests that samples reported as none detected undergo additional analysis via TEM to avoid the possibility of false negatives.
Samples analyzed by LA Testing Huntington Beach, CA

Initial report from 09/10/2020 08:05:59

OrderID: 332016221

LA TESTING

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*

#332016221

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE (714) 828-4999
FAX (714) 828-4944

Company Name : Entech Environmental		**LA Testing Customer ID:**	
Street:		**City:**	**State or Province:**
Zip/Postal Code:	**Country:**	**Telephone #:**	**Fax #:**
Report To (Name): Abbas Sam		**Please Provide Results via:** ☐ Fax ☐ Email	
email Address:		**Purchase Order Number:**	
Client Project ID:		**LA Testing Project ID** *(internal use only)*	
State or Province Collected:		**CT only** ☐ **Commercial/Taxable** ☐ **Residential/Tax Exempt**	

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1]	☐ 4-4.5Hr[1] AHERA Only	☐ 6 Hr[1]	☐ 24 Hr	☐ 32 Hr[2]	☐ 48 Hr	☐ 72 Hr	☐ 96 Hr	☐ 1 Week	☐ 2 Week

[1] *Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only, samples must be submitted by 11:30 am.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr TWA

PLM - Bulk (reporting limit)
- ☑ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
- ☑ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ **Stop At First Positive** *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name:

Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
			9/2/20
	See Attached		

Client Sample # (s): - **Total # of Samples:**

Relinquished by (Client): **Date:** **Time:**

Received by (Lab): AE(wi) **Date:** 9/8/20 **Time:** 12:20

Comments/Special Instructions:

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Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

EMSL Analytical, Inc.'s (DBA LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to LA Testing constitutes acceptance and acknowledgment of all terms and conditions.

Page 1 of 3 pages

OrderID: 332016221

#332016221

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH40-Asph	Asphalt Surface	Asphalt	
BH-41-0	Soil Surface	Soil	
-0.5	0.5'		
-1	1'		
-2	2'		
0.5-Debris	0.5'	Tile chip	
1-Debris	1'		
BH46-Asph	Asphalt Surface	Asphalt	
-0	Soil Surface	Soil	
-0.5	0.5'		
-1	1'		
-2	2'		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/2/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

1 of 2 2 of 3

CONFIDENTIAL

OrderID: 332016221

#332016221

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (GSST 4-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-46-0-Debris	Soil Surface	Tile chip	N/A
↓ -0.5-Debris	0.5'	↓	/
BH-49-Asph	Asphalt Surface	Asphalt	
BH-50-0	Soil Surface	Soil	
↓ -1	1'	↓	
↓ -2	2'	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

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Released by: Russell Hartranft Date: 9/3/20 Time: 1330

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Tel.: 858-2308515 Cell: 310-720-2321

2 of 2 3 of 3

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OrderID: 332016221

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #332016221

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE: (714) 828-4999
FAX: (714) 828-4944

Company Name: Entech Environmental		LA Testing Customer ID:	
Street:		City:	State or Province:
Zip/Postal Code:	Country:	Telephone #:	Fax #:
Report To (Name): Abbas Sam		Please Provide Results via: ☐ Fax ☐ Email	
email Address:		Purchase Order Number:	
Client Project ID:		LA Testing Project ID *(internal use only)*:	
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PLM - Bulk (reporting limit)
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- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

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- ☐ NIOSH 9002 (<1%)

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- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
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TEM- Settled Dust
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- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

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- ☑ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ **Stop At First Positive** *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: **Sampler's Signature:**

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
			9/2/20
	See Attached		

Client Sample # (s): - **Total # of Samples:**

Relinquished by (Client): **Date:** **Time:**

Received by (Lab): JS (WI) **Date:** 9/3/20 **Time:** 2:00PM

Comments/Special Instructions:

CONFIDENTIAL

Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

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Page 1 of 3 pages

OrderID: 332016221

ENTECH

#332016221

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

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Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH40-Asph	Asphalt Surface	Asphalt	
BH-41-0	Soil Surface	Soil	
-0.5	0.5'		
-1	1'		
-2	2'		
0.5-Debris	0.5'	Tile chip	
1-Debris	1'		
BH-46-Asph	Asphalt Surface	Asphalt	
-0	Soil Surface	Soil	
-0.5	0.5'		
-1	1'		
-2	2'		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/2/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: Date: Time:

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

~~1 of 2~~ 2 of 3

OrderID: 332016221

ENTECH

#332016221

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-1-46-0-Debris	Soil Surface	Tile chip	N/A
↓ -0.5-Debris	0.5'	↓	
BH-49-Asph	Asphalt Surface	Asphalt	
BH-50-0	Soil Surface	Soil	
↓ -1	1'	↓	
↓ -2	2'		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

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Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

3 of 2 3 of 3

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LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332016237
Customer ID: 32ENTE54
Customer PO:
Project ID:

Attention: Sam Abbas
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone: (310) 720-2321
Fax: (619) 552-8630
Received Date: 09/08/2020 12:20 PM
Analysis Date: 09/10/2020
Collected Date: 08/31/2020

Project: AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
BH-1-Asph *332016237-0001*	Asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-5-.2-Debris *332016237-0002*	0.2'	Brown/Tan/Yellow Fibrous Homogeneous		45% Non-fibrous (Other)	55% Chrysotile
BH-9-Asph *332016237-0005*		Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-9-0.5-Debris *332016237-0006*	0.5'	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-9-3.5-Debris-Vinyl Floor Tile 1 *332016237-0007*	3.5'	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
BH-9-3.5-Debris-Vinyl Floor Tile 2 *332016237-0007A*	3.5'	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile

CONFIDENTIAL

Analyst(s)
Dennies Ly (6)

Michael Chapman
Michael Chapman, Laboratory Manager
or Other Approved Signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore LA Testing recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by LA Testing Huntington Beach, CA NVLAP Lab Code 101384-0, CA ELAP 1406

Initial report from: 09/10/2020 12:57:30

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com gardengrovelab@latesting.com

LA Testing Order: 332016237
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 9/8/2020 12:20 PM
Analysis Date: 9/10/2020
Collected: 8/31/2020

Project: **AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044**

Test Report: Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Description	Appearance	Result	Notes
BH-9-0.5 *332016237-0003*	0.5	Brown Non-Fibrous Heterogeneous	**None Detected**	
BH-9-3.5 *332016237-0004*	3.5'	Brown Non-Fibrous Homogeneous	**None Detected**	

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Analyst(s)
Dennies Ly (2)

Michael Chapman
Michael Chapman, Laboratory Manager
or other approved signatory

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Samples analyzed by LA Testing Huntington Beach, CA

Initial report from 09/10/2020 09:57:29

OrderID: 332016237

LA TESTING

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*

#332016237

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE (714) 828-4999
FAX (714) 828-4944

Company Name : Entech Environmental		**LA Testing Customer ID:** On File	
Street:		**City:**	**State or Province:**
Zip/Postal Code:	**Country:**	**Telephone #:**	**Fax #:**
Report To (Name): Abbas Sam		**Please Provide Results via:** ☐ Fax ☐ Email	
email Address: abbas@entechenvironmental.com		**Purchase Order Number:**	
Client Project ID:		**LA Testing Project ID** *(internal use only)*:	
State or Province Collected:		**CT only** ☐ **Commercial/Taxable** ☐ **Residential/Tax Exempt**	

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1]	☐ 4-4.5Hr[1] AHERA Only	☐ 6 Hr[1]	☐ 24 Hr	☐ 32 Hr[2]	☑ 48 Hr	☐ 72 Hr	☐ 96 Hr	☐ 1 Week	☐ 2 Week

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PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr TWA

PLM - Bulk (reporting limit)
- ☑ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
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Soil – Rock – Vermiculite (reporting limit)
- ☑ PLM EPA 600/R-93/116 with milling prep (<0.25%)
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- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

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Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name:

Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
	See Attached		

Client Sample # (s): -

Total # of Samples:

Relinquished by (Client): **Date:** **Time:**

Received by (Lab): AE (wi) **Date:** 9/8/20 **Time:** 12:20

Comments/Special Instructions:

Hold until Abbas Sam contacts Lab

CONFIDENTIAL

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Page 1 of 3 pages

OrderID: 332016237

#332016237

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-1-0	Soil Surface	Soil	N/A
-1	1'	↓	
-2	2'	↓	
-Asph	Asphalt Surface	Asphalt	
BH-5-0.2	0.2'	Soil	
-1	1'	↓	
-2	2'	↓	
-Debris	0.2'	Tile Chip	
BH-9-0	Soil Surface	Soil	
-0.5	0.5	↓	
-1	1	↓	
-2	2	↓	✓

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

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Notes: Hold until hear from Abbas Sam Samples Collected on 8/31/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

2 of 3

CONFIDENTIAL

OrderID: 332016237

ENTECH

#332016237

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-9-3	Soil @ 3'	Soil	N/A
-3.5	↓ 3.5'	↓	
- Asph		Asphalt Surface	
0.5 - Debris	0.5'	Tile Chip	
1.5 - Debris	1.5'		
2 - Debris	2'		
3 - Debris	3'		
3.5 - Debris	3.5'	↓	

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Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

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Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

3 of 3

CONFIDENTIAL

OrderID: 332016237

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #332016237

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE: (714) 828-4999
FAX: (714) 828-4944

Company Name: Entech Environmental	LA Testing Customer ID: On File
Street:	City: / State or Province:
Zip/Postal Code: / Country:	Telephone #: / Fax #:
Report To (Name): Abbas Sam	Please Provide Results via: ☐ Fax ☐ Email
email Address: abbas@entechenvironmental.com	Purchase Order Number:
Client Project ID:	LA Testing Project ID *(internal use only)*:
State or Province Collected:	CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt

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☐ NYS 198.8 SOF-V
☐ NIOSH 9002 (<1%)

TEM – Air[1]
☐ AHERA 40 CFR, Part 763
☐ NIOSH 7402
☐ EPA Level II
☐ ISO 10312

TEM - Bulk
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Fibers >10µm ☐ Waste ☐ Drinking
All Fiber Sizes ☐ Waste ☐ Drinking

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☐ Wipe - ASTM D6480
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☐ TEM Qualitative via Drop Mount Prep
☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ Stop At First Positive *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: / Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
	See Attached		

Client Sample # (s): - Total # of Samples:

Relinquished by (Client): Date: Time:

Received by (Lab): JS(WT) Date: 9/3/20 Time: 2:00pm

Comments/Special Instructions:

Hold until Abbas Sam contacts Lab

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Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

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Page 1 of 3 pages

Page 4 Of 6

OrderID: 332016237

ENTECH

#332016237

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-1-0	Soil Surface	Soil	N/A
-1	1'	↓	↓
-2	2'	↓	↓
-Asph	Asphalt Surface	Asphalt	↓
BH-5-0.2	0.2'	Soil	↓
-1	1'	↓	↓
-2	2'	↓	↓
0.2-Debris	0.2'	Tile Chip	↓
BH-9-0	Soil Surface	Soil	↓
-0.5	0.5	↓	↓
-1	1	↓	↓
-2	2	↓	↓

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Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples Collected on 8/31/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

OrderID: 332016237

ENTECH

#332016237

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-9-3	~~Soil~~ @ 3'	Soil	N/A
-3.5	↓ 3.5'	↓	↓
-Asph		Asphalt Surface	
0.5 - Debris	0.5'	Tile chip	
1.5 - Debris	1.5'		
2 - Debris	2'		
3 - Debris	3'		
3.5 - Debris	3.5'		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples from 8/31/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
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3 of 3

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LA Testing
5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332016242
Customer ID: 32ENTE54
Customer PO:
Project ID:

Attention: Sam Abbas
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone: (310) 720-2321
Fax: (619) 552-8630
Received Date: 09/08/2020 12:20 PM
Analysis Date: 09/10/2020
Collected Date: 09/03/2020

Project: AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
E15-0-Debris-Vinyl Floor Tile 1 *332016242-0002*	Tile chip @ soil surface	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E15-0-Debris-Vinyl Floor Tile 2 *332016242-0002A*	Tile chip @ soil surface	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E6-0-Debris-Vinyl Floor Tile 1 *332016242-0004*	Soil surface	Blue Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E6-0-Debris-Vinyl Floor Tile 2 *332016242-0004A*	Soil surface	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
E6-0-Debris-Vinyl Floor Tile 3 *332016242-0004B*	Soil surface	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile

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Analyst(s)
Brian Magumcia (5)

Michael Chapman, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing Huntington Beach, CA NVLAP Lab Code 101384-0, CA ELAP 1406

Initial report from: 09/10/2020 13:14:20

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com gardengrovelab@latesting.com

LA Testing Order: 332016242
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 9/8/2020 12:20 PM
Analysis Date: 9/10/2020
Collected: 9/3/2020

Project: **AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044**

Test Report: Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Description	Appearance	Result	Notes
E15-3.5 *332016242-0001*	Soil @ 3.5'	Brown Non-Fibrous Heterogeneous	**None Detected**	
E6-0 *332016242-0003*	Soil surface	Brown/Tan Non-Fibrous Heterogeneous	**Chrysotile**	
E10-0 *332016242-0005*	Soil surface	Brown Non-Fibrous Heterogeneous	**None Detected**	
E10-0-1 *332016242-0006*	Soil surface	Brown Non-Fibrous Heterogeneous	**None Detected**	

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Analyst(s)
Brian Magumcia (4)

Michael Chapman
Michael Chapman, Laboratory Manager
or other approved signatory

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Samples analyzed by LA Testing Huntington Beach, CA

Initial report from 09/10/2020 10:14:19

OrderID: 332016242

LA TESTING

Asbestos Chain of Custody

LA Testing Order Number (lab use only)
#332016242

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE (714) 828-4999
FAX (714) 828-4944

Company Name: Entech Environmental		LA Testing Customer ID: On file	
Street:		City:	State or Province:
Zip/Postal Code:	Country:	Telephone #:	Fax #:
Report To (Name): Abbas Sam		Please Provide Results via: ☐ Fax ☑ Email	
email Address: abbas@entechenvironmental.com		Purchase Order Number:	
Client Project ID:		LA Testing Project ID (internal use only):	
State or Province Collected: CA		CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt	

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1]	☐ 4-4.5Hr[1] AHERA Only	☐ 6 Hr[1]	☐ 24 Hr	☐ 32 Hr[2]	☑ 48 Hr	☐ 72 Hr	☐ 96 Hr	☐ 1 Week	☐ 2 Week

[1] *Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ Stop At First Positive *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name:

Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
ES-2	Soil @ 2'		9/3/20
-3.5	Soil @ 3.5'		
ES-0-Debris	Tile Chip @ Soil Surface		

Client Sample # (s):

Total # of Samples:

Relinquished by (Client): Russell Hartranft Date: 9/3/20 Time: 1330

Received by (Lab): AE(vi) Date: 9/8/20 Time: 1220

Comments/Special Instructions:

* Hold until Abbas Sam calls Lab

* Please put pg. 2 Result 1st on Lab Report

1pg of 2

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Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

EMSL Analytical, Inc.'s (DBA LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to LA Testing constitutes acceptance and acknowledgment of all terms and conditions

Page 1 of 2 pages

OrderID: 332016242

ENTECH

#332016242

BULK/SOIL SAMPLING FORM

Project Name: AFI-South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartnett (CSST #14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E6-0	Soil Surface	Soil	N/A
-1	1'	↓	↓
-2	2'		
-3	3'		
-3.5	3.5	↓	
↓ -0-Debris	Soil Surface	Tile Chip	
E10-0	↓	Soil	
-1	1'	↓	
-2	2'		
↓ -0-Debris	Soil Surface	Tile Chip	
E15-0	↓	Soil	
↓ -1	1'	↓	↓

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/3/20

Released by: Russell Hartnett Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

2 of 2

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OrderID: 332016242

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #332016242

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE: (714) 828-4999
FAX: (714) 828-4944

Company Name: Entech Environmental		LA Testing Customer ID: On file	
Street:		City:	State or Province:
Zip/Postal Code:	Country:	Telephone #:	Fax #:
Report To (Name): Abbas Sam		Please Provide Results via: ☐ Fax ☑ Email	
email Address: abbas@entechenvironmental.com		Purchase Order Number:	
Client Project ID:		LA Testing Project ID *(internal use only)*:	
State or Province Collected: CA		CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt	

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1] | ☐ 4-4.5Hr[1] AHERA Only | ☐ 6 Hr[1] | ☐ 24 Hr | ☐ 32 Hr[2] | ☑ 48 Hr | ☐ 72 Hr | ☐ 96 Hr | ☐ 1 Week | ☐ 2 Week

[1]*Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.*

PCM - Air
☐ NIOSH 7400
☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
☐ PLM EPA 600/R-93/116 (<1%)
☐ PLM EPA NOB (<1%)
Point Count
☐ 400 (<0.25%) ☐ 1000 (<0.1%)
Point Count w/Gravimetric
☐ 400 (<0.25%) ☐ 1000 (<0.1%)
☐ NYS 198.1 (friable - NY)
☐ NYS 198.6 NOB (non-friable-NY)
☐ NYS 198.8 SOF-V
☐ NIOSH 9002 (<1%)

TEM – Air[1]
☐ AHERA 40 CFR, Part 763
☐ NIOSH 7402
☐ EPA Level II
☐ ISO 10312

TEM - Bulk
☐ TEM EPA NOB
☐ NYS NOB 198.4 (non-friable-NY)
☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
Fibers >10µm ☐ Waste ☐ Drinking
All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
☐ Microvac - ASTM D 5755
☐ Wipe - ASTM D6480
☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
☐ TEM Qualitative via Filtration Prep
☐ TEM Qualitative via Drop Mount Prep
☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ **Stop At First Positive** *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name:

Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
E15-2	Soil @ 2'		9/3/20
-3.5	Soil @ 3.5'		
E15-O-Debris	Tile Chip @ Soil Surface		

Client Sample # (s):

Total # of Samples:

Relinquished by (Client): Russell Hartranft **Date:** 9/3/20 **Time:** 1330

Received by (Lab): JS (WS) **Date:** 9/3/20 **Time:** 2:00pm

Comments/Special Instructions:

* Hold until Abbas Sam calls Lab

* Please put pg. 2 Result 1st on Lab Report 4pg of 4

See Attached Sheet

Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

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Page 1 of 2 pages

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Page 3 Of 4

OrderID: 332016242

ENTECH

#332016242

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hastreiter (CSST #14520) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E6-0	Soil Surface	Soil	N/A
-1	1'		
-2	2'		
-3	3'		
-3.5	3.5		
-0-Debris	Soil Surface	Tile Chip	
E10-0		Soil	
-1	1'		
-2	2'		
-0-Debris	Soil Surface	Tile Chip	
E15-0		Soil	
-1	1'		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/3/20

Released by: Russell Hastreiter Date: 9/3/20 Time: 1330

Received by: Date: Time:

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

2 of 2

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Page 4 Of 4

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http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332016244
Customer ID: 32ENTE54
Customer PO:
Project ID:

Attention: Sam Abbas
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone: (310) 720-2321
Fax: (619) 552-8630
Received Date: 09/08/2020 12:20 PM
Analysis Date: 09/10/2020
Collected Date: 09/01/2020

Project: AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
BH-15-0-Debris-Insulation *332016244-0001*	Surface	White Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
BH-15-0-Debris-Floor Tile *332016244-0001A*	Surface	Brown Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
BH-19-0.5-Debris *332016244-0003*	0.5'	Brown Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
BH-22-Asph *332016244-0004*	Asphalt surface	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-32-Asph *332016244-0005*	Surface of asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-12-0-Debris *332016244-0006*	Surface of soil	Tan/White Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
BH-21-0-Debris-Vinyl Floor Tile *332016244-0007*	Soil surface	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-21-0-Debris-Mastic *332016244-0007A*	Soil surface	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-26-1-Debris-Vinyl Floor Tile 1 *332016244-0008*	Soil surface	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
BH-26-1-Debris-Vinyl Floor Tile 2 *332016244-0008A*	Soil surface	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-26-1-Debris-Vinyl Floor Tile 3 *332016244-0008B*	Soil surface	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
BH-26-1.5-Debris-Vinyl Floor Tile 1 *332016244-0009*	Soil surface	Green/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
BH-26-1.5-Debris-Vinyl Floor Tile 2 *332016244-0009A*	Soil surface	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Initial report from: 09/10/2020 12:50:20

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5431 Industrial Drive Huntington Beach, CA 92649
Tel/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com / gardengrovelab@latesting.com

LA Testing Order: 332016244
Customer ID: 32ENTE54
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
BH-26-1.5-Debris-Vinyl Floor Tile 3 *332016244-0009B*	Soil surface	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
BH-28-0.5-Debris *332016244-0010*	Soil surface	Brown Fibrous Homogeneous	80% Synthetic	20% Non-fibrous (Other)	None Detected

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Analyst(s)
Dennies Ly (15)

Michael Chapman, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing Huntington Beach, CA NVLAP Lab Code 101384-0, CA ELAP 1406

Initial report from: 09/10/2020 12:50:20

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com gardengrovelab@latesting.com

LA Testing Order: 332016244
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 9/8/2020 12:20 PM
Analysis Date: 9/10/2020
Collected: 9/1/2020

Project: **AFI - South Gate Soil Sampling Monitoring 5037 Patata St. South Gate / 20-27044**

Test Report: Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Description	Appearance	Result	Notes
BH-19-1 *332016244-0002*	1'	Brown Non-Fibrous Heterogeneous	**None Detected**	

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Analyst(s)
Dennies Ly (1)

Michael Chapman, Laboratory Manager
or other approved signatory

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Samples analyzed by LA Testing Huntington Beach, CA

Initial report from 09/10/2020 09:50:18

OrderID: 332016244

LA TESTING

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)* #3320162 44

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE (714) 828-4999
FAX (714) 828-4944

Company Name : Entech Environmental	**LA Testing Customer ID:**
Street:	**City:** / **State or Province:**
Zip/Postal Code: / **Country:**	**Telephone #:** / **Fax #:**
Report To (Name): Abbas Sam	**Please Provide Results via:** ☐ Fax ☐ Email
email Address:	**Purchase Order Number:**
Client Project ID:	**LA Testing Project ID** *(internal use only):*
State or Province Collected:	**CT only** ☐ **Commercial/Taxable** ☐ **Residential/Tax Exempt**

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1] | ☐ 4-4.5Hr[1] AHERA Only | ☐ 6 Hr[1] | ☐ 24 Hr | ☐ 32 Hr[2] | ☐ 48 Hr | ☐ 72 Hr | ☐ 96 Hr | ☐ 1 Week | ☐ 2 Week

[1] *Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only, samples must be submitted by 11:30 am.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ **Stop At First Positive** *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: **Sampler's Signature:**

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
			9/1/20
	See Attached		

Client Sample # (s): - **Total # of Samples:**

Relinquished by (Client): **Date:** **Time:**

Received by (Lab): AE (wi) **Date:** 9/8/20 **Time:** 12:20

Comments/Special Instructions:

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Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

EMSL Analytical, Inc.'s (DBA LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to LA Testing constitutes acceptance and acknowledgment of all terms and conditions

Page 1 of 3 pages

OrderID: 332016244

#332016244

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-14-0	Surface	Soil	N/A
-1	1'	↓	↓
-2	2'		
-Asph	Asphalt Surface	Asphalt	
BH-15-0-Debris	Surface	Suspect Brown Material	
BH-19-0	Surface	Soil	
-1	1'	↓	
-1.5	1.5'		
-2	2'		
-3	3'		
0.5-Debris	0.5'	Tile chip	
BH-22-Asph	Asphalt Surface	Asphalt	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/1/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

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OrderID: 332016244

#332016244

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St, South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-22-0	Soil Surface	Soil	N/A
-1	1'	↓	
-2	2'	↓	
BH-32-Asph	Surface of Asphalt	Asphalt	
-0	Surface of Soil	Soil	
-1	1'	↓	
-2	2'	↓	
BH-12-0-Debris	Soil Surface	& tile Chip	
BH-21-0-Debris		tile Chip	
BH-26-1-Debris		↓	
↓ -1.5-Debris		Rubber & Suspect Material	
BH-28-0.5-Debris		Suspect Material	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples Collected on 9/1/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

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1 of 2 2 of 3 Pg 3 of 3

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OrderID: 332016244

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #3320162 44

LA TESTING
5431 INDUSTRIAL DRIVE
HUNTINGTON BEACH, CA 92649
PHONE: (714) 828-4999
FAX: (714) 828-4944

Company Name: Entech Environmental		LA Testing Customer ID:	
Street:		City:	State or Province:
Zip/Postal Code:	Country:	Telephone #:	Fax #:
Report To (Name): Abbas Sam		Please Provide Results via: ☐ Fax ☐ Email	
email Address:		Purchase Order Number:	
Client Project ID:		LA Testing Project ID *(internal use only)*:	
State or Province Collected:		CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt	

EMSL-Bill to: ☐ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1] ☐ 4-4.5Hr[1] AHERA Only ☐ 6 Hr[1] ☐ 24 Hr ☐ 32 Hr[2] ☐ 48 Hr ☐ 72 Hr ☐ 96 Hr ☐ 1 Week ☐ 2 Week

[1] *Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.*

PCM - Air
☐ NIOSH 7400
☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
☐ PLM EPA 600/R-93/116 (<1%)
☐ PLM EPA NOB (<1%)
Point Count
☐ 400 (<0.25%) ☐ 1000 (<0.1%)
Point Count w/Gravimetric
☐ 400 (<0.25%) ☐ 1000 (<0.1%)
☐ NYS 198.1 (friable - NY)
☐ NYS 198.6 NOB (non-friable-NY)
☐ NYS 198.8 SOF-V
☐ NIOSH 9002 (<1%)

TEM – Air[1]
☐ AHERA 40 CFR, Part 763
☐ NIOSH 7402
☐ EPA Level II
☐ ISO 10312

TEM - Bulk
☐ TEM EPA NOB
☐ NYS NOB 198.4 (non-friable-NY)
☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
Fibers >10µm ☐ Waste ☐ Drinking
All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
☐ Microvac - ASTM D 5755
☐ Wipe - ASTM D6480
☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
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☐ TEM Qualitative via Drop Mount Prep
☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ Stop At First Positive *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: Sampler's Signature:

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
			9/1/20
	See Attached		

Client Sample # (s): - Total # of Samples:

Relinquished by (Client): Date: Time:

Received by (Lab): JS(WI) Date: 9/3/20 Time: 2:00pm

Comments/Special Instructions:

CONFIDENTIAL

Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

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Page 1 of 3 pages

Page 4 Of 6

OrderID: 332016244

ENTECH

#33201624

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-14-0	Surface	Soil	N/A
-1	1'	↓	↓
-2	2'	↓	↓
-Asph	Asphalt Surface	Asphalt	↓
BH-15-0-Debris	Surface	Suspect Brown Material	↓
BH-19-0	Surface	Soil	↓
-1	1'	↓	↓
-1.5	1.5'	↓	↓
-2	2'	↓	↓
-3	3'	↓	↓
0.5-Debris	0.5'	Tile chip	↓
BH-22-Asph	Asphalt Surface	Asphalt	↓

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Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: Hold until hear from Abbas Sam Samples collected on 9/1/20

Released by: Russell Hartranft Date: 9/3/20 Time: 1330

Received by: _____ Date: _____ Time: _____

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ENTECH

#332016244

OrderID: 332016244

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate Soil Sampling Monitoring Project Address: 5037 Patata St. South Gate

Job #: 20-27044

Sampler/Certification: Russell Hartranft (CSST 14-5200) Date: 9/3/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
BH-22-0	Soil Surface	Soil	N/A
-1	1'	↓	↓
-2	2'	↓	↓
BH-32-Asph	Surface of Asphalt	Asphalt	↓
-0	Surface of Soil	Soil	↓
-1	1'	↓	↓
-2	2'	↓	↓
BH-12-0-Debris	Soil Surface	& tile chip	↓
BH-21-0-Debris		tile chip	↓
BH-26-1-Debris		↓	↓
-1.5-Debris		Rubber & Suspect Material	↓
BH-28-0.5-Debris		Suspect Material	↓

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

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Asbestos Soil & Bulk Sample Analytical Laboratory Reports

October 2020 Sampling Event (Phase II)

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LA Testing
520 Mission Street, South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com pasadenalab@latesting.com

LA Testing Order: 322018248
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
Collected: 10/7/2020

Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-1-0 *322018248-0001*	0 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-1-0.5 *322018248-0002*	0.5 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-1-1 *322018248-0003*	1 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-1-2 *322018248-0004*	2 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-2-0 *322018248-0005*	0 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-2-0.5 *322018248-0006*	0.5 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-2-1 *322018248-0007*	1 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-2-2 *322018248-0008*	2 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-3-0 *322018248-0009*	0 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	

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Analyst(s)

David Flores (72) *Julie Vong (25)* *Nahid Motamedi (11)*
Joel Paruli (53) *Kieu-anh Pham Duong (24)*

Jerry Drapala Ph.D, Laboratory Manager
or other approved signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. LA Testing suggests that samples reported as none detected undergo additional analysis via TEM to avoid the possibility of false negatives.

Samples analyzed by LA Testing South Pasadena, CA

Initial report from 10/12/2020 17:04:41

LA Testing
520 Mission Street, South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com pasadenalab@latesting.com

LA Testing Order: 322018248
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Phone:
Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
Collected: 10/7/2020

Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-3-0.5 *322018248-0010*	0.5 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-3-1 *322018248-0011*	1 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-3-2 *322018248-0012*	2 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-4-0 *322018248-0013*	0 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-4-0.5 *322018248-0014*	0.5 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-4-1 *322018248-0015*	1 - Soil	Brown Non-Fibrous Homogeneous	**None Detected**	
E-4-2 *322018248-0016*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-5-0 *322018248-0017*	0	Brown Non-Fibrous Heterogeneous	**None Detected**	
E-5-0.5 *322018248-0018*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	

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Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-5-1 *322018248-0019*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-5-15" *322018248-0020*	15"	Brown Non-Fibrous Homogeneous	**None Detected**	
E-6-0 *322018248-0021*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-6-0.5 *322018248-0022*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-6-1 *322018248-0023*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-6-2 *322018248-0024*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-7-0 *322018248-0025*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-7-0.5 *322018248-0026*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-7-1 *322018248-0027*	1	Brown Non-Fibrous Homogeneous	**None Detected**	

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Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-7-2 *322018248-0028*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-8-0 *322018248-0029*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-8-0.5 *322018248-0030*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-8-1 *322018248-0031*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-8-2 *322018248-0032*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-9-0 *322018248-0033*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-9-0.5 *322018248-0034*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-9-1 *322018248-0035*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-9-2 *322018248-0036*	2	Brown Non-Fibrous Homogeneous	**None Detected**	

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Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
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Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-10-0 *322018248-0037*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-10-0.5 *322018248-0038*	0.5	Brown/Black Non-Fibrous Homogeneous	**Chrysotile**	
E-10-1 *322018248-0039*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-10-2 *322018248-0040*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-11-0 *322018248-0041*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-11-0.5 *322018248-0042*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-11-1 *322018248-0043*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-11-2 *322018248-0044*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-12-0 *322018248-0045*	0	Brown Non-Fibrous Homogeneous	**None Detected**	

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Analyst(s)

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ProjectID:

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Phone:
Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
Collected: 10/7/2020

Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-12-0.5 *322018248-0046*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-12-1 *322018248-0047*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-12-2 *322018248-0048*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-13-0 *322018248-0049*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-13-0.5 *322018248-0050*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-13-1 *322018248-0051*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-13-2 *322018248-0052*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-14-0 *322018248-0053*	0	Brown Non-Fibrous Homogeneous	**Chrysotile**	
E-14-0.5 *322018248-0054*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	

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Analyst(s)

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Joel Paruli (53) *Kieu-anh Pham Duong (24)*

Jerry Drapala Ph.D, Laboratory Manager
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Samples analyzed by LA Testing South Pasadena, CA

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LA Testing Order: 322018248
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Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-14-1 *322018248-0055*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-14-2 *322018248-0056*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-15-0 *322018248-0057*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-15-0.5 *322018248-0058*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-15-1 *322018248-0059*	1	Brown Non-Fibrous Heterogeneous	**None Detected**	
E-16-0 *322018248-0060*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-16-0.5 *322018248-0061*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-16-1 *322018248-0062*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-16-2 *322018248-0063*	2	Brown Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-17-0 *322018248-0064*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-17-0.5 *322018248-0065*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-17-1 *322018248-0066*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-17-1.5 *322018248-0067*	1.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-18-0 *322018248-0068*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-18-0.5 *322018248-0069*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-18-1 *322018248-0070*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-18-2 *322018248-0071*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-19-0 *322018248-0072*	0	Brown Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-19-.5 *322018248-0073*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-19-1 *322018248-0074*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-19-2 *322018248-0075*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-20-0 *322018248-0076*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-20-0.5 *322018248-0077*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-20-1 *322018248-0078*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-20-2 *322018248-0079*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-21-0 *322018248-0080*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-21-0.5 *322018248-0081*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-21-1 *322018248-0082*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-21-2 *322018248-0083*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-22-0 *322018248-0084*	0	Brown Non-Fibrous Homogeneous	**Chrysotile**	
E-22-0.5 *322018248-0085*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-23-0 *322018248-0086*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-23-0.5 *322018248-0087*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-23-1 *322018248-0088*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-23-2 *322018248-0089*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-24-0 *322018248-0090*	0	Brown Non-Fibrous Homogeneous	**Chrysotile**	

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Sample	Description	Appearance	Result	Notes
E-24-0.5 *322018248-0091*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-24-1 *322018248-0092*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-24-2 *322018248-0093*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-25-0 *322018248-0094*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
E-25-0.5 *322018248-0095*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
E-25-1 *322018248-0096*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
E-25-2 *322018248-0097*	2	Brown Non-Fibrous Homogeneous	**None Detected**	
E-26-0 *322018248-0098*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-26-0.5 *322018248-0099*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-26-1 *322018248-0100*	1	Gray Non-Fibrous Homogeneous	**Chrysotile**	
E-26-2 *322018248-0101*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-27-0 *322018248-0102*	0	Gray Non-Fibrous Homogeneous	**Chrysotile**	
E-27-0.5 *322018248-0103*	0.5	Gray Non-Fibrous Homogeneous	**Chrysotile**	
E-27-1 *322018248-0104*	1	Brown/Gray Non-Fibrous Homogeneous	**Chrysotile**	
E-27-2 *322018248-0105*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-28-0 *322018248-0106*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-28-0.5 *322018248-0107*	0.5	Brown Non-Fibrous Homogeneous	**Chrysotile**	
E-28-1 *322018248-0108*	1	Brown Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-28-2 *322018248-0109*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-29-0 *322018248-0110*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-29-0.5 *322018248-0111*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-29-1 *322018248-0112*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-29-2 *322018248-0113*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-30-0 *322018248-0114*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-30-0.5 *322018248-0115*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-30-1 *322018248-0116*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-30-2 *322018248-0117*	2	Gray Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-31-0 *322018248-0118*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-31-0.5 *322018248-0119*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-31-1 *322018248-0120*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-31-2 *322018248-0121*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-32-0 *322018248-0122*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-32-0.5 *322018248-0123*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-32-1 *322018248-0124*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-32-2 *322018248-0125*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-33-0 *322018248-0126*	0	Gray Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-33-0.5 *322018248-0127*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-33-1 *322018248-0128*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-33-2 *322018248-0129*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-34-0 *322018248-0130*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-34-0.5 *322018248-0131*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-34-1 *322018248-0132*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-34-2 *322018248-0133*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-35-0 *322018248-0134*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-35-0.5 *322018248-0135*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	

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Sample	Description	Appearance	Result	Notes
E-35-1 *322018248-0136*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-35-2 *322018248-0137*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-36-0 *322018248-0138*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-36-0.5 *322018248-0139*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-36-1 *322018248-0140*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-36-2 *322018248-0141*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-37-0 *322018248-0142*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-37-0.5 *322018248-0143*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-37-1 *322018248-0144*	1	Gray Non-Fibrous Homogeneous	**None Detected**	

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Analyst(s)

David Flores (72) *Julie Vong (25)* *Nahid Motamedi (11)*
Joel Paruli (53) *Kieu-anh Pham Duong (24)*

Jerry Drapala Ph.D, Laboratory Manager
or other approved signatory

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Samples analyzed by LA Testing South Pasadena, CA

Initial report from 10/12/2020 17:04:41

LA Testing
520 Mission Street, South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com pasadenalab@latesting.com

LA Testing Order: 322018248
CustomerID: 32ENTE54
CustomerPO:
ProjectID:

Attn: **Sam Abbas**
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
Collected: 10/7/2020

Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
E-37-2 *322018248-0145*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
E-38-0 *322018248-0146*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
E-38-0.5 *322018248-0147*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
E-38-1 *322018248-0148*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
E-38-2 *322018248-0149*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
I-1-0 *322018248-0150*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
I-1-0.5 *322018248-0151*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
I-1-1 *322018248-0152*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
I-1-2 *322018248-0153*	2	Gray Non-Fibrous Homogeneous	**None Detected**	

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Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
I-2-0 *322018248-0154*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
I-2-0.5 *322018248-0155*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
I-2-1 *322018248-0156*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
I-2-2 *322018248-0157*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
I-3-0 *322018248-0158*	0	Gray Non-Fibrous Homogeneous	**None Detected**	
I-3-0.5 *322018248-0159*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
I-3-1 *322018248-0160*	1	Gray Non-Fibrous Homogeneous	**None Detected**	
I-3-2 *322018248-0161*	2	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-4-0 *322018248-0162*	0	Gray Non-Fibrous Homogeneous	**None Detected**	

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Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
I-4-0.5 *322018248-0163*	0.5	Gray Non-Fibrous Homogeneous	**None Detected**	
I-4-1 *322018248-0164*	1	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-5-0 *322018248-0165*	0	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-5-0.5 *322018248-0166*	0.5	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-5-1 *322018248-0167*	1	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-5-2 *322018248-0168*	2	Brown/Gray Non-Fibrous Homogeneous	**None Detected**	
I-6-0 *322018248-0169*	0	Brown/Gray Non-Fibrous Heterogeneous	**None Detected**	
I-6-0.5 *322018248-0170*	0.5	Gray/Black Non-Fibrous Homogeneous	**Chrysotile**	
I-7-1 *322018248-0175*	1	Brown Non-Fibrous Homogeneous	**None Detected**	

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Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
I-7-2 *322018248-0176*	2	Gray/Black Non-Fibrous Homogeneous	**Chrysotile**	
I-8-0 *322018248-0177*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
I-8-0.5 *322018248-0178*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
I-8-1 *322018248-0179*	1	Brown Non-Fibrous Homogeneous	**None Detected**	
I-8-2 *322018248-0180*	2	Gray/Beige Non-Fibrous Homogeneous	**None Detected**	
I-8-4 *322018248-0181*	4	Gray/Black Non-Fibrous Homogeneous	**Chrysotile**	
I-10-0 *322018248-0182*	0	Brown Non-Fibrous Homogeneous	**None Detected**	
I-10-0.5 *322018248-0183*	0.5	Brown Non-Fibrous Homogeneous	**None Detected**	
I-10-1 *322018248-0184*	1	Brown Non-Fibrous Homogeneous	**None Detected**	

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Attn: **Sam Abbas**
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#318
San Marcos, CA 92069

Phone:
Fax: (619) 552-8630
Received: 10/08/20 8:00 AM
Analysis Date: 10/12/2020
Collected: 10/7/2020

Project: **20-27044-AFI / AFI - South Gate / 5037 Datata St. South Gate, CA 90280**

Test Report: Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Description	Appearance	Result	Notes
I-10-2 *322018248-0185*	2	Gray Non-Fibrous Homogeneous	**None Detected**	
I-11-0 *322018248-0186*	0	Brown/Gray Non-Fibrous Heterogeneous	**None Detected**	
I-11-0.5 *322018248-0187*	0.5	Brown/Gray Non-Fibrous Heterogeneous	**None Detected**	
I-11-1 *322018248-0188*	1	Brown/Gray Non-Fibrous Heterogeneous	**None Detected**	
I-11-14" *322018248-0189*	14"	Gray Non-Fibrous Homogeneous	**None Detected**	

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Samples analyzed by LA Testing South Pasadena, CA

Initial report from 10/12/2020 17:04:41

Test Report PLMQualw/Types-7.21.0 Printed: 10/12/2020 5:05:24 PM **THIS IS THE LAST PAGE OF THE REPORT.** 21

OrderID: 322018248

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #322018248

LA TESTING
520 MISSION STREET
SOUTH PASADENA, CA 91030
PHONE: (800) 303-0047
FAX: (323) 254-9982

Company Name: Entech	LA Testing Customer ID:
Street: 208 Marquette Ave.	City: San Marcos State or Province: CA
Zip/Postal Code: 92078 Country: USA	Telephone #: 310-720-2324 Fax #: -
Report To (Name): Abbas Sam	Please Provide Results via: ☐ Fax ☑ Email
email Address: abbas@entechenvironmental.com	Purchase Order Number:
Client Project ID: 2027044	LA Testing Project ID *(internal use only)*:
State or Province Collected: CA	CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt

EMSL-Bill to: ☑ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1]	☐ 4-4.5Hr[1] AHERA Only	☐ 6 Hr[1]	☐ 24 Hr	☐ 32 Hr[2]	☑ 48 Hr	☐ 72 Hr	☐ 96 Hr	☐ 1 Week	☐ 2 Week

[1]*Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☑ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

**Lower reporting limits avaialble on request*

Other test (please specify):

☐ Stop At First Positive *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: Abbas Sam Sampler's Signature: [signature]

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
	Please See Attached Logs		

Client Sample # (s): E-1 / I-1 - E-38 / I-11 Total # of Samples: 233

Relinquished by (Client): [signature] Date: 10/8/20 Time: 7:30am

Received by (Lab): ET (DB) Date: 10-8-20 Time: 8am

Comments/Special Instructions:
Qualitative soil (PLM)

Thank you

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EMSL Analytical, Inc.'s (DBA: LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to LA Testing constitutes acceptance and acknowledgment of all terms and conditions.

#3220182 48 Pg. 1

OrderID: 322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate

Project Address: 5037 Patata St. South Gate, CA 90280

Job #: 20-27044 - AFI

Sampler/Certification: #14-5200

Date : 10-7-20

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Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-1-0	0	Soil	
-0.5	0.5		
-1	1		
-2	2		
E-2-0	0		
-0.5	0.5		
-1	1		
-2	2		
E-3-0	0		
-0.5	0.5		
-1	1		
-2	2		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

OrderID: 322018248

ENTECH

#322018248 Pg. 2

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #:

Sampler/Certification: Date :

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-4-Ø	Ø	Soil	
-0.5	0.5		
-1	1		
-2	2		
E-5-Ø	Ø		
-0.5	2.5		
-1	1		
-15"	1.15"		
E-6-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

Received by: Date: Time:

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Environmental Consulting , Stormwater Management , Building Sciences , Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

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Page 3 Of 18

OrderID: 322018248

ENTECH

BULK/SOIL SAMPLING FORM

#322018248 Pg. 3

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-7-Ø	Ø	Soil	
-0.5	0.5		
-1	1		
-2	2		
E-8-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-9-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

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OrderID: 322018248

ENTECH

#322018248 Pg. 4

BULK SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: See Pg. 1 Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-10-Ø	Ø	Soil	
↓ -0.5	0.5		
-1	1		
↓ -2	2		
E-11-Ø	Ø		
0.5	0.5		
1	1		
↓ 2	2		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

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Tel.: 858-2308515 Cell: 310-720-2321

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OrderID: 322018248

ENTECH

#322018248

Pg. 5

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-12-0	0	Soil	
↓ -0.5	0.5	↓	
1	1		
↓ 2	2		
E-13-0	0		
↓ -0.5	0.5		
-1	1		
↓ -2	2		
E-14-0	0		
↓ -0.5	0.5		
-1	1		
↓ -2	2	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

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OrderID: 322018248

ENTECH

BULK/SOIL SAMPLING FORM

#322018248

Pg. 6

Project Name: See Pg. 7 Project Address: See Pg. 1

Job #:

Sampler/Certification: Date :

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-15-Ø	Ø	Soil	
↓	0.5	↓	
↓	1		
E-16-Ø	Ø		
↓	0.5		
↓	1		
↓	2		
E-17-Ø	Ø		
↓	0.5		
↓	1		
↓	1.5		
E-18-Ø	Ø	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

Received by: Date: Time:

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OrderID: 322018248

Pg. 7

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: Pg. 1 Date :

Sampler/Certification:

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-13-0.5	0.5	Soil	
1	1		
2	2		
E-19-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-20-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-21-Ø	Ø		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

Received by: Date: Time:

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Page 8 Of 18

OrderID: 322018248

ENTECH

BULK/SOIL SAMPLING FORM

#322018248 Pg. 8

Project Name: See Pg. 7 Project Address: See Pg. 7

Job #:

Sampler/Certification: Date :

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-21	0.5	Soil	
E-21-1	1		
E-21-2	2		
E-22-Ø	Ø		
↓ -0.5	0.5		
E-23-Ø	Ø		
-0.5	0.5		
-1	1		
↓ -2	2		
E-24-Ø	Ø		
0.5	0.5		
↓ 1	1	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

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OrderID: 322018248

Pg. 9

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: Sampler/Certification: Date :

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-24-2	~~E-1~~ 2	Soil	
E-25-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-26-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-27-Ø	Ø		
-0.5	0.5		
-1	1	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

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OrderID: 322018248

Pg. 10

#322018248

ENTECH

BULK SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #:

Sampler/Certification: Date :

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-27 - 2	2	So.1	
E-28 -Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-29- Ø	Ø.5 Ø		
-0.5	0.5		
-1	1		
-2	2		
E-30 - Ø	Ø		
-0.5	0.5		
-1	1		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

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OrderID: 322018248

Pg. 11

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-30-2	2	Soil	
E-31-0	0		
-0.5	0.5		
-1	1		
-2	2		
E-32-0	0		
-0.5	0.5		
-1	1		
-2	2		
E-33-0	0		
-0.5	0.5		
-1	1		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to **Abbas Sam** @ abbas@entechenvironmental.com

Notes: _____

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OrderID: 322018248

Pg. 12

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 7 Project Address: See Pg. 7

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-33-2	2	Soil	
E-34-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-35-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-36-Ø	Ø		
-0.5	0.5		
-1	1		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to **Abbas Sam** @ abbas@entechenvironmental.com

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OrderID: 322018248

Pg. 13

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-36-2	2	Soil	
E-37-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
E-38-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
I-1-Ø	Ø		
-0.5	0.5		
-1	1		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to **Abbas Sam** @ abbas@entechenvironmental.com

Notes: _____

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OrderID: 322018248

Pg. 14

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 2 Project Address: See Pg. 2

Job #: Date :

Sampler/Certification:

Sample #	Sample Location/Depth	Material Description	Condition/Comments
I-1-2	2	Soil	
I-2-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
I-3-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
I-4-Ø	Ø		
-0.5	0.5		
-1	1		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

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OrderID: 322018248

Pg. 15

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 7 Project Address: See Pg. 7

Job #: _____ Date : _____

Sampler/Certification: _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
I-5-Ø	Ø	Soil	
-0.5	0.5		
-1	1		
-2	2		
I-6-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		
I-7-Ø	Ø		
-0.5	0.5		
-1	1		
-2	2		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to **Abbas Sam** @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

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OrderID: 322018248

Pg. 16

#322018248

ENTECH

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 7 Project Address: See Pg. 7

Job #: _____ Date : _____

Sampler/Certification: _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
I-9-Ø	Ø	Soil	
↓	-0.5	↓	
	-1		
	-2		
↓	-4		
I-10-Ø	Ø		
↓	-0.5		
	-1		
↓	-2		
I-11-Ø	Ø		
↓	-0.5		
	-1	↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

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OrderID: 322018248

Pg. 17

#322018248

ENTECH

BULK SOIL SAMPLING FORM

Project Name: See Pg. 2 Project Address: See Pg. 2

Job #: Pg. 2 Date :

Sampler/Certification:

Sample #	Sample Location/Depth	Material Description	Condition/Comments
I-11-14"	14'	Soil	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

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http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order: 322018415
Customer ID: 32ENTE54
Customer PO:
Project ID:

Attention: Sam Abbas
Entech Environmental Management
1005 Armorlite Drive
#318
San Marcos, CA 92069
Project: 20-27044-AFI / AFI-South Gate / 5037 Patata St. South Gate, CA 90280

Phone: (310) 720-2321
Fax: (619) 552-8630
Received Date: 10/08/2020 8:00 AM
Analysis Date: 10/12/2020
Collected Date: 10/07/2020

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
E-5-0.5-Tile 322018415-0001	0.5 - Beige tile chip	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-5-0.5-Cementitious Material 322018415-0001A	0.5 - Beige tile chip	Gray/Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-6-0-Tile 1 322018415-0002	0 - Beige & red tile chips	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-6-0-Tile 2 322018415-0002A	0 - Beige & red tile chips	Peach Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-6-0-Tile 3 322018415-0002B	0 - Beige & red tile chips	Red Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-6-0-Tile 4 322018415-0002C	0 - Beige & red tile chips	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-9-0.5-Tile 1 322018415-0003	0.5 - Beige & red tile chips	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-9-0.5-Tile 2 322018415-0003A	0.5 - Beige & red tile chips	Red Non-Fibrous Homogeneous	3% Synthetic	97% Non-fibrous (Other)	None Detected
E-11-1-Tile 1 322018415-0004	1 - Mixed tile chips	Red Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-11-1-Tile 2 322018415-0004A	1 - Mixed tile chips	Tan Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-11-1-Tile 3 322018415-0004B	1 - Mixed tile chips	Peach Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-11-1-Tile 4 322018415-0004C	1 - Mixed tile chips	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-11-1-Tile 5 322018415-0004D	1 - Mixed tile chips	Yellow/Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-11-1-Tile 6 322018415-0004E	1 - Mixed tile chips	Beige Fibrous Homogeneous	5% Synthetic	95% Non-fibrous (Other)	None Detected
E-11-1-Tile 7 322018415-0004F	1 - Mixed tile chips	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-11-1.5-Tile 1 322018415-0005	1.5 - Mixed tile chips	Red Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile

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http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order: 322018415
Customer ID: 32ENTE54
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
E-11-1.5-Tile 2 322018415-0005A	1.5 - Mixed tile chips	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-11-1.5-Tile 3 322018415-0005B	1.5 - Mixed tile chips	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-11-1.5-Tile 4 322018415-0005C	1.5 - Mixed tile chips	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-11-1.5-Tile 5 322018415-0005D	1.5 - Mixed tile chips	Green/Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-12-0 322018415-0006	0 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-13-0-Vinyl Tile 322018415-0007	0 - Mixed tile	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-13-0-Tile 322018415-0007A	0 - Mixed tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-13-0.5-Tile 1 322018415-0008	0.5 - Mixed tile	Tan/Pink Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-13-0.5-Tile 2 322018415-0008A	0.5 - Mixed tile	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-13-0.5-Tile 3 322018415-0008B	0.5 - Mixed tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-13-0.5-Tile 4 322018415-0008C	0.5 - Mixed tile	Beige Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
E-17-0-Tile 1 322018415-0009	0 - Beige tile	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-17-0-Tile 2 322018415-0009A	0 - Beige tile	White/Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-17-0-Tile 3 322018415-0009B	0 - Beige tile	Beige Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-17-0.5-Tile 1 322018415-0010	0.5 - Mixed tile	Red Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-17-0.5-Tile 2 322018415-0010A	0.5 - Mixed tile	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-17-0.5-Tile 3 322018415-0010B	0.5 - Mixed tile	Beige Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-17-1 322018415-0011	1 - Yellow tile	Tan Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
E-17-1.5-Tile 1 322018415-0012	1.5 - Beige tile	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile

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LA Testing Order: 322018415
Customer ID: 32ENTE54
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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
E-17-1.5-Tile 2 322018415-0012A	1.5 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-17-1.5-Tile 3 322018415-0012B	1.5 - Beige tile	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-17-1.5-Tile 4 322018415-0012C	1.5 - Beige tile	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-21-0.5-Tile 1 322018415-0013	0.5 - Mixed tile	Red Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-21-0.5-Tile 2 322018415-0013A	0.5 - Mixed tile	White Non-Fibrous Homogeneous	3% Synthetic	97% Non-fibrous (Other)	None Detected
E-21-0.5-Tile 3 322018415-0013B	0.5 - Mixed tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-21-0.5-Concrete Like 322018415-0013C	0.5 - Mixed tile	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-21-1-Tile 1 322018415-0014	1 - Mixed tile	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-21-1-Tile 2 322018415-0014A	1 - Mixed tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-21-1-Tile 3 322018415-0014B	1 - Mixed tile	Gray/Beige Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-25-0-Rubbery Floor 322018415-0015	0 - Fill debris	Gray/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
E-25-0-Ceramic Like 322018415-0015A	0 - Fill debris	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-25-0-Concrete 322018415-0015B	0 - Fill debris	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-25-0.5-Brick Like 322018415-0016	0.5 - Fill debris	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-25-0.5-Cementitious Material 1 322018415-0016A	0.5 - Fill debris	Pink Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-25-0.5-Cementitious Material 2 322018415-0016B	0.5 - Fill debris	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-26-14"-Tile 1 322018415-0017	14" - Mixed tile	Red/Black Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-26-14"-Tile 2 322018415-0017A	14" - Mixed tile	Red Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile

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http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order: 322018415
Customer ID: 32ENTE54
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
E-26-14"-Tile 3 322018415-0017B	14" - Mixed tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-26-14"-Tile 3 322018415-0017C	14" - Mixed tile	Yellow Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
E-31-0-Tile 1 322018415-0018	0 - Beige tile	White/Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-31-0-Tile 2 322018415-0018A	0 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-31-0.5-Tile 1 322018415-0019	0.5 - Beige tile	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-31-0.5-Tile 2 322018415-0019A	0.5 - Beige tile	Tan Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-32-0-Tile 1 322018415-0020	0 - Beige tile	White/Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-32-0-Tile 2 322018415-0020A	0 - Beige tile	Beige Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-32-0.5-Tile 1 322018415-0021	0.5 - Beige tile	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-32-0.5-Tile 2 322018415-0021A	0.5 - Beige tile	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
E-32-0.5-Tile 3 322018415-0021B	0.5 - Beige tile	Gray/Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
E-33-0.5 322018415-0022	0.5 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-36-0-Tile 1 322018415-0023	0 - Beige tile	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-36-0-Tile 2 322018415-0023A	0 - Beige tile	Gray Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-36-0.5 322018415-0024	0.5 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-37-0.5 322018415-0025	0.5 - Beige tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-37-1 322018415-0026	1 - Beige tile	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
I-3-0 322018415-0027	0 - White suspect material	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-4-0.5 322018415-0028	0.5 - White suspect material				Not Submitted

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LA Testing Order: 322018415
Customer ID: 32ENTE54
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
I-5-0 322018415-0029	0 - White suspect material	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-6-0 322018415-0030	0 - Beige tile	Gray Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
I-6-0.5-Tile 1 322018415-0031	0.5 - Mixed tile	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-6-0.5-Tile 2 322018415-0031A	0.5 - Mixed tile	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
I-6-0.5-Brick Like 322018415-0031B	0.5 - Mixed tile	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-11-1-Ceramic Tile 322018415-0032	1 - Fill debris (brick)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-11-1-Brick 322018415-0032A	1 - Fill debris (brick)	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Asphalt-1 322018415-0033	Asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Asphalt-2 322018415-0034	Asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Asphalt-3 322018415-0035	Asphalt	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Conrete-1 322018415-0036	Concrete	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
Concrete-2 322018415-0037	Concrete	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-4-0 322018415-0038	0 - Concrete	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-6-10'' 322018415-0039	10'' - Suspect/tile chip	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-7-0.5 322018415-0040	0.5 - Suspect/tile chip	Brown Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
E-16-1-Tile 1 322018415-0041	1 - Suspect/tile chip	Tan Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-16-1-Tile 2 322018415-0041A	1 - Suspect/tile chip	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-16-1-Tile 3 322018415-0041B	1 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-16-0.5-Tile 1 322018415-0042	0.5 - Suspect/tile chip	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 10/12/2020 15:56:31

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LA Testing
520 Mission Street South Pasadena, CA 91030
Tel/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order: 322018415
Customer ID: 32ENTE54
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
E-16-0.5-Tile 2 322018415-0042A	0.5 - Suspect/tile chip	Tan Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
E-16-0.5-Tile 3 322018415-0042B	0.5 - Suspect/tile chip	Peach Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-16-0.5-Tile 4 322018415-0042C	0.5 - Suspect/tile chip	Tan Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-24-0.5 322018415-0043	0.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-21-1.5-Tile 1 322018415-0044	1.5 - Suspect/tile chip	Brown/Red Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
E-21-1.5-Tile 2 322018415-0044A	1.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
E-21-1.5-Tile 3 322018415-0044B	1.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
E-21-1.5-Tile 4 322018415-0044C	1.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-21-1.5-Tile 5 322018415-0044D	1.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-21-1.5-Tile 6 322018415-0044E	1.5 - Suspect/tile chip	Brown Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile
E-27-0.5-Tile 322018415-0045	0.5 - Suspect/tile chip	Beige Non-Fibrous Homogeneous		97% Non-fibrous (Other)	3% Chrysotile
E-27-0.5-Brick Like 322018415-0045A	0.5 - Suspect/tile chip	Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
I-5-0.5 322018415-0046	0.5 - Suspect/tile chip	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
E-16-1.5 322018415-0047	1.5 - Suspect/tile chip	Blue Non-Fibrous Homogeneous		95% Non-fibrous (Other)	5% Chrysotile

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Initial report from: 10/12/2020 15:56:31

LA Testing
520 Mission Street South Pasadena, CA 91030
Tel/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order:	322018415
Customer ID:	32ENTE54
Customer PO:	
Project ID:	

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Analyst(s)
Julie Vong (41)
Kieu-anh Pham Duong (63)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations . The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore LA Testing recommends gravimetric reduction prior to analysis . Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 10/12/2020 15:56:31

OrderID: 322018415

LA TESTING

Asbestos Chain of Custody

LA Testing Order Number *(lab use only)*: #322018415

LA TESTING
520 MISSION STREET
SOUTH PASADENA, CA 91030
PHONE: (800) 303-0047
FAX: (323) 254-9982

Company Name: Entech	LA Testing Customer ID:
Street: 206 Marguella Ave	City: San Marcos / State or Province: CA
Zip/Postal Code: 92078 / Country: USA	Telephone #: 310-720-7321 / Fax #:
Report To (Name): Abbas Sam	Please Provide Results via: ☐ Fax ☑ Email
email Address: abbas@entechenvironmental.com	Purchase Order Number:
Client Project ID: 2027044	LA Testing Project ID *(internal use only)*:
State or Province Collected: CA	CT only ☐ Commercial/Taxable ☐ Residential/Tax Exempt

EMSL-Bill to: ☑ Same ☐ Different - *If bill to is different note instructions in comment. Third party billing requires written authorization from third party*

Turnaround Time (TAT) Options Please Check

☐ 3 Hr[1]	☐ 4-4.5Hr[1] AHERA Only	☐ 6 Hr[1]	☐ 24 Hr	☐ 32 Hr[2]	☑ 48 Hr	☐ 72 Hr	☐ 96 Hr	☐ 1 Week	☐ 2 Week

[1]*Premium Service Charge applies for 3 Hour TEM AHERA or EPA Level II TAT – you will be asked to sign an authorization form. TEM Air 3-6 Hour, please call ahead to schedule*
[2] *32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.*

PCM - Air
- ☑ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable - NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NYS 198.8 SOF-V
- ☐ NIOSH 9002 (<1%)

TEM – Air[1]
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Settled Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil – Rock – Vermiculite (reporting limit)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)*
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep
- ☐ Cincinnati Method EPA 600/R-04/004 – PLM/TEM

*Lower reporting limits avaialble on request

Other test (please specify):

☐ **Stop At First Positive** *(clearly identify homogenous areas below)*

Filter Pore Size (Air Samples): ☐ 0.8µm ☐ 0.45µm

Sampler's Name: **Sampler's Signature:**

Sample #	Sample Description/Location	Volume, Area or Homogenous Area	Date/Time Sampled
	Please See Attached logs		

Client Sample # (s): — - — **Total # of Samples:** 40

Relinquished by (Client): [signature] **Date:** 10/8/20 **Time:** 7:20

Received by (Lab): ET (PB) **Date:** 10-8-20 **Time:** 8am

Comments/Special Instructions:

Bulk samples per Sami PLM

Thank you

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Controlled Document – COC-04 Asbestos LA Testing R4 10-25-2019

EMSL Analytical, Inc.'s (DBA: LA Testing) Laboratory Terms and Conditions are incorporated into this chain of custody by reference in their entirety. Submission of samples to LA Testing constitutes acceptance and acknowledgment of all terms and conditions.

Page 1 of 5

Page 1 Of 6

OrderID: 322018415

ENTECH

#322018415

BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate

Project Address: 5037 Patata St.
South Gate, CA 90280

Job #: 20-27044-AFI

Sampler/Certification: 14-5200

Date: 10-7-20

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Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-5-0.5	0.5	Beige Tile chip	
E-6-0	Ø	Beige & Red tile chips	
E-9-0.5	0.5	" "	
E-11-1	1	Mixed tile chips	
↓ -1.5	1.5	" "	
E-12-0	Ø	Beige Tile	
E-13-Ø	Ø	Mixed tile	
↓ -0.5	0.5	" "	
E-17-0	Ø	Beige Tile	
* -0.5	0.5	Mixed Tile	
* -1	1	Yellow Tile	
↓ -1.5	1.5	beige Tile	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

Received by: Date: Time:

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

OrderID: 322018415

Pg. 2

ENTECH

#322018415

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 7

Job #: Date :

Sampler/Certification:

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-21-0.5	0.5	Mixed Tile	
E-21-1 ~~0.5~~	1	↓	
↓ - 1.5	1.5		
E-24-0.5	0.5	Beige Tile	
E-25 - Ø	Ø	Fill Debris	
↓ - 0.5	0.5	↓	
E-26 - 14"	14"	Mixed Tile	
E-31 - Ø	Ø	Beige Tile	
↓ - 0.5	0.5	↓	
E-32 - Ø	Ø	Beige Tile	
↓ - 0.5	0.5	↓	
E-33 - 0.5	0.5	Beige Tile	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes:

Released by: Date: Time:

Received by: Date: Time:

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OrderID: 322018415

Pg. 3

ENTECH

#322018415

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 1 Project Address: See Pg. 1

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-36-Ø	Ø	Beige Tile	
↓ -0.5	0.5	↓	
E-37 - 0.5	0.5	Beige Tile	
↓ 1	1	↓	
I-3-Ø	Ø	White Suspect Material	
I-4-0.5	0.5	↓	
I-5-Ø	Ø	Beige Tile	
I-6-Ø	Ø	Mixed Tile	
↓ -0.5	0.5	↓	
↓ -10"	10"	Green Tile	
I-11-1	1	Fill Debris (brick)	
Asphalt-1	-	Asphalt	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

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OrderID: 322018415

Pg. 4

ENTECH

#322018415

BULK/SOIL SAMPLING FORM

Project Name: See Pg. 7 Project Address: See Pg. 7

Job #: _____

Sampler/Certification: _____ Date : _____

Sample #	Sample Location/Depth	Material Description	Condition/Comments
Asphalt-2	-	Asphalt	
-3	-	↓	
Concrete-1	-	Concrete	
↓ -2		↓	

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs 48 hrs 72 hrs 5 days

Email Results ASAP to **Abbas Sam** @ abbas@entechenvironmental.com

Notes: _____

Released by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

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Tel.: 858-2308515 Cell: 310-720-2321

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Page 5 Of 6

OrderID: 322018415

#322018415

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BULK/SOIL SAMPLING FORM

Project Name: AFI - South Gate
Project Address: 5037 Patata St.
South Gate, CA
Job #: 20-270444
Sampler/Certification:
Date: 10/7/20

Sample #	Sample Location/Depth	Material Description	Condition/Comments
E-4-0	0	Stop at Tile chip	
E-6-10'	10'		
E-7-0.5	0.5		
E-16-1	1		
E-16-0.5	0.5		
E-24-0.5	0.5		
E-21-1.5	1.5		
E-27-0.5	0.5		
T-5-0.5	0.5		
E-16-1.5	1.5		

Turnaround Time (circle one): <8 hrs/Same Day 24 hrs (48 hrs) 72 hrs 5 days
Email Results ASAP to Abbas Sam @ abbas@entechenvironmental.com
Notes:
Released by: Date: Time:
Received by: Date: Time:

Entech Environmental Group
Environmental Consulting . Stormwater Management . Building Sciences . Sustainability
Tel.: 858-2308515 Cell: 310-720-2321

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Page 6 Of 6

APPENDIX B

Asbestos Sample Location Plans

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AFI South Gate Facility
Figure 1 - Exterior Paved Sampling Location Plan
Phase I & II



Legend	
Y	Soil/Debris Sample – Positive for ACM
N	Soil/Debris/Asph. Sample – Negative for ACM
#	No Debris Observed
*	Sampled – Not Analyzed
-	Not Sampled

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AFI South Gate Facility
Figure 2- Exterior unpaved Sampling Location Plan
Phase I & II



Legend	
Y	Soil/Debris Sample – Positive for ACM
N	Soil/Debris/Asph. Sample – Negative for ACM
#	No Debris Observed
*	Sampled – Not Analyzed
-	Soil Not Sampled
+	Debris Observed – Not Sampled

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AFI South Gate Facility
Figure 3 - Interior Paved Sampling Location Plan
Phase I & II



Legend	
Y	Soil/Debris Sample – Positive for ACM
N	Soil/Debris/Asph. Sample – Negative for ACM
#	No Debris Observed
*	Sampled – Not Analyzed
-	Not Sampled

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APPENDIX C

Soil Volume Analysis & Remediation Cost Estimate

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AFI South Gate Facility
Asbestos Soil Abatement Cost Estimate
Phase II
(Entech - October 2020)

	Phase I (Waterstone - September 2020)			Phase II (Entech - October 2020)		
Asbestos Abatement Tasks	**QTY.**	**Unit Price**	**Cost**	**QTY.**	**Unit Price**	**Cost**
Task 1 - Asbestos in Soil - Exterior Unpaved Area						
Certified Asbestos Consultant (CAC)						
Prepare Procedure 5 Plan, (ea.)	1	$11,200.00	$11,200.00	1	$11,200.00	$11,200.00
Oversight & Clearance Sampling (per day)	26	$2,500.00	$65,000.00	20	$2,500.00	$50,000.00
Reporting & Project Management, (ea.)	1	$8,400.00	$8,400.00	1	$8,400.00	$8,400.00
Communication - Agencies, Contractor, Consultant, (ea.)	1	$10,000.00	$10,000.00	1	$10,000.00	$10,000.00
Abatement Contractor						
SCAQMD & LAFD Division 5 Permit	1	$74,746.00	$74,746.00	1	$74,746.00	$74,746.00
Pre-Field Activities, Mobilization, Setup & Containment (per day)	1.12	$15,800.00	$17,696.00	1.12	$15,800.00	$17,696.00
Heavy Equipment & Crew	26	$7,000.00	$182,000.00	20	$7,000.00	$140,000.00
Abatement Crew, Labor, 11 Men (per day)	26	$8,800.00	$228,800.00	20	$8,800.00	$176,000.00
Materials (Poly) & Equipment (ea.)	1	$320,572.00	$320,572.00	1	$65,000.00	$65,000.00
Soil Transport & Disposal (ton)	12310	$95.00	$1,169,450.00	7512	$95.00	$713,640.00
CDTFA BOE Generator Fee	1	$98,640.00	$98,640.00	1	$98,640.00	$98,640.00
Replacement Soil, Import (cy)	8207	$20.00	$164,140.00	5008	$20.00	$100,160.00
Oversight, Management, Reporting, Agency Communication						
Pre-Field Activities	1	$7,500.00	$7,500.00	1	$7,500.00	$7,500.00
Field Oversight, (wk.)	5	$4,900.00	$24,500.00	5	$4,900.00	$24,500.00
Reporting & Comm (ea.)	1	$10,000.00	$10,000.00	1	$10,000.00	$10,000.00
		Total	$2,392,644.00			$1,507,482.00
		Contingency for Work in Containment	$994,451.00			$0.00
		Task 1 Total	$3,387,095.00			$1,507,482.00
Task 2 - Asbestos in Soil - Exterior/Interior Paved Area						
Certified Asbestos Consultant (CAC)						
Prepare Procedure 5 Plan, (ea.)	1	$11,200.00	$11,200.00	1	$11,200.00	$11,200.00
Oversight & Clearance Sampling (per day)	89	$2,500.00	$222,500.00	54	$2,500.00	$135,000.00
Reporting & Project Management, (ea.)	1	$8,400.00	$8,400.00	1	$8,400.00	$8,400.00
Communication - Agencies, Contractor, Consultant, (ea.)	1	$10,000.00	$10,000.00	1	$10,000.00	$10,000.00
Abatement Contractor						
SCAQMD & LAFD Division 5 Permit	1	$125,254.00	$125,254.00	1	$125,254.00	$125,254.00
Pre-Field Activities, Mobilization, Setup & Containment (per day)	1	$15,800.00	$15,800.00	1	$15,800.00	$15,800.00
Separate Asphalt from Soil		NA			NA	
Heavy Equipment & Crew	89	$7,000.00	$623,000.00	54	$7,000.00	$378,000.00
Abatement Crew, Labor, 11 Men (per day)	89	$8,800.00	$783,200.00	54	$8,800.00	$475,200.00
Materials (Poly) & Equipment (ea.)	1	$1,111,204.00	$1,111,204.00	1	$250,000.00	$250,000.00
Soil Transport & Disposal (ton)	42670	$95.00	$4,053,650.00	21387	$95.00	$2,031,765.00
CDTFA BOE Generator Fee	1	$98,640.00	$98,640.00	1	$98,640.00	$98,640.00
Replacement Soil, Import (cy)	28447	$20.00	$568,940.00	14258	$20.00	$285,160.00
Oversight, Management, Reporting, Agency Communication						
Pre-Field Activities	1	$7,500.00	$7,500.00	1	$7,500.00	$7,500.00
Field Oversight, (wk.)	18	$4,900.00	$88,200.00	11	$4,900.00	$53,900.00
Reporting & Comm (ea.)	1	$10,000.00	$10,000.00	1	$10,000.00	$10,000.00
		Total	$7,737,488.00			$3,895,819.00
		Contingency for Work in Containment	$2,713,922.00			$0.00
		Task 2 Total	$10,451,410.00			$3,895,819.00
Task 3 - Removal of Asphalt w/Asbestos Containing Soil, Est 400,000 sf, thickness avg. 6"						
SCAQMD & LAFD Division 5 Permit	1	$100,000.00	$100,000.00	0	$100,000.00	$0.00
Heavy Equipment & Crew	25	$5,000.00	$125,000.00	0	$5,000.00	$0.00
Abatement Crew, Labor, 11 Men (per day)	25	$8,800.00	$220,000.00	0	$8,800.00	$0.00
Materials (Poly) & Equipment (ea.)	1	$300,000.00	$300,000.00	0	$60,000.00	$0.00
Waste Transport & Disposal (ton)	583	$2,640.00	$1,539,120.00	0	$2,640.00	$0.00
		Task 3 Total	$2,284,120.00			$0.00
		Task 1, 2 & 3 Total	$16,122,625.00			$5,403,301.00

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10/14/2020

ENTECH

AFI South Gate Facility
Soil Excavation Volume Analysis
Phase II
(Entech - October 2020)

PHASE I (Waterstone - September 2020) Estimated Soil Volume to be Excavated in Paved Areas (Not including Buildings) (Approx. 14.22 ac)									PHASE II (Entech - October 2020) Estimated Soil Volume to be Excavated in Paved Areas (Not including Buildings) (Approx. 14.22 ac)					
Area of Impact	Maximum Depth of Positive Detection of Asbestos (ft.)		Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons	Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons
	Tile Debris	Soil												
Areas Tested														
1			2.33	13,403	0.31	31,229	1,155	1,733	2.33	5,500	0.13	12,815	474	711
2			0.53	6,382	0.15	3,382	125	188	0.53	3,600	0.08	1,908	71	106
3			2.83	14,256	0.33	40,344	1,493	2,239	2.83	3,400	0.08	9,622	356	534
4			0.33	8,668	0.20	2,860	106	159	0.33	6,000	0.14	1,980	73	110
5			1.58	34,317	0.79	54,221	2,006	3,009	1.58	18,400	0.42	29,072	1,076	1,613
6			0.93	9,057	0.21	8,423	312	467	0.93	9,057	0.21	8,423	312	467
7			1.83	32,753	0.75	59,938	2,218	3,327	1.25	27,000	0.62	33,750	1,249	1,873
8			1.83	38,034	0.87	69,602	2,575	3,863	1.83	38,034	0.87	69,602	2,575	3,863
9			1.33	67,570	1.55	89,868	3,325	4,988	1.33	43,000	0.99	57,190	2,116	3,174
10			0.83	9,338	0.21	7,751	287	430	0.83	9,338	0.21	7,751	287	430
11			0.83	9,282	0.21	7,704	285	428	0.83	6,000	0.14	4,980	184	276
12			2.13	18,145	0.42	38,649	1,430	2,145	2.13	11,000	0.25	23,430	867	1,300
13			1.33	8,113	0.19	10,790	399	599	1.33	6,700	0.15	8,911	330	495
14			1.33	5,610	0.13	7,461	276	414	1.5	6,200	0.14	9,300	344	516
15			1.33	24,080	0.55	32,026	1,185	1,777	1.33	12,000	0.28	15,960	591	886
				299,008	6.86	464,250	17,177	25,766		205,229	4.71	294,694	10,904	16,356

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10/14/2020 1 ENTECH

AFI South Gate Facility
Soil Excavation Volume Analysis
Phase II
(Entech - October 2020)

PHASE I (Waterstone - September 2020) Estimated Soil Volume to be Excavated in Paved Areas (Under Buildings Only) (Approx. 5.6 ac)									PHASE II (Entech - October 2020) Estimated Soil Volume to be Excavated in Paved Areas (Under Buildings Only) (Approx. 5.6 ac)					
Area of Impact	Maximum Depth of Positive Detection of Asbestos (ft.)		Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons	Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons
	Tile Debris	Soil												
Areas Tested														
16			1.33	33,687	0.77	44,803.71	1,657.74	2,486.61	1.33	33,687	0.77	44,804	1,658	2,487
17			1.33	57,979	1.33	77,112.07	2,853.15	4,279.72	2	0	0	0	0	0
18			1.33	42,224	0.97	56,157.92	2,077.84	3,116.76	1.33	0	0	0	0	0
19			1.33	21,138	0.49	28,113.54	1,040.20	1,560.30	1.33	0	0	0	0	0
20			1.33	38,929	0.89	51,775.57	1,915.70	2,873.54	1.33	0	0	0	0	0
21			1.33	34,475	0.79	45,851.75	1,696.51	2,544.77	1.33	34,475	0.79	45,852	1,697	2,545
				228,432	5.24	303,814.56	11,241.14	16,861.71		68,162	1.56	90,655	3,354	5,031

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AFI South Gate Facility
Soil Excavation Volume Analysis
Phase II
(Entech - October 2020)

PHASE I (Waterstone - September 2020) Estimated Soil Volume to be Excavated in Unpaved Areas (Approx. 7 ac)									PHASE II (Entech - October 2020) Estimated Soil Volume to be Excavated in Unpaved Areas (Approx. 7 ac)					
Area of Impact	Maximum Depth of Positive Detection of Asbestos (ft.)		Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons	Estimated Removal Depth (ft.)	(sf)	AC	CF	CY	Tons
	Tile Debris	Soil												
Areas Tested														
0.1			0.43	284,198	6.52	122,205.14	4,521.59	6,782.39	0.43	85,000	2	36,550	1,352	2,029
0.25			0.15	4,312	0.10	646.80	23.93	35.90	0.15	4,312	0	647	24	36
0.5			0.40	11,581	0.27	4,632.40	171.40	257.10	0.40	11,581	0	4,632	171	257
0.75			0.65	6,445	0.15	4,189.25	155.00	232.50	0.65	6,445	0	4,189	155	233
1			0.90	15,897	0.36	14,307.30	529.37	794.06	0.90	15,897	0	14,307	529	794
1.25			1.15	5,822	0.13	6,695.30	247.73	371.59	1.15	5,822	0	6,695	248	372
1.5			1.40	10,363	0.24	14,508.20	536.80	805.21	1.40	10,363	0	14,508	537	805
2			1.90	3,442	0.08	6,539.80	241.97	362.96	1.90	3,442	0	6,540	242	363
2.25			2.15	3,151	0.07	6,774.65	250.66	375.99	2.15	3,151	0	6,775	251	376
2.5			2.40	11,843	0.27	28,423.20	1,051.66	1,577.49	2.40	11,843	0	28,423	1,052	1,577
2.75			2.65	2,368	0.05	6,275.20	232.18	348.27	2.65	2,368	0	6,275	232	348
3			2.90	1,999	0.05	5,797.10	214.49	321.74	2.90	1,999	0	5,797	214	322
			1.90	4	0.00	7.60	0.28	0.42	1.90	4	0	8	0	0
				361,425	8.30	221,001.94	8,177.07	12,265.61		162,227	4	135,347	5,008	7,512

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APPENDIX D

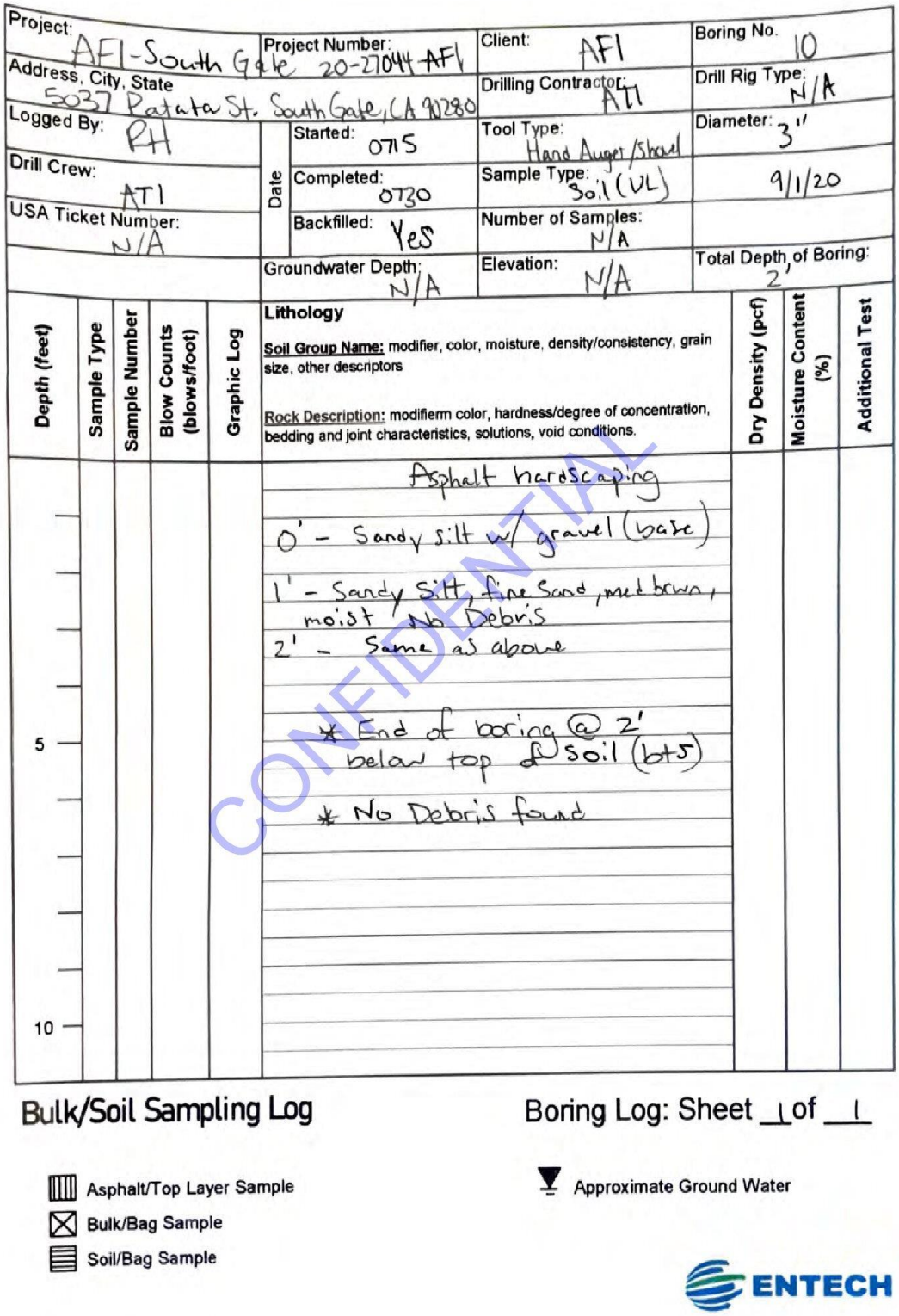
Soil Boring Logs

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Soil Boring Logs

September 2020 Sampling Event (Phase I)

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Project: AFI-South Gate	Project Number: 20-27044-AFI	Client: AFI	Boring No. 10
Address, City, State: 5037 Patata St. South Gate, CA 90280		Drilling Contractor: ATI	Drill Rig Type: N/A
Logged By: RH	Date Started: 0715	Tool Type: Hand Auger/Shovel	Diameter: 3"
Drill Crew: ATI	Date Completed: 0730	Sample Type: Soil (VL)	9/1/20
USA Ticket Number: N/A	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt hardscaping 0' - Sandy silt w/ gravel (base) 1' - Sandy Silt, fine Sand, med brown, moist No Debris 2' - Same as above * End of boring @ 2' below top of soil (btS) * No Debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. 12
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 810	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 820	Sample Type: Soil / Tile / VL	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 1 (Tile)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'-Trace Tile debris (biege) found @ Surface 1'- Sandy Silt, fine Sand, med brown, moist, No debris 2'- Same as above *End of boring @ 2' bgs *No Tile debris past surface			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No: 13
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 820	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 830	Sample Type: Soil (VL)	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hard Scaping 0' - No Tile Debris found, Sandy Silt w/ Gravel, med brown, moist 1' - Sand silt, No debris 2' - No debris, Sandy Silt * End of boring @ 2' bts * No tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. 14
Address, City, State		Drilling Contractor: AFI	Drill Rig Type:
Logged By: RH	Date Started: 835	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 845	Sample Type: Soil / Tile	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5(Soil) 1(Tile)	
	Groundwater Depth:	Elevation:	Total Depth of Boring:

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt Surfacing			
					0' - No tile, silty Sand, lgt brwn w/ gravel			
					0.5 - Tile debris (biege)			
					1' - No tile, Sandy Silt, md brwn moist			
					2' - Same as above			
5					* End of boring @ 2'			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 15
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 845	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 900	Sample Type: Soil / Tile (UL)	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 1	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hard Scraping 0' - Tile debris - Silty Sand, lgt brown, gravel, moist 1' - No Tile, Sandy Silt, med. brown, moist 2' - Same as above * End of boring @ 2' bts * - No Tile debris past Surface (0')			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client:	Boring No. 16
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 900	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 910	Sample Type: Soil	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: ø	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No HardScaping 0' - No Tile debris, Silty Sand w/ gravel 1' - Sandy Silt, med brwn, moist, No debris 2' - Same as above * End of boring @ 2' bts * No tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. B7
Address, City, State		Drilling Contractor: AT	Drill Rig Type:
Logged By: RH	Date Started: 915	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 925	Sample Type: Soil (UL)	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: Ø	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- No debris found, Silty Sand 1'- No debris, Sandy Silt, med. brown, moist 2'- Same as above * End of boring @ 2' * No debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 18
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 925	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 940	Sample Type: Soil (UL)	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: Ø	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt Surfacing 0'-No debris found, Silty Sand, 1'- No debris, Sandy Silt, fine sand, med brown, moist 2'- No debris, Sandy Silt * End of boring @ 2' bgs * No tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 19
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 9:55	Tool Type: HA/SHS	Diameter: 4"
Drill Crew:	Date Completed: 10:10	Sample Type: Soil / Bulk	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples:	
	Groundwater Depth: N/A	Elevation:	Total Depth of Boring: 3'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Asphalt Surfacing 0' - No debris @ surface, Sand w/ gravel 0.5' - Tile debris (Sample collected) 1.5' - Suspect white tile debris found and Sampled 2' - Same as above; Silty Sand (~~Soil Sample only~~) 2.5' - No debris, Sandy Silt (Soil Sample only) 3' - No debris, native Sandy Silt * End of boring @ 3' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. ZO
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1400	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1410	Sample Type: Soil	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: Ø	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2" Asphalt Core			
					0'- No Tile debris, Sandy Silt			
					0.5'- Tile Debris (Red & beige)			
					1'- No debris, Sandy Silt, v.fine Sand, med. brown, moist			
5					1.8'- Tile Debris found			
					2'- Sandy Silt, No debris			
					3' Same as above			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client:	Boring No. 20 21
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: PH	Date Started: 945	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1000	Sample Type: Soil/Tile (VL)	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 1 (tile)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt Core 6"			
					0' - Tile Debris @ surface, lgt brown, fine sand w/ base (gravel) moist			
					1' - Sandy Silt, med. brown, moist			
					2' - Same as above			
5					* End of boring @ 2' bts			
					* No tile debris found past surface (0').			
10								

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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No: BH-22
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 1145	Tool Type: Hand Auger	Diameter: 3"
Drill Crew:	Completed: 1205	Sample Type: Discrete	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					3" Asphalt Surface 0'-Base(gravel) - Silty Sand Silty Sand w/ gravel 3"-1' 1'-2' - Silty Sand 1'-2' (no debris * End of boring @ 2' bts * No debris in borehole			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 23
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1305	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1325	Sample Type: Soil/Tile	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					3" Asphalt Core			
					3"-8": Base Gravel w/fine Sand No Tile Debris			
					1' - Fill w/ Tile Debris (Red & Beige			
					1.5 - Same as above			
5					2' - Clean Sandy Silt, med brown, moist - No Debris			
					* End of boring @ 2' bgs			
					No Tile Debris past 1.5' bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No: BH-~~B~~ 24
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1150	Tool Type: Hand Auger/ Shovel	Diameter: 3"
Drill Crew: ATi	Completed: 1210	Sample Type: Disturbed ~~Grab~~	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: Ø	
	Groundwater Depth: N/A	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
0.5					No Surface covering			
1					Gravely Silty Sand; No debris			
1.5'					0'- @ Surface → Red & White tile			
2'					-Debris @ 0.5' bgs } UL			
					1' - Fill w/gravel-0 } Samples			
					Silty Sand 1.5			
					2'- Silty Sand; No debris			
5					* End of boring @ 2' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 25
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1000	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1015	Sample Type: Soil	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt 7" Core 0' – No tile debris, Sand w/ base (gravel) 1' – No tile Debris; Sandy Silt, fine Sand, med. brwn, moist 2' – Same as above *End of boring @ 2' bts *No tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. BH-26
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: R-H	Date Started: 1225	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1255	Sample Type: Soil & bulk	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
1					2" Asphalt Surfacing 2"-9" Base Material			
2		1			Debris @ 0.5' (white tile) ↳ Fill debris 0.8-1' (red & white tile) * Debris & Soil Sample collected			
		1.5			(1.5' - lgt green plastic debris ↳ Sample collected			
5					2' - Sandy silt, v. fine sand, drk brwn, moist, appears native			
					* End of boring @ 2' bts			
					No tile debris found past 1.5' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. B27
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: R+I	Date Started: 905	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 915	Sample Type:	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring:

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt Core 0' - No tile debris; Below/ Sand 1' - Sandy Silt, fine Sand, med. brwn, moist, No tile debris 2' - Same as above * End of boring @ 2' bts * No tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 28
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1210	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1225	Sample Type: Soil/Tile	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 9	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					4" Asphalt Debris (Black fabric) @ 4" Dark Brown Silty Sand w/ gravel (fill) 1'- Sandy Silt, dark brown 2" Same as above * End of boring @ 2' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 29
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1245	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 1255	Sample Type: Soil (VL)	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: Ø	
	Groundwater Depth:	Elevation:	Total Depth of Boring: Ø

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					4" Asphalt Core			
					0'-base (heavy gravel) w/ Sand No Tile Debris found			
5					* Refusal @ Surface			
10								

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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 30
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1300	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1325	Sample Type: Soil	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.5" Asphalt Core 0'-Base (gravel) w/ Sand - No Tile Debris found 1' - Fill (Base) - No Tile Debris 2' - Sandy Silt, v. fine Sand, med. brown, moist, No tile debris * End of boring @ 2' bts * No Tile debris found in boring			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No: 31
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1330	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1355	Sample Type: Soil	9/1/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.5" Asphalt Core 0' - No debris, Base w/ fine Sand 1' - Sandy Silt, fine Sand, med. brwn, moist, No debris 2' - Same as above * End of boring @ 2' bgs * No Tile debris found			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 32
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1410	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1425	Sample Type: Soil / Asphalt	9/1/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
		Asph			2.5" Asphalt Core			
		0			0' - Fill debris (dark silty sand slight odor), No debris			
		1			1' - Same as above			
		2			2' - Same as above			
5					* End of boring @ 2' bts			
					* No Tile debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 33
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 800	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 815	Sample Type: Soil	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5" Asphalt Core			
					0 - Base w/ Silty Sand, med brown, fine grained Sand, moist			
					1' - Sandy Silt (Same as above) No gravel, No debris			
					2' - Same as above			
5					* End of boring @ 2' below top of Soil (bts)			
					* No Tile Debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:		Project Number:	Client: AFT	Boring No. 34
Address, City, State			Drilling Contractor: ATI	Drill Rig Type:
Logged By:	Date Started: 0735		Tool Type: HA & HS	Diameter: 3"
Drill Crew:	Completed: 0750		Sample Type: Soil	9/20/20
USA Ticket Number:	Backfilled: Yes		Number of Samples: N/A	
	Groundwater Depth:		Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" Asphalt Core 0 - Silty Sand w/ base, No debris 1' - Sandy Silt fine Sand, med. brown, moist, No debris 2' - Same as above * End of boring @ 2' bts * No Tile Debris found			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 35
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By:	Date Started: 0735	Tool Type: HA/HS	Diameter: 9/2/20
Drill Crew:	Date Completed: 0745	Sample Type: Soil (UL)	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					4" Asphalt Core 0' - Silty Sand w/ gravel (base) No debris 1' - Sandy Silt, fine Sand, med. brwn, moist, No debris 2' - Same as above * End of boring @ 2' bts * No Tile Debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 36
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By:	Date Started: 800	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 815	Sample Type: Soil (UL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7" Asphalt Core 0' - Base w/ Silty Sand, Sand is fine, med. brwn, moist, No debris 1' - Silty Sand, fine Sand, med. brwn, moist No Debris 2' - Sandy Silt (Same as above) * End of Boring @ 2' bts * No Tile Debris found			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 37
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 0745	Tool Type: HA & HS	Diameter: 3"
Drill Crew:	Date Completed: 0800	Sample Type: Soil/Bulk	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5" Asphalt Core			
					0 - Red & White tile, Base w/ Silty Sand, lgt brwn, moist			
					1' - No Debris, Silty Sand, fine Sand, med. brwn, moist			
					2' - Same as above			
5					End of boring @ 2' bts			
					* No Tile Debris found past 0.5' bts			
10								

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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project: AFI	Project Number:	Client:	Boring No. 38
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1130	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1145	Sample Type: Soil/Tile (UL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt 5.5" Core			
					Ø (Surface) - Sandy Silt w/ gravel (base) No debris			
					0.5' - Tile (Beige) Debris (UL Sample)			
					1' - Tile Debris; Sandy Silt, Sand is v. fine to fine, med. brown, moist (UL collects debris sample @ 1'			
5					2' - No debris, Sandy Silt (Same as above)			
					* End of boring @ 2' below bottom of Asphalt			
					*No Tile Debris past 1' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 39
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1135	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 1145	Sample Type: Soil (UL)	9/20/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2" Asphalt Core			
					0'(Surface) Base w/yellowish brown Silty Sand, Sand it is fine, moist			
					1' - No Debris, Silty Sand, lgt brown, moist			
					2' - Same as above			
5					*End of Boring @ 2' below bottom of Asphalt			
					*No Tile Debris found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 40
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 815	Tool Type: HA & HS	Diameter: 3"
Drill Crew:	Date Completed: 825	Sample Type: Soil (HL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 0	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7" Asphalt Surfacing			
					0' - Silty Sand w/ base			
					1' - Silty Sand w/ gravel (base)			
					2' - Silty Sand w/ trace gravel			
					* End of boring @ 2' bgs			
					* No Tile Debris Found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 41
Address, City, State		Drilling Contractor: AFI	Drill Rig Type:
Logged By: RH	Date Started: 810	Tool Type: Hand Auger / Hand shovel	Diameter: 3"
Drill Crew:	Completed: 825	Sample Type: Soil & Bulk	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 7 (4 soil, 3 Bulk)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
1 2' 5 10		BH-41 @ 0.5	-		7" Asphalt Surfacing 0'- Red, White & Green tile debris, Sandy Silt, med brown, moist 0.5'- tile debris 1'- Red & White tile debris / Sandy Silt, V. fine Sand, med brown, moist 2' - No debris - Sandy Silt (Same as above) * End of boring @ 2' bts * No tile debris found past 1'			

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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No BH-42
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 830	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 845	Sample Type: Soil/Tile (U)	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 1'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					9" Asphalt Core Tile debris @ surface (Ø) (white tile) 0.5'- No debris - Sandy Silt, med brwn moist 1' No debris - Sandy Silt (same as above) * Refusal just past 1' (below soil surface) * End of boring @ 1' bts * No tile debris found past 0.5' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. BH-43
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 835	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Date Completed: 855	Sample Type: Soil/Tile(VL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5.5" Asph Core Ø - Green & Beige Tile debris (large pieces) 0.5 - Tile debris 11" - Biege Tile (one piece) 1' - Clean Sandy Silt, fine sand, moist, med. brwn, No debris 1.5' - Biege Tile debris (one piece) 2' - Clean Sandy Silt, fine Sand, med. brwn, moist, No debris *End of boring @ 2' bts * No Tile debris found past 1.5' bts			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 44 ~~46~~
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 900	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 915	Sample Type: Soil (UL)	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" Asphalt Core			
					0 - Clean - Yellowbrown fill Sand w/ gravel			
					1' - Sandy Silt, fine Sand, med. brwn, moist			
					2' Sandy Silt (Same as above)			
					* No debris found in borehole			
5					* End of boring @ 2' bts			
10								

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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 45
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 920	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 935	Sample Type: Soil/Tile (VL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					8" Asphalt Core 0' - Red & White tile debris (small amount) Sandy Silt, v.fine Sand, med. brwn, moist 1' - No debris; Sandy Silt (Same as above) 2' Same as above * End of boring @ 2' below Bottom of Asphalt * No tile debris found past 0' bts.			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. ~~4~~ 6
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 855	Tool Type: HA/HS	Diameter: 3"
Drill Crew:	Completed: 920	Sample Type: Soil, Bulk	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 7 (4 Soil, 3 Bulk)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5" Asphalt Core (sampled) 0' - Biege Tile debris (small amount) Sandy Silt, brwn, v.fine Sand, moist 0.5' - Multi-colored tile debris (significant amount of debris) 10" - Debris 1' - No debris; Sandy Silt, v.fine Sand, med. brwn, moist 2' - No debris; Sandy Silt (same as above) *End of boring @ 2' below bottom of Asphalt *No Tile debris found past 10" bgs			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. 47
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: ~~935~~ 945	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 955	Sample Type: tile/soil (UL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt 9" Core			
					- 0'(surface): Red Tile chip debris (trace) Sandy Silt, v.fine sand, med.brown, moist			
					-1': No debris; Sandy Silt (Same as above)			
					-2': No debris; (Same as above			
5					* UL collected debris Sample @ surface 0'			
					* No tile debris found past 0' bts			
					*End of boring @ 2' bts			
10								

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. 48
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: AH	Date Started: 935	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 955 ~~945~~	Sample Type: tile/soil (VL)	9/2/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7.5" Asphalt Core 0' (Surface) - Gravely Sandy Silt 3" tile debris 1' - Sandy Silt, v. fine Sand, med. brwn, moist ~~No~~ debris @ 1' 2' - Same as above (No debris) & Debris VL Soil Samples @: 3' Tile Debris, 9" " " } Debris from 3" to 9" 1' *End of Boring @ 2' below bottom of Asphalt * No Tile debris past 1' bts			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project: AFI	Project Number:	Client: AFI	Boring No. 49
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1155	Tool Type: HA / HS	Diameter: 3"
Drill Crew:	Date Completed: 1215	Sample Type: Soil (UL)	9/2/21
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	X
	Groundwater Depth:	Elevation:	Total Depth of Boring: 13'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" 2.5" Asphalt Core			
					Surface(0') - Base(gravel) w/Sand, fine to med grained, lt brown, ~~moist~~ dry - No debris			
					1' - Base(heavy Gravel)			
					2' - Refusal @ 13"			
					UL Samples @ Asph, surface & 1' below asphalt bottom			
5					0' - 1' base (gravel)			
					* End of boring @ 13"			
					* No Tile debris found in borehole			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project: AFI	Project Number:	Client: AFI	Boring No. 50
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 1155	Tool Type: HA	Diameter: 3'
Drill Crew:	Completed: 1215	Sample Type: (Soil)	9/2/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 3 (Soil)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
	S	Ø	—		7.5" Asphalt Core			
		1			Surface(0') - No debris, Sandy Silt, v. fine Sand, med. brwn, moist w/ gravel			
		2			1' - Same as above			
					2' - Sandy Silt, med brwn, fine grained, moist, No debris			
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					* End of boring @ 2' below bottom of Asphalt			
					* No Tile debris found in borehole			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AEI	Boring No. E1
Address, City, State		Drilling Contractor: AEI	Drill Rig Type:
Logged By: RH	Date Started: 735	Tool Type: Hand Shovel Hand Auger	Diameter: 3"
Drill Crew:	Completed: 745	Sample Type: Soil (UL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hard cover Ø - No Debris, Sandy Soil, yellowish brown, loose, moist 1' - Sand, fine grained, yellowish brown, loose, moist, No debris 2' - Same as above *End of boring @ 2' below ground surface (bgs) *No Debris found			
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CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No: E2
Address, City, State		Drilling Contractor: AFI	Drill Rig Type:
Logged By: RH	Date Started: 0750	Tool Type: HA/S	Diameter: 3"
Drill Crew:	Date Completed: 8:00	Sample Type: Soil (UL)	9/3/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Silty Sand, fine to coarse grained Sand, lgt brwn, moist, No Debris 1'- Silty Sand, v. fine grained, lgt brwn, loose, moist, No debris 2'- Same as above * No Debris found * End of boring @ 2' bgs			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E3
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 0805	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 0820	Sample Type: Soil	9/3/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0 - 1' = Trash Debris; No Tile Chips 2' - Clean Silty Sand * No Tile Debris found * End of boring @ 2' bgs			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E4
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 0740	Tool Type: HA / HS	Diameter: 3"
Drill Crew:	Date Completed: 0755	Sample Type: Soil	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping Ø - Silty Sand fine to coarse grained Sand, lgt brown, loose, moist No debris 1' - Same as above 2' - Same as above *No Debris found *End of boring @ 2' bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No: E5
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 0755	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 0815	Sample Type: Soil, Bulk (Surface)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2' 3'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0' - Green tile found @ surface to 0.5'; Silty Sand, Sand is fine to coarse, lgt. brwn, moist 1' - Sandy Silt, v. fine Sand, lgt brwn, moist, No debris 2' - Small tile chip found, Soil Same as above 3' - No debris found; Sandy Silt * Tile debris found @ 16" bgs & @ 2' bgs (white tile chips) * End of boring @ 3' bgs			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E6
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 0825	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 0855	Sample Type: Soil/Tile	9/3/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: (5 Soil) 6 (1 Bulk)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3.5'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping Ø - Blue & Biege (Green) Tile found @ Surface ; Sandy Silt, fine to coarse sand. 1'- Tile debris, white powder, Silty Sand 1.5'- Significant Tile debris 2'- Significant - Multi-Colored tile debris (Red, Green, Beige) 3'- ~~Silty~~ Sandy Silt ; No debris * Powder (White) debris from 11" * Tile Sample Collected @ Ø' * 3.5' - Clean Sandy Silt ; End of boring			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No: E7
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date: Started: 0935	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 945	Sample Type: Soil/Tile (VL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0' - Tile debris (surface to 10" bgs) 1' - Sandy Silt, no tile debris 2' - Same as above * End of boring @ 2' bgs * Tile debris Not found past surface (0')			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. E9
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: AH	Date Started: 0825	Tool Type:	Diameter: 3"
Drill Crew:	Date Completed: 0840	Sample Type: Soil / Tile (UL)	9/3/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0 - Green & biege Tile chip debris 0.5' - Same as above 1' - Same as above 2' - Silty Sand ; No tile debris * End of boring @ 2' bgs * No Tile Found past 0'			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. E9
Address, City, State		Drilling Contractor:	Drill Rig Type
Logged By: RH	Date Started: 950	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 1000	Sample Type: Soil / Bulk	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3.75'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0 - Tile from Surface to 1'; Reduced @ 1' bgs 1.5' - Tile Debris (Biege - low amount) 2' - Tile Debris present; Sandy silt, lgt brn, moist 2.5' - Tile Debris (trace amount) Soil (same as above) 3' - Tile Debris (trace amount) 3.5' - No tile debris; Clean Sandy silt 3.75' - Same as above; End of boring @ 3.75' bgs *EOB @ 3.75' * No Tile Debris past 3' bgs			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No: E10
Address, City, State:		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date: Started: 0940	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 0950	Sample Type: So.1/Tile (UL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 3 (So.1)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hard Scraping 0 - Trace Tile debris (Base) UL collects same, Not sufficient amount to split sample 1' - Silty Sand, v. fine grained, loose, lgt brwn, moist, No tile debris 2' - Same as above (No debris) * End of boring @ 2' bgs * No Tile debris found past 0' (trace)			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. E11
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 0845 0825	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 0900	Sample Type: Soil (VL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples:	
	Groundwater Depth:	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0' - Sandy silt; No Debris 1' - Sandy Silt; No Debris 2' - Same as above * No Debris found * End of boring @ 2'			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E12
Address, City, State		Drilling Contractor: ATI	Drill Rig Type:
Logged By: RH	Date Started: 0955	Tool Type: HA/HS	Diameter: @ 3"
Drill Crew:	Completed: 1010	Sample Type: Soil / Tile (VL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3.5'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Tile debris present @ surface to 0.5' (significant tile debris) 1'- Tile Debris (moderate amount of ~~Soil~~ Sandy Silt	debris		
					2 - Same as above 2.5 - Slight amount of tile debris 2.75 - Same as above 3' - Clean; Sandy Silt (No debris) 3.5 - (Same as above) * End of boring @ 3.5' bgs * No tile debris found past 2.75' bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. E13
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 1005	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 1015	Sample Type: Soil / Tile (UL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0' - No tile debris, Sandy silt 10" - Tile Debris Present (UL collects sample) 1' - No debris, Sandy silt 2' - Same as above *End of boring @ 2' bgs * No Tile Debris found past 10" bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. E14
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 1020	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 1035	Sample Type: Soil/Tile (UL)	9/3/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: N/A	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0' - tile debris @ surface to 0.5' .75' - 1.75' - No debris 1' - Tile Debris, Sandy Silt 2' - Tile Debris, Sand Silt 2.5 - No Tile Debris, ~~Silt~~ Sandy Silt 3' - Same as above * End of boring @ 3' bgs * No Tile debris found past 2' bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No: E15
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date: Started: 1020	Tool Type:	Diameter: 3"
Drill Crew:	Completed: 1040	Sample Type: Soil / Debris (ENCORE)	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4 (Soil) 1 (Debris)	
	Groundwater Depth:	Elevation:	Total Depth of Boring: 3.5'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Beige Tile Chips 0.5'-1' (trace tile chips found); Sandy Silt, fine to med. grained, med brown, moist 2'- Same as above 3'- No debris found, Silty Sand 3.5'- Same as above *End of boring @ 3.5 bgs * No tile debris found past 2.5' bgs			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet __of ___

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Soil Boring Logs

October 2020 Sampling Event (Phase II)

CONFIDENTIAL

Project: AFI - South Gate	Project Number: 20-27044-AFI	Client: AFI	Boring No. E-1
Address, City, State		Drilling Contractor: EC1	Drill Rig Type:
Logged By: RH	Date Started: 1255	Tool Type: Hand Auger	Diameter: 4"
Drill Crew:	Date Completed: 1310	Sample Type: Soil	10/5/20
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					4" Asphalt Core			
					0' - ~~Sandy~~ Silty Sand w/ asphalt debris, No tile debris			
					0.5' - Sandy Silt, No tile debris			
					1' - Same as above			
5					2' - Silty Sand, brown, no tile debris			
					* No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

CONFIDENTIAL

Project:	Project Number:	Client: AFI	Boring No. F-2
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1315	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 1330	Sample Type: Soil	10/5/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2' bgs

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					9" Asphalt core 0' - Silty Sand w/ asphalt debris, no tile 1' - Silty Sand, lgt brwn, no tile debris 2': Same as above, brown * No Tile debris encountered			
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CONFIDENTIAL

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-3
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1335	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 1355	Sample Type: Soil	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7" Asphalt Core - Purple rag attached to bottom of Core 0' - Dark Brown Silty Sand w/ asphalt & fill debris (red brick), No tile debris 1' - Sand w/ trace Silt, light brown, w/ trace Gravel, No tile debris 2' - Silty Sand, lgt Brown w/ trace gravel, No tile debris * No debris (tile) encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E4'
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1435	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 1455	Sample Type: So. 1	
USA Ticket Number:	Backfilled: YeS	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 4

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping			
					0'- dry Silty Sand w/gravel and debris (plastic), No tile debris			
					0.5'- Same as above			
					1'- dry Silty Sand w/gravel & plastic debris, no tile debris			
5					2'- Same as above, No debris			
					* No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E5
Address, City, State		Drilling Contractor: ECI A	Drill Rig Type:
Logged By: RH	Date Started: 1400	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 1430	Sample Type: Soil/Tile	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 15"

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7.5" Asphalt Core			
					0'- Silty Sand w/ trace beige tile & red tile debris, brown soil - w/ Asphalt + debris brick			
					0.5 - Silty Sand w/ trace beige tile debris and brick debris,			
					1'- Silty Sand w/ gravel, No tile debris			
5					Refusal @ 15" below bottom of asphalt			
					15"- Silty Sand, dark/discolored soil w/ trace suspect material (beige)			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client:	Boring No. E6
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1500	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1520	Sample Type: Soil / Tile	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2" Asphalt Core 0'-Silty Sand w/asphalt debris & beige & red tile debris 0.5 - Silty Sand, dark brown, moist, no tile debris 1' - Same as above 2' - Same as above * Tile debris only found at surface			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E7
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1320	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1340	Sample Type: Soil / Tile	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.25" Asphalt Core 0' - Silty Sand w/ gravel & wood debris, No tile debris 0.5' - Sandy Silt w/ gravel & trace brown tile debris, moist 1' - Sandy Silt, dark brown, moist white powdery debris, No Tile debris 2' - Same as above * 0.5' Tile debris Sample Collected			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AEI	Boring No. E-8 ~~B-8~~
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1540	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Date Completed: 1550	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping			
					0' - Silty Sand, dry w/ Gravel & detritus, No tile debris			
					0.5' - Same as above			
					1' - Silty Sand w/ gravel, No tile debris			
5					2' - Same as above			
					*No Tile encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AEI	Boring No. E-9
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0710	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 0730	Sample Type: Soil/Tile	10/6/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.75" Asphalt Core 0'- Silty Sand w/ Gravel & asphalt debris, dry, lgt brown, No tile debris 0.5'- Silty Sand w/ gravel & trace beige & red tile 1'- Sandy Sand w/ coarse Sand, No tile, moist, lgt brown 2'- Same as above *trace tile chips collected @ 0.5' below bottom of asphalt			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-10
Address, City, State		Drilling Contractor: A	Drill Rig Type:
Logged By: RH	Date Started: 0730	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 0750	Sample Type: Soil HA	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					3.5" Asphalt Core			
					0' - Silty Sand w/ Gravel, moist brown, No tile debris, Fill debris			
					0.5 - Silty Sand w/ fill debris (brick and suspect beige specks (possible sand)			
					1' - Sandy Silt w/ trace gravel, moist brown, No tile debris			
5					2' - Same as above, No gravel, trace coarse sand			
					* No tile chips encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-11
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0755	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Date Completed: 0820	Sample Type: Soil / Tile	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2" Asphalt Core			
					0' - Silty Sand w/ fill debris, No tile chips observed			
					0.5' - Same as above			
					1' - Silty Sand w/ fill debris and white tile debris, trace red tile			
5					1'6" - Significant tile debris (mixed color - biege, red, white)			
					1'9" - Same as above, tile chip Sample collected			
					2' - 1.5' - Significant tile debris white & red			
10					2' - Sandy Silt, moist, brown, No tile debris			

Bulk/Soil Sampling Log * 2 tile chip Sample collected Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample
Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AEI	Boring No. E-12
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 855	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Date Completed: 910	Sample Type: Soil/Tile	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Silty Sand, dry w/gravel, tan, ~~tile~~ tile debris beige 0.5- Same as above, No tile debris 1'- Sandy Silt, moist, brown, no tile 2'- Same as above * Tile debris found only @ Surface(0')			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-13
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0915	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 0930	Sample Type: Soil/Tile	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Silty Sand w/ gravel and trace tile debris (beige & black) 0.5 - Sandy Silt w/ significant tile debris (gray & beige) 1'- Sandy Silt, moist, lgt brown, white powdery substance, No tile debris 2'- Same as above * Tile Chips Samples collected @ 0 & 0.5' below ~~batte~~ ground surface (bgs)			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-14
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 935	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 9:53	Sample Type: Soil	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.5" Asphalt Core 0'-Silty Sand w/base material (gravel) observed, No tile debris 0.5'-Silty Sand w/fill debris (gravel & brick, moist, brown, No tile debris observed 1'-Same as above 2'-Sandy Silt, moist, brown, No debris/fill *Fill material from Surface to 1.5' below bottom asphalt (bba) No tile chip sample			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-15
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 955	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1015	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 3	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 1'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2" Asphalt Core 0'- Silty Sand w/ fill debris (asphalt gravel) No tile chips observed 0.5'- Same as above 1'- Fill debris, No tile debris Refusal due to pipe *Refusal @ 1' bba; No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-18
Address, City, State		Drilling Contractor:	Drill Rig Type:
Logged By: RH	Date Started: 1220	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1210	Sample Type: Soil	10/6/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					3" Asphalt Core			
					0' - Sandy Silt, moist, brown, w/ grave/asphalt debris, No tile debris			
					0.5' - Same as above			
					1' - Silt w/ Sand & trace fill, no tile debris observed			
5					2' - Silt, moist, brown, No tile debris			
					* No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-19
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1340	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1350	Sample Type: Soil	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6.5" Asphalt Core 0' - Sandy Silt w/ fill debris (gravel & brick debris 0.5 - Silt w/ red streaks, trace fill debris 1' - Silt, moist, no tile debris 2' - Same as above * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

E-20

Project:	Project Number:	Client: AFI	Boring No. I-9
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 13:20	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 1335	Sample Type: Soil	10/6/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					Asphalt Surface 0'- Silt, Sand w/ fill (base & asphalt debris, No tile debris 0.5'- Sandy Silt w/ fill debris (brick, gravel, asphalt) moist, brown, No tile debris 1'- Silt w/ very fine Sand, moist brown, No debris, No tile chip 2'- Same as above * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-21
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 825	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Date Completed: 845	Sample Type: Soil/Tile	
USA Ticket Number:	Date Backfilled:	Number of Samples: 7	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					2.5" Asphalt Core 0'- Silty Sand w/ gravel & asphalt debris, No tile chips observed 0.5'- Silty Sand w/ fill, beige & red tile debris present 1'- Same as above 1.5'- Significant tile debris (white & beige, red tile) 2'- Silty Sand, moist, brown, No tile debris * No tile debris encountered after 19.5" below bottom of asphalt 0.5'- 19.5" tile found			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-22
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1230	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1245	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 2	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 8"

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6.25" Asphalt Surface 0'- Well Graded Fill Sand w/ gravel, tan, moist, No tile debris 05'- Same as above 1' 8"- Pipe encountered; Refusal Well Graded fill Sand, No tile debris observed * Refusal @ 8"; No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-23
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RA	Date Started: 1247	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 1300	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5" Asphalt Surface 0' - Sandy Silt, No debris, moist lgt brwn 0.5' - Silt, moist, brwn, No Tile debris found 1' - Same as above 2' - Same as above * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-24
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1351	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 1402	Sample Type: Soil/Tile	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5.5" Asphalt Surface			
					0'- Sandy Silt w/ fill debris (gravel, asphalt, brick debris)			
					0.5- Sandy Silt w/ trace large beige tile chip, moist, brown			
5					1'- Sandy Silt, moist, brown, No tile debris			
					2'- Same as above, No tile debris observed			
					* Tile chip debris only observed @ 0.5' below bottom of asphalt			
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Bulk/Soil Sampling Log

Boring Log: Sheet __of ___

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-25
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1405	Tool Type:	Diameter: 3.5'
Drill Crew:	Date Completed: 1425	Sample Type: Soil/Bulk	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5.75" Asphalt Surface 0' - Silty Sand w/ fill debris, Suspect fill debris collected (red, blue material) 0.5' - Same as above 1' - Silt w/ trace fill debris (black rock), No Sample (bulk) collected 2' - Silt, moist, brown, No tile debris * No Tile debris; 2 suspect material samples (bulk) collected (0' & 0.5')			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFL	Boring No. E-26
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1427	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Date Completed: 1451	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5.5" Asphalt Surface 0'- Silty Sand w/ Fill debris (brick, coarse Sand, gravel, ~~asphalt~~) 0.5 - Same as above 1'- Same as above 14" - Significant tile debris (yellow, red, beige) Sample * 1 bulk sample collected @ 14" below bottom of asphalt 2'- Silt, moist, brown, No debris observed			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-27
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1454	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 1506	Sample Type: Soil	
USA Ticket Number:	Date Backfilled:	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" Asphalt Surface			
					0' - Silty Sand w/ fill debris Lgravel			
					0.5' - Same as above w/ trace beige & red tile, moist brwn soil			
					1' - Silty Sand, reddish orange (rusty color) No tile debris			
5					2' - Silt, moist, brwn, trace glass debris, No tile debris			
					* No tile chips encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-28
Address, City, State		Drilling Contractor: FCI	Drill Rig Type:
Logged By: RH	Date Started: 1215	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 1225	Sample Type: Soil	10/6/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					3" Asphalt Surface			
					0'- Sandy Silt w/ gravel, moist, brown, No tile encountered			
					0.5'- Same as above, trace gravel			
					1'- Same as above			
5					2'- Silt, moist, brown, No tile debris observed			
					*No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-29
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By:	Date Started: 0727	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 0733	Sample Type: Soil	10/7/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0'- Silty Sand w/ trace gravel, dry, lgt brwn, No tile debris 0.5 - Silty Sand trace gravel slt moist, lgt brwn, No tile debris 1' - Same as above, No gravel 2' - Silt w/ v. fine Sandy Slt. moist, No tile debris * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-30
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0740	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 0752	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples:	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No Hardscaping 0'- Sandy Sand w/ trace gravel, dry, lgt brwn, No tile debris 0.5'- Silt w/ v. fine Sand, dry lgt brwn, No tile debris 1'- Same as above 2'- Same as above * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. E-3
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0755	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 0816	Sample Type: Soil/Tile	10/7/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0'- Sandy Silt w/ trace beige tile chips, dry, lgt brown 0.5'- Same as above 1'- Silt w/ very fine Sand, dry, lgt brown, No tile debris observed 2'- Same as above * Refusal @ 1.5' on first location Stepped over 2' then collected 2' Sample Tile encountered @ 0' & 0.5'			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:		Project Number:	Client: AFI	Boring No. E-32
Address, City, State			Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date	Started: 0820	Tool Type: HA	Diameter: 3.5'
Drill Crew:		Completed: 0830	Sample Type: Soil/Tile	
USA Ticket Number:		Backfilled: Yes	Number of Samples: 6	
		Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping			
					0' - Sand w/ tile chips (moderate) beige, dry sand, lgt brown,			
					0.5 - Same as above			
					10" - Tile debris trace			
5					1' - Sand w/ trace silt, dry, lgt brown, No tile debris			
					2' - Very Fine Sand w/ trace Coarse Sand, dry, lgt brown No tile debris			
					* Tile Chips encountered @ 0' & 0.5', no chips observed past 10" bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-33
Address, City, State		Drilling Contractor: EC1	Drill Rig Type:
Logged By: RH	Date Started: 0833	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 0843	Sample Type: Soil / Tile	
USA Ticket Number:	Backfilled:	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hard Scaping 0' – Silt w/ v fine to trace coarse Sand and trace gravel, dry, lgt brown, No tile debris observed 0.5' – ~~Silt~~ Same as above w/ trace beige tile chip 1' – Silt, slightly moist, lgt brown, No tile debris encountered 2' – Same as above * Tile encountered @ 0.5' only			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. E-34
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0900	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 0910	Sample Type: Soil	10/07/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0' - Sandy Silt w/ gravel, dry, lgt brwn, N 0.5' - Same as above 1' - Silt w/ trace coarse sand, slightly moist, lgt brwn 2' - Same as above * No Tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-35
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0848	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 0858	Sample Type: Soil	10/7/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0'- Sandy Silt w/ gravel, dry, lgt brown, No tile debris 0.5'- Same as above 1'- Silt, slightly moist, lgt brown, No tile debris 2'- Same as above * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-36
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 0912	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 0930	Sample Type: Soil/Tile	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0' - Sandy Silt w/ gravel & trace large beige tile chips 0.5' - Same as above 10" - Tile chips observed 1' - Silt w/ very fine sand/slt. moist, lgt brwn no tile debris, trace gravel 2' - Silt, slt. moist, lgt. brown, No tile encountered * No tile debris past 10"			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-37
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RA	Date Started: 0935	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 0950	Sample Type: Soil/Tile	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 6	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping 0'- Sandy Silt w/ gravel ~~& trace large tile chips (beige)~~, dry, lgt brwn 0.5'- Silt w/ v. fine Sand & gravel and trace large tile chips (beige) dry, lgt brwn 1'- Same as above; trace gravel 16"- large tile chip observed, 2'- Silt, slightly moist, lgt brwn, No tile debris * Tile encountered @ 0.5' & 1' bgs, no tile observed past 16" bgs			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. E-38
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 715	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 725	Sample Type: Soil	10/7/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					No hardscaping Ø - Sandy Silt w/ trace gravel, dry, lgt brown, No tile debris 0.5 - Sandy Silt, trace coarse Sand, dry, No tile debris 1' - Same as above 2' - Silt w/ very fine Sand, dry lgt brown, No tile debris * No tile encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-1
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1357	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1411	Sample Type: Soil	10/7/20
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6.5" Concrete Surface 0' - Sand w/ gravel, medium to coarse grained sand, moist, olive, No tile debris observed 0.5' - Same as above 1' - Same as above 2' - Sand, no gravel, medium grained, lgt brown, moist, No tile debris 20-23" - Silt, moist brown, No debris * No tile debris encountered			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-2
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1415	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1445	Sample Type: Soil	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 3'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" Concrete Surface			
					0' - Sandy fill w/ gravel, fine to v. coarse sand, moist, olive, No tile debris			
					0.5' - Same as above			
					1' - Silty, dark fill debris, moist, strong odor, No tile debris			
5					2' - Same as above			
					3' - Same as above			
					* Refusal @ 3' below bottom slab, No tile debris observed			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. I-3
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1336	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1353	Sample Type: Soil/bulk	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7.75" Concrete Surfacing			
					0' Sandy Silty Fill debris/brick white fibrous material-Sampled, gravel, moist, No tile debris observed			
					0.5'- Same as above			
5					1'- Silt w/ trace fill debris (gravel & rock), moist, brown			
					2'- Same as above, trace brick debris			
					* No tile debris observed			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-4
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1313	Tool Type: HA	Diameter: 3.5
Drill Crew:	Date Completed: 1333	Sample Type: Soil / bulk	
USA Ticket Number:	Date Backfilled: YeS	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 14"

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7.75" Concrete Surfacing			
					0'- Silty Sandy fill debris (brick, wood, black rock) moist, no visible tile debris			
					0.5'- Same as above, trace white suspect friable material (sample collected) moist, no visible tile debris			
5					1'- Silt w/ trace fill debris (rock-black, brick, wood			
					14" Refusal (concrete)			
					* Suspect white friable material collected @ 0.5'			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-5
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1251	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Date Completed: 1311	Sample Type: Soil/bulk	
USA Ticket Number:	Date Backfilled: Yes	Number of Samples: 5'	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					7.5" Concrete Surfacing 0' - Silty Sandy fill w/ gravel & suspect friable white material moist, yellowish brown 0.5 - Silty Sandy fill w/ gravel & brick debris, No tile debris observed 1' - Silt w/ trace fill debris (black rock, brick), No tile debris observed, moist, brown 2' - Same as above * Suspect material Sample collected @ Surface, No tile chips observed			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-6
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RA	Date Started: 1125	Tool Type: HA	Diameter: 3.5
Drill Crew:	Completed: 1143	Sample Type: soil / Tile	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 7	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6.25" Concrete Surfacing			
					0' – Sandy Silty Fill, dark, moist, w/ beige tile chips			
					0.5 – Same as above, w/ significant tile debris (mixed color - green, beige, red, strong odor			
5					10' – tile chip large (green) encountered			
					1' – Sandy Silty dark-fill material, moist, strong odor, No tile debris			
					2' – Same as above			
					* Tile encountered up to 10" below bottom of concrete			
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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Project:	Project Number:	Client: AFI	Boring No. IE-7
Address, City, State		Drilling Contractor: ELI	Drill Rig Type:
Logged By: RH	Date Started: 1145	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1159	Sample Type: Soil	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors **Rock Description:** modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6.25" Concrete Surfacing 0'- Sandy Silt w/ gravel lgt brown, slightly moist, No tile debris observed 0.5'- Sand fill, fine to very coarse, orange, slgt moist, No tile debris 1'- Dark Sandy Silty fill, Strong odor, No tile debris 1.5'- Silt w/ fine Sand, No odor, No debris 2'- Same as above * No tile encountered			
5								
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Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

Project:	Project Number:	Client: AFI	Boring No. I-8
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1015	Tool Type: HA	Diameter: 3.5"
Drill Crew:	Completed: 1035	Sample Type: So-1	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 5	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 4'

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					6" Concrete Surfacing			
					0' - Clean Fill Sand (Poorly Graded) medium grained, No tile debris trace gravel			
					0.5' - Same as above			
					1' - Fill Sand, tan, medium grained, moist, trace gravel			
5					2' - Same as above			
					3.5 - transitioned to silty Sand moist, brown, No			
					4' - Sandy Silt (possible native) moist, brown, No tile			
10					* No tile debris encountered			

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

ENTECH

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Project:	Project Number:	Client: AFI	Boring No. I-10
Address, City, State		Drilling Contractor: ECI	Drill Rig Type:
Logged By: RH	Date Started: 1205	Tool Type: HA	Diameter: 3.5'
Drill Crew:	Completed: 1219	Sample Type: Soil	
USA Ticket Number:	Backfilled: Yes	Number of Samples: 4	
	Groundwater Depth: N/A	Elevation: N/A	Total Depth of Boring: 2

Depth (feet)	Sample Type	Sample Number	Blow Counts (blows/foot)	Graphic Log	Lithology Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors Rock Description: modifierm color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	Dry Density (pcf)	Moisture Content (%)	Additional Test
					5.25" Concrete Surfacing 0'- Silty Sandy fill, clean fine to coarse grained sand, slgtly moist, lgt tan, No tile debris 0.5'- Same as above 1'- Sandy fill medium grained trace gravel, moist, No tile debris 2'- Same as above Refusal, possible concrete pad * No tile debris encountered			
5								
10								

Bulk/Soil Sampling Log

Boring Log: Sheet 1 of 1

Asphalt/Top Layer Sample
Bulk/Bag Sample
Soil/Bag Sample

Approximate Ground Water

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APPENDIX E

Photo Log

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Asbestos Soil Sampling
AFI South Gate Facility
5037 Patata Street, South Gate, CA
Phase I & II



Photo 1 – AFI South Gate Facility – North Central Paved Area looking East

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Photo 2 – AFI South Gate Facility – Southeast Paved Area looking West

Asbestos Soil Sampling
AFI South Gate Facility
5037 Patata Street, South Gate, CA
Phase I & II



Photo 3 – AFI South Gate Facility – Southeast looking Northwest

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Photo 4 – AFI South Gate Facility – Soil Sampling

Asbestos Soil Sampling
AFI South Gate Facility
5037 Patata Street, South Gate, CA
Phase I & II



Photo 5 – AFI South Gate Facility – Soil Sampling

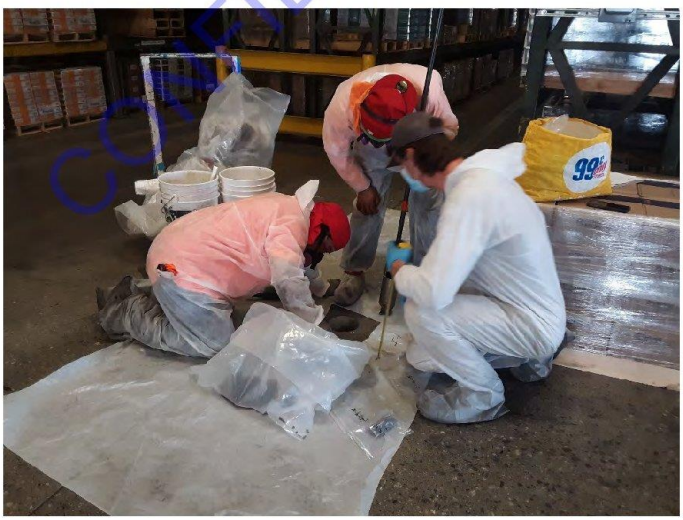


Photo 6 – AFI South Gate Facility – Interior Soil Sampling – Concrete Slab

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Asbestos Soil Sampling
AFI South Gate Facility
5037 Patata Street, South Gate, CA
Phase I & II



Photo 7 – AFI South Gate Facility – Cored Borehole (Asphalt)

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Photo 8 – AFI South Gate Facility – Recovered Suspect Debris from a Borehole

Asbestos Soil Sampling
AFI South Gate Facility
5037 Patata Street, South Gate, CA
Phase I & II

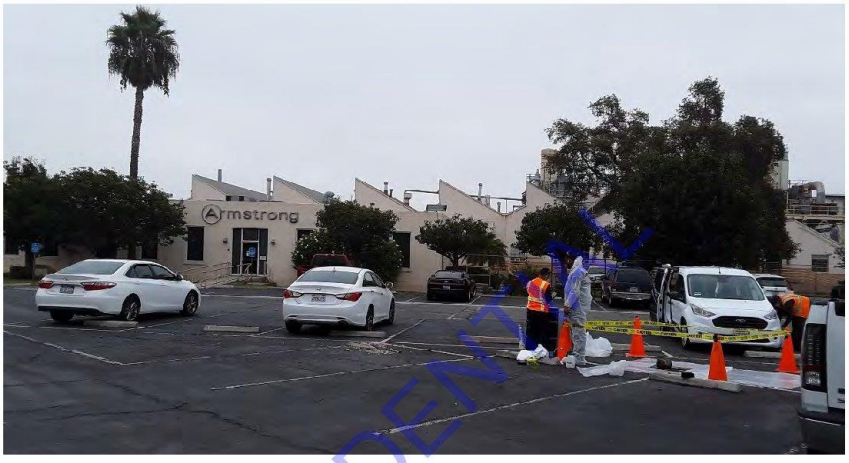


Photo 9 – AFI South Gate Facility – West Façade - Soil Sampling

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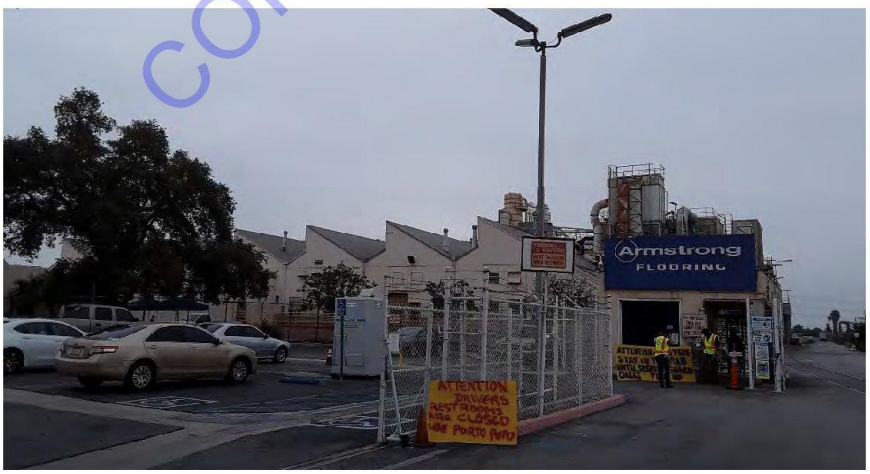
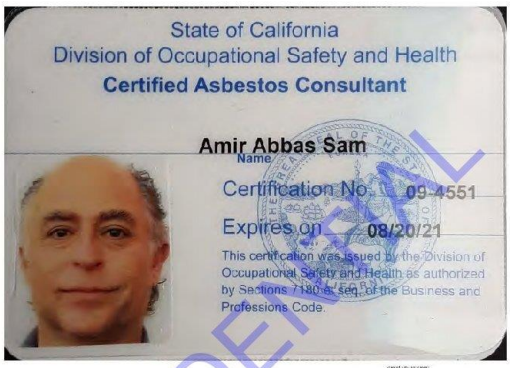


Photo 10 – AFI South Gate Facility – Entrance Gate

APPENDIX F

Certifications

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State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant
Amir Abbas Sam
Name
Certification No. 09-4551
Expires on 08/20/21
This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et. Seq. of the Business and Professions Code.

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STATE OF CALIFORNIA — Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
Asbestos Certification & Training Unit
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html acru@dir.ca.gov

402195200T 386

August 24, 2020

Mark R Hartranft
12635 Main Street, Unit 323
Garden Grove CA 92840

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. *[8 CCR 341.15(h)(1)].*

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please notify our office via U.S. Postal Service or other carrier of any changes in your mailing or work address within 15 days of the change.

Sincerely,

Jeff Ferrell
Senior Safety Engineer

Attachment: Certification Card

cc: File


State of California
Division of Occupational Safety and Health
Certified Site Surveillance Technician
Mark R Hartranft
Name
Certification No. 14-5200
Expires on 05/14/21
This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code

Renewal – Card Attached (Revised 06/2020)

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APPENDIX G

Estimated Excavation Boundary Plan

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Area-1

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-1 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



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Area-2

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-2 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



CONFIDENTIAL

Area-3

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-3 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-4

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-4 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-5

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-5 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



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Area-6

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-6 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



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Area-7

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-7 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



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Area-8

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-8 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-9

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-9 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-10

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-10 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-11

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-11 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-12

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-12 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-13

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-13 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-14

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-14 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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Area-15

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-15 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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CONFIDENTIAL

Area-16

Legend
Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-16 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

ENTECH



CONFIDENTIAL

Area-21

Legend	
	Estimated Excavation Boundary

N

Prepared for: Armstrong Flooring, Inc.	Armstrong Flooring, Inc – South Gate 5037 Patata Street, South Gate, CA Environmental Due Diligence Soil Investigation	Figure-1-21 Estimated Excavation Plan
Prepared by: Entech Environmental Group, LLC		*Date:* 1/18/2021 *Drawn by:* AAS

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APPENDIX G – HYDROLOGY

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Thienes Engineering, Inc.
CIVIL ENGINEERING LAND SURVEYING

PRELIMINARY HYDROLOGY STUDY

FOR

PATATA STREET INDUSTRIAL BUILDING
5037 PATATA STREET
SOUTH GATE, CALIFORNIA

PREPARED FOR

OVERTONE MOORE PROPERTIES
19700 S. VERMONT AVENUE, SUITE 101
TORRANCE, CA 90502
PHONE: (310) 323-9100

MAY 11, 2021

JOB NO. 3901

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
(714) 521-4811

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

PATATA STREET INDUSTRIAL BUILDING

PREPARED UNDER
THE SUPERVISION OF



REINHARD STENZEL , PE
R.C.E. 5615
EXP. 12/31/22

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the easterly side of Wilcox Avenue and west of Los Angeles river between Fostoria Street and Southern Pacific railroad track in the City of South Gate. See following page for vicinity map.

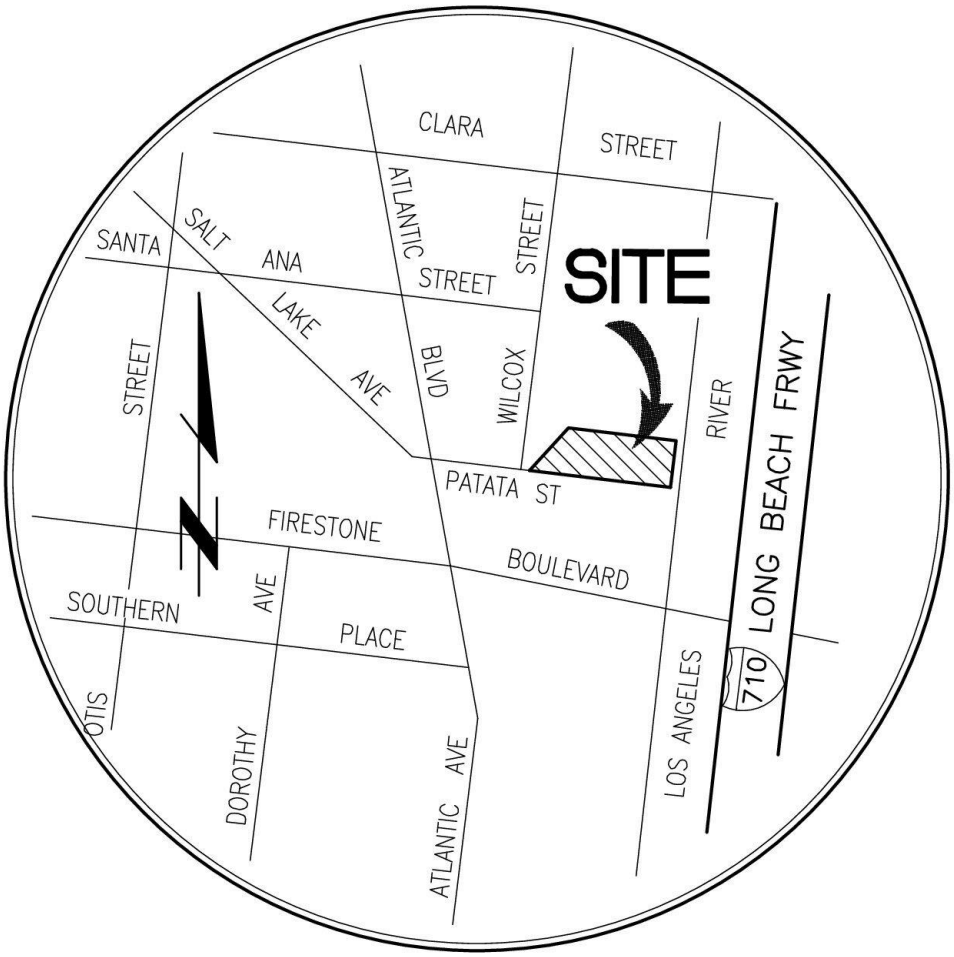
B: STUDY PURPOSE

The purpose of this study is to determine the existing and proposed condition 50-year peak flow rate from the site that surface drains to an existing 24" pipe southeast of the site and conveyed to Los Angeles River.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Kristie Fortunato
Eduardo Toledanes



VICINITY MAP

N.T.S.

DISCUSSION

The proposed project site encompasses approximately 26.8 acres. There is one proposed warehouse type building of approximately 409,920 square feet. A truck yard will be located on the south side of the site and truck parking area on the easterly and southerly side of the building, while vehicle parking is on the north and westerly side of the building. A paved drive aisle will be located southwesterly of the site. There will be landscaped areas adjacent to Wilcox Avenue and smaller areas throughout the site.

Master Plan of Drainage

The project site was tabled to an existing 24" pipe southeast of the property and drains to Los Angeles river. The 24" pipe is currently maintained by the Corps of Engineers Operation Branch. Per Los Angeles County Department of Public Works the site has an allowable discharge of 1 cubic feet per acre. Therefore, allowable discharge from the site is approximately 26.8 cfs. (26.8 acres x 1 cubic feet/ acre). Runoff volume that exceeds 26.8 cfs, will be detained onsite.

Please see Appendix "A" (Reference materials) for portions of the City's Master Plan of Drainage and downstream existing storm drain plans.

Existing Condition

In the existing condition, the majority of the site is paved over as an industrial plant. The eastern portion of the site is undeveloped. There is a well-defined vegetated swale, which appears to drain the site. The swale accepts runoff from the project site and conveys in south, then southeasterly towards the southeast corner of the site. The swale dead ends near the southeast corner. The runoff must pond up then it spills out into the landscape strip paralleling the Los Angeles River. This landscape strip has a headwall with a 24" storm drain which collects the runoff from the site, from the northern portion of the railroad right of way, and the landscape strip west of the Los Angeles River. The site (26.8 acres) is tabled to the Los Angeles River via the existing 24" storm drain. The allowable Q is 1.0 cfs/acre.

Runoff from a northerly offsite area (1.85 acres) also drains south through the project site and ultimately discharges to the existing 24" storm drain system downstream. The total onsite and offsite areas tributary to the existing 24" RCP southeast of the site is approximately 28.6 acres (26.8 acres + 1.8 acres).

The total allowable 50-year peak flow rate tributary to the site including the offsite runoff is approximately 28.6 cfs (28.6 acres x 1.0 cfs/acre).

The existing 24" RCP downstream has a full capacity of approximately 35.9 cfs.
See Appendix "A" for reference materials.

Proposed Condition

The site is being developed with a single warehouse type building. There will be a truck yard south of the site and truck parking areas along the east and south sides of the proposed building, vehicle parking will be along the west and north of the building. The runoff will be collected in a series of catch basins and drains to a proposed storm drain system that will convey runoff to an existing 24" RCP at the southeast corner of the site and discharges to Los Angeles River. The 50-year storm event flow rate for the site is approximately 38.2 cfs. undetained.

A southwesterly portion of the site (Area 1D, 0.15 acres) drains south to Patata Street. The 50-year storm event at this location is approximately 0.2 cfs undetained.

An offsite runoff (Area 1C 1.85 acres) north of the site will drain southerly via a proposed storm drain system and conveyed southeasterly to an existing 24" pipe southeast of the site and ultimately discharged to Los Angeles River. The 50-year peak flow rate at this location is approximately 1.9 cfs. undetained.

The total 50-year peak flow rate at proposed condition tributary to the site including the offsite runoff is approximately 40.3 cfs (32.8 cfs + 0.2 cfs + 1.9 cfs) undetained which is higher than the allowable condition (28.6 cfs.). Detention is required onsite to limit discharge from the site.

See Appendix "B" for the proposed condition hydrology calculations and Appendix "D" for the Proposed Condition Hydrology Map.

Detention

The discharge from the site including the offsite runoff will be limited to 28.6 cfs. The additional flow will be temporarily detained above ground in the easterly and southerly truck yard. This will require approximately 11,188 cf. of storage. The easterly and the southerly truck yard can provide this at a maximum depth of approximately 0.45 foot. The runoff will then be allowed to burb up into a small detention basin at the south east corner of the site. This detention basin will have a spillway into the landscape strip west of the river. The pipe into the detention basin will control and limit the flow to the basin. From there the runoff will continue to the existing 24" storm drain, which will mimic the allowable condition Q. A pump station will be installed north of the pipe outlet to gradually drain residual runoff from the pipes. All improvements will be within the project limits and not encroaching into Flood Control Right-of-Way. The total 50-year peak flow rate (at detained condition) from the site including the offsite runoff tributary to the 24" pipe downstream is approximately 28.6 cfs. (26.5 cfs. + 1.9 cfs.) which is comparable to

the allowable discharge (28.6 cfs). Therefore, runoff from the site at proposed condition does not adversely affect the runoff discharge that drains to the existing 24" pipe downstream.

If this spillway option is not allowed by permitting agencies, a connection to the channel may be required. This would require permits from both LACFCD and ACOE which can extend the permitting process.

See Appendix "B" for the proposed condition hydrology calculations and Appendix "D" for the Proposed Condition Hydrology Map.

Methodology

Hydrology and hydrograph calculations were computed using Los Angeles County's Tc Calculator Excel spreadsheet. Per the Los Angeles County Hydrology Manual (January 2006), the project site consists of Soil Types 015. The isohyet is 5.9 per the Los Angeles County Hydrology Manual. WSPG was used for hydraulic calculations.

APPENDIX	DESCRIPTION
A	REFERENCE MATERIALS
B	HYDROLOGY CALCULATIONS
C	DETENTION ANALYSIS
D	HYDROLOGY MAP

APPENDIX A

REFERENCE MATERIALS

Office Use Only
☒ Sent Initials: _____
☐ Fax ☒ Email ☐ Other: _____
Date: _____ Time: _____

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION – HYDRAULIC ANALYSIS UNIT

INFORMATION REQUEST SUMMARY

INFORMATION REQUESTED BY

*Requester's Name: Angie Maldonado
Company: Thienes Engineering, Inc
*Phone Number: (714) 521-4811 Fax Number: (714) 521-4173
*Email: Angie@ThienesEng.com

Method of Contact: ☐ Walk-in ☐ Phone ☐ Fax ☒ Email ☐ Prelim. Mtg. Date: 07/30/2020

Intended Use: Research

Proposed Project Type: Industrial Acreage Involved: _____

*Will information be used in any litigation? ☐ YES ☒ NO
Case Info. Name: _____ No: _____ Location: _____

INFORMATION REQUESTED (Attach Assessor Map)

LACFCD Facility: Name: LOS ANEGELES RIVER
Unit: _____ Line: _____ Station: 720 to 730
City: South Gate
*Street/Cross-street: 5037 Patata Street / Wilcox Ave
*Thomas Guide: Page: 705 Grid: E3 F3 ☒ Site Map/Plans Submitted
Info. Requested:
- Hydrology
- Allowable Q
- Calcs

***Required Information. See Page 2 of 2 for Instructions.**

BELOW SECTION TO BE COMPLETED BY THE HYDRAULIC ANALYSIS UNIT

INFORMATION PROVIDED:
Hydraulic Calculation, As Built Drawing, Allowable Discharge Flow. Design Data " LAR-A14".

REFERENCES SEARCHED:
Los Angeles River Files, and Drawing No. LA427/16

COMMENTS, ETC:

1- The subject site tabled to discharge into Los Angeles River via existing 24"CMP drain located at Sta. 721+10.80.
2- Allowable Discharge flow into Los Angeles River limited to Q=1.0cfs/acre.
3- The subject drain maintained by Corps of Engineers Operation Branch. See attached Design Data Sheet LAR-A-14

INFORMATION PROVIDED BY: George K Aintablian Date: 08/31/2020

INFORMATION REVIEWED BY: Date:

Print Save a Copy

LA 804

HYDRAULIC DESIGN - PERTINENT DATA

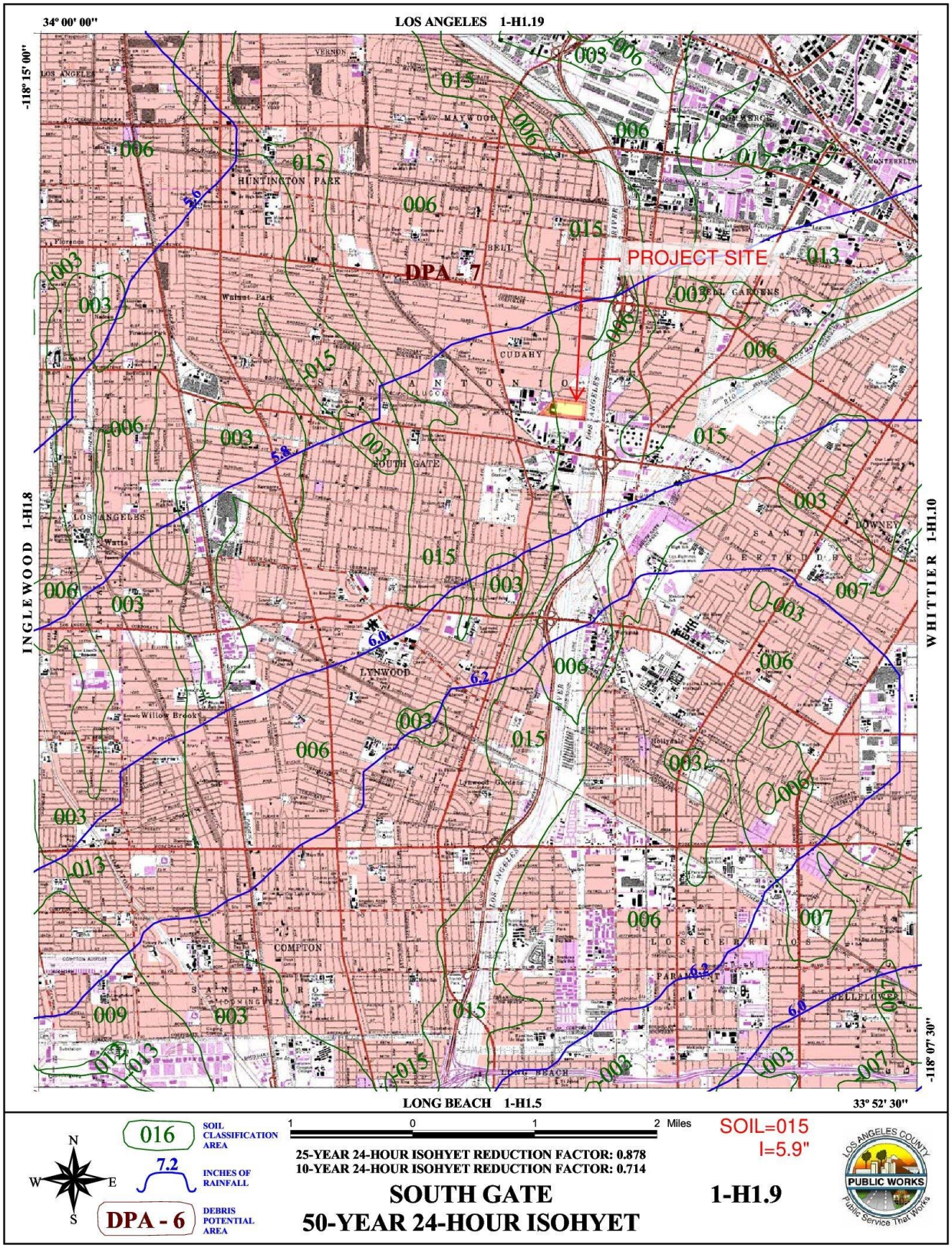
PROJECT Los Angeles River LOCALITY S.P.R.R. bridge to Steward & Gray Rd. SHEET 2 OF 2 SHEETS

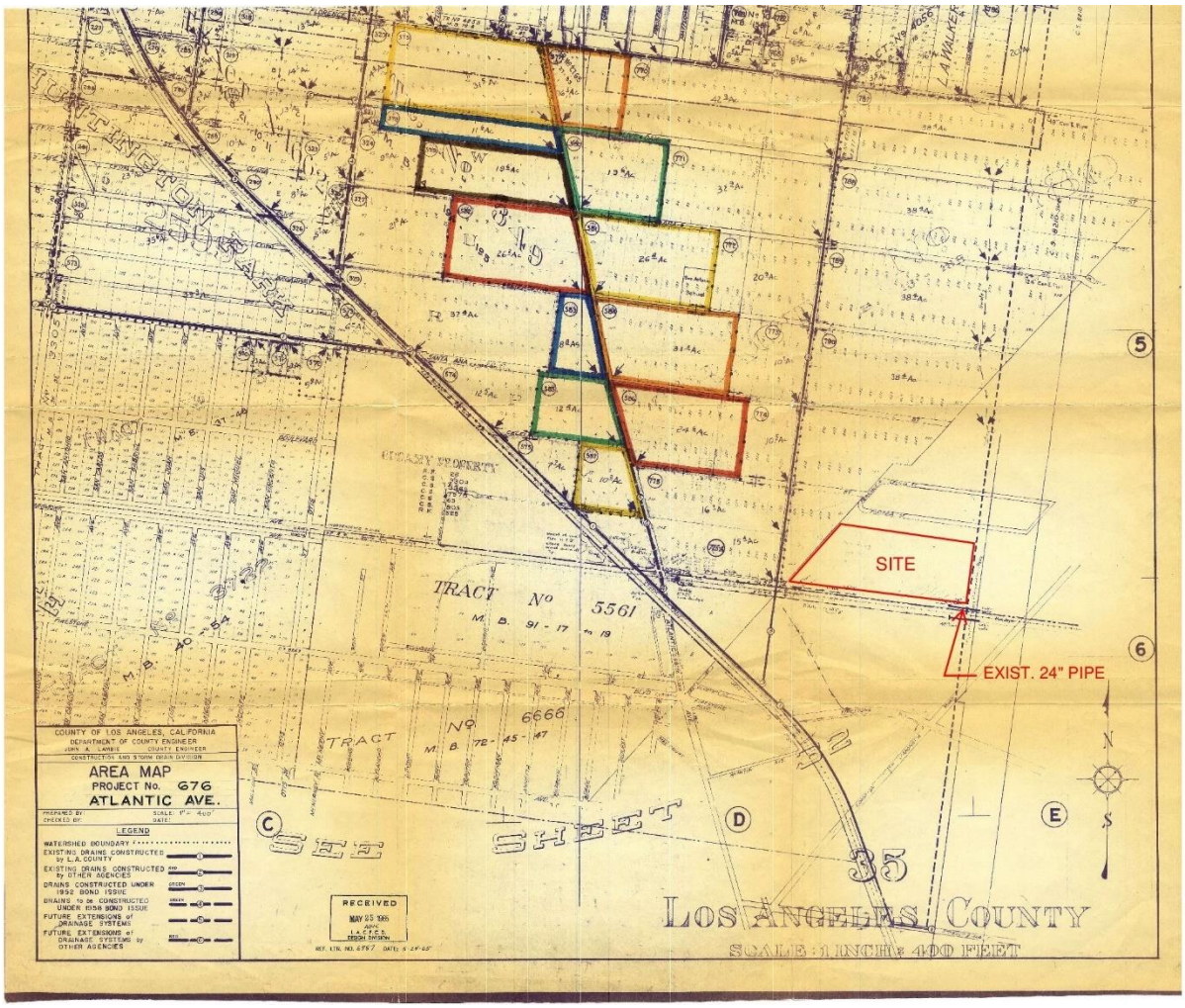
REFERENCE DRAWINGS Plan and Profile (File No. H-2231) DATE 7/8/41 BY R.F.Y.

AUTHORITY FOR STUDY Detail Hydraulic Design CHECKED BY J.P.H.

STATION	SECTION	SLOPE	d_n	d	V	E	S.E.	d+ S.E.	Ht.	F.B.	REMARKS
720+77.50				18.00	15.39	21.68	-	18.00	23.00	5.00)	See Analysis of Design-
720+77.50				15.14	18.72	20.59	-	15.14	22.00	6.86)	Randolph Street to
720+00.00				14.45	19.31	20.25	-	14.45	22.05	7.60	Steward & Gray Road
719+00.00				14.45	19.31	20.25	-	14.45	22.12	7.67	dated July 1940 for W.S.
710+00.00				15.75	17.50	20.51	-	15.75	22.71	6.96	computations upstream of
705+56.24				16.55	16.57	20.82	-	16.55	23.00	6.45)	S.P.R.R. bridge.
705+56.24				15.75	17.50	20.51	-	15.75	22.00	6.25)	℄ S.P.R.R. bridge
695+00.00				17.90	15.11	21.45	-	17.90	22.92	5.02	
688+15.33				19.45	13.66	22.35	-	19.45	23.50	4.05)	℄ Firestone Blvd. bridge
683+15.33				18.50	14.50	21.77*	-	18.50	23.50	5.00)	℄ Stewart & Gray Rd. Bri
694+00.00			15.30	19.10	15.55	22.86	-	19.10	23.11	4.01	*E=22.38 for Q=120,000.

Q = DESIGN DISCHARGE-C.F.S. d_c = CRITICAL DEPTH-FT. d = COMPUTED DEPTH-FT E = ENERGY HEAD-FT HT.= WALL HEIGHT-FT.
n = COEFF. OF ROUGHNESS d_n = NORMAL DEPTH-FT. V = COMPUTED VELOCITY-FT/SEC. S.E.= SUPERELEVATION-FT. F.B.= FREEBOARD-FT.


34° 00' 00"
LOS ANGELES 1-H1.19
-118° 15' 00"
INGLEWOOD 1-H1.8
WHITTIER 1-H1.10
-118° 07' 30"
LONG BEACH 1-H1.5
33° 52' 30"
PROJECT SITE
DPA - 7
HUNTINGTON PARK
MAYWOOD
BELL
CUDAHY
SOUTH GATE
LYNWOOD
COMPTON
LOS CERRITOS
SANTA GERTRUDES
016 SOIL CLASSIFICATION AREA
7.2 INCHES OF RAINFALL
DPA - 6 DEBRIS POTENTIAL AREA
1 0 1 2 Miles
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714
SOIL=015
I=5.9"
1-H1.9
SOUTH GATE
50-YEAR 24-HOUR ISOHYET
LOS ANGELES COUNTY PUBLIC WORKS
Public Service That Works


SITE
EXIST. 24" PIPE
TRACT No 5561
M. B. 91 - 17 to 19
TRACT No 6666
M. B. 72 - 45 - 47
SEE SHEET 35
LOS ANGELES COUNTY
SCALE: 1 INCH = 400 FEET
AREA MAP
PROJECT No. 676
ATLANTIC AVE.
COUNTY OF LOS ANGELES, CALIFORNIA
DEPARTMENT OF COUNTY ENGINEER
LEGEND
RECEIVED
MAY 25 1965

OPERATION AND MAINTENANCE MANUAL

DATA SHEET
LAR-A-14

LOS ANGELES RIVER CHANNEL
Florence Ave to Stewart and Gray Rd

Construction Data

Contract No:	DA 56-170 Winston Brothers Co	Force Account
Specifications:	CIVENG 56-71	
Plans:	D.O. Series 147/1-14	D.O. LA427/1-73,428/1-6
Start:	15 May 1956	1937
Finish:	14 December 1956	May 1942
Folio Title:	LOS ANGELES RIVER IMPROVEMENT Florence Ave to Stewart and Gray Rd	LOS ANGELES RIVER IMPROVEMENT Randolph St to Stewart and Gray Rd

Local Assurances
Resolution Dated:
Operation and Maintenance Transferred to: Operations Branch, Corps of Engineers

Stormflow Data
Gaging Station Location: downstream of Firestone Blvd (sta 702+48)
Type: Recording (LACFCD--F34D-R)
Staff Gage Reading at One-third Capacity: 7.4 ft on gage (40,000 cfs)

Access Ramps
To Invert: none; use LAR-A-13

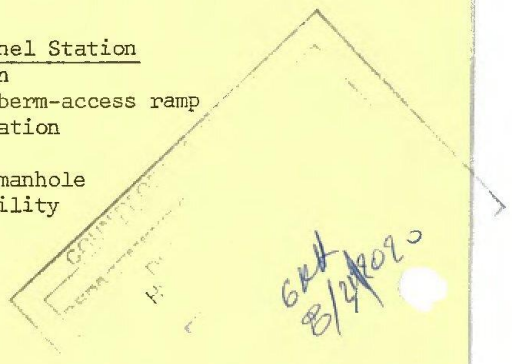
To Right Berm: River Rd
To Left Berm: Long Beach Fwy (southbound)

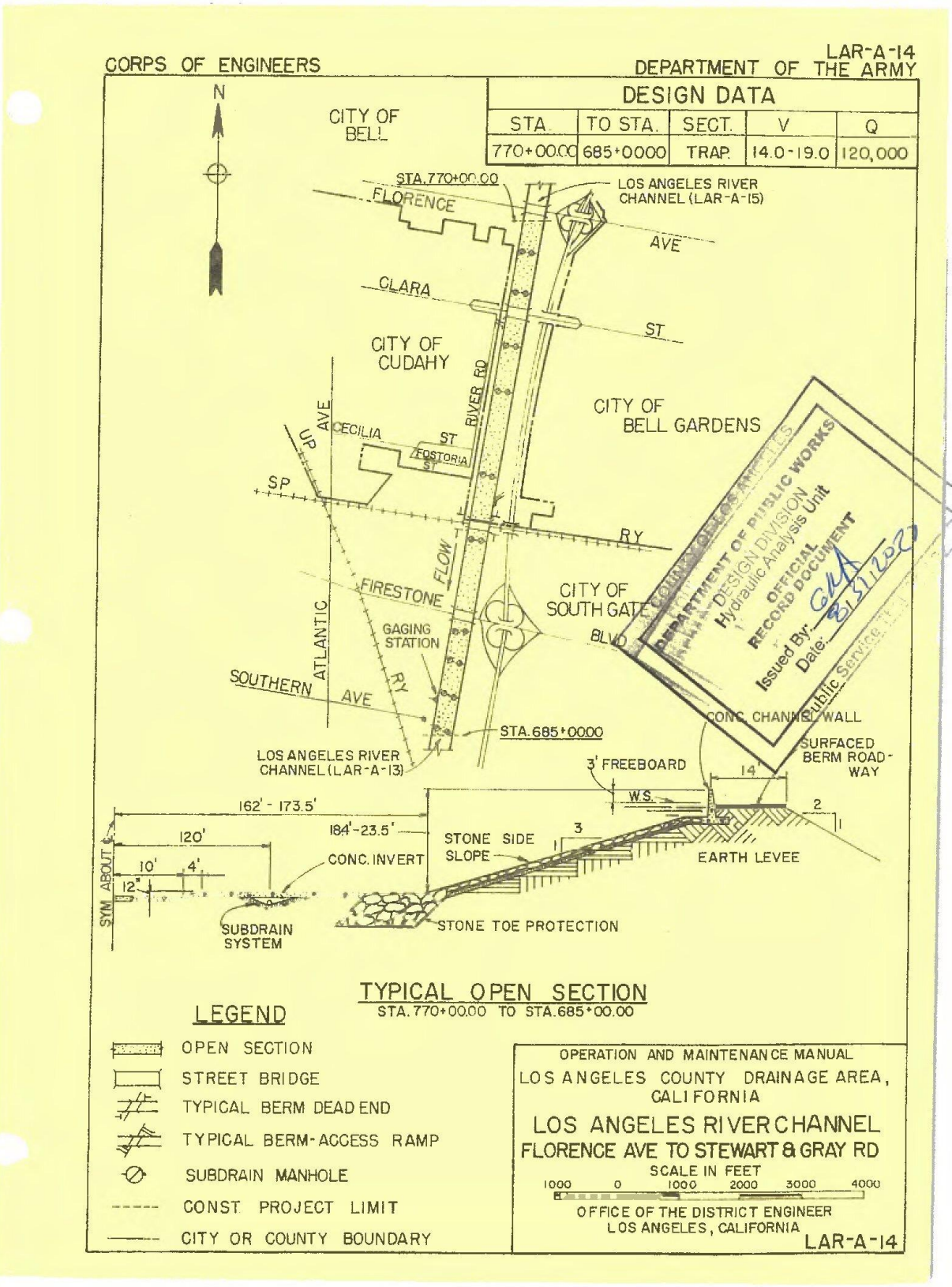
Bridges

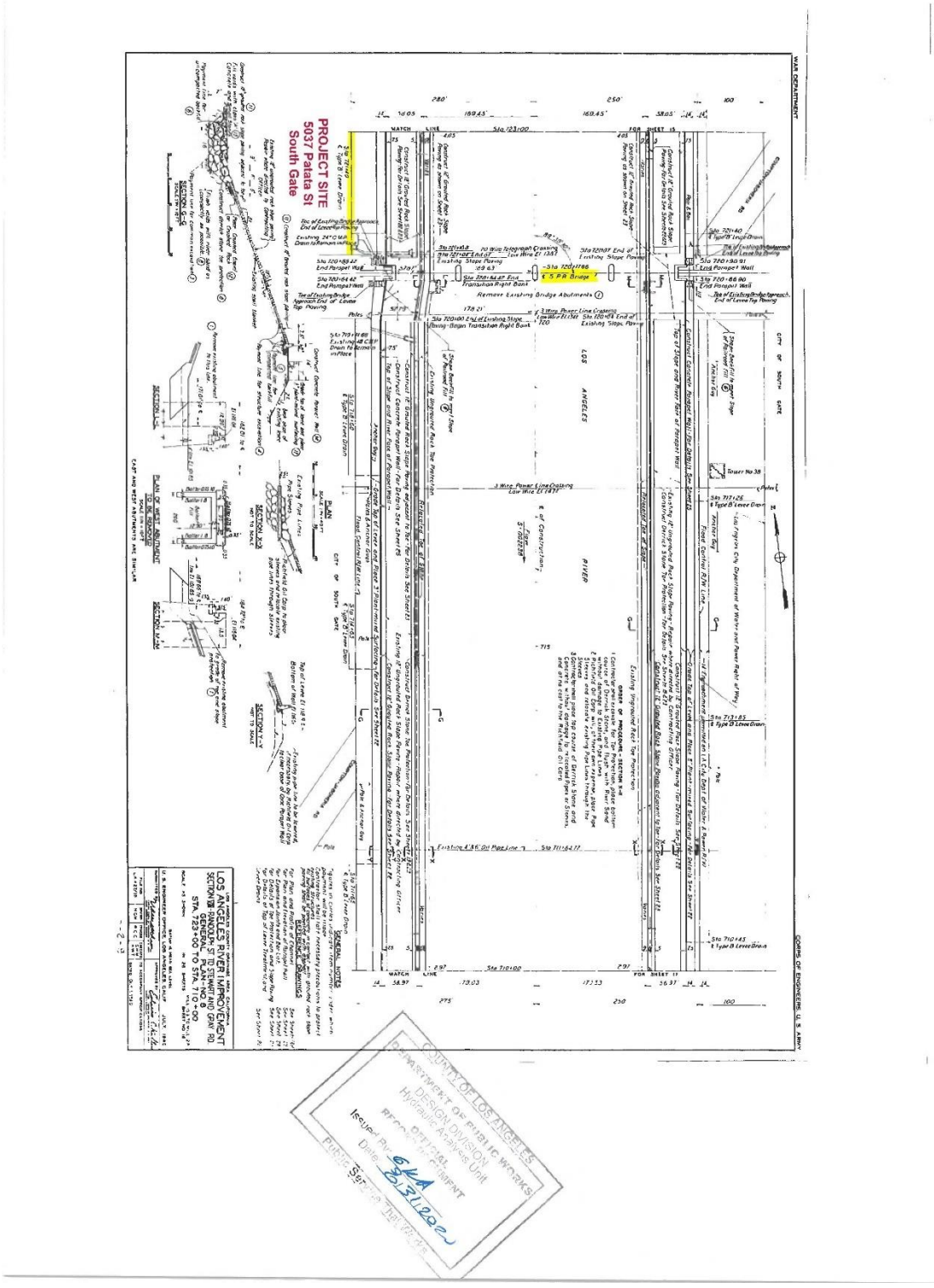
Location or Street Name	Integral with Channel Piers	Abutments	Owner
Clara St	4	0	Los Angeles County
S.P. Ry	3	2	S.P.R.R.
Firestone Blvd	3	0	City of South Gage

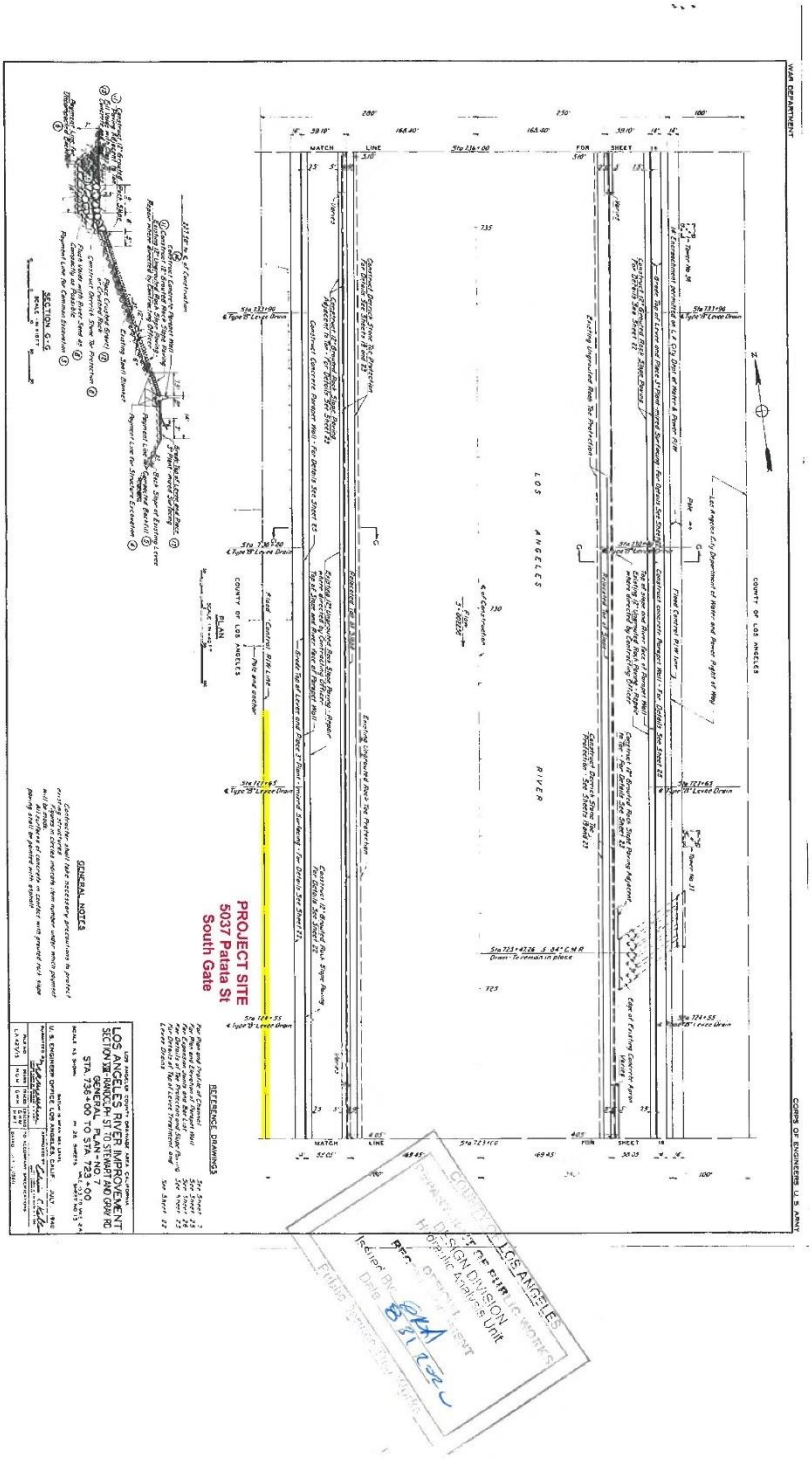
Reporting Features

Along Channel	At a Channel Station
Earth channel levee	Side drain
Concrete channel invert	Surfaced berm-access ramp
Concrete channel walls	Gaging station
Stone channel side slopes	Bridge
Stone toe protection	Subdrain manhole
Surfaced berm roadway	Public utility
Subdrain system	
Fencing	
Rights-of-way	




CORPS OF ENGINEERS
LAR-A-14
DEPARTMENT OF THE ARMY
DESIGN DATA
STA. | TO STA. | SECT. | V | Q
770+00.00 | 685+0000 | TRAP. | 14.0-19.0 | 120,000
N
CITY OF BELL
STA.770+00.00
LOS ANGELES RIVER CHANNEL (LAR-A-15)
FLORENCE AVE
CLARA ST
CITY OF CUDAHY
RIVER RD
CITY OF BELL GARDENS
PACIFIC AVE
CECILIA ST
FOSTORIA ST
SP RY
FLOW
FIRESTONE BLVD
CITY OF SOUTH GATE
ATLANTIC RY
GAGING STATION
SOUTHERN AVE
STA.685+0000
LOS ANGELES RIVER CHANNEL (LAR-A-13)
CONC. CHANNEL WALL
3' FREEBOARD
W.S.
14'
SURFACED BERM ROADWAY
2
1
3
1
162' - 173.5'
184'-23.5'
120'
10'
4'
12"
SYM ABOUT
CONC. INVERT
STONE SIDE SLOPE
EARTH LEVEE
SUBDRAIN SYSTEM
STONE TOE PROTECTION
DEPARTMENT OF PUBLIC WORKS
COUNTY OF LOS ANGELES
DESIGN DIVISION
Hydraulic Analysis Unit
OFFICIAL RECORD DOCUMENT
Issued By: GAA
Date: 8/31/2022
Public Service
TYPICAL OPEN SECTION
STA. 770+00.00 TO STA. 685+00.00
LEGEND
OPEN SECTION
STREET BRIDGE
TYPICAL BERM DEAD END
TYPICAL BERM-ACCESS RAMP
SUBDRAIN MANHOLE
CONST. PROJECT LIMIT
CITY OR COUNTY BOUNDARY
OPERATION AND MAINTENANCE MANUAL
LOS ANGELES COUNTY DRAINAGE AREA, CALIFORNIA
LOS ANGELES RIVER CHANNEL
FLORENCE AVE TO STEWART & GRAY RD
SCALE IN FEET
1000 0 1000 2000 3000 4000
OFFICE OF THE DISTRICT ENGINEER
LOS ANGELES, CALIFORNIA
LAR-A-14

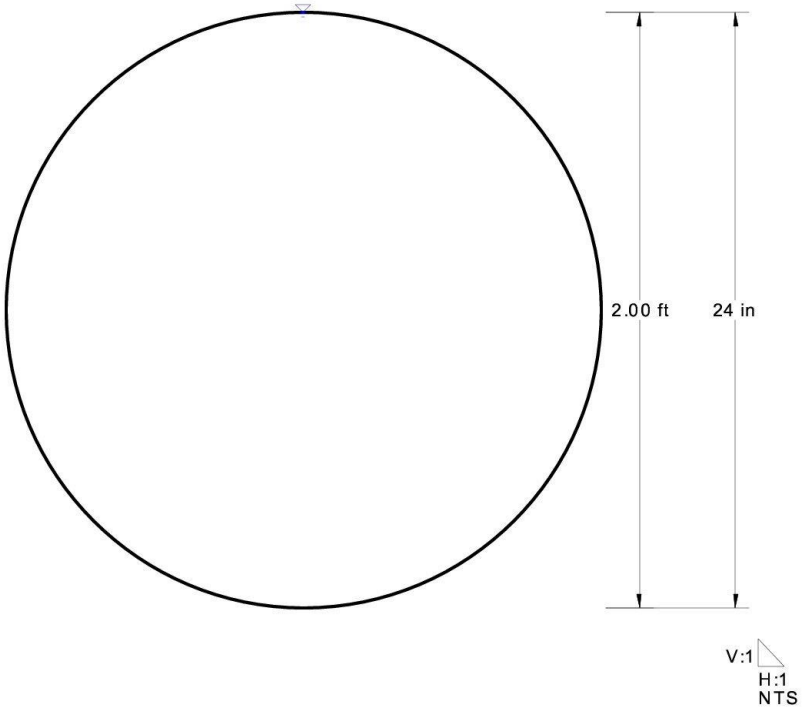

PROJECT SITE
5037 Patata St
South Gate
LOS ANGELES RIVER IMPROVEMENT
SECTION 3 RANDOLPH ST TO TEMPLE AND GRAY RD
STA. 723+00 TO STA. 710+00
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION
Hydraulic Analysis Unit
Issued By
Date 8/31/2021


PROJECT SITE
5037 Patata St
South Gate
LOS ANGELES RIVER IMPROVEMENT
SECTION 18 WARNOCK ST TO STAMPT AND GRAY RD
GENERAL PLAN - NO. 7
STA. 738+00 TO STA. 723+00
GENERAL NOTES
REFERENCE DRAWINGS
LOS ANGELES
RIVER
COUNTY OF LOS ANGELES
WAR DEPARTMENT
CORPS OF ENGINEERS U.S. ARMY

MAXIMUM CAPACITY OF EXIST. 24" RCP DOWNSTREAM

Project Description	
Worksheet	Circular Channel
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Discharge

Section Data		
Mannings Coeffic	0.013	
Slope	025200	ft/ft
Depth	2.00	ft
Diameter	24	in
Discharge	35.91	cfs



APPENDIX B

HYDROLOGY CALCULATIONS

Peak Flow Hydrologic Analysis

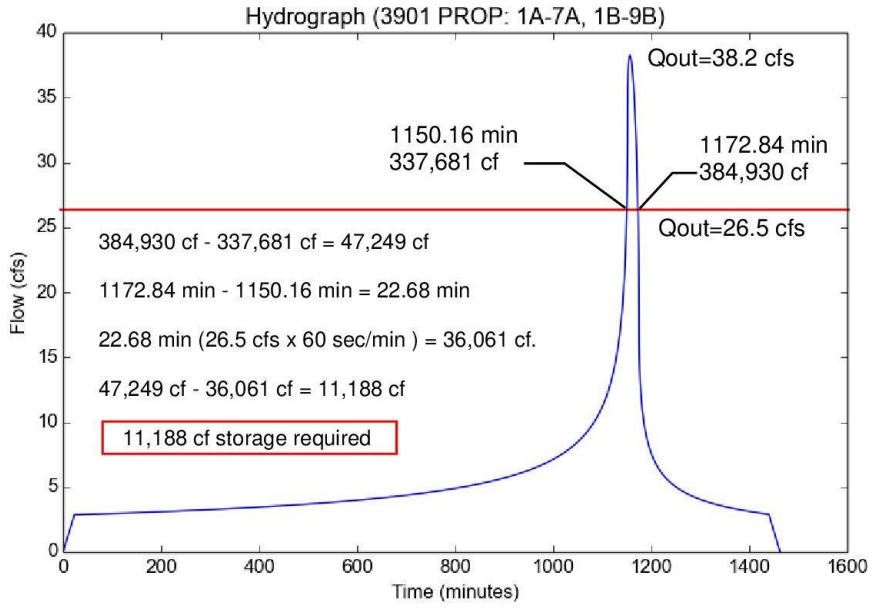
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 1A-7A, 1B-9B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1A-7A, 1B-9B
Area (ac)	26.65
Flow Path Length (ft)	2212.0
Flow Path Slope (vft/hft)	0.003
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	1.7181
Undeveloped Runoff Coefficient (Cu)	0.2506
Developed Runoff Coefficient (Cd)	0.8351
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	38.2363
Burned Peak Flow Rate (cfs)	38.2363
24-Hr Clear Runoff Volume (ac-ft)	10.6727
24-Hr Clear Runoff Volume (cu-ft)	464901.8675



Peak Flow Hydrologic Analysis

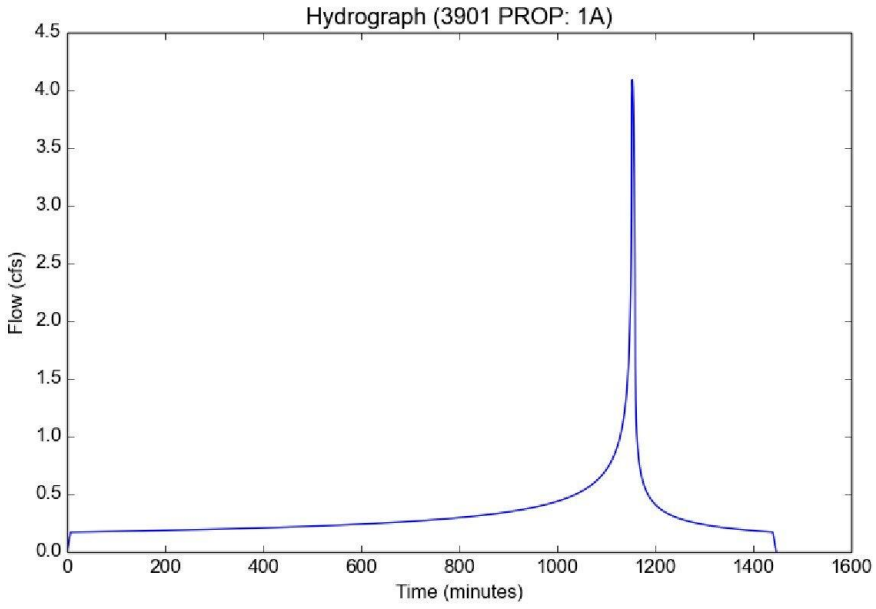
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1A
Area (ac)	1.6
Flow Path Length (ft)	525.0
Flow Path Slope (vft/hft)	0.0112
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.0052
Undeveloped Runoff Coefficient (Cu)	0.4111
Developed Runoff Coefficient (Cd)	0.8511
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	4.0924
Burned Peak Flow Rate (cfs)	4.0924
24-Hr Clear Runoff Volume (ac-ft)	0.6412
24-Hr Clear Runoff Volume (cu-ft)	27932.3091



Peak Flow Hydrologic Analysis

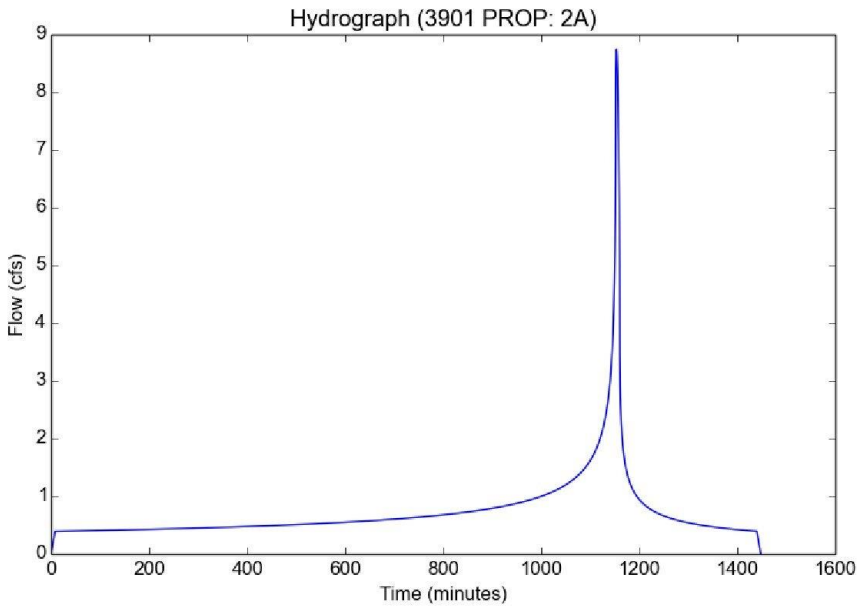
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 2A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	2A
Area (ac)	3.65
Flow Path Length (ft)	514.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	2.8224
Undeveloped Runoff Coefficient (Cu)	0.3893
Developed Runoff Coefficient (Cd)	0.8489
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.7454
Burned Peak Flow Rate (cfs)	8.7454
24-Hr Clear Runoff Volume (ac-ft)	1.4627
24-Hr Clear Runoff Volume (cu-ft)	63716.0766



Peak Flow Hydrologic Analysis

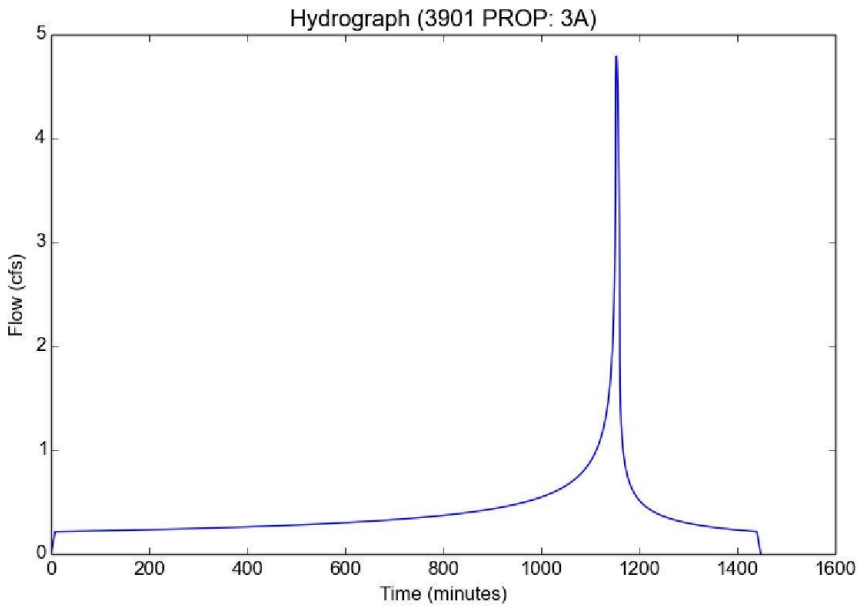
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	3A
Area (ac)	2.0
Flow Path Length (ft)	484.0
Flow Path Slope (vft/hft)	0.005
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	2.8224
Undeveloped Runoff Coefficient (Cu)	0.3893
Developed Runoff Coefficient (Cd)	0.8489
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	4.792
Burned Peak Flow Rate (cfs)	4.792
24-Hr Clear Runoff Volume (ac-ft)	0.8015
24-Hr Clear Runoff Volume (cu-ft)	34912.9187



Peak Flow Hydrologic Analysis

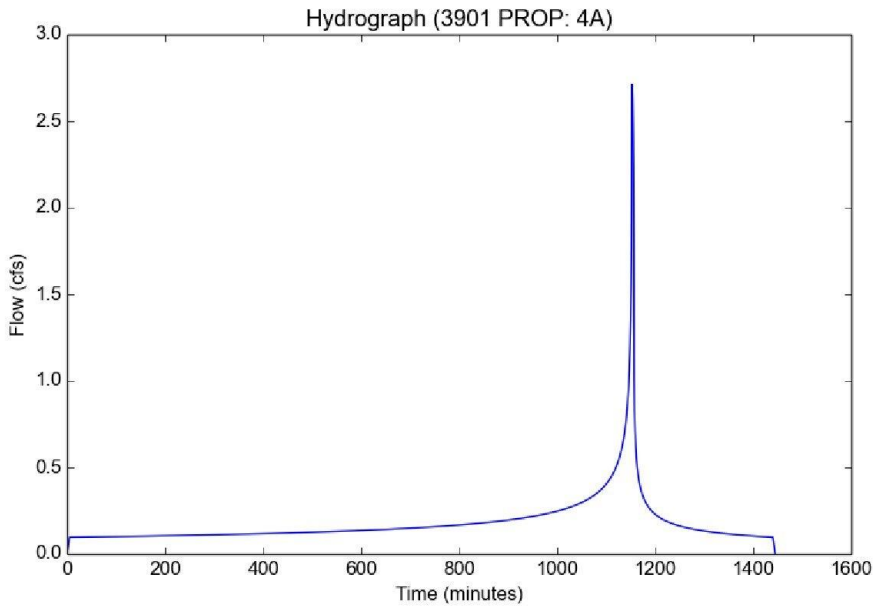
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	4A
Area (ac)	0.9
Flow Path Length (ft)	174.0
Flow Path Slope (vft/hft)	0.0073
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.4604
Developed Runoff Coefficient (Cd)	0.856
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.712
Burned Peak Flow Rate (cfs)	2.712
24-Hr Clear Runoff Volume (ac-ft)	0.3607
24-Hr Clear Runoff Volume (cu-ft)	15714.1461



Peak Flow Hydrologic Analysis

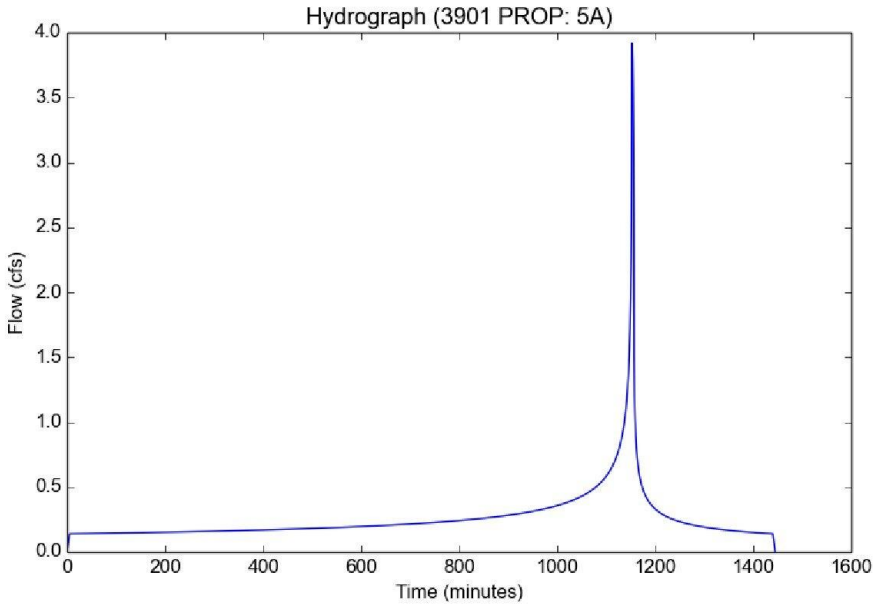
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	5A
Area (ac)	1.3
Flow Path Length (ft)	212.0
Flow Path Slope (vft/hft)	0.006
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.4604
Developed Runoff Coefficient (Cd)	0.856
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.9173
Burned Peak Flow Rate (cfs)	3.9173
24-Hr Clear Runoff Volume (ac-ft)	0.5211
24-Hr Clear Runoff Volume (cu-ft)	22698.211



Peak Flow Hydrologic Analysis

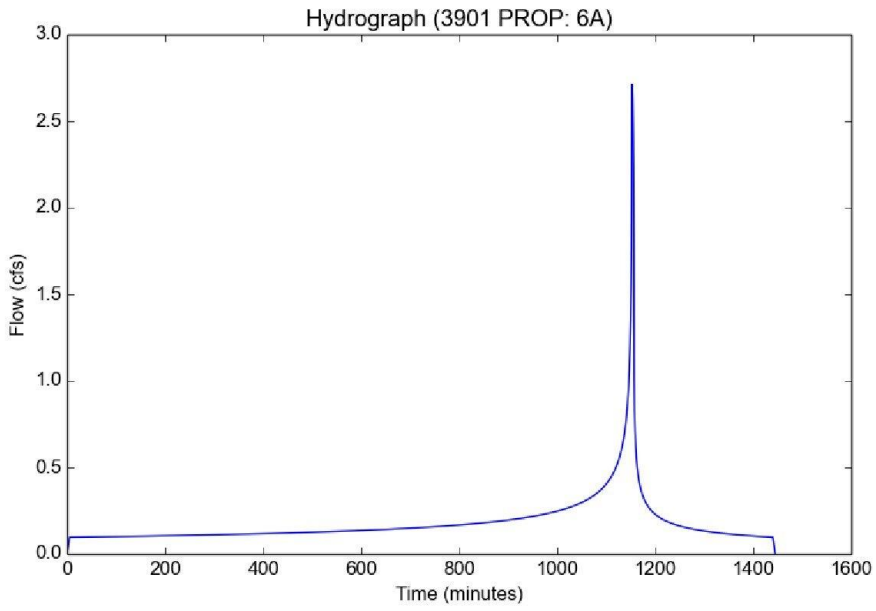
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	6A
Area (ac)	0.9
Flow Path Length (ft)	173.0
Flow Path Slope (vft/hft)	0.0071
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.4604
Developed Runoff Coefficient (Cd)	0.856
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.712
Burned Peak Flow Rate (cfs)	2.712
24-Hr Clear Runoff Volume (ac-ft)	0.3607
24-Hr Clear Runoff Volume (cu-ft)	15714.1461



Peak Flow Hydrologic Analysis

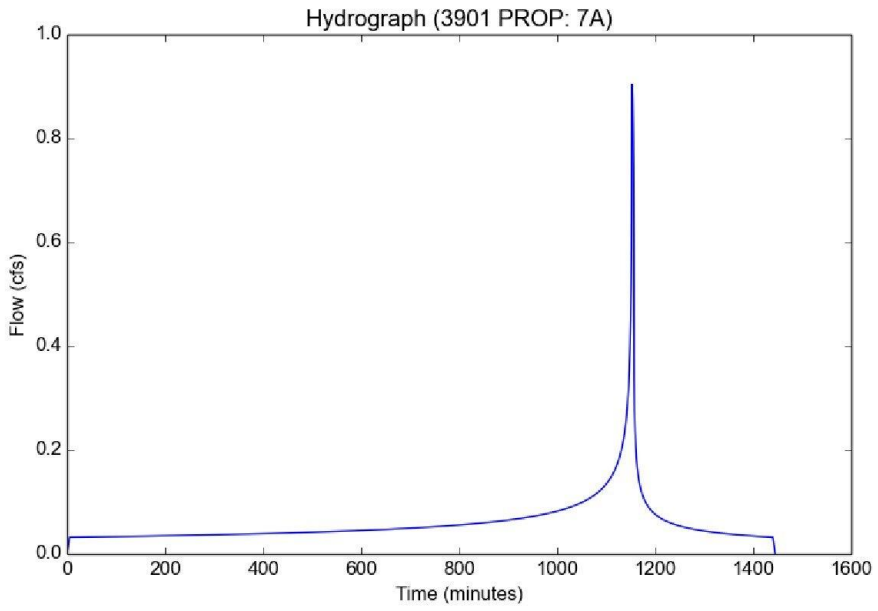
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	7A
Area (ac)	0.3
Flow Path Length (ft)	101.0
Flow Path Slope (vft/hft)	0.0054
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.4604
Developed Runoff Coefficient (Cd)	0.856
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.904
Burned Peak Flow Rate (cfs)	0.904
24-Hr Clear Runoff Volume (ac-ft)	0.1202
24-Hr Clear Runoff Volume (cu-ft)	5238.0487



Peak Flow Hydrologic Analysis

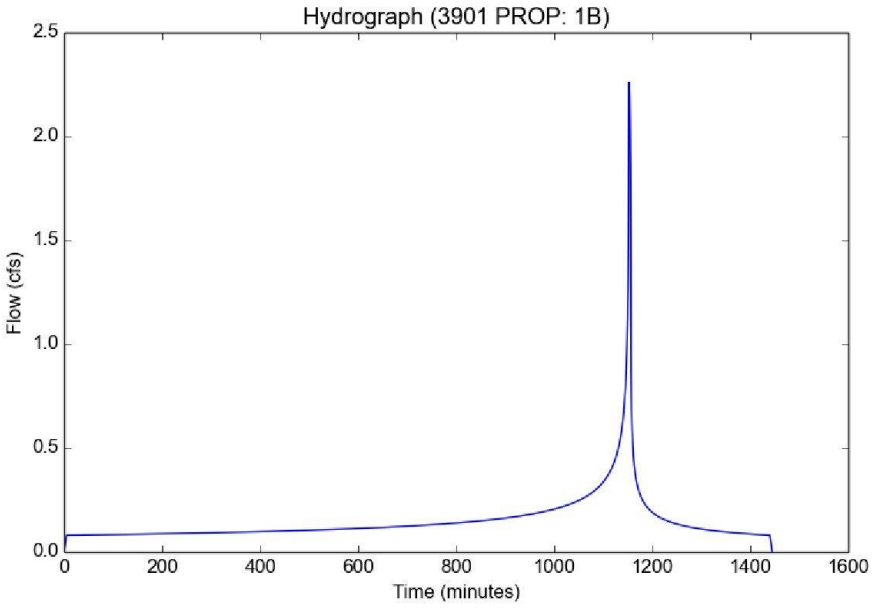
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1B
Area (ac)	0.75
Flow Path Length (ft)	154.0
Flow Path Slope (vft/hft)	0.0136
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.5201
Undeveloped Runoff Coefficient (Cu)	0.4604
Developed Runoff Coefficient (Cd)	0.856
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.26
Burned Peak Flow Rate (cfs)	2.26
24-Hr Clear Runoff Volume (ac-ft)	0.3006
24-Hr Clear Runoff Volume (cu-ft)	13095.1217



Peak Flow Hydrologic Analysis

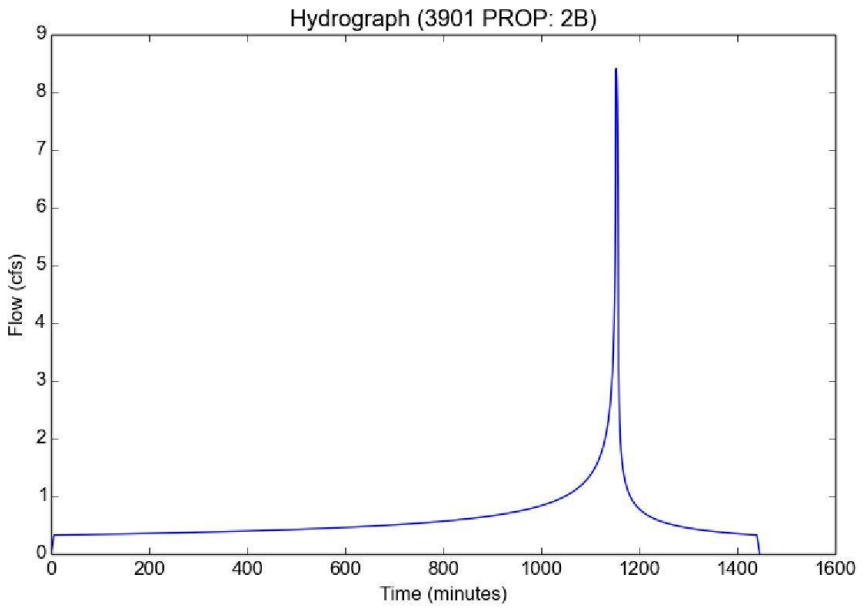
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	2B
Area (ac)	3.05
Flow Path Length (ft)	362.0
Flow Path Slope (vft/hft)	0.0091
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	8.4087
Burned Peak Flow Rate (cfs)	8.4087
24-Hr Clear Runoff Volume (ac-ft)	1.2224
24-Hr Clear Runoff Volume (cu-ft)	53249.6061



Peak Flow Hydrologic Analysis

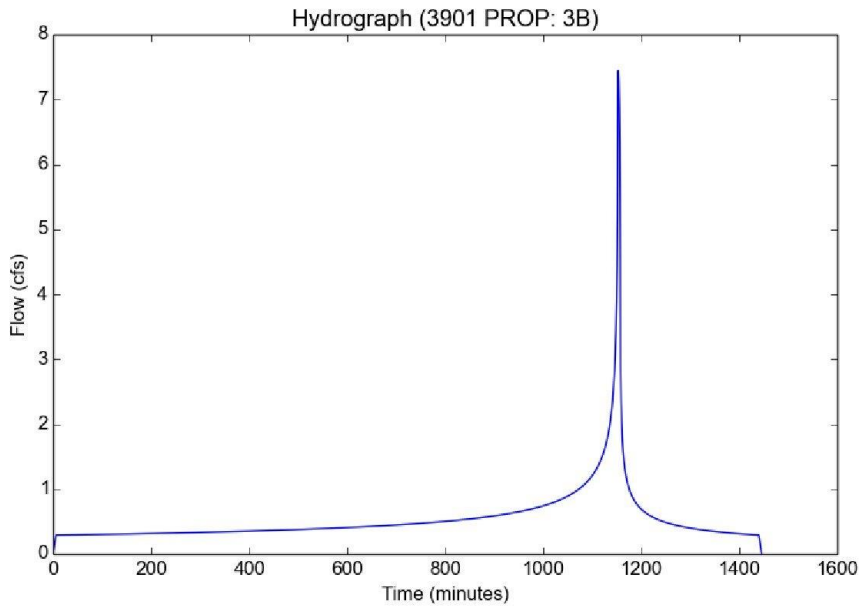
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	3B
Area (ac)	2.7
Flow Path Length (ft)	394.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	7.4437
Burned Peak Flow Rate (cfs)	7.4437
24-Hr Clear Runoff Volume (ac-ft)	1.0822
24-Hr Clear Runoff Volume (cu-ft)	47138.9955



Peak Flow Hydrologic Analysis

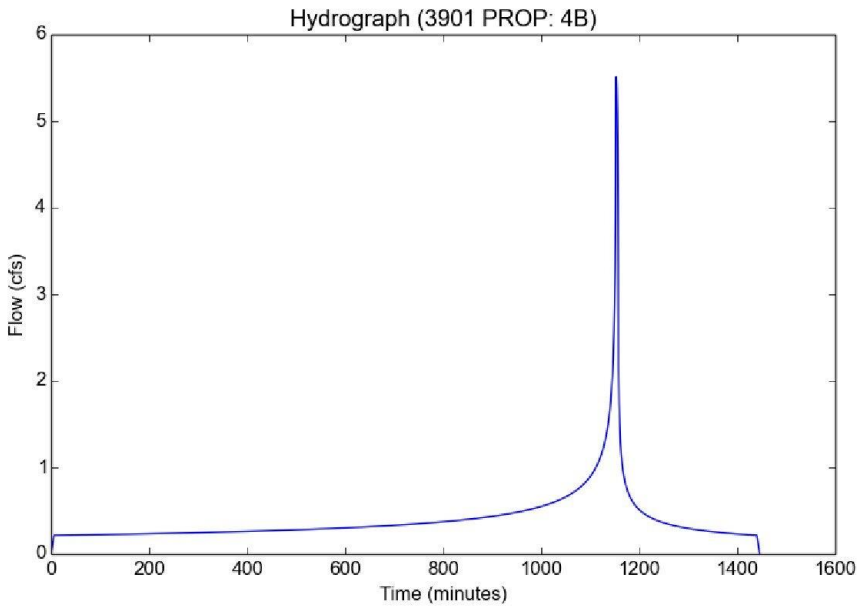
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	4B
Area (ac)	2.0
Flow Path Length (ft)	402.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.5139
Burned Peak Flow Rate (cfs)	5.5139
24-Hr Clear Runoff Volume (ac-ft)	0.8016
24-Hr Clear Runoff Volume (cu-ft)	34917.7745



Peak Flow Hydrologic Analysis

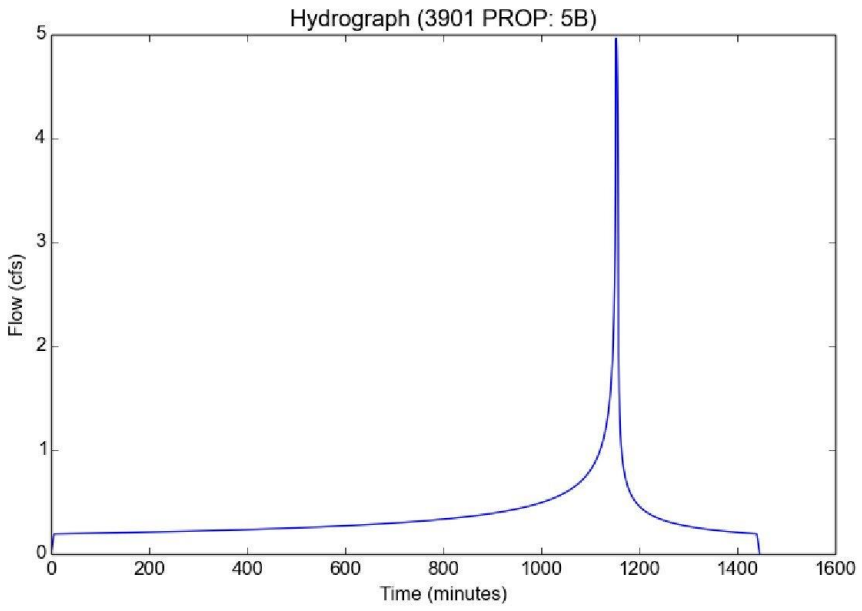
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	5B
Area (ac)	1.8
Flow Path Length (ft)	382.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.9625
Burned Peak Flow Rate (cfs)	4.9625
24-Hr Clear Runoff Volume (ac-ft)	0.7214
24-Hr Clear Runoff Volume (cu-ft)	31425.997



Peak Flow Hydrologic Analysis

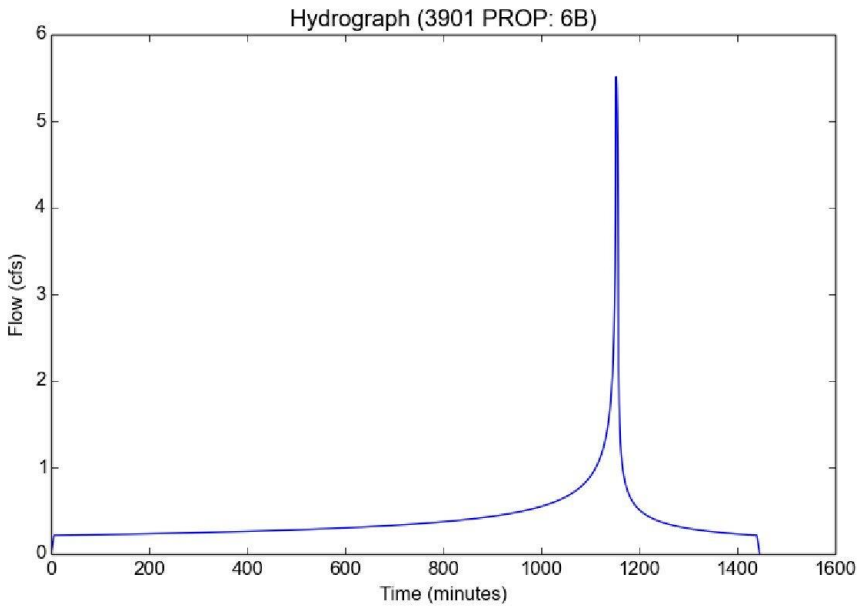
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Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	6B
Area (ac)	2.0
Flow Path Length (ft)	416.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	5.5139
Burned Peak Flow Rate (cfs)	5.5139
24-Hr Clear Runoff Volume (ac-ft)	0.8016
24-Hr Clear Runoff Volume (cu-ft)	34917.7745



Peak Flow Hydrologic Analysis

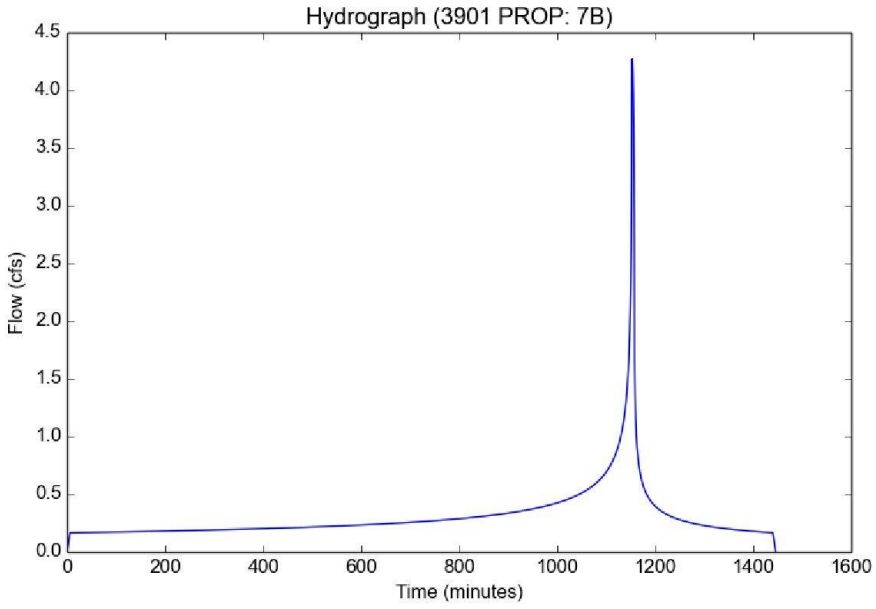
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 7B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	7B
Area (ac)	1.55
Flow Path Length (ft)	374.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	4.2733
Burned Peak Flow Rate (cfs)	4.2733
24-Hr Clear Runoff Volume (ac-ft)	0.6212
24-Hr Clear Runoff Volume (cu-ft)	27061.2752



Peak Flow Hydrologic Analysis

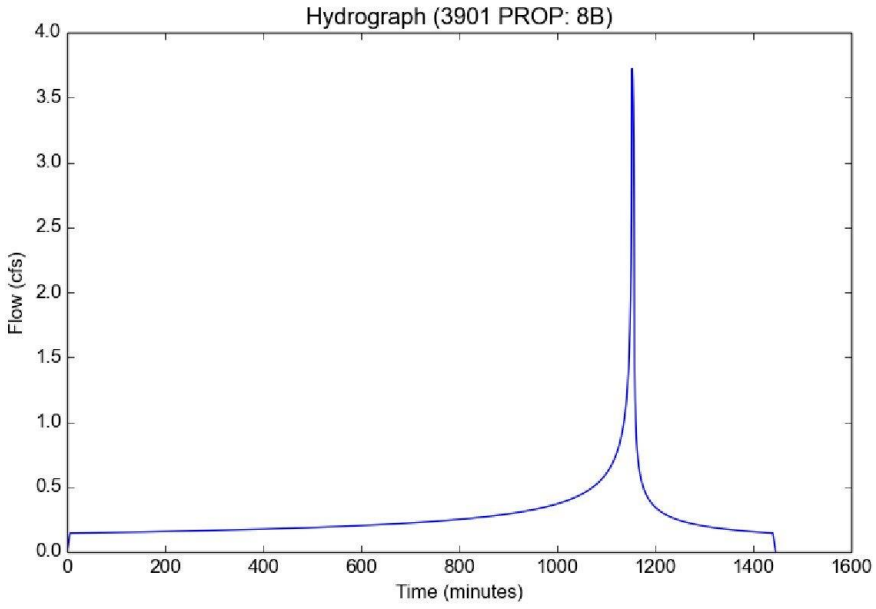
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 8B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	8B
Area (ac)	1.35
Flow Path Length (ft)	371.0
Flow Path Slope (vft/hft)	0.0125
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	3.231
Undeveloped Runoff Coefficient (Cu)	0.4327
Developed Runoff Coefficient (Cd)	0.8533
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	3.7219
Burned Peak Flow Rate (cfs)	3.7219
24-Hr Clear Runoff Volume (ac-ft)	0.5411
24-Hr Clear Runoff Volume (cu-ft)	23569.4978



Peak Flow Hydrologic Analysis

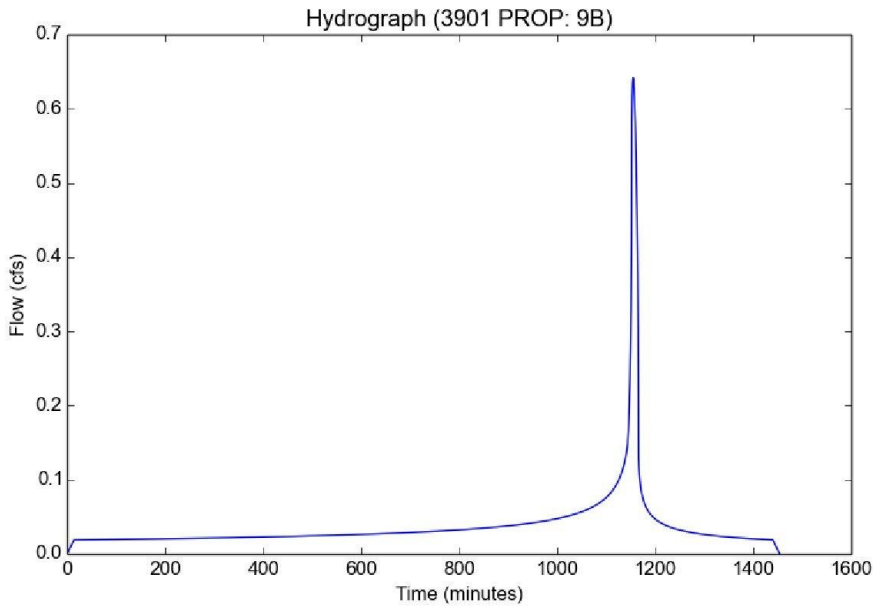
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 9B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	9B
Area (ac)	0.8
Flow Path Length (ft)	530.0
Flow Path Slope (vft/hft)	0.0067
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.1
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	2.1697
Undeveloped Runoff Coefficient (Cu)	0.3108
Developed Runoff Coefficient (Cd)	0.3697
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.6417
Burned Peak Flow Rate (cfs)	0.6417
24-Hr Clear Runoff Volume (ac-ft)	0.0759
24-Hr Clear Runoff Volume (cu-ft)	3305.8027



Peak Flow Hydrologic Analysis

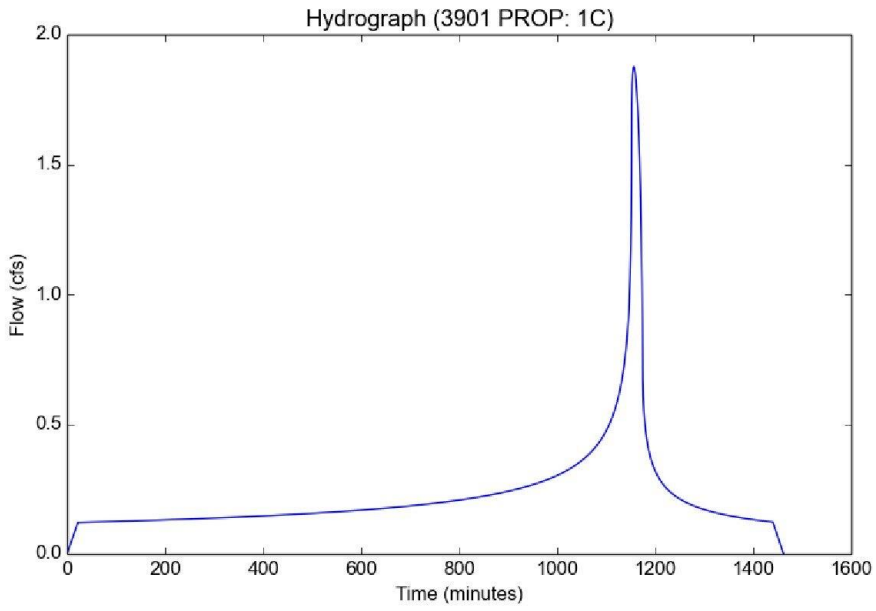
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 1C.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1C
Area (ac)	1.85
Flow Path Length (ft)	1506.0
Flow Path Slope (vft/hft)	0.004
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.5
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	1.7544
Undeveloped Runoff Coefficient (Cu)	0.2557
Developed Runoff Coefficient (Cd)	0.5779
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	1.8756
Burned Peak Flow Rate (cfs)	1.8756
24-Hr Clear Runoff Volume (ac-ft)	0.4571
24-Hr Clear Runoff Volume (cu-ft)	19910.6919



Peak Flow Hydrologic Analysis

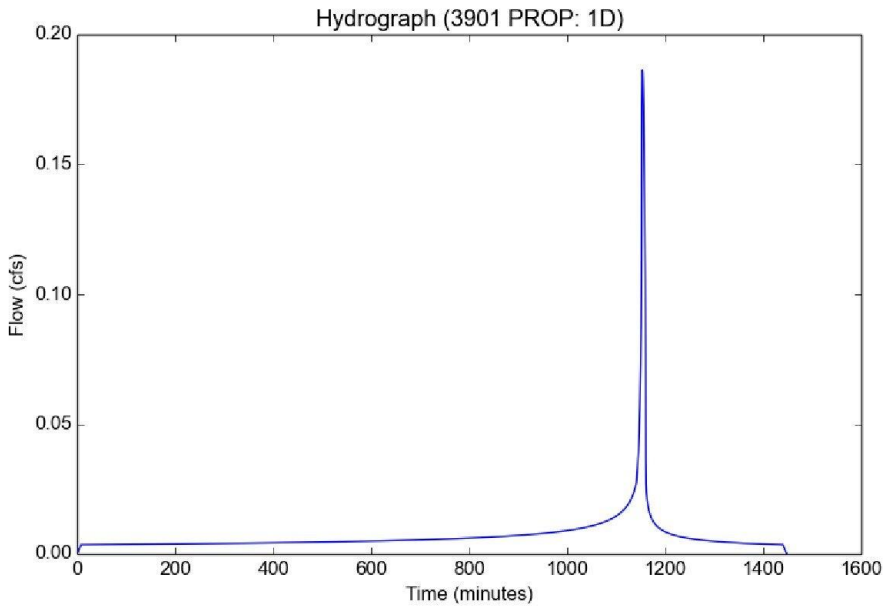
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 1D.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1D
Area (ac)	0.15
Flow Path Length (ft)	270.0
Flow Path Slope (vft/hft)	0.0061
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.1
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	2.8224
Undeveloped Runoff Coefficient (Cu)	0.3893
Developed Runoff Coefficient (Cd)	0.4403
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	0.1864
Burned Peak Flow Rate (cfs)	0.1864
24-Hr Clear Runoff Volume (ac-ft)	0.0144
24-Hr Clear Runoff Volume (cu-ft)	627.0016



APPENDIX C

DETENTION CALCULATIONS

Peak Flow Hydrologic Analysis

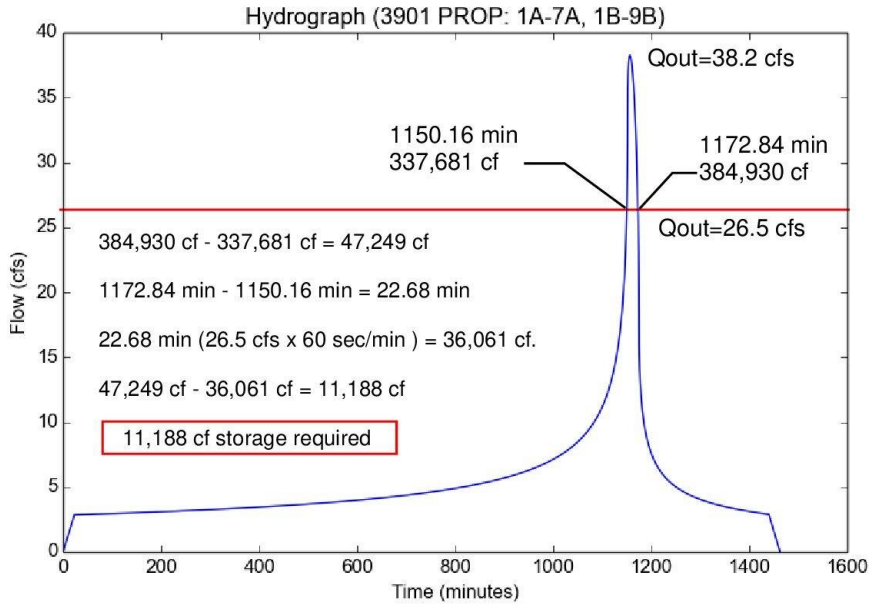
File location: O:/3900-3999/3901/HYDROLOGY/1ST SUBMITTAL PRELIM HYDRO 1 BLDG/3901 PROP - 1A-7A, 1B-9B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3901 PROP
Subarea ID	1A-7A, 1B-9B
Area (ac)	26.65
Flow Path Length (ft)	2212.0
Flow Path Slope (vft/hft)	0.003
50-yr Rainfall Depth (in)	5.9
Percent Impervious	0.9
Soil Type	15
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

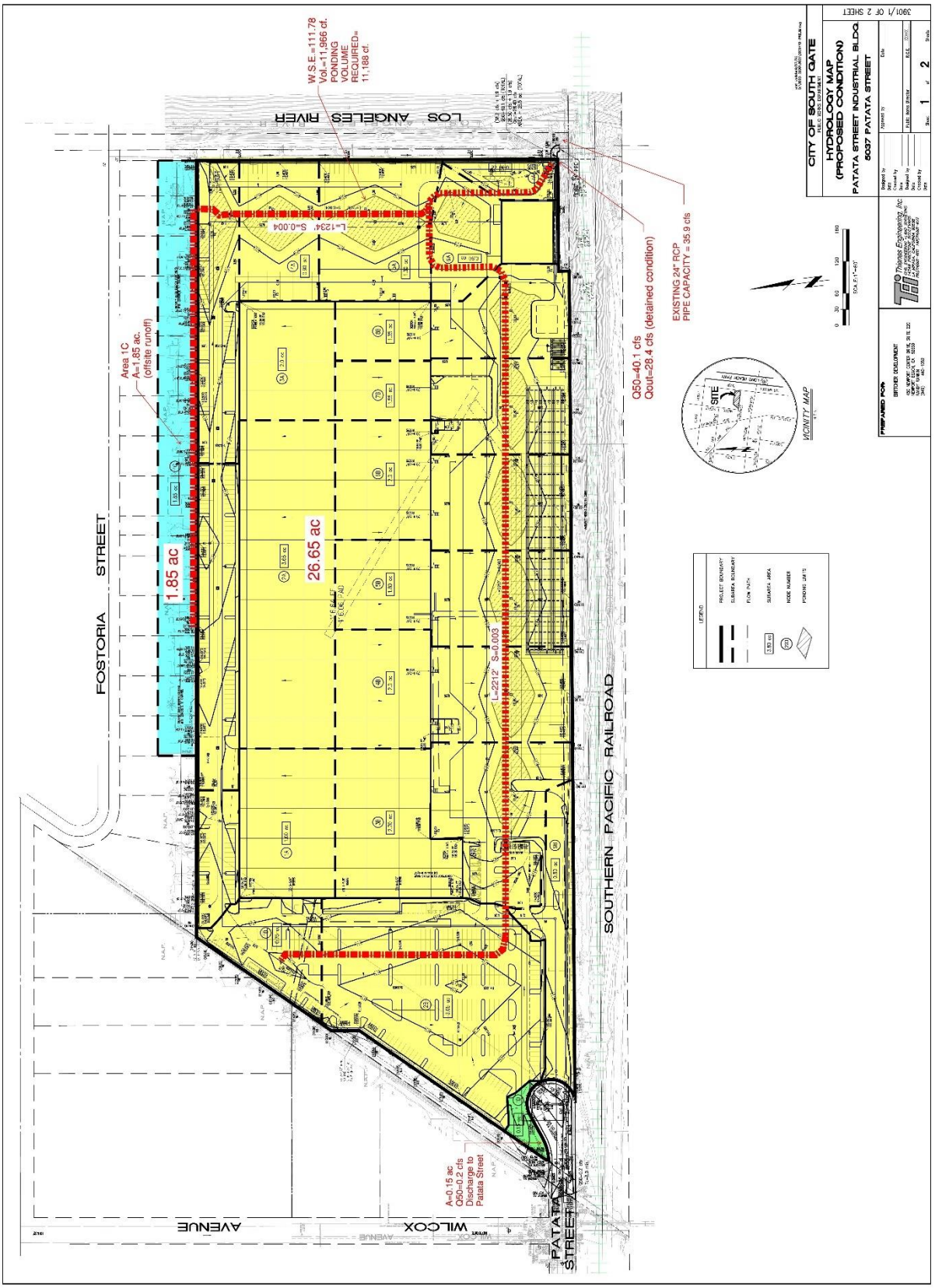
Output Results

Modeled (50-yr) Rainfall Depth (in)	5.9
Peak Intensity (in/hr)	1.7181
Undeveloped Runoff Coefficient (Cu)	0.2506
Developed Runoff Coefficient (Cd)	0.8351
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	38.2363
Burned Peak Flow Rate (cfs)	38.2363
24-Hr Clear Runoff Volume (ac-ft)	10.6727
24-Hr Clear Runoff Volume (cu-ft)	464901.8675



PATATA STREET INDUSTRIAL BLDG.
PONDING AT SOUTHERLY AND EASTERLY TRUCK YARD

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)
111.33	0.00	37.8			
			19	19	0.00
111.40	0.07	506			
			2570	2,589	0.06
111.60	0.27	25191			
			3920	6,508	0.15
111.70	0.37	53201			
			4911	11,419	0.26
111.78	0.45	69564			
			1481	12,900	0.30
111.80	0.47	78558			
			9759	22,659	0.52
111.90	0.57	116613			
			13723	36,382	0.84
112.00	0.67	157857			


W.S.E.=111.78
Vol.=11,966 cf.
PONDING
VOLUME
REQUIRED=
11,188 cf.
LOS ANGELES RIVER
L=1234' S=0.004
Area 1C
A=1.85 ac.
(offsite runoff)
1.85 ac
26.65 ac
L=2212' S=0.003
Q50=40.1 cfs
Qout=28.4 cfs (detained condition)
EXISTING 24" RCP
PIPE CAPACITY = 35.9 cfs
A=0.15 ac
Q50=0.2 cfs
Discharge to
Patata Street
FOSTORIA STREET
SOUTHERN PACIFIC RAILROAD
WILCOX AVENUE
PATATA STREET
VICINITY MAP
SITE
LEGEND
CITY OF SOUTH GATE
HYDROLOGY MAP
(PROPOSED CONDITION)
PATATA STREET INDUSTRIAL BLDG
5037 PATATA STREET
PREPARED FOR:
BIRTCHER DEVELOPMENT

AREA 1A-7A & 1B-9B DETENTION

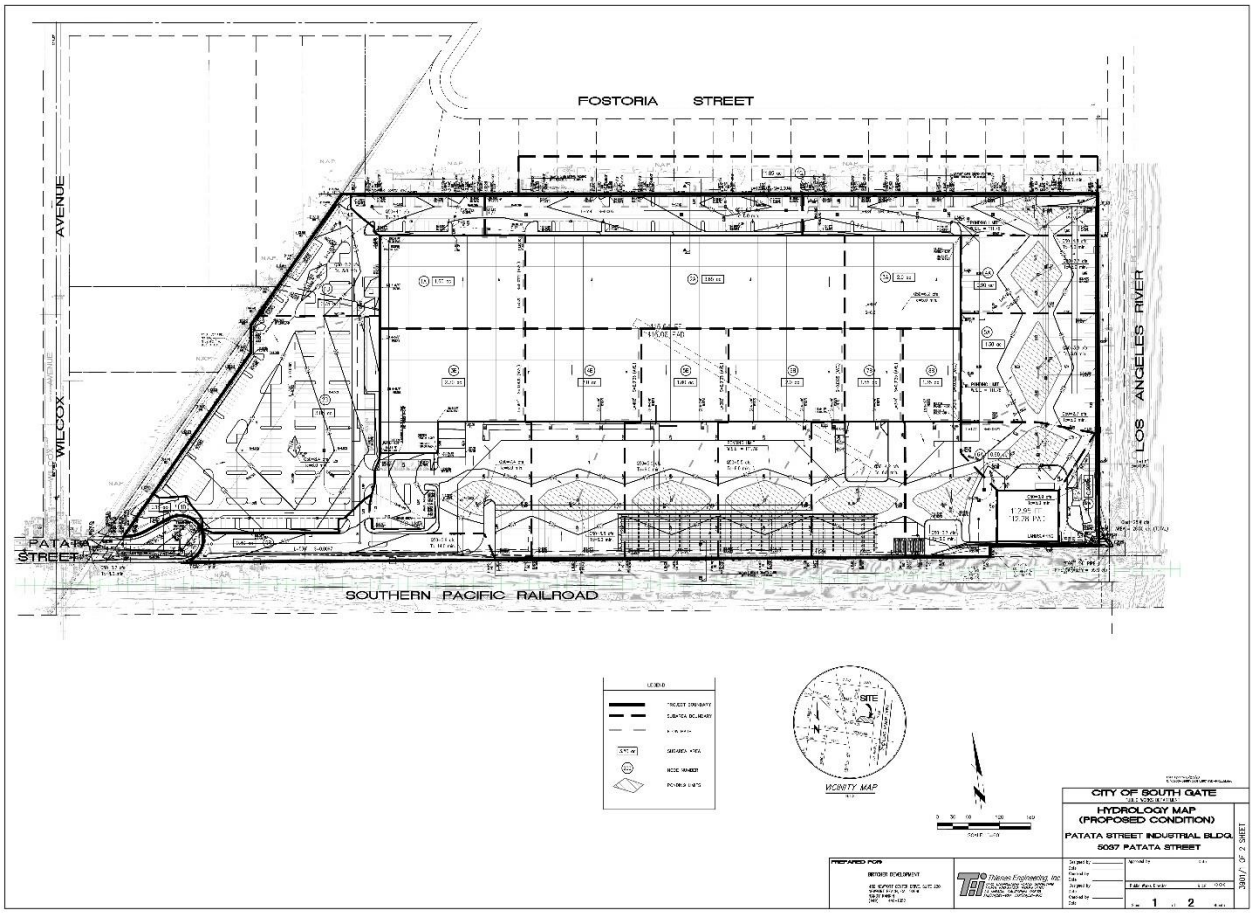
T (MIN.)			In (In/HR)	Cu	Cd	Q (CFS.)		Volume (CF.)
1149.4	0.768344	4.53323	1.150203	0.132521	0.823252	25.23507	301.0845	336498.9
1149.6	0.769659	4.540987	1.163648	0.135879	0.823588	25.54046	304.6532	336803.6
1149.8	0.771026	4.549055	1.177877	0.139433	0.823943	25.86392	308.4263	337112
1150	0.772454	4.557476	1.193001	0.143211	0.824321	26.20802	312.4317	337424.5
1150.16						26.5		337681
1150.2	0.77395	4.566303	1.209158	0.147246	0.824725	26.57598	316.704	337741.2
1150.4	0.775526	4.575604	1.226527	0.151585	0.825158	26.97191	321.2873	338062.4
1150.6	0.777198	4.58547	1.245343	0.156284	0.825628	27.40128	326.2391	338388.7
1150.8	0.778987	4.596024	1.265927	0.161426	0.826143	27.87154	331.6369	338720.3
1151	0.780923	4.607443	1.288742	0.167124	0.826712	28.3934	337.5897	339057.9
1151.2	0.78305	4.619998	1.31449	0.173555	0.827356	28.98323	344.2598	339402.2
1151.4	0.785447	4.63414	1.344352	0.181014	0.828101	29.66837	351.9096	339754.1
1151.6	0.788262	4.650743	1.380607	0.190069	0.829007	30.50179	361.021	340115.1
1151.8	0.79187	4.672036	1.429066	0.202173	0.830217	31.61851	372.7218	340487.8
1152	0.8	4.72	1.547075	0.226525	0.832653	34.32989	395.6904	340883.5
1152.2	0.804237	4.745001	1.605149	0.234711	0.833471	35.65358	419.9008	341303.4
1152.4	0.806118	4.756099	1.626928	0.23778	0.833778	36.15063	430.8253	341734.2
1152.6	0.807585	4.764753	1.6423	0.239947	0.833995	36.50168	435.9139	342170.2
1152.8	0.808835	4.772124	1.654295	0.241637	0.834164	36.77574	439.6645	342609.8
1153	0.809944	4.778668	1.664101	0.243019	0.834302	36.99986	442.6536	343052.5
1153.2	0.810953	4.78462	1.672332	0.24418	0.834418	37.18804	445.1274	343497.6
1153.4	0.811885	4.790122	1.679355	0.245169	0.834517	37.34864	447.2201	343944.8
1153.6	0.812757	4.795264	1.68541	0.246023	0.834602	37.48715	449.0148	344393.8
1153.8	0.813578	4.800112	1.690665	0.246764	0.834676	37.60737	450.5671	344844.4
1154	0.814358	4.804713	1.695243	0.247409	0.834741	37.7121	451.9169	345296.3
1154.2	0.815102	4.809102	1.699234	0.247971	0.834797	37.80345	453.0933	345749.4
1154.4	0.815815	4.813307	1.702713	0.248462	0.834846	37.88306	454.1191	346203.5
1154.6	0.8165	4.817351	1.705735	0.248888	0.834889	37.95223	455.0117	346658.5
1154.8	0.817161	4.821251	1.708347	0.249256	0.834926	38.01203	455.7856	347114.3
1155	0.8178	4.825022	1.710588	0.249572	0.834957	38.06333	456.4522	347570.8
1155.2	0.81842	4.828676	1.712489	0.24984	0.834984	38.10686	457.0211	348027.8
1155.4	0.819021	4.832225	1.714078	0.250063	0.835006	38.14324	457.5006	348485.3
1155.6	0.819606	4.835676	1.715377	0.250247	0.835025	38.17299	457.8973	348943.2
1155.8	0.820176	4.839039	1.716407	0.250392	0.835039	38.19656	458.2173	349401.4
1156	0.820732	4.84232	1.717184	0.250501	0.83505	38.21436	458.4655	349859.9
1156.2	0.821275	4.845524	1.717724	0.250577	0.835058	38.22672	458.6465	350318.5
1156.4	0.821806	4.848657	1.718039	0.250622	0.835062	38.23394	458.764	350777.3
1156.6	0.822326	4.851724	1.718142	0.250636	0.835064	38.2363	458.8215	351236.1
1156.8	0.822835	4.854729	1.718042	0.250622	0.835062	38.23402	458.8219	351694.9
1157	0.823335	4.857676	1.71775	0.250581	0.835058	38.22731	458.768	352153.7

1157.2	0.823825	4.860568	1.717272	0.250514	0.835051	38.21637	458.6621	352612.4
1157.4	0.824306	4.863408	1.716617	0.250421	0.835042	38.20137	458.5064	353070.9
1157.6	0.824779	4.866199	1.71579	0.250305	0.83503	38.18244	458.3028	353529.2
1157.8	0.825245	4.868943	1.714798	0.250165	0.835017	38.15974	458.0531	353987.2
1158	0.825702	4.871644	1.713647	0.250003	0.835	38.13337	457.7586	354445
1158.2	0.826153	4.874302	1.712341	0.249819	0.834982	38.10346	457.421	354902.4
1158.4	0.826597	4.87692	1.710884	0.249613	0.834961	38.0701	457.0414	355359.5
1158.6	0.827034	4.879501	1.70928	0.249387	0.834939	38.03339	456.6209	355816.1
1158.8	0.827465	4.882044	1.707533	0.249141	0.834914	37.9934	456.1607	356272.2
1159	0.82789	4.884553	1.705646	0.248875	0.834888	37.95021	455.6617	356727.9
1159.2	0.82831	4.887028	1.703623	0.24859	0.834859	37.90389	455.1246	357183
1159.4	0.828724	4.889472	1.701465	0.248286	0.834829	37.8545	454.5503	357637.6
1159.6	0.829133	4.891884	1.699175	0.247963	0.834796	37.80208	453.9395	358091.5
1159.8	0.829537	4.894267	1.696755	0.247622	0.834762	37.7467	453.2927	358544.8
1160	0.829936	4.896621	1.694207	0.247263	0.834726	37.6884	452.6106	358997.4
1160.2	0.83033	4.898947	1.691532	0.246886	0.834689	37.6272	451.8936	359449.3
1160.4	0.83072	4.901247	1.688733	0.246491	0.834649	37.56316	451.1422	359900.4
1160.6	0.831105	4.903522	1.68581	0.246079	0.834608	37.49629	450.3567	360350.8
1160.8	0.831487	4.905772	1.682764	0.24565	0.834565	37.42663	449.5375	360800.3
1161	0.831864	4.907998	1.679597	0.245204	0.83452	37.35419	448.6849	361249
1161.2	0.832237	4.9102	1.67631	0.24474	0.834474	37.279	447.7992	361696.8
1161.4	0.832607	4.912381	1.672902	0.24426	0.834426	37.20107	446.8804	362143.7
1161.6	0.832973	4.914539	1.669374	0.243763	0.834376	37.12041	445.9289	362589.6
1161.8	0.833335	4.916677	1.665727	0.243249	0.834325	37.03703	444.9447	363034.6
1162	0.833694	4.918794	1.661961	0.242718	0.834272	36.95094	443.9279	363478.5
1162.2	0.834049	4.920892	1.658075	0.24217	0.834217	36.86214	442.8785	363921.4
1162.4	0.834402	4.92297	1.654071	0.241606	0.834161	36.77062	441.7966	364363.2
1162.6	0.834751	4.925029	1.649947	0.241025	0.834102	36.67639	440.6821	364803.9
1162.8	0.835097	4.927071	1.645704	0.240426	0.834043	36.57944	439.535	365243.4
1163	0.83544	4.929094	1.64134	0.239811	0.833981	36.47976	438.3552	365681.8
1163.2	0.83578	4.931101	1.636855	0.239179	0.833918	36.37733	437.1426	366118.9
1163.4	0.836117	4.93309	1.63225	0.23853	0.833853	36.27215	435.8969	366554.8
1163.6	0.836451	4.935064	1.627521	0.237864	0.833786	36.16418	434.618	366989.4
1163.8	0.836783	4.937021	1.62267	0.23718	0.833718	36.05342	433.3056	367422.7
1164	0.837112	4.938963	1.617694	0.236479	0.833648	35.93984	431.9596	367854.7
1164.2	0.837439	4.940889	1.612592	0.23576	0.833576	35.82341	430.5795	368285.3
1164.4	0.837763	4.942801	1.607363	0.235023	0.833502	35.70409	429.165	368714.4
1164.6	0.838085	4.944699	1.602006	0.234267	0.833427	35.58186	427.7157	369142.1
1164.8	0.838404	4.946582	1.596518	0.233494	0.833349	35.45668	426.2312	369568.4
1165	0.838721	4.948451	1.590897	0.232702	0.83327	35.3285	424.7111	369993.1
1165.2	0.839035	4.950308	1.585143	0.231891	0.833189	35.19729	423.1547	370416.2
1165.4	0.839348	4.95215	1.579252	0.23106	0.833106	35.06299	421.5617	370837.8
1165.6	0.839658	4.95398	1.573222	0.230211	0.833021	34.92555	419.9312	371257.7
1165.8	0.839966	4.955798	1.567051	0.229341	0.832934	34.78491	418.2628	371676

1166	0.840272	4.957603	1.560735	0.228451	0.832845	34.64102	416.5556	372092.5
1166.2	0.840576	4.959396	1.554272	0.22754	0.832754	34.4938	414.8089	372507.4
1166.4	0.840877	4.961177	1.547659	0.226608	0.832661	34.34319	413.0219	372920.4
1166.6	0.841177	4.962947	1.540892	0.225654	0.832565	34.1891	411.1937	373331.6
1166.8	0.841475	4.964705	1.533967	0.224678	0.832468	34.03146	409.3233	373740.9
1167	0.841772	4.966452	1.52688	0.223679	0.832368	33.87017	407.4097	374148.3
1167.2	0.842066	4.968188	1.519627	0.222657	0.832266	33.70514	405.4518	374553.8
1167.4	0.842358	4.969914	1.512203	0.22161	0.832161	33.53626	403.4484	374957.2
1167.6	0.842649	4.971629	1.504603	0.220539	0.832054	33.36343	401.3981	375358.6
1167.8	0.842938	4.973333	1.496822	0.219097	0.83191	33.18514	399.2914	375757.9
1168	0.843225	4.975028	1.488854	0.217106	0.831711	33.00059	397.1144	376155
1168.2	0.843511	4.976712	1.480693	0.215068	0.831507	32.81165	394.8734	376549.9
1168.4	0.843794	4.978387	1.472331	0.212979	0.831298	32.61816	392.5789	376942.5
1168.6	0.844077	4.980053	1.463762	0.210839	0.831084	32.41997	390.2288	377332.7
1168.8	0.844357	4.981709	1.454977	0.208645	0.830864	32.21689	387.8212	377720.5
1169	0.844636	4.983355	1.445968	0.206395	0.830639	32.00873	385.3538	378105.9
1169.2	0.844914	4.984993	1.436725	0.204086	0.830409	31.79529	382.8241	378488.7
1169.4	0.84519	4.986621	1.427238	0.201716	0.830172	31.57632	380.2296	378868.9
1169.6	0.845465	4.988241	1.417495	0.199283	0.829928	31.35158	377.5674	379246.5
1169.8	0.845738	4.989853	1.407485	0.196783	0.829678	31.12079	374.8342	379621.3
1170	0.846009	4.991455	1.397193	0.194212	0.829421	30.88365	372.0267	379993.3
1170.2	0.84628	4.99305	1.386604	0.191567	0.829157	30.63983	369.1409	380362.5
1170.4	0.846548	4.994636	1.375702	0.188844	0.828884	30.38895	366.1727	380728.7
1170.6	0.846816	4.996214	1.364469	0.186039	0.828604	30.1306	363.1173	381091.8
1170.8	0.847082	4.997784	1.352883	0.183145	0.828314	29.86433	359.9696	381451.7
1171	0.847347	4.999347	1.340922	0.180157	0.828016	29.58961	356.7237	381808.5
1171.2	0.84761	5.000901	1.328559	0.177069	0.827707	29.30587	353.3729	382161.8
1171.4	0.847873	5.002448	1.315765	0.173874	0.827387	29.01244	349.9099	382511.8
1171.6	0.848134	5.003988	1.302505	0.170562	0.827056	28.70858	346.3262	382858.1
1171.8	0.848393	5.00552	1.288742	0.167124	0.826712	28.39342	342.612	383200.7
1172	0.848652	5.007045	1.27443	0.163549	0.826355	28.06596	338.7563	383539.4
1172.2	0.848909	5.008563	1.259517	0.159825	0.825982	27.72504	334.746	383874.2
1172.4	0.849165	5.010073	1.24394	0.155934	0.825593	27.36926	330.5658	384204.8
1172.6	0.84942	5.011577	1.227626	0.151859	0.825186	26.99698	326.1974	384531
1172.8	0.849674	5.013074	1.210485	0.147578	0.824758	26.6062	321.6191	384852.6
1172.84						26.5		384930
1173	0.849926	5.014564	1.192405	0.143062	0.824306	26.19447	316.804	385169.4
1173.2	0.850178	5.016048	1.173249	0.138277	0.823828	25.75869	311.7189	385481.1
1173.4	0.850428	5.017525	1.152838	0.133179	0.823318	25.2949	306.3215	385787.4
1173.6	0.850677	5.018995	1.130937	0.127709	0.822771	24.79787	300.5566	386088

APPENDIX D

HYDROLOGY MAP


FOSTORIA STREET
WILCOX AVENUE
LOS ANGELES RIVER
PATATA STREET
SOUTHERN PACIFIC RAILROAD
SITE
VICINITY MAP
CITY OF SOUTH GATE
HYDROLOGY MAP
(PROPOSED CONDITION)
PATATA STREET INDUSTRIAL BLDG.
5037 PATATA STREET

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APPENDIX H – TRAFFIC STUDY

LOCAL TRAFFIC ASSESSMENT

Proposed Industrial Building

5037 Patata Street, South Gate

Date: November 4, 2022

Prepared For:
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Local Traffic Assessment
Proposed Industrial Building
5037 Patata Street
In the City of South Gate



Prepared under the supervision of

Jende Kay Hsu, P.E., T. E.
Lic. # T2285

EXECUTIVE SUMMARY

The purpose of this study is to provide a local traffic assessment of the proposed development at 5037 Patata Street in the City of South Gate. The proposed development consists of constructing a new light-manufacturing building of cold storage warehouse with 435,420 square feet of gross floor area on the building footprint of 409,433 square feet, and a vehicle maintenance building of 13,924 square feet as an ancillary use.

With the application of passenger car equivalent, the project is expected to generate 82 inbound and 23 outbound trips in the AM peak hour, 31 inbound and 81 outbound trips in the PM peak hour, and 2,002 daily trips. The project will not result in any operational deficiency at study intersections for the opening year plus project conditions after implementing the following **mitigation measures**:

Intersection (#6) of Atlantic Avenue and Patata Street / Salt Lake Avenue:

- Re-stripe Salt Lake Avenue for the eastbound traffic to provide a shared right-thru-left turn lane and an exclusive right-turn lane.
- Re-stripe Patata Street for westbound traffic to provide a shared right-thru-left turn lane and an exclusive left-turn lane.

Intersection (#4) of Atlantic Avenue and Santa Ana Street:

- Revise striping to extend the eastbound left-turn lane from 85 feet to 240 feet.

Intersection (#5) of Atlantic Avenue and Cecelia Street:

- Revise striping to extend the westbound left-turn lane from 70 feet to 110 feet.

Intersection (#9) of Atlantic Avenue and Southern Avenue:

- Evaluate the feasibility of roadway/striping modification for Southern Avenue between Atlantic Avenue and Pinehurst Avenue to increase the queuing length for eastbound left turns.

Intersection (#10) of Firestone Boulevard and Mason Street:

- Post No Stopping Any Time signs for southbound Mason Street within 100' of the crosswalk at Firestone Boulevard.

The above suggested improvements are subject to thoroughly review and evaluation by the governing authorities at the local and county level for feasibility, constructability, policy consistency, traffic safety, and other applicable considerations.

The proposed development includes constructing a bicycle lane along the south property line that begins at Wilcox Avenue and ends at the east property line. Subject to approval by the County of Los Angeles and other governing agencies, this bicycle lane can be extended to connect with the existing bicycle lane on the west side of Los Angeles River. The subject bicycle lane can also be integrated with future bicycle lanes within the city limits of Cudahy, such as Wilcox Avenue. The proposed bicycle lane is consistent with the forward-looking approaches to enhance bicycle facilities and encourage use of alternative transportation modes set forth in the General Plans of both South Gate and Cudahy.

Site access is provided by three proposed driveways located in the cul-de-sac of Patata Street just east of Wilcox Avenue. Each driveway will be equipped with a power operated gate for access control. Site access appears adequate for the intended uses, including semi-trailers.

INTRODUCTION

The purpose of this study is to provide a local traffic assessment of the proposed industrial development at 5037 Patata Street in the City of South Gate. The proposed development consists of constructing a new light-manufacturing building of cold storage warehouse with 435,420 square feet of gross floor area on the building footprint of 409,433 square feet, and a vehicle maintenance building of 13,924 square feet as an ancillary use. Vicinity map is shown in **Exhibit 1**. The proposed site plan is shown in **Exhibit 2**.

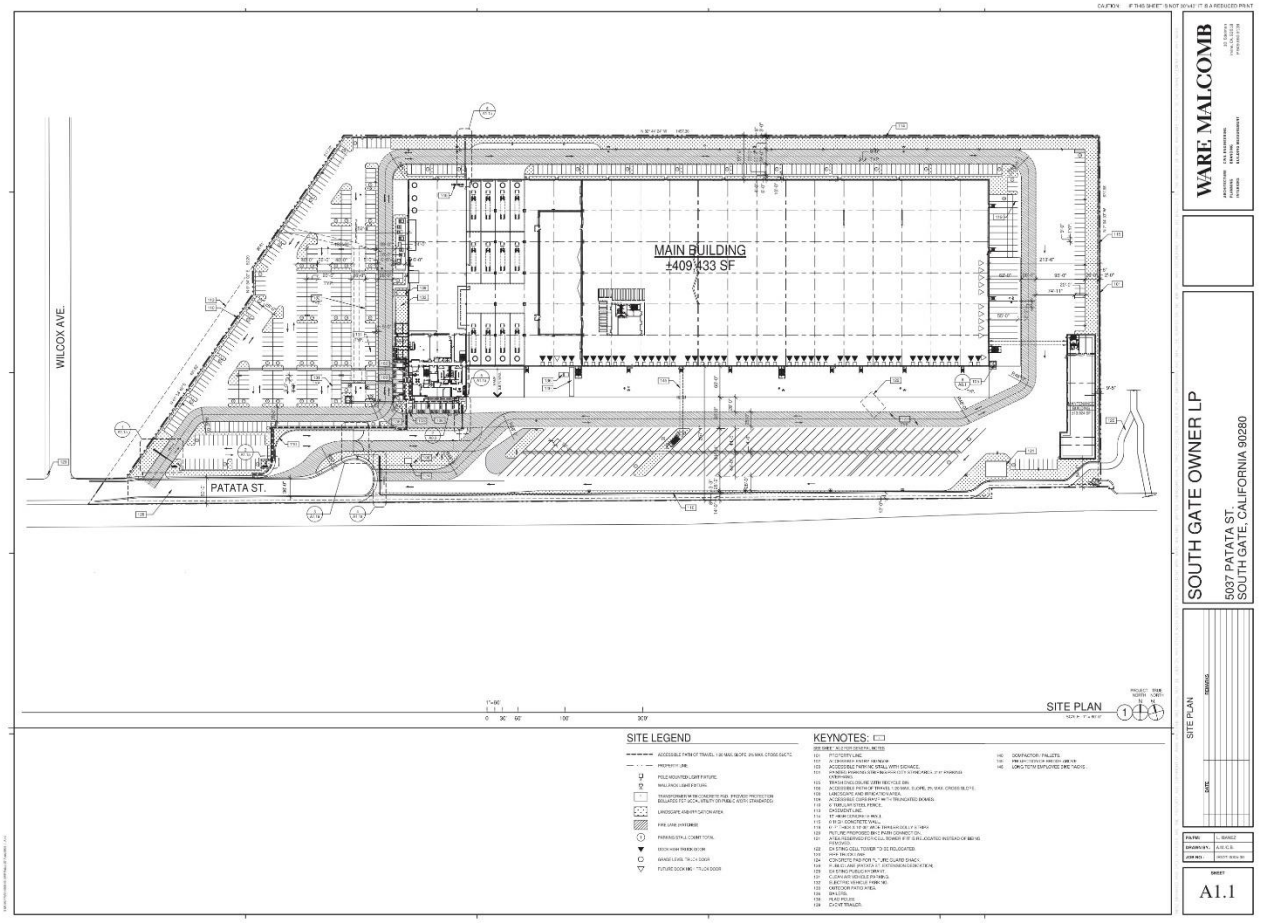
The project site is located at the west end of Patata Street intersecting Wilcox Avenue. Site access is provided by three proposed driveways located in the cul-de-sac of Patata Street just east of Wilcox Avenue. Each driveway will be equipped with a power operated gate for access control. The project is expected to open in year 2024.

The project will also include constructing a bike/pedestrian trail running east-westerly along the south property line. With a future extension, this bike/pedestrian trail can be connected to the existing Los Angeles River Bike Path.



EXHIBIT 1. VICINITY MAP
No Scale

K2 Traffic Engineering, Inc.


WILCOX AVE.
PATATA ST.
MAIN BUILDING
±409,433 SF
SITE PLAN
SITE LEGEND
KEYNOTES:
WARE MALCOMB
SOUTH GATE OWNER LP
5037 PATATA ST.
SOUTH GATE, CALIFORNIA 90280
SITE PLAN
A1.1

STUDY SCENARIOS

In compliance with the Los Angeles County Public Works "Transportation Impact Analysis Guidelines", dated July 2020, the following scenarios are included in this analysis:

i. Existing (2022) Conditions
ii. Existing Conditions plus Project
iii. Opening Year Cumulative (2024) without Project Conditions
iv. Opening Year Cumulative (2024) plus Project Conditions

According to the approved Scoping Agreement, provided in **Appendix A**, the following intersections are studied for level of service analysis to evaluate potential traffic impacts:

1. Wilcox Avenue at Santa Ana Street (Cudahy)
2. Wilcox Avenue at Cecelia Street (Cudahy)
3. Wilcox Avenue at Patata Street (Cudahy)
4. Atlantic Avenue at Santa Ana Street (Cudahy)
5. Atlantic Avenue at Cecelia Street (Cudahy)[1]
6. Atlantic Avenue at Patata Street /Salt Lake Avenue (Cudahy/South Gate)
7. Atlantic Avenue at Azelea West (South Gate)
8. Atlantic Avenue at Firestone Boulevard (South Gate)
9. Atlantic Avenue at Southern Avenue (South Gate)
10. Firestone Boulevard at Mason Street (South Gate)
11. Firestone Boulevard at Firestone Place (South Gate)
12. Firestone Boulevard at Rayo Avenue (South Gate)

The Level of Service (LOS) analysis is performed using SYNCHRO software based on the methodologies prescribed in the Highway Capacity Manual (HCM). For signalized intersections, the average control delay per vehicle is estimated for each lane group and

[1] Cecelia Street is staggered at Atlantic Avenue. Therefore, the level of service analysis will consist of two parts: location 5A for the north portion of the intersection and location 5B for the south portion of the intersection.

aggregated for each approach and for the intersection as a whole. For unsignalized intersections, LOS is related to the control delay for each stop controlled movement. The relationship between vehicle delay and LOS for signalized and unsignalized intersections is provided in **Table 1**.

Table 1. LOS Definitions

LOS	Description	Average Control Delay Per Vehicle (Seconds)	
		Signalized	Un-signalized
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10.0	≤ 10.0
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	> 10.0 - 20.0	> 10.0 - 15.0
C	Good operation. Occasionally drivers may have to wait for more than 60 seconds, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted.	> 20.0 - 35.0	> 15.0 - 25.0
D	Fair operation. Cars are sometimes required to wait for more than 60 seconds during short peaks. There is no long-standing traffic queues. This level is typically associated with design practice for peak periods.	> 35.0 - 55.0	> 25.0 - 35.0
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	> 55.0 - 80.0	> 35.0 - 50.0
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersections approach lanes; therefore, volumes carried are not predictable. Potential for stop-and-go type traffic flow.	> 80.0	> 50.0

EXISTING CONDITIONS

The proposed site is situated at the northeast corner of Patata Street and Wilcox Avenue in the City of South Gate. The site borders residential areas in the City of Cudahy to the north, Los Angeles River to the east, a Union Pacific Railroad (UPRR) line to the south, and industrial areas in the City of Cudahy to the west. The project site provides its access via three truck routes: Patata Street, Atlantic Avenue, and Firestone Boulevard. The map of truck routes in the Mobility Element of South Gate General Plan 2035 is shown in **Exhibit 3**.

Patata Street is designated as a Collector Street in the Baseline Street Circulation System of Cudahy General Plan 2040, as shown in **Exhibit 4**. Patata Street is an east-westerly truck route with one lane in each direction. On-street parking is permitted except near the intersection with Atlantic Avenue. The posted speed limit is 35 mph.

Atlantic Avenue is designated as a Boulevard (Primary Arterial) in the Mobility Element of South Gate General Plan 2035, as shown in **Exhibit 5**. Within the City of South Gate limits, Atlantic Avenue has three northbound lanes and two southbound lanes, separated by raised medians. Multiple left-turn lanes are provided at major intersections. Atlantic Avenue has been identified as a truck route within City of South Gate boundaries. The posted speed limit is 35 mph. South Gate General Plan 2035 has identified in the Implementation Actions that Atlantic Avenue should be widened from four lanes to six lanes throughout the City.

Atlantic Avenue is designated as a Major Highway (Arterial) north of Patata Street in Cudahy General Plan 2040. Within the City of Cudahy limits, Atlantic Avenue has two lanes in each direction separated by painted islands and two-way-left-turn lanes. The posted speed limit is 35 mph in the project vicinity. On-street parking is generally permitted for both approaches on Atlantic Avenue south of Firestone Boulevard. On-street parking is permitted on Atlantic Avenue for the northbound approach only between Mason Street and the railroad tracks with the following restrictions: No parking

from 3 PM to 6 PM Monday through Friday; 20-minute parking from 9 AM to 3 PM Monday through Friday. Within the City of Cudahy, on-street parking is generally permitted on Atlantic Avenue for the southbound approach only.

Firestone Boulevard is designated as a Boulevard (Primary Arterial) and an Enhanced Corridor in South Gate General Plan 2035, running east-westerly currently with three lanes in each direction, separated by raised medians. This roadway is a designated truck route. The speed limit is 35 mph in the project vicinity. South Gate General Plan 2035 has identified in the Implementation Actions that Firestone Boulevard should be widened to a minimum of eight lanes (excluding left turns) between Atlantic Avenue and Garfield Avenue. On-street parking is permitted for both approaches on Firestone Boulevard between Atlantic Avenue and the railroad tracks with the following restrictions: No parking from 6 AM to 9 AM and from 3 PM to 6 PM; 2-hour parking from 9 AM to 3 PM except Sundays; No Parking Friday from 3 AM to 8 AM. Additional on-street parking is provided on Firestone Boulevard at selected areas west of Atlantic Boulevard for the eastbound approach.

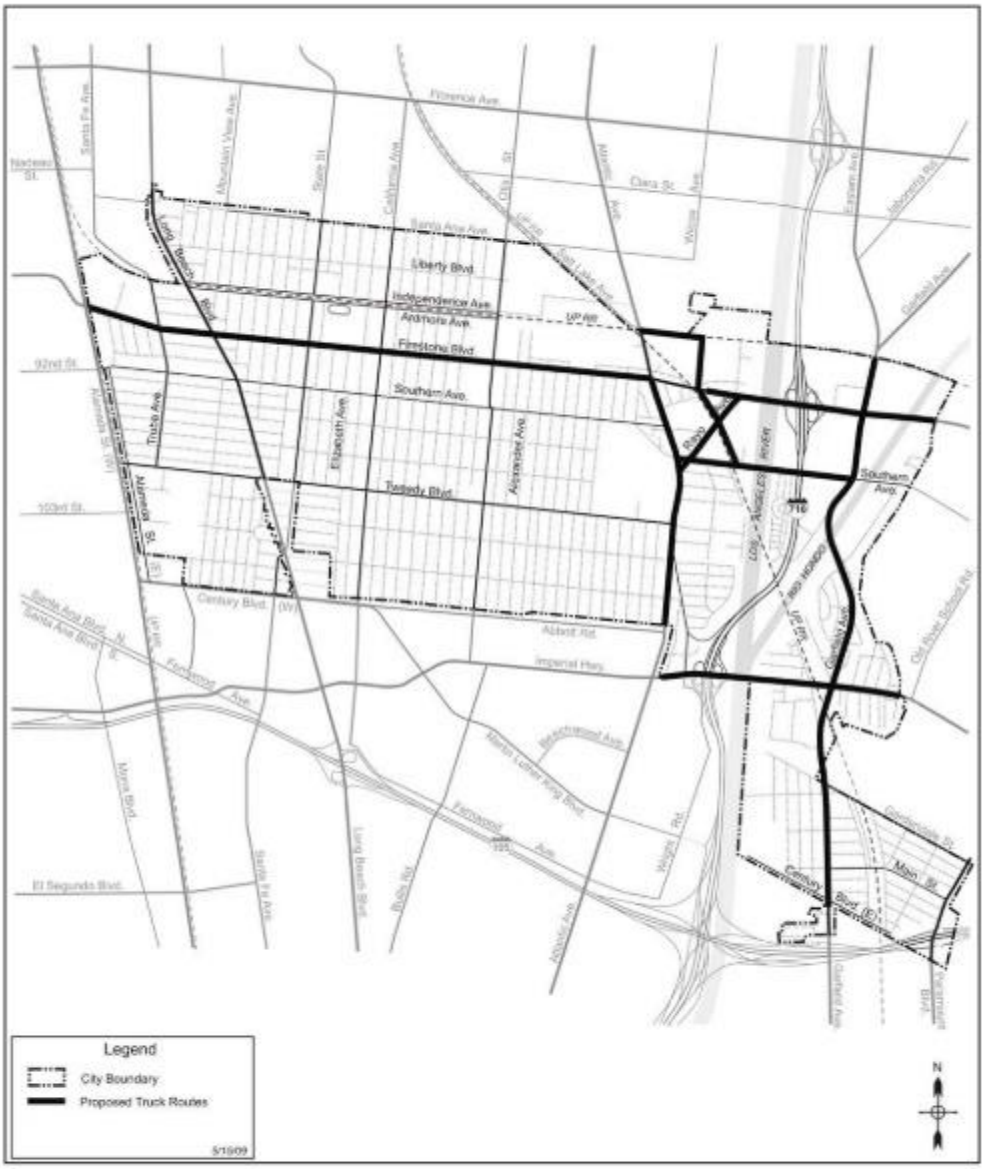
Rayo Avenue is designated as a Collector Street and a truck route. The roadway runs north-southerly generally with one lane in each direction, except a section of Rayo Avenue south of Firestone Boulevard that provides two lanes in each direction. The posted speed limit is 35 mph. Rayo Avenue is a designated truck route in the General Plan. On-street parking is generally permitted for both directions north of Firestone Place. No stopping any time signs and red curbs are present for Rayo Avenue between Atlantic Avenue and Firestone Place.

Wilcox Avenue is designated as a Collector Street, running north-southerly with one lane in each direction. The posted speed limit is 30 mph in the project vicinity. On-street parking is generally allowed except near intersections. The intersection of Wilcox Avenue and Patata Street is controlled by stop signs on all three approaches.

Salt Lake Avenue is designated as a Collector Street, running east-westerly with one lane in each direction. The posted speed limit is 35 mph in the project vicinity. No parking any time signs are posted with red curbs for the north/westbound approach only.

EXHIBIT 3. TRUCK ROUTE MAP - SOUTH GATE

Figure ME 3 Truck Routes



South Gate General Plan 2035, Mobility Element 11

EXHIBIT 4. STREET CIRCULATION SYSTEM MAP - CUDAHY

CIRCULATION ELEMENT



Cudahy General Plan 2040, Circulation Element 12

EXISTING CONDITIONS

The proposed site is situated at the northeast corner of Patata Street and Wilcox Avenue in the City of South Gate. The site borders residential areas in the City of Cudahy to the north, Los Angeles River to the east, a Union Pacific Railroad (UPRR) line to the south, and industrial areas in the City of Cudahy to the west. The project site provides its access via three truck routes: Patata Street, Atlantic Avenue, and Firestone Boulevard. The map of truck routes in the Mobility Element of South Gate General Plan 2035 is shown in **Exhibit 3**.

Patata Street is designated as a Collector Street in the Baseline Street Circulation System of Cudahy General Plan 2040, as shown in **Exhibit 4**. Patata Street is an east-westerly truck route with one lane in each direction. On-street parking is permitted except near the intersection with Atlantic Avenue. The posted speed limit is 35 mph.

Atlantic Avenue is designated as a Boulevard (Primary Arterial) in the Mobility Element of South Gate General Plan 2035, as shown in **Exhibit 5**. Within the City of South Gate limits, Atlantic Avenue has three northbound lanes and two southbound lanes, separated by raised medians. Multiple left-turn lanes are provided at major intersections. Atlantic Avenue has been identified as a truck route within City of South Gate boundaries. The posted speed limit is 35 mph. South Gate General Plan 2035 has identified in the Implementation Actions that Atlantic Avenue should be widened from four lanes to six lanes throughout the City.

Atlantic Avenue is designated as a Major Highway (Arterial) north of Patata Street in Cudahy General Plan 2040. Within the City of Cudahy limits, Atlantic Avenue has two lanes in each direction separated by painted islands and two-way-left-turn lanes. The posted speed limit is 35 mph in the project vicinity. On-street parking is generally permitted for both approaches on Atlantic Avenue south of Firestone Boulevard. On-street parking is permitted on Atlantic Avenue for the northbound approach only between Mason Street and the railroad tracks with the following restrictions: No parking

from 3 PM to 6 PM Monday through Friday; 20-minute parking from 9 AM to 3 PM Monday through Friday. Within the City of Cudahy, on-street parking is generally permitted on Atlantic Avenue for the southbound approach only.

Firestone Boulevard is designated as a Boulevard (Primary Arterial) and an Enhanced Corridor in South Gate General Plan 2035, running east-westerly currently with three lanes in each direction, separated by raised medians. This roadway is a designated truck route. The speed limit is 35 mph in the project vicinity. South Gate General Plan 2035 has identified in the Implementation Actions that Firestone Boulevard should be widened to a minimum of eight lanes (excluding left turns) between Atlantic Avenue and Garfield Avenue. On-street parking is permitted for both approaches on Firestone Boulevard between Atlantic Avenue and the railroad tracks with the following restrictions: No parking from 6 AM to 9 AM and from 3 PM to 6 PM; 2-hour parking from 9 AM to 3 PM except Sundays; No Parking Friday from 3 AM to 8 AM. Additional on-street parking is provided on Firestone Boulevard at selected areas west of Atlantic Boulevard for the eastbound approach.

Rayo Avenue is designated as a Collector Street and a truck route. The roadway runs north-southerly generally with one lane in each direction, except a section of Rayo Avenue south of Firestone Boulevard that provides two lanes in each direction. The posted speed limit is 35 mph. Rayo Avenue is a designated truck route in the General Plan. On-street parking is generally permitted for both directions north of Firestone Place. No stopping any time signs and red curbs are present for Rayo Avenue between Atlantic Avenue and Firestone Place.

Wilcox Avenue is designated as a Collector Street, running north-southerly with one lane in each direction. The posted speed limit is 30 mph in the project vicinity. On-street parking is generally allowed except near intersections. The intersection of Wilcox Avenue and Patata Street is controlled by stop signs on all three approaches.

Salt Lake Avenue is designated as a Collector Street, running east-westerly with one lane in each direction. The posted speed limit is 35 mph in the project vicinity. No parking any time signs are posted with red curbs for the north/westbound approach only.

EXHIBIT 3. TRUCK ROUTE MAP - SOUTH GATE

Figure ME 3 Truck Routes

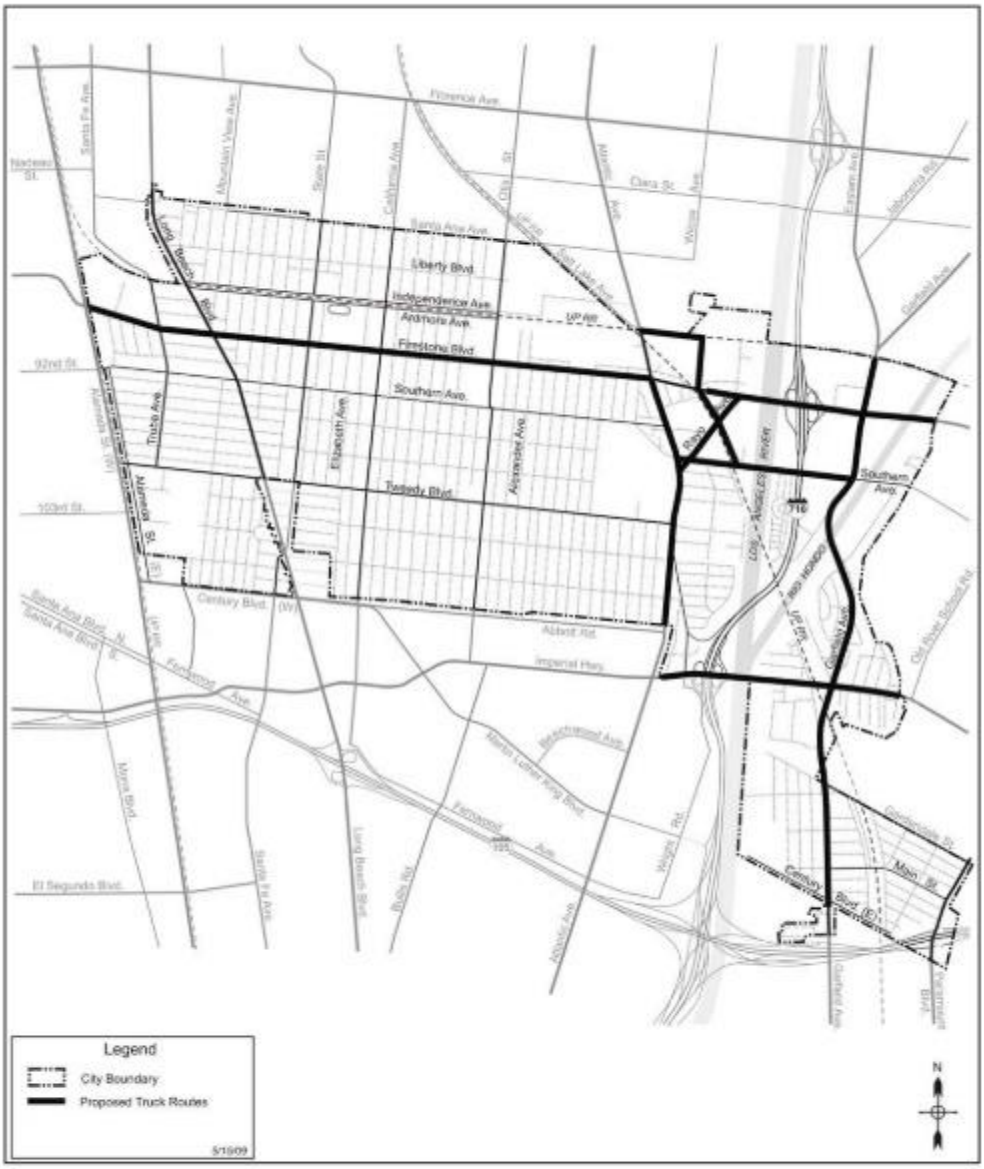


EXHIBIT 4. STREET CIRCULATION SYSTEM MAP - CUDAHY

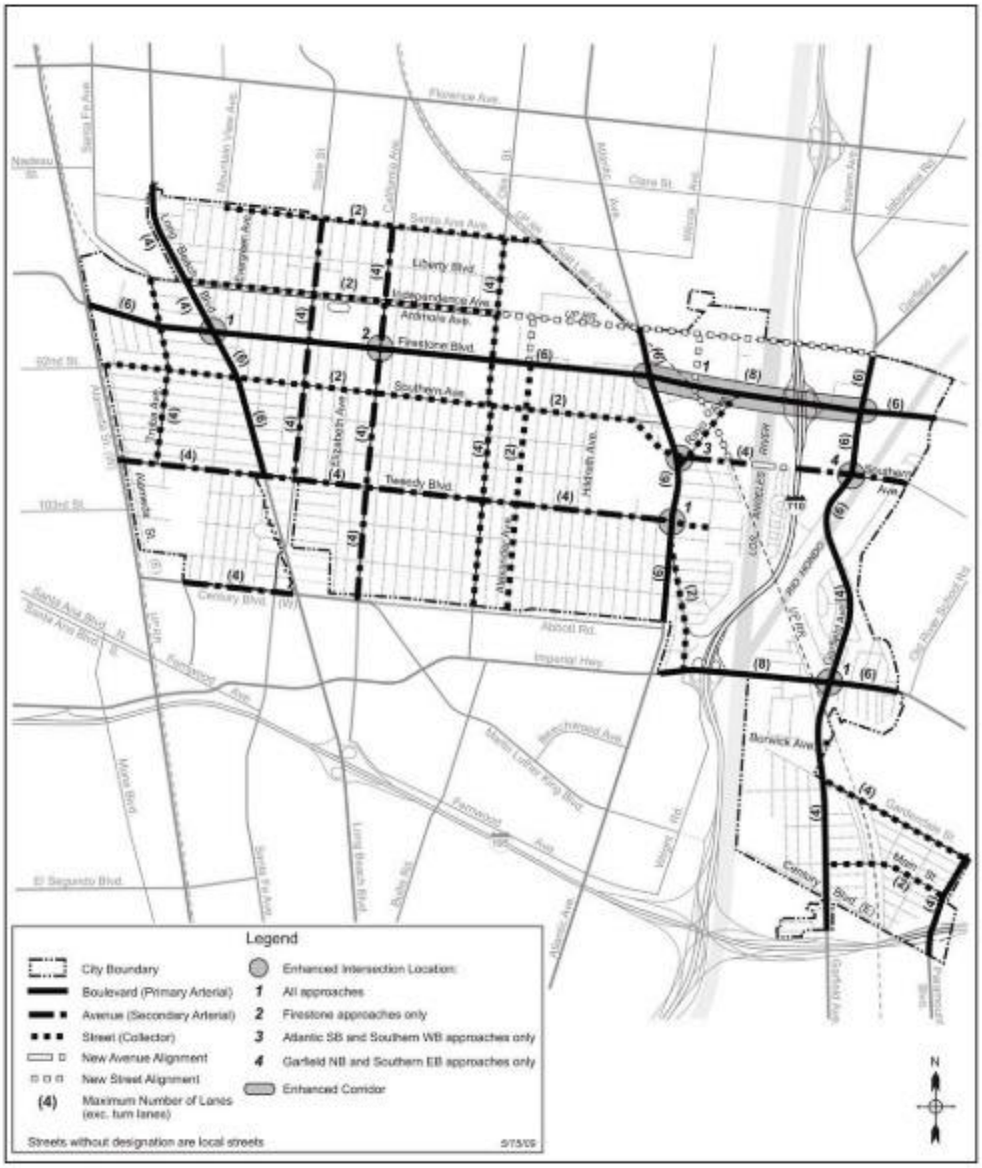
CIRCULATION ELEMENT



Cudahy General Plan 2040, Circulation Element 12

EXHIBIT 5. ROADWAY CLASSIFICATION MAP - SOUTH GATE

Figure ME 2 Street Classifications



Turning movement counts in the AM and PM peak hours were collected on Tuesday, March 1, 2022. The existing lane configuration is shown in **Exhibits 6**. Existing traffic volumes at the study intersections in the AM and PM peak hours are shown in **Exhibits 7** and **8**, respectively. Complete traffic data can be found in **Appendix B**.

The level of services and intersection delay for existing conditions are shown in **Table 2**. The analysis worksheets can be found in **Appendix C**.

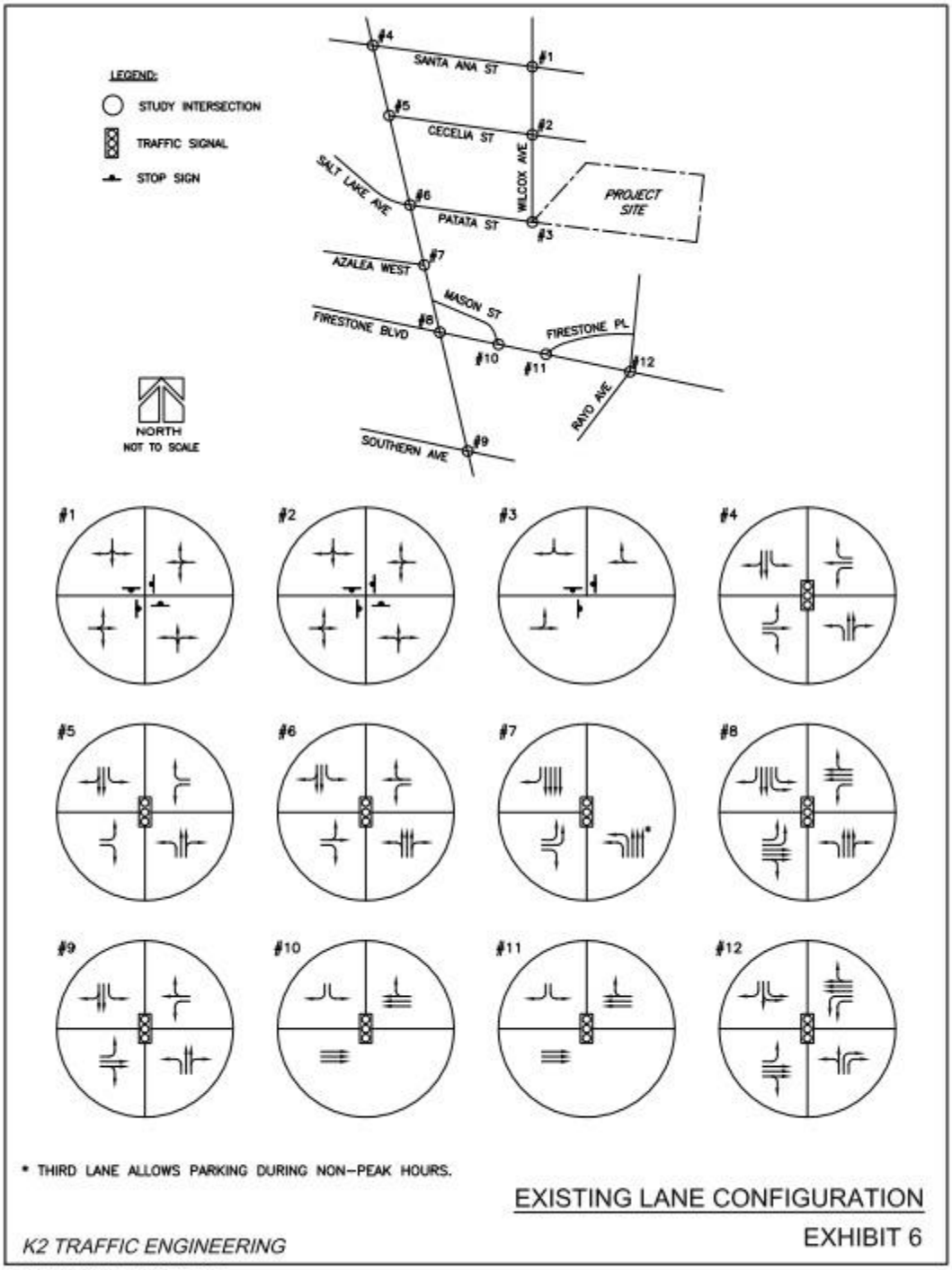
Table 2. Existing Conditions Analysis

No.	Study Intersection	Control Type	AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
1	Wilcox Ave at Santa Ana St	AWSC	C	20.9	C	17.0
2	Wilcox Ave at Cecelia St	AWSC	A	9.0	A	9.2
3	Wilcox Ave at Patata St	AWSC	A	8.3	A	8.5
4	Atlantic Ave at Santa Ana St	TS	C	27.1	C	25.2
5A	Atlantic Ave at Cecelia St (North)	TS	B	11.0	A	6.5
5B	Atlantic Ave at Cecelia St (South)	TS	A	3.2	A	3.8
6	Atlantic Ave at Patata St/Salt Lake Ave	TS	D	50.0	**E**	**63.5**
7	Atlantic Ave at Azalea West	TS	A	3.5	B	10.8
8	Atlantic Ave at Firestone Blvd	TS	**E**	**59.2**	D	53.2
9	Atlantic Ave at Southern Ave	TS	B	17.6	C	22.5
10	Firestone Blvd at Mason St	TS	A	9.9	B	11.5
11	Firestone Blvd at Firestone Pl	TS	A	7.4	B	10.2
12	Firestone Blvd at Rayo Ave	TS	**E**	**68.8**	D	50.5

Note: AWSC = All-way-stop control; TS = Traffic Signal; Delay in seconds

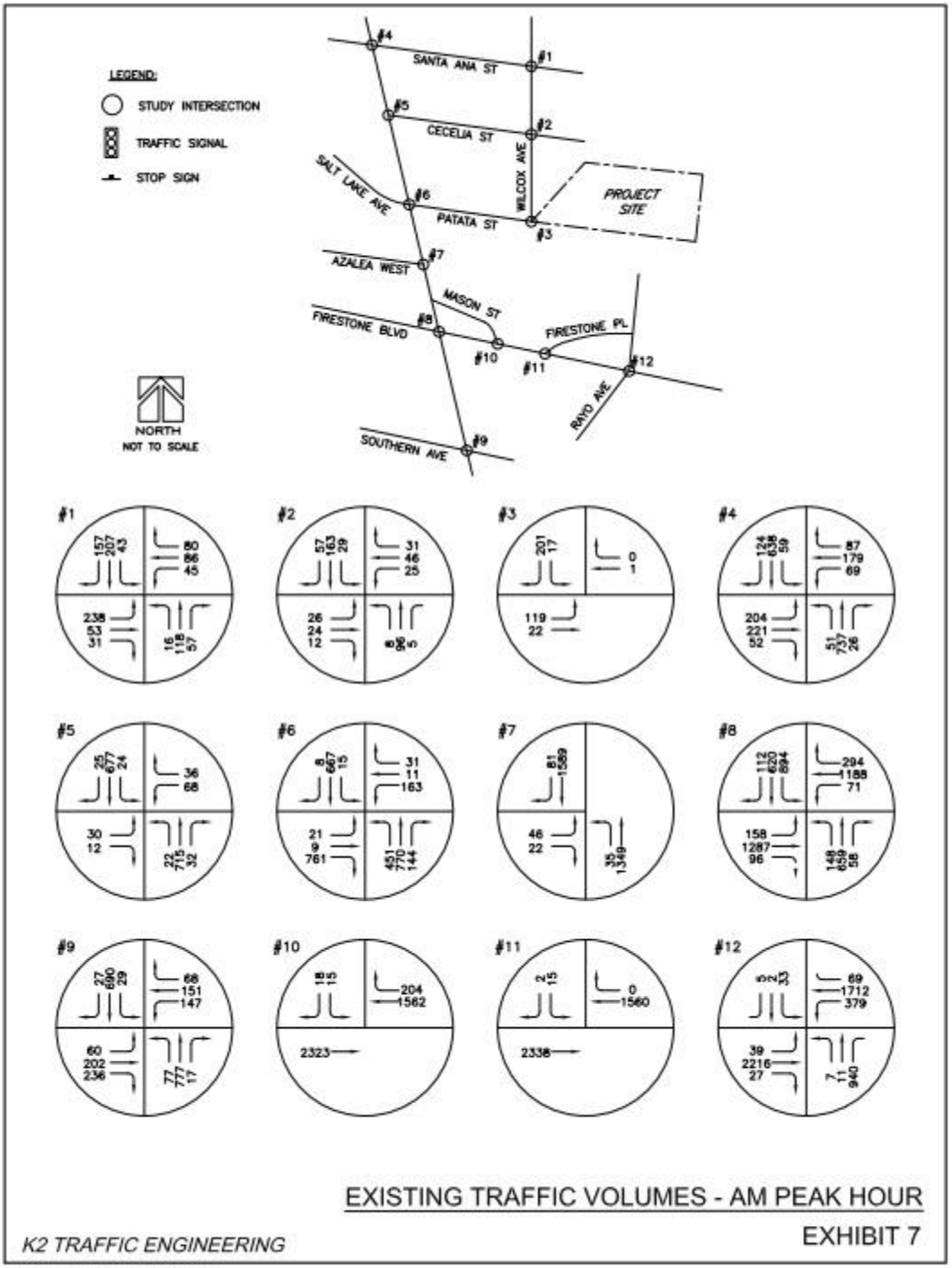
The study intersections operate at LOS D or better in the AM and PM peak hours except for the following intersections:

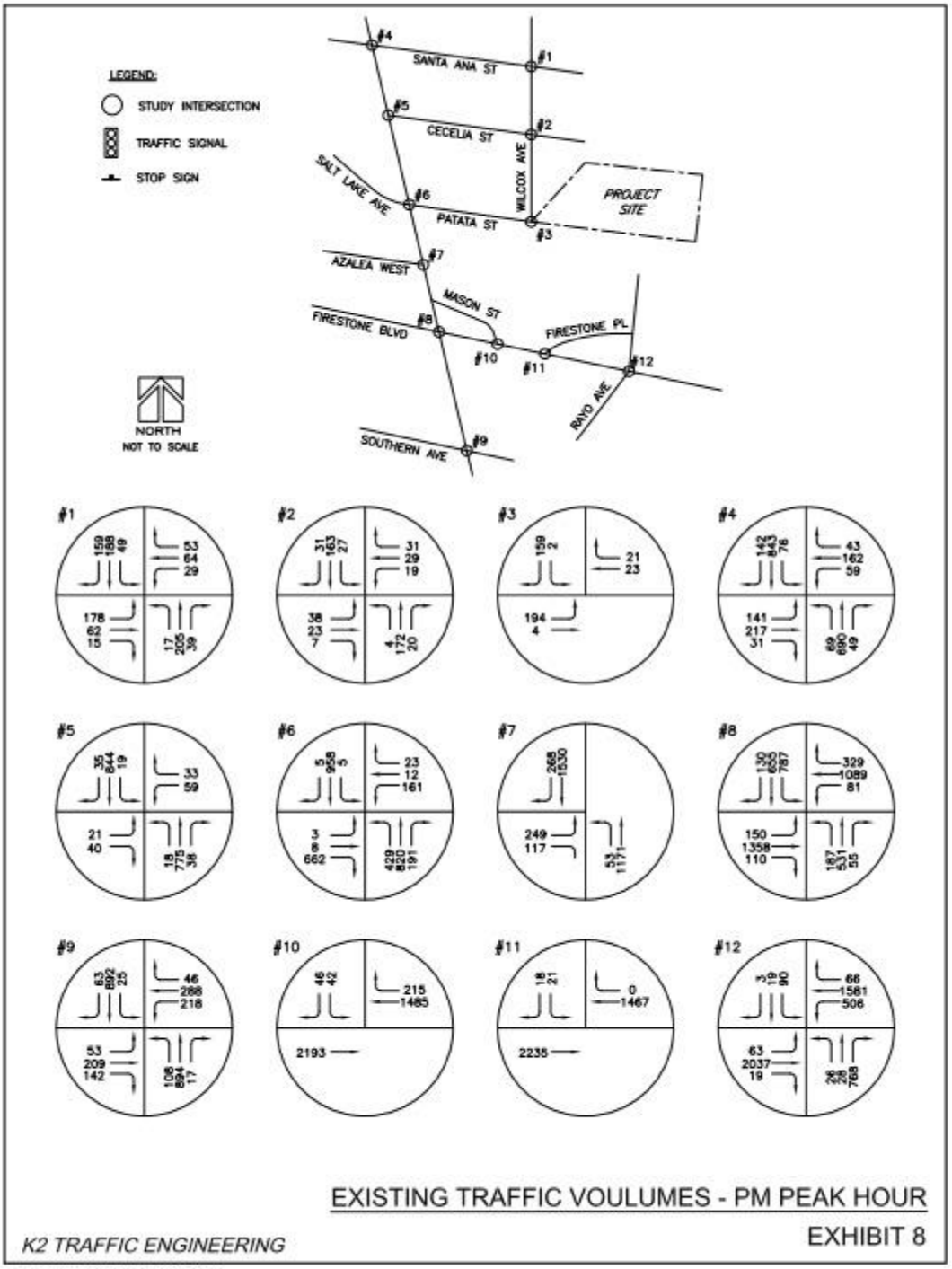
- #6 Atlantic Ave at Patata St/Salt Lake Ave: LOS E in the PM peak hour
- #8 Atlantic Ave at Firestone Blvd: LOS E in the AM peak hour
- #12 Firestone Blvd at Rayo Ave: LOS E in the AM peak hour



Proposed Industrial Building
5037 Patata Street, South Gate

16


LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
AZALEA WEST
MASON ST
FIRESTONE BLVD
FIRESTONE PL
RAYO AVE
SOUTHERN AVE
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#12
EXISTING TRAFFIC VOLUMES - AM PEAK HOUR
K2 TRAFFIC ENGINEERING
EXHIBIT 7
Proposed Industrial Building
5037 Patata Street, South Gate
17



Proposed Industrial Building
5037 Patata Street, South Gate

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TRIP GENERATION

Passenger vehicle trips are estimated utilizing the rates and methodologies outlined in "*Trip Generation, 11th Edition*", published by the Institute of Transportation Engineers (ITE). Truck trips generated by the project are converted into passenger car equivalents (PCE) utilizing the methodology of Recommended Large Truck Mix Percentages as provided in the "*City of Fontana Truck Trip Generation Study*", which is the widely accepted by most transportation authorities in Southern California.

With the application of PCEs, the project is expected to generate 82 inbound and 23 outbound trips in the AM peak hour, 31 inbound and 81 outbound trips in the PM peak hour, and 2,002 daily trips. The applicable ITE trip generation rates and projected trips associated with the proposed facility are provided in **Table 3**.

TABLE 3. PROJECT TRIP GENERATION

Land Use	Unit	AM Peak In[2]	AM Peak Out[2]	AM Peak Total	PM Peak In[2]	PM Peak Out[2]	PM Peak Total	Daily
Total Vehicle Rates								
High-Cube Cold Storage Warehouse (157)[1]	TSF	0.085	0.025	0.110	0.034	0.086	0.12	2.12
PCE Inbound/Outbound Splits		77%	23%	100%	28%	72%	100%	50%/50%
Passenger Car Equivalent Rate Calculations								
Passenger Cars								
Recommended Mix (%)[3]		79.57%	79.57%	79.57%	79.57%	79.57%	79.57%	79.57%
PCE Factor[3]		1.0	1.0	1.0	1.0	1.0	1.0	1.0
PCE Rates		0.067	0.021	0.088	0.027	0.069	0.095	1.687
2-Axel Trucks								
Recommended Mix (%)[3]		3.46%	3.46%	3.46%	3.46%	3.46%	3.46%	3.46%
PCE Factor[3]		1.5	1.5	1.5	1.5	1.5	1.5	1.5
PCE Rates		0.004	0.001	0.006	0.002	0.005	0.006	0.110
3-Axel Trucks								
Recommended Mix (%)[3]		4.64%	4.64%	4.64%	4.64%	4.64%	4.64%	4.64%
PCE Factor[3]		2.0	2.0	2.0	2.0	2.0	2.0	2.0
PCE Rates		0.008	0.002	0.010	0.003	0.008	0.011	0.197
4+ Axel Trucks								
Recommended Mix (%)[3]		12.33%	12.33%	12.33%	12.33%	12.33%	12.33%	12.33%
PCE Factor		3.0	3.0	3.0	3.0	3.0	3.0	3.0
PCE Rates		0.031	0.009	0.041	0.012	0.032	0.044	0.784
Warehouse NET PCE Rate		0.110	0.033	0.145	0.044	0.114	0.156	2.778
Total Project Trip Generation (Trips, By Vehicle Type)								
High-Cube Cold Storage Warehouse (157)	435.42 TSF							
Passenger Cars		29	9	38	12	30	41	735
2-Axel Trucks		2	0	3	1	2	3	48
3-Axel Trucks		4	1	4	1	3	5	86
4+ Axel Trucks		14	4	18	5	14	19	341
Total Trucks		20	5	25	7	19	27	475
Total Vehicles		49	14	63	19	49	68	1,210
Total Project Trip Generation (Passenger Car Equivalent Trips, By Vehicle Type)								
Passenger Cars		29	9	38	12	30	41	735
Truck PCE								
2-Axel Trucks		3	0	5	2	3	4	72
3-Axel Trucks		8	2	8	2	6	10	172
4+ Axel Trucks		42	12	54	15	42	57	1,023
Total Truck PCE		53	14	67	19	51	71	1,267
Total PCE		**82**	**23**	**105**	**31**	**81**	**112**	**2,002**

TSF = Thousand Square Feet

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition.

[2] Directional distribution is based on Warehousing use (LU: 150)

[3] Recommended Large Truck Mix Percentages per City of Fontana Truck Trip Generation Study for Heavy Warehouse uses, August 2003.

TRIP DISTRIBUTION

Trip distribution represents the directional orientation of traffic to and from the proposed project. Directional orientation is largely influenced by the geographical location of the site, among many other factors. The trip distribution pattern for the passenger cars and trucks associated with the project is illustrated in **Exhibits 9** and **10**, respectively.

TRAFFIC ASSIGNMENT

The traffic assignment to and from the site has been based upon the results of trip generation, trip distribution, and access layouts, as approved by the Cities of South Gate and Cudahy. The combined traffic assignment, including passenger car and truck trips with PCE conversion, in the AM and PM peak hours are illustrated in **Exhibits 11** and **12**, respectively.

EXHIBIT 9. TRIP DISTRIBUTION: PASSENGER CAR

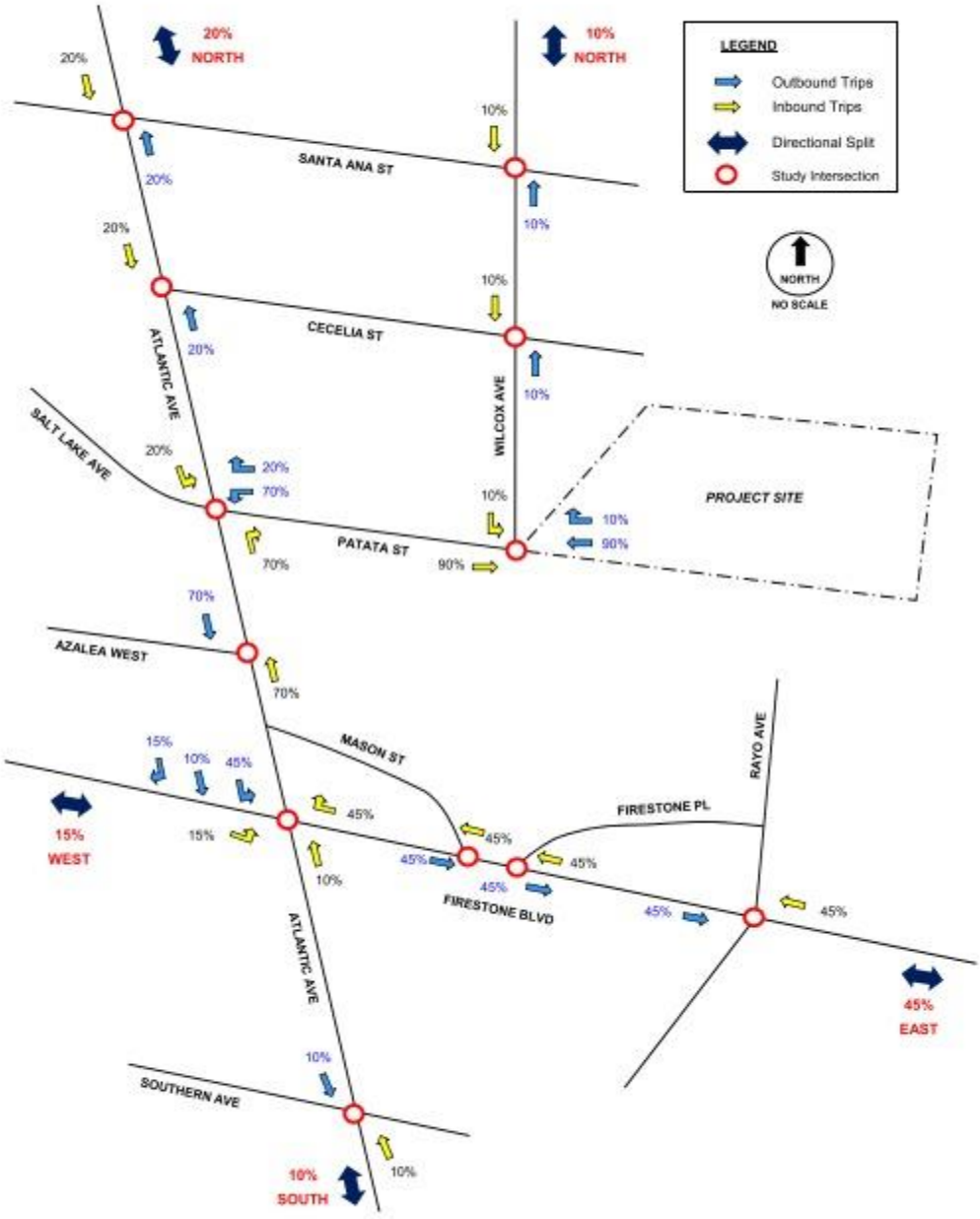
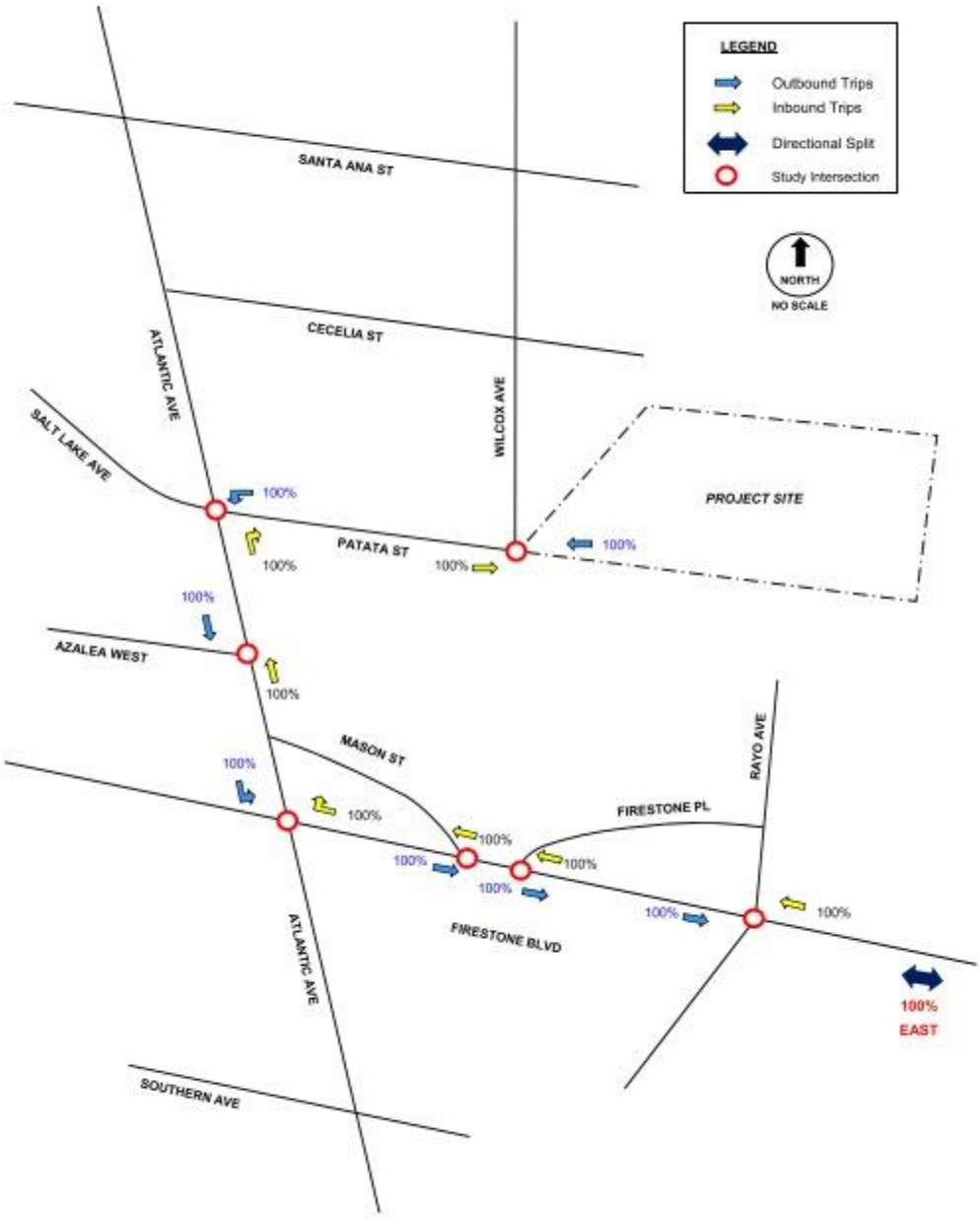
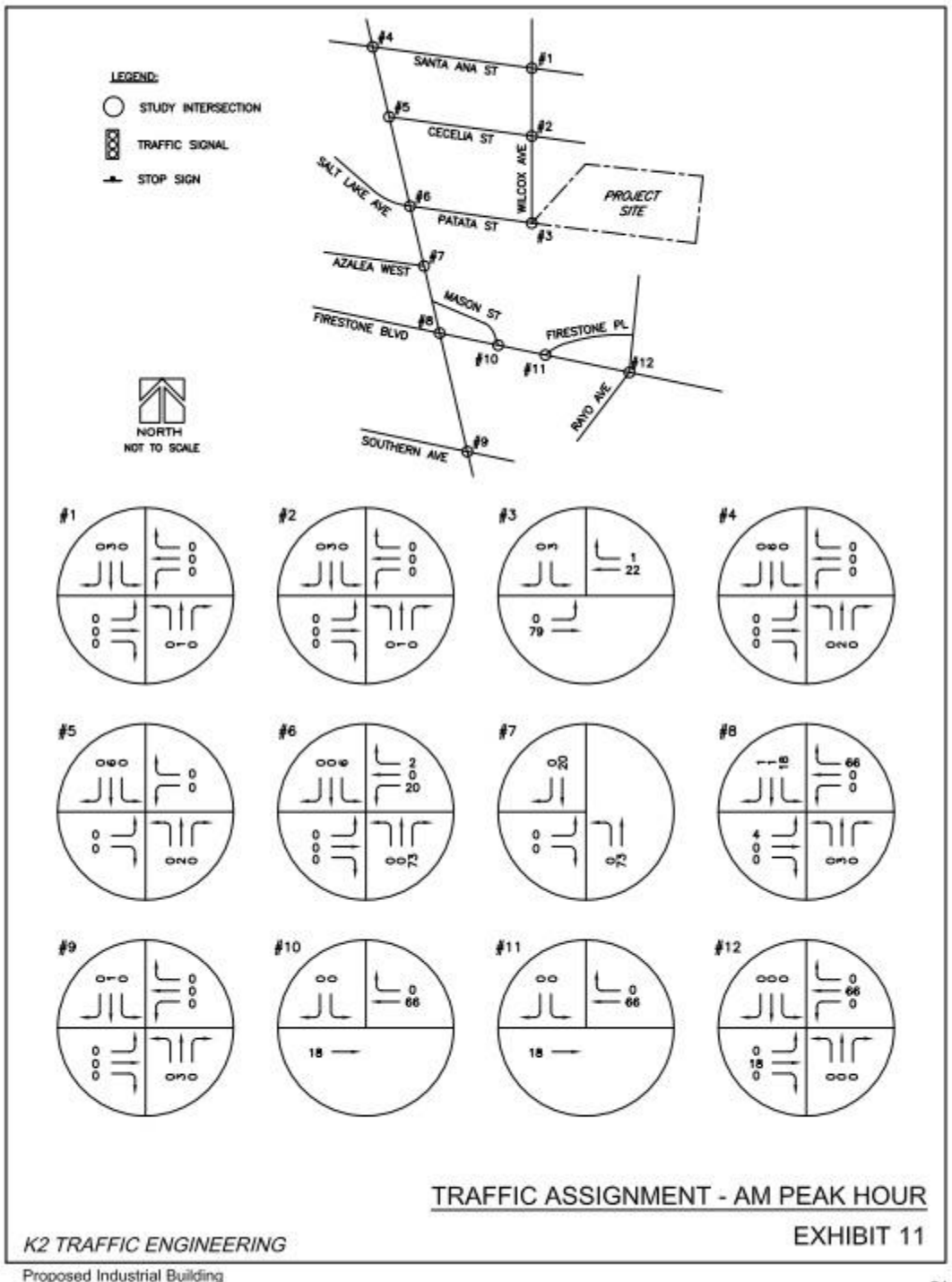


EXHIBIT 10. TRIP DISTRIBUTION: TRUCK

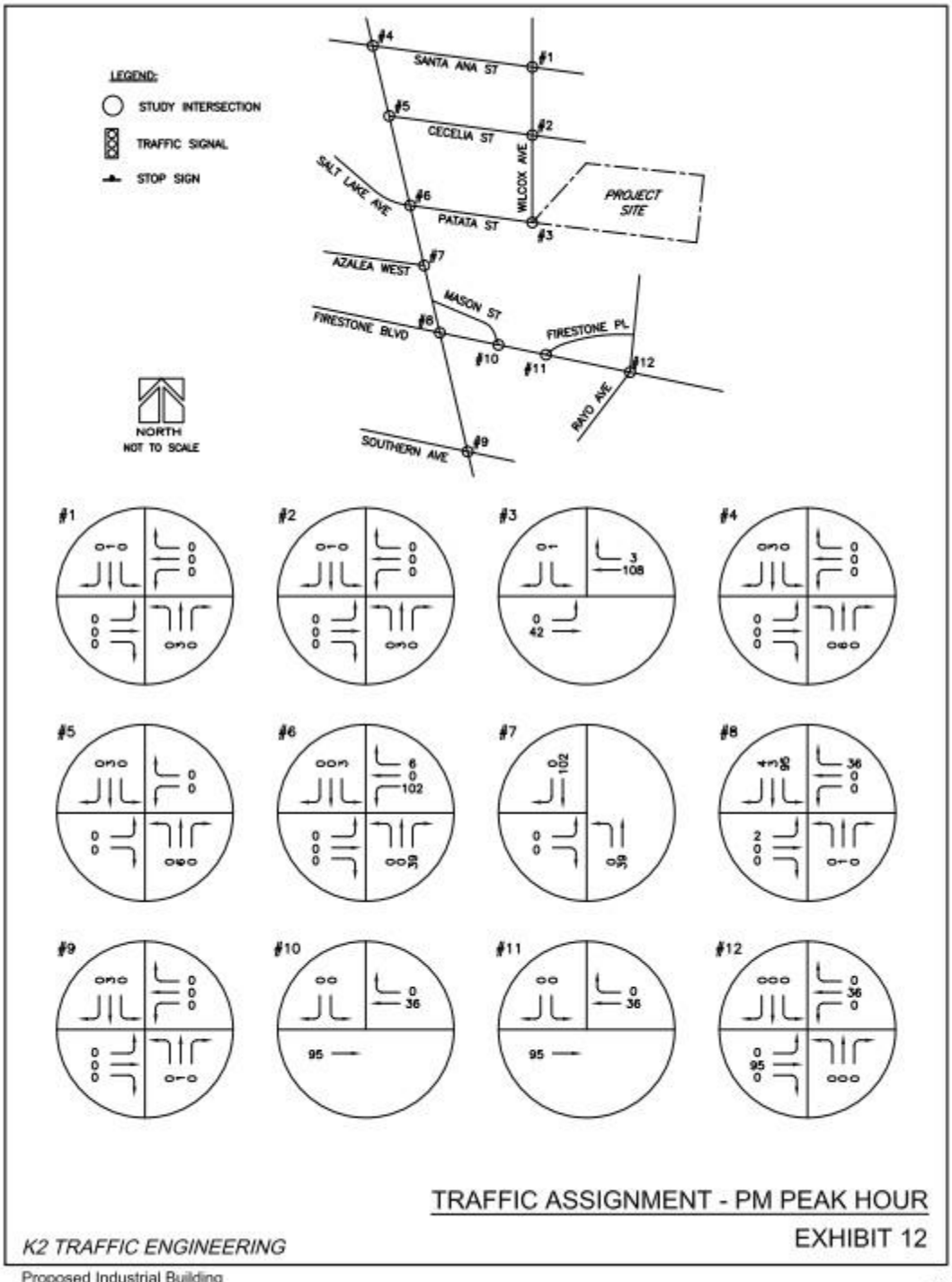


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5037 Patata Street, South Gate

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Proposed Industrial Building
5037 Patata Street, South Gate

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EXISTING CONDITIONS PLUS PROJECT

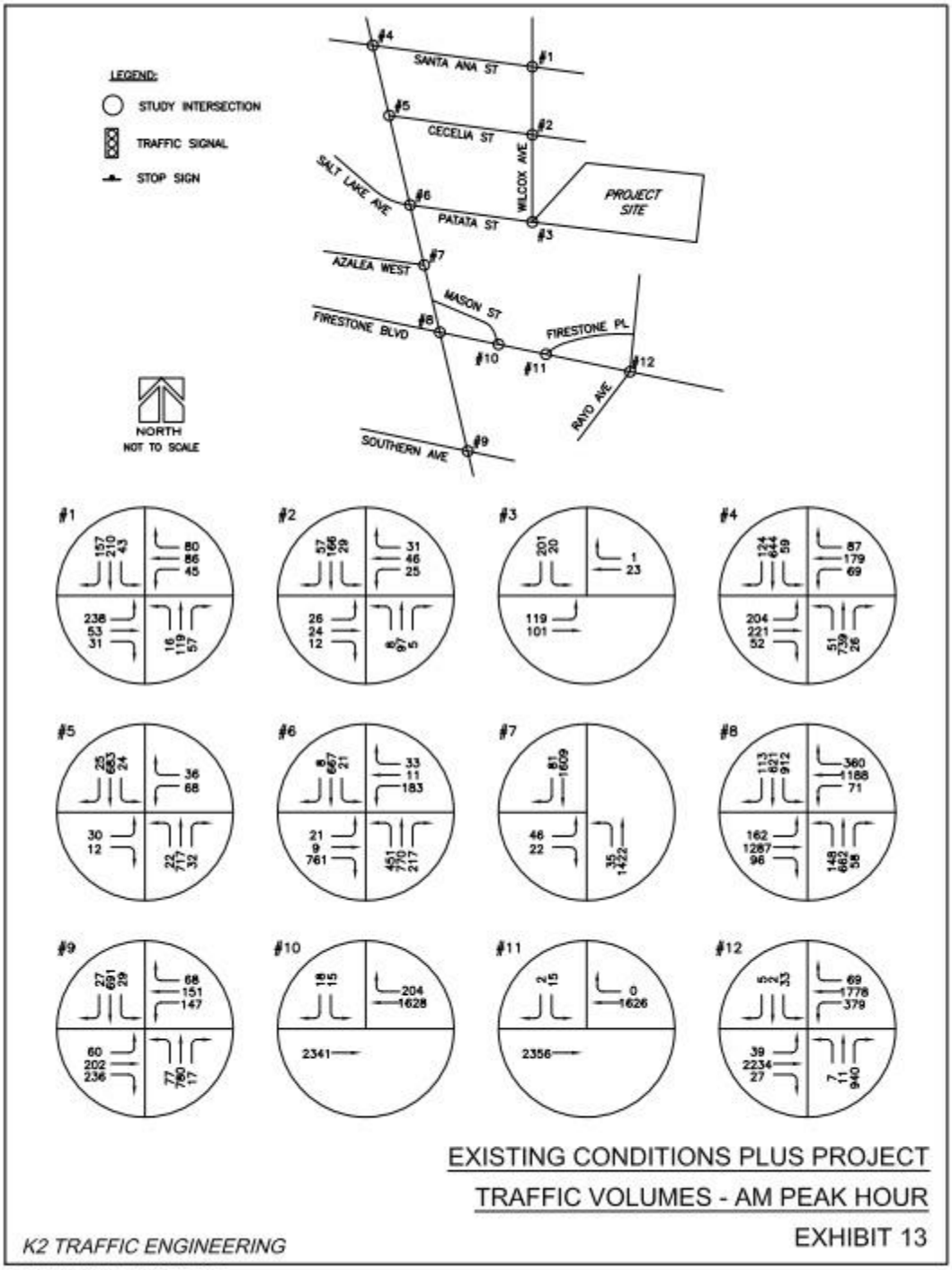
Traffic volumes at the study intersections for existing conditions plus project are shown in **Exhibits 13** and **14**, respectively. The level of service and delays are shown in **Table 4**. The analysis worksheets can be found in **Appendix C**. All study intersections operate at LOS D or better in the AM and PM peak hours except for the following intersection:

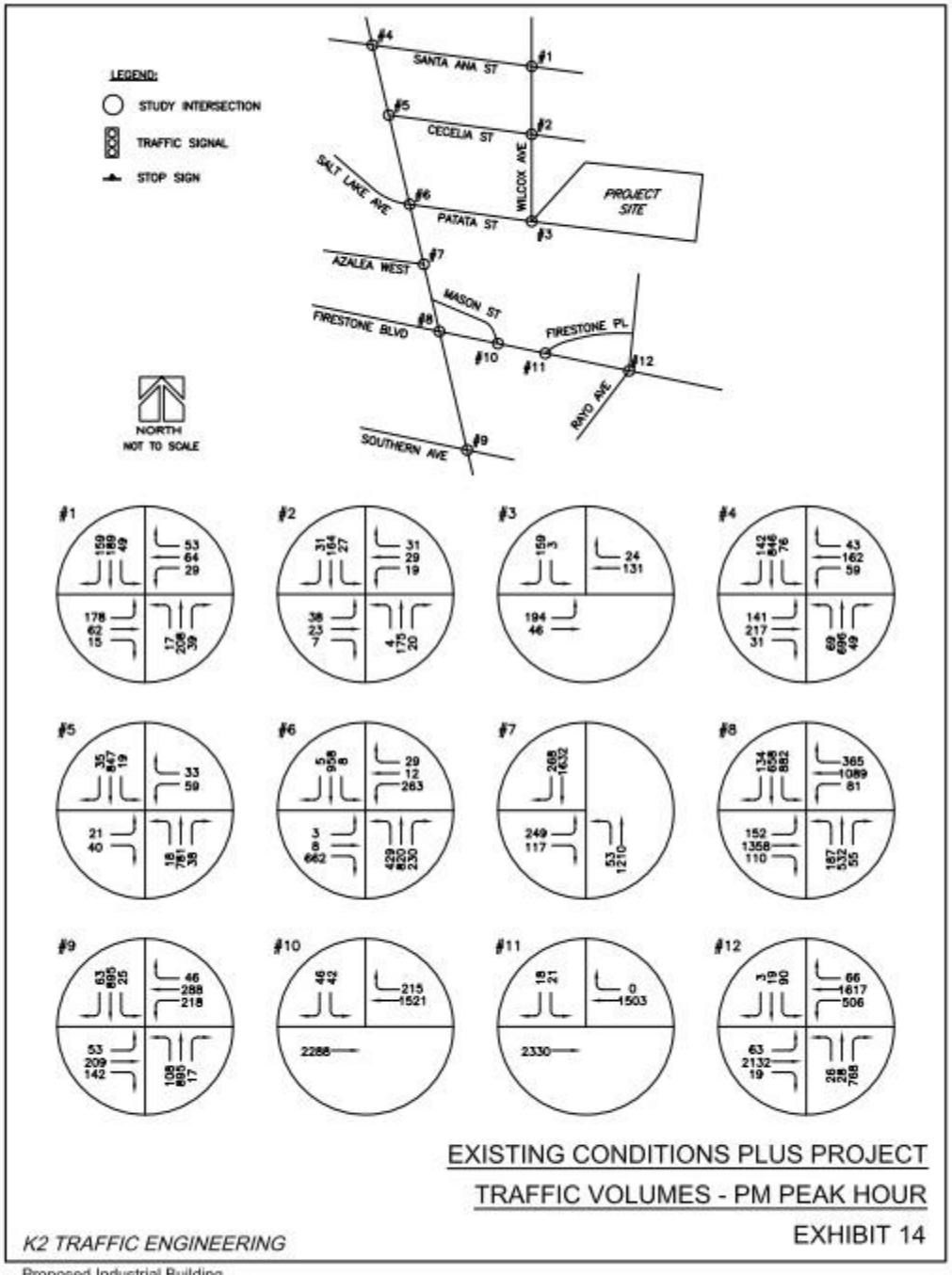
- Atlantic Ave at Patata St/Salt Lake Ave (#6): LOS F in the PM peak hour
- Atlantic Ave at Firestone Blvd (#8): LOS E in the AM and PM peak hour
- Firestone Blvd at Rayo Ave (#12): LOS E in the AM and PM peak hour

Table 4. Existing Conditions Plus Project

No.	Study Intersection	Control Type	AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
1	Wilcox Ave at Santa Ana St	AWSC	C	21.4	C	17.2
2	Wilcox Ave at Cecelia St	AWSC	A	9.1	A	9.2
3	Wilcox Ave at Patata St	AWSC	A	9.0	A	9.3
4	Atlantic Ave at Santa Ana St	TS	C	27.1	C	25.1
5A	Atlantic Ave at Cecelia St (North)	TS	B	11.0	A	6.5
5B	Atlantic Ave at Cecelia St (South)	TS	A	3.2	A	3.8
6	Atlantic Ave at Patata St/Salt Lake Ave	TS	D	52.8	**F**	**82.2**
7	Atlantic Ave at Azalea West	TS	A	3.4	B	10.5
8	Atlantic Ave at Firestone Blvd	TS	**E**	**62.7**	**E**	**55.9**
9	Atlantic Ave at Southern Ave	TS	B	17.6	C	22.6
10	Firestone Blvd at Mason St	TS	A	9.6	B	10.8
11	Firestone Blvd at Firestone Pl	TS	A	7.5	A	7.4
12	Firestone Blvd at Rayo Ave	TS	**E**	**69.6**	**E**	**55.1**

Note: AWSC = All-way-stop control; TS = Traffic Signal; Delay in seconds


LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
AZALEA WEST
MASON ST
FIRESTONE BLVD
FIRESTONE PL
RAYO AVE
SOUTHERN AVE
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EXISTING CONDITIONS PLUS PROJECT
TRAFFIC VOLUMES - AM PEAK HOUR
EXHIBIT 13
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
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LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
AZALEA WEST
MASON ST
FIRESTONE BLVD
FIRESTONE PL
RAYO AVE
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EXISTING CONDITIONS PLUS PROJECT
TRAFFIC VOLUMES - PM PEAK HOUR
EXHIBIT 14
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
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CUMULATIVE PROJECTS

Cumulative projects within a one-half mile (2,640 feet) radius were taken into consideration for the project completion year conditions. Based upon the information provided by the City of South Gate and City of Cudahy, cumulative projects are listed in **Table 5**.

Exhibit 15 illustrates the locations of the related projects. **Exhibits 16** and **17** show the traffic generated by these related developments at the study intersections for the AM and PM peak hours, respectively.

Table 5. Summary of Cumulative Projects

No.	Project Address	Project Description
1	4827 Santa Ana St, Cudahy	New 5-unit multi-family residential
2	4935-37 Santa Ana St, Cudahy	New 6-unit multi-family residential, demo existing
3	7919 Wilcox Ave, Cudahy	New 9-unit multi-family residential
4	4938-4932 Clara St, Cudahy	New 30-unit multi-family residential
5	4942-4938 Clara St, Cudahy	New 44-unit multi-family residential
6	5111 Elizabeth St, Cudahy	New 6-unit multi-family residential
7	5112 Santa Ana St, Cudahy	New 8-unit multi-family residential
8	5210 Santa Ana St, Cudahy	New 8-unit multi-family residential
9	9350 Rayo Ave, South Gate	Off-site parking facility, Amazon DAX7 Distribution Facility
10	9208 Atlantic Ave, South Gate	Amazon parking lot

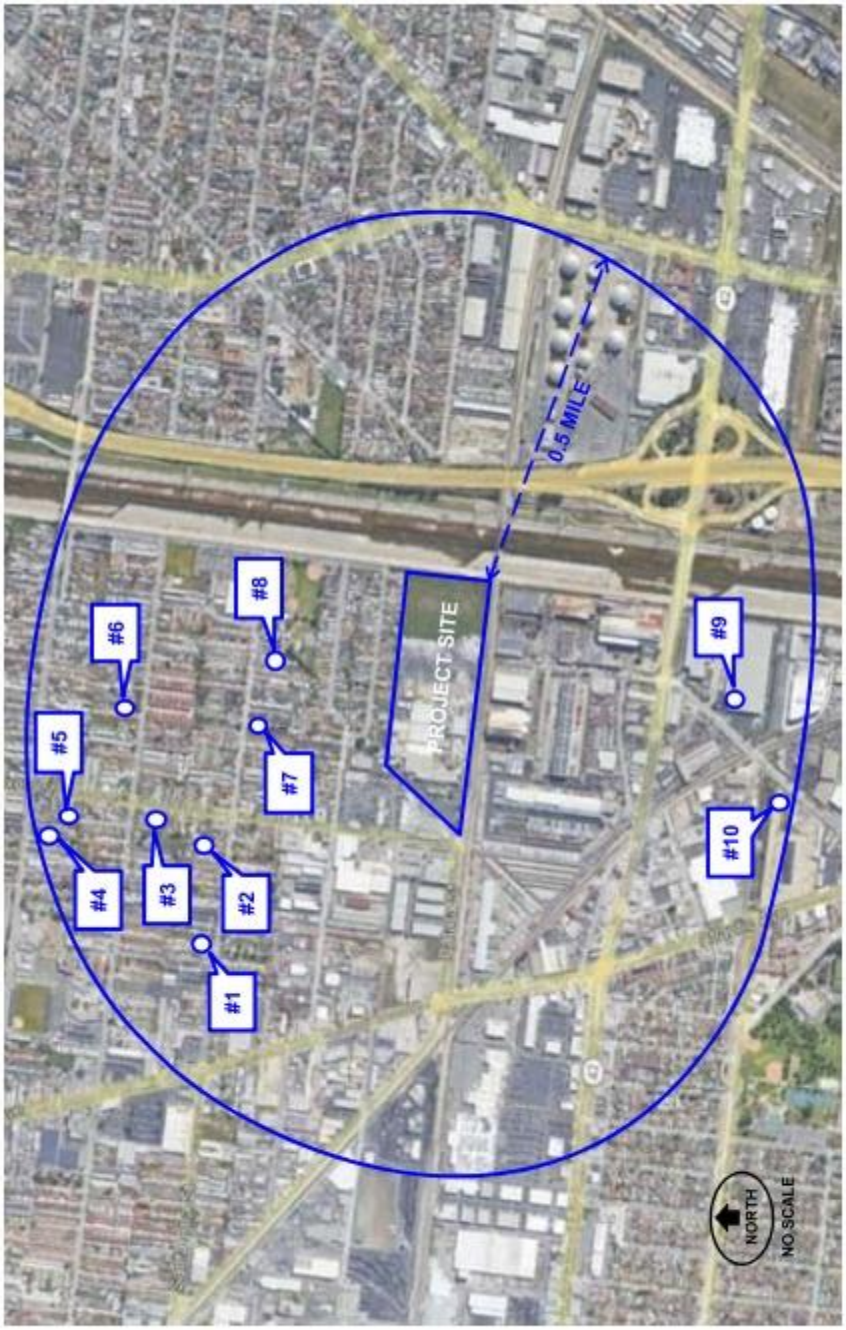
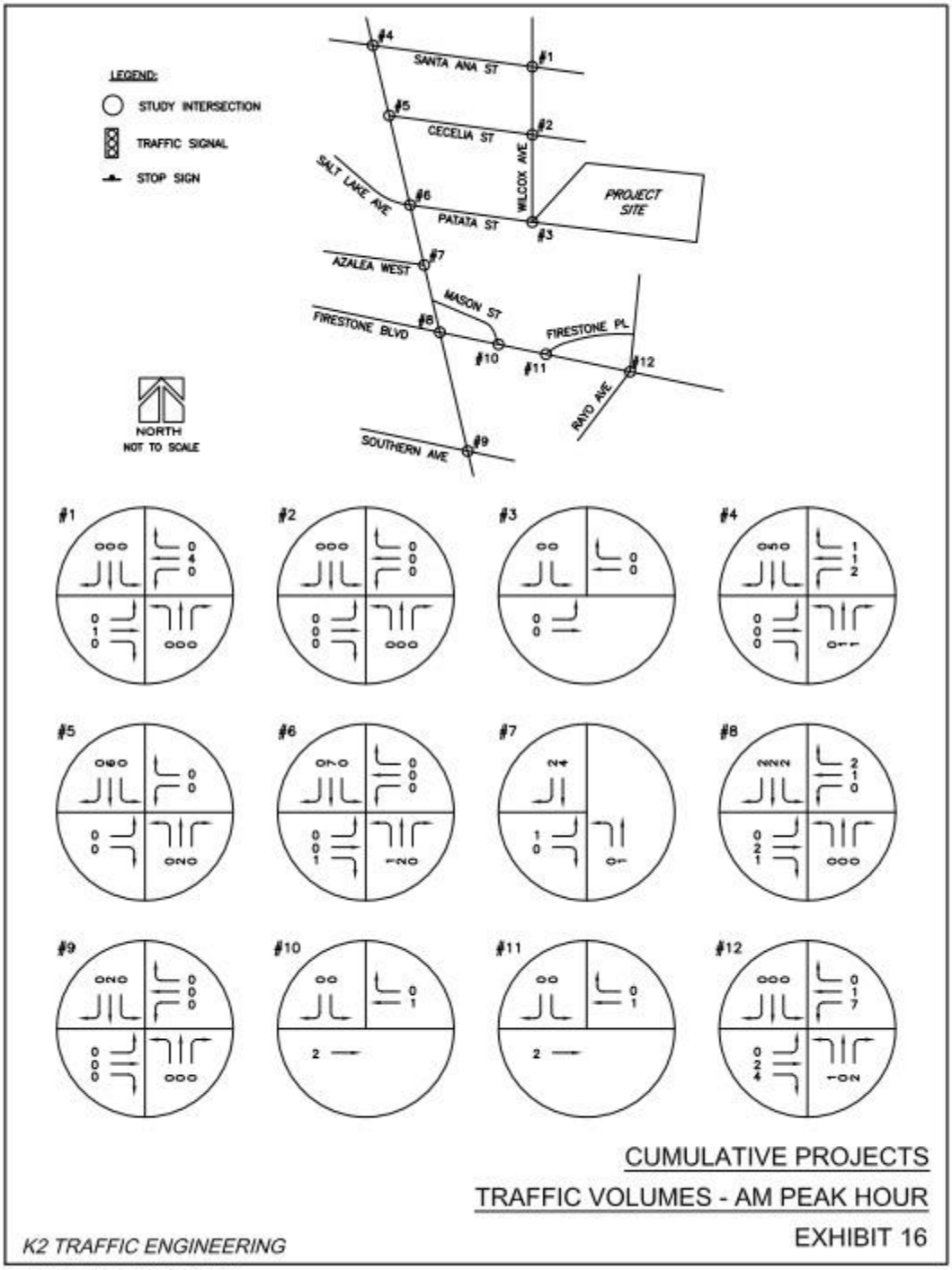


EXHIBIT 15. LOCATION OF CUMULATIVE DEVELOPMENTS

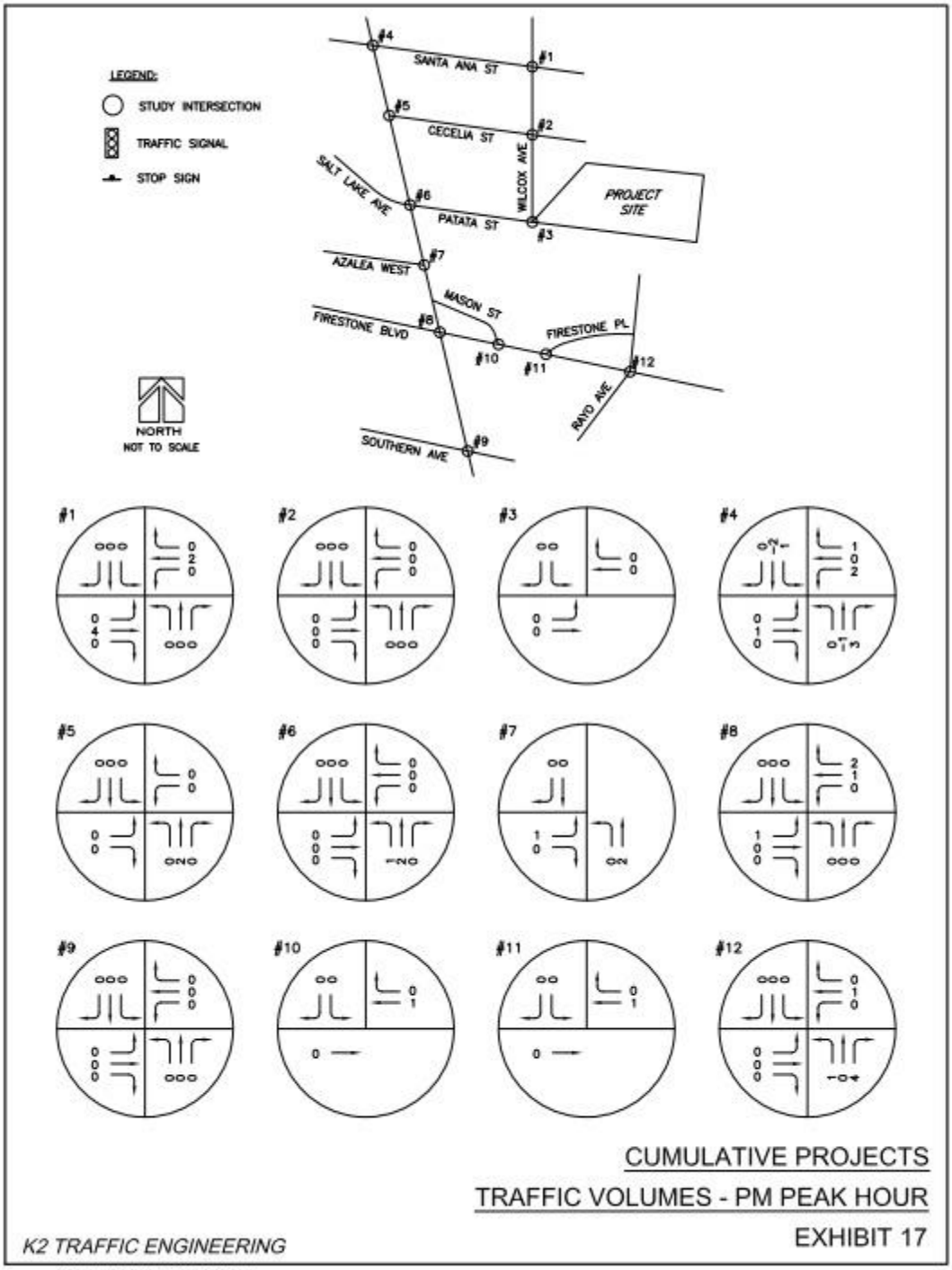
No Scale

K2 Traffic Engineering, Inc.



Proposed Industrial Building
5037 Patata Street, South Gate

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Proposed Industrial Building
5037 Patata Street, South Gate

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OPENING YEAR CUMULATIVE WITHOUT PROJECT CONDITIONS

For the project opening year 2024, the ambient growth rate of 1.4% per year is applied to existing traffic data. This annual growth rate that represents traffic increases resulting from regional development growth is derived from "*2010 Congestion Management Program for Los Angeles County*" and approved by the City, as shown in the approved scoping agreement, **Appendix A**. Traffic volumes for the project opening year without project in the AM and PM peak hours are illustrated in **Exhibits 18** and **19**, respectively.

The level of services in the AM and PM peak hour in this scenario are shown in **Table 6**. The analysis worksheets can be found in **Appendix C**.

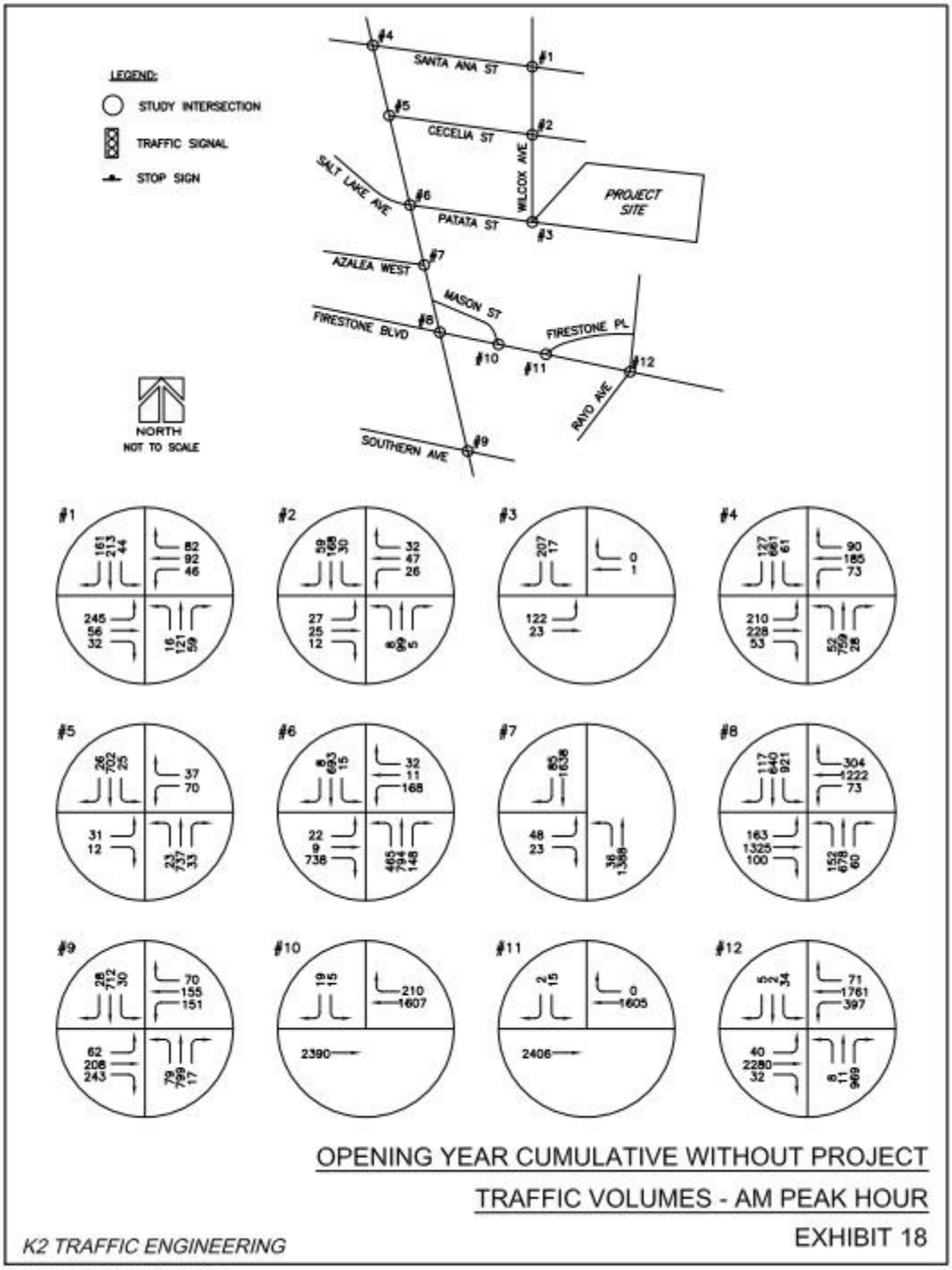
The study intersections maintain acceptable LOS D or better except for the following intersections:

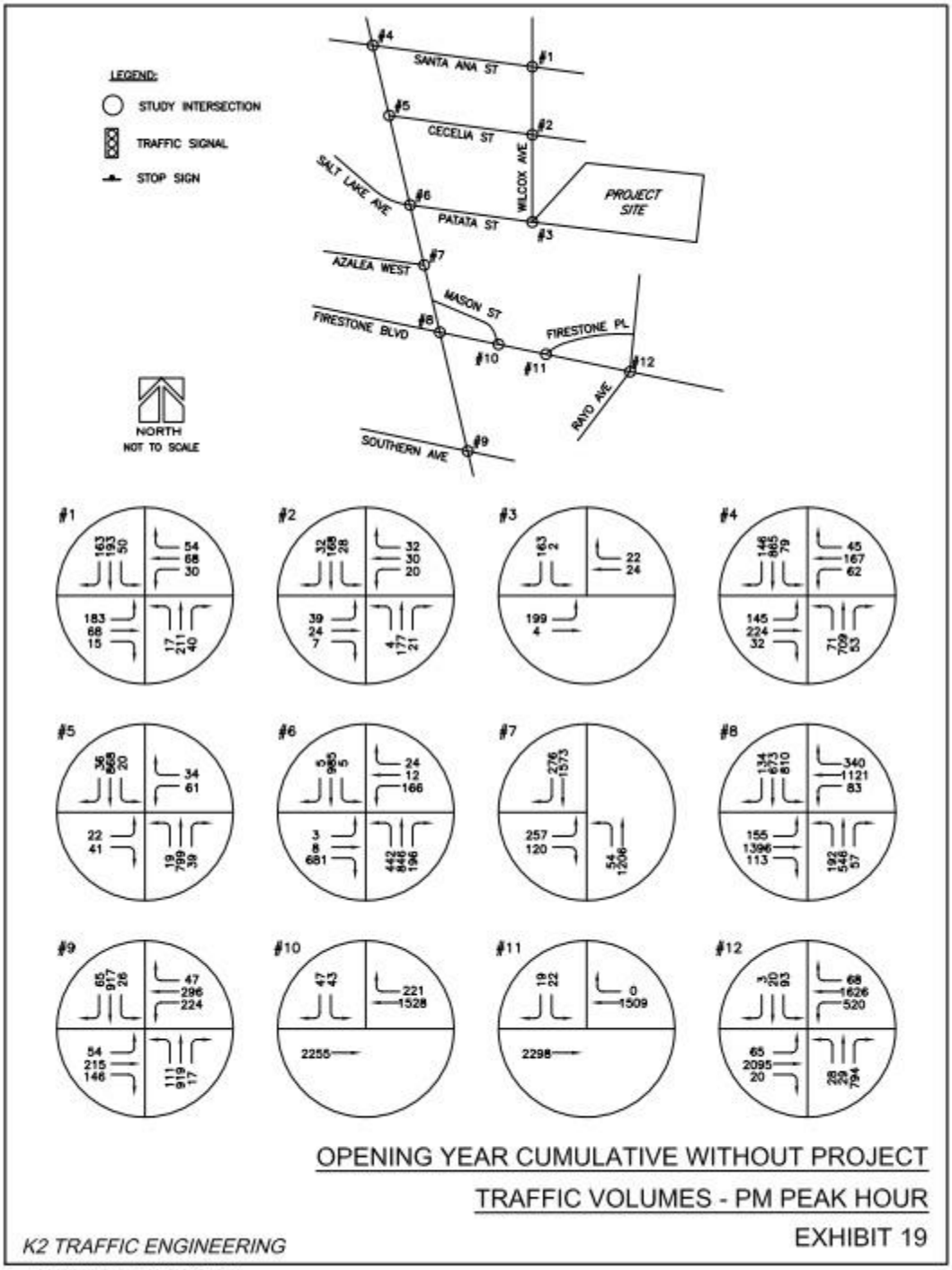
- #6 Atlantic Ave at Patata St/Salt Lake Ave: LOS E in the PM peak hour
- #8 Atlantic Ave at Firestone Blvd: LOS E in the AM peak hour
- #12 Firestone Blvd at Rayo Ave: LOS E in the AM peak hour

Table 6. Opening Year Conditions Analysis - Without Project

No.	Study Intersection	Control Type	AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
1	Wilcox Ave at Santa Ana St	AWSC	C	24.2	C	18.4
2	Wilcox Ave at Cecelia St	AWSC	A	9.1	A	9.4
3	Wilcox Ave at Patata St	AWSC	A	8.3	A	8.6
4	Atlantic Ave at Santa Ana St	TS	C	27.2	C	25.3
5A	Atlantic Ave at Cecelia St (North)	TS	B	11.1	A	6.6
5B	Atlantic Ave at Cecelia St (South)	TS	A	3.2	A	3.8
6	Atlantic Ave at Patata St/Salt Lake Ave	TS	D	54.0	**E**	**69.1**
7	Atlantic Ave at Azalea West	TS	A	3.5	B	10.8
8	Atlantic Ave at Firestone Blvd	**TS**	**E**	**62.5**	D	54.8
9	Atlantic Ave at Southern Ave	TS	B	18.2	C	23.5
10	Firestone Blvd at Mason St	TS	A	9.3	B	11.0
11	Firestone Blvd at Firestone Pl	TS	B	11.1	A	7.8
12	Firestone Blvd at Rayo Ave	**TS**	**E**	**76.7**	D	54.6

Note: AWSC = All-way-stop control; TS = Traffic Signal; Delay in seconds


LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
AZALEA WEST
MASON ST
FIRESTONE BLVD
FIRESTONE PL
RAYO AVE
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OPENING YEAR CUMULATIVE WITHOUT PROJECT
TRAFFIC VOLUMES - AM PEAK HOUR
EXHIBIT 18
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
36


LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
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OPENING YEAR CUMULATIVE WITHOUT PROJECT
TRAFFIC VOLUMES - PM PEAK HOUR
EXHIBIT 19
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
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OPENING YEAR CUMULATIVE PLUS PROJECT

Traffic volumes for the opening year with cumulative projects plus project scenario in the AM and PM peak hours are illustrated in **Exhibits 20** and **21**, respectively. Analysis worksheets can be found in **Appendix C**. The level of service in the AM and PM peak hour in this scenario are shown in **Table 7**.

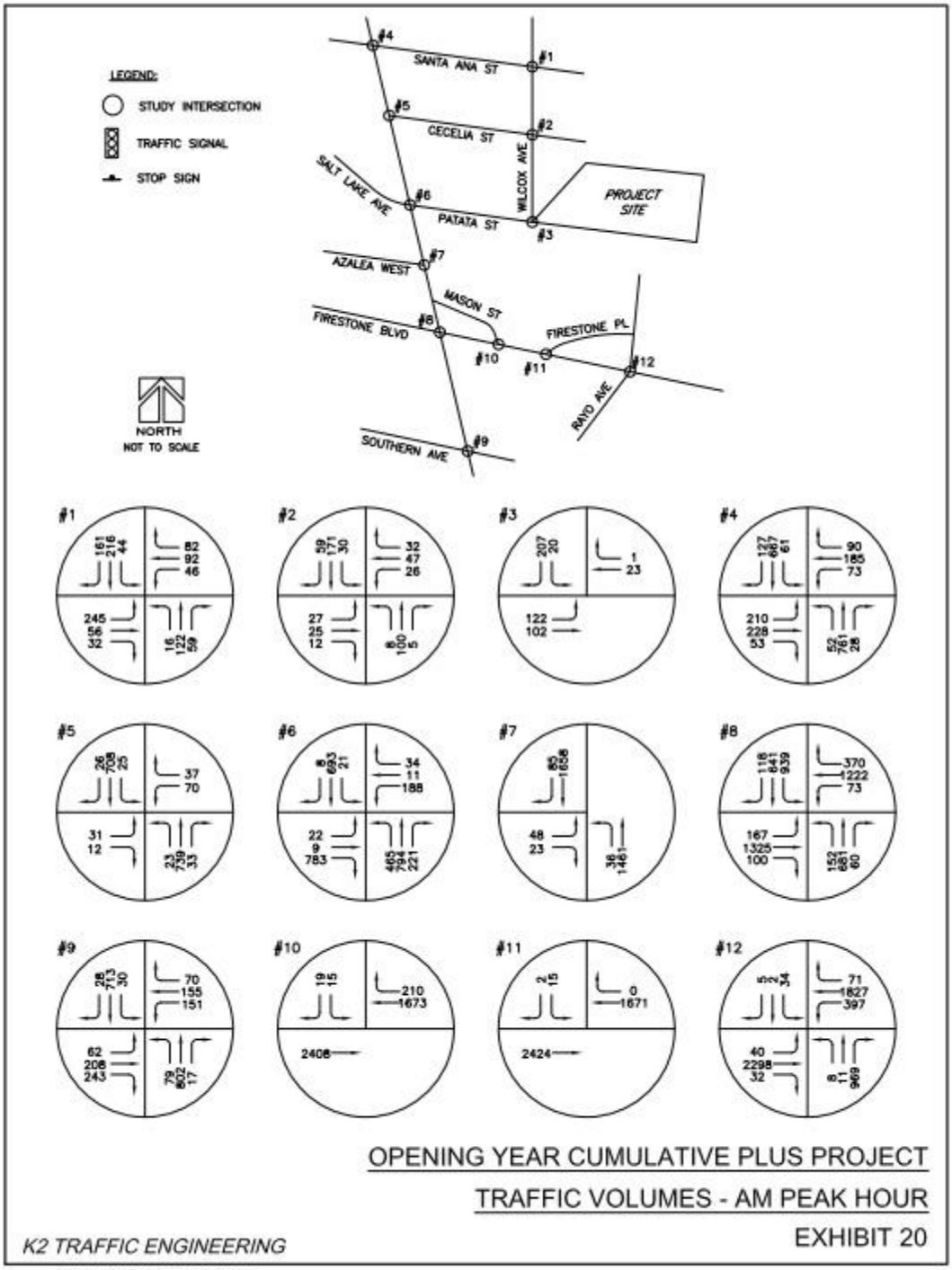
The study intersection remains operating at acceptable LOS D or better for this scenario except for the following intersections:

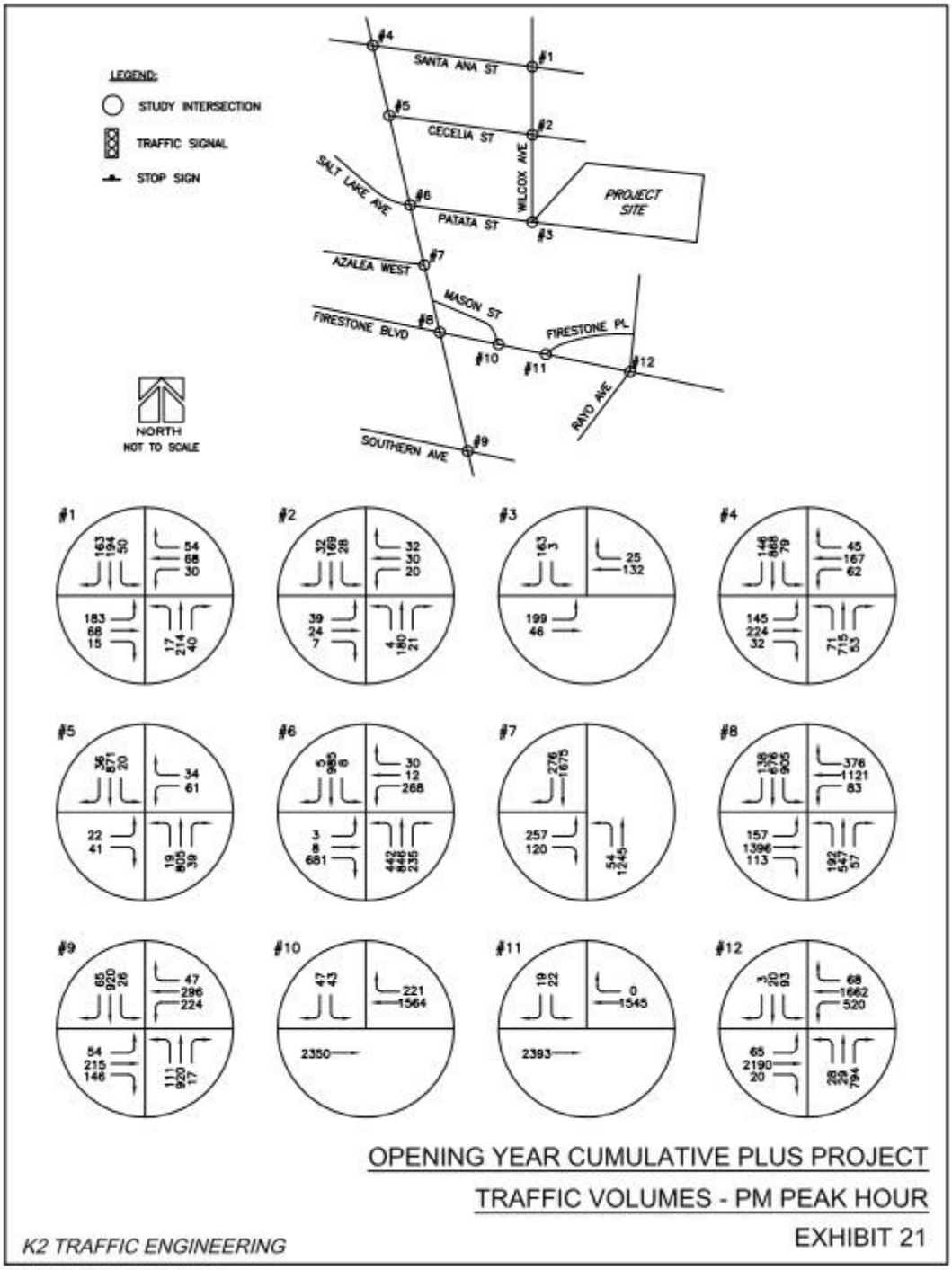
- #6 Atlantic Ave at Patata St/Salt Lake Ave: LOS E and F in the AM and PM peak hours, respectively
- #8 Atlantic Ave at Firestone Blvd: LOS E in the AM and PM peak hours
- #12 Firestone Blvd at Rayo Ave: LOS E in the AM and PM peak hours

Table 7. Opening Year Cumulative plus Project Analysis

No.	Study Intersection	Control Type	AM Peak		PM Peak	
			LOS	Delay	LOS	Delay
1	Wilcox Ave at Santa Ana St	AWSC	C	24.6	C	18.5
2	Wilcox Ave at Cecelia St	AWSC	A	9.2	A	9.4
3	Wilcox Ave at Patata St	AWSC	A	9.1	A	9.3
4	Atlantic Ave at Santa Ana St	TS	C	27.3	C	25.3
5A	Atlantic Ave at Cecelia St (North)	TS	B	11.0	A	6.6
5B	Atlantic Ave at Cecelia St (South)	TS	A	3.2	A	3.8
6	Atlantic Ave at Patata St/Salt Lake Ave	**TS**	**E**	**56.9**	**F**	**88.4**
7	Atlantic Ave at Azalea West	TS	A	3.4	B	10.6
8	Atlantic Ave at Firestone Blvd	**TS**	**E**	**66.9**	**E**	**58.0**
9	Atlantic Ave at Southern Ave	TS	B	18.2	C	23.6
10	Firestone Blvd at Mason St	TS	A	9.1	B	10.3
11	Firestone Blvd at Firestone Pl	TS	B	19.1	C	21.2
12	Firestone Blvd at Rayo Ave	TS	**E**	**77.7**	**E**	**59.8**

Note: AWSC = All-way-stop control; TS = Traffic Signal; Delay in seconds


LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
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MASON ST
FIRESTONE BLVD
FIRESTONE PL
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OPENING YEAR CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES - AM PEAK HOUR
EXHIBIT 20
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
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LEGEND:
STUDY INTERSECTION
TRAFFIC SIGNAL
STOP SIGN
NORTH
NOT TO SCALE
SANTA ANA ST
CECELIA ST
WILCOX AVE
SALT LAKE AVE
PATATA ST
PROJECT SITE
AZALEA WEST
MASON ST
FIRESTONE BLVD
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OPENING YEAR CUMULATIVE PLUS PROJECT
TRAFFIC VOLUMES - PM PEAK HOUR
EXHIBIT 21
K2 TRAFFIC ENGINEERING
Proposed Industrial Building
5037 Patata Street, South Gate
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OPERATIONAL THRESHOLDS

South Gate General Plan 2035 has the following statement in the policy (ME1.1 - P.3): "*the City desires to maintain a maximum LOS D at signalized intersections throughout the City, except that LOS E may be permitted in the following circumstances:*

- *Intersections at, or adjacent to, freeway ramps*
- *Intersections of **Boulevards (Primary Arterials) with other Boulevards***
- *Intersections on **Truck Routes***
- *Intersections at or adjacent to designated Major Commercial Districts (Community College, Civic Center, Gateway, El Paseo, Rayo Industrial, El Portal, South Gate Triangle)"*

Cudahy General Plan 2040 adopted in March 2018 includes the policy (CE 1.1) to "*maintain or improve the level of service on major streets and intersections to a minimum of LOS D.*"

Operational deficiency analysis based on existing conditions in the AM and PM peak hours are shown in **Tables 8** and **9**, respectively. Project traffic is expected to result in operational deficiency at the following intersection:

- #6 Atlantic Avenue at Patata Street / Salt Lake Avenue in the PM peak hour

Table 8. Operational Deficiency Analysis – Existing Conditions (AM Peak Hour)

Intersection	Without Project		With Project		Meet Target LOS	Operational Deficiency
	LOS	Delay	LOS	Delay		
1. Wilcox Ave at Santa Ana St	C	20.9	C	21.4	OK	No
2. Wilcox Ave at Cecilia St	A	9.0	A	9.1	OK	No
3. Wilcox Ave at Patata St	A	8.3	A	9.0	OK	No
4. Atlantic Ave at Santa Ana St	C	27.1	C	27.1	OK	No
5A. Atlantic Ave at Cecilia St (North)	B	11.0	B	11.0	OK	No
5B. Atlantic Ave at Cecilia St (South)	A	3.2	A	3.2	OK	No
6. Atlantic Ave at Patata St/ Salt Lake Ave	D	50.0	D	52.8	OK	No
7. Atlantic Ave at Azalea West	A	3.5	A	3.4	OK	No
8. Atlantic Ave at Firestone Blvd	E[1]	59.2	E[1]	62.7	OK	No
9. Atlantic Ave at Southern Ave	B	17.6	B	17.6	OK	No
10. Firestone Blvd at Mason St	A	9.9	A	9.6	OK	No
11. Firestone Blvd at Firestone Pl	A	7.4	A	7.5	OK	No
12. Firestone Blvd at Rayo Ave	E[1]	68.8	E[1]	69.6	OK	No

[1] South Gate General Plan 2035: LOS E may be permitted at intersections on truck routes (Policy ME 1.1-P.3).

Table 9. Operational Deficiency Analysis – Existing Conditions (PM Peak Hour)

Intersection	Without Project		With Project		Meet Target LOS	Operational Deficiency
	LOS	Delay	LOS	Delay		
1. Wilcox Ave at Santa Ana St	C	17.0	C	17.2	OK	No
2. Wilcox Ave at Cecilia St	A	9.2	A	9.2	OK	No
3. Wilcox Ave at Patata St	A	8.5	A	9.3	OK	No
4. Atlantic Ave at Santa Ana St	C	25.2	C	25.1	OK	No
5A. Atlantic Ave at Cecilia St (North)	A	6.5	A	6.5	OK	No
5B. Atlantic Ave at Cecilia St (South)	A	3.8	A	3.8	OK	No
6. Atlantic Ave at Patata St/ Salt Lake Ave	E[1]	63.5	**F[1]**	**82.2**	**Failed**	**Yes**
7. Atlantic Ave at Azalea West	B	10.8	B	10.5	OK	No
8. Atlantic Ave at Firestone Blvd	D	53.2	E[1]	55.9	OK	No
9. Atlantic Ave at Southern Ave	C	22.5	C	22.6	OK	No
10. Firestone Blvd at Mason St	B	11.5	B	10.8	OK	No
11. Firestone Blvd at Firestone Pl	B	10.2	A	7.4	OK	No
12. Firestone Blvd at Rayo Ave	D	50.5	E[1]	55.1	OK	No

[1] South Gate General Plan 2035: LOS E may be permitted at intersections on truck routes (Policy ME 1.1-P.3).

Operational deficiency analysis based on opening year (2024) conditions in the AM and PM peak hours are shown in **Tables 10** and **11**, respectively. Project traffic is expected to result in operational deficiency at the following intersection:

- #6 Atlantic Avenue at Patata Street / Salt Lake Avenue in the PM peak hour

Table 10. Operational Deficiency Analysis – Opening Year 2024 (AM Peak Hour)

Intersection	Without Project		With Project		Meet Target LOS	Operational Deficiency
	LOS	Delay	LOS	Delay		
1. Wilcox Ave at Santa Ana St	C	24.2	C	24.6	OK	No
2. Wilcox Ave at Cecilia St	A	9.1	A	9.2	OK	No
3. Wilcox Ave at Patata St	A	8.3	A	9.1	OK	No
4. Atlantic Ave at Santa Ana St	C	27.2	C	27.3	OK	No
5A. Atlantic Ave at Cecilia St (North)	B	11.1	B	11.0	OK	No
5B. Atlantic Ave at Cecilia St (South)	A	3.2	A	3.2	OK	No
6. Atlantic Ave at Patata St/ Salt Lake Ave	D	54.0	E[1]	56.9	OK	No
7. Atlantic Ave at Azalea West	A	3.5	A	3.4	OK	No
8. Atlantic Ave at Firestone Blvd	E[1]	62.5	E[1]	66.9	OK	No
9. Atlantic Ave at Southern Ave	B	18.2	B	18.2	OK	No
10. Firestone Blvd at Mason St	A	9.3	A	9.1	OK	No
11. Firestone Blvd at Firestone Pl	C	31.8	A	7.4	OK	No
12. Firestone Blvd at Rayo Ave	E[1]	76.7	E[1]	77.7	OK	No

[1] South Gate General Plan 2035: LOS E may be permitted at intersections on truck routes (Policy ME 1.1-P.3).

Table 11. Operational Deficiency Analysis – Opening Year 2024 (PM Peak Hour)

Intersection	Without Project		With Project		Meet Target LOS	Operational Deficiency
	LOS	Delay	LOS	Delay		
1. Wilcox Ave at Santa Ana St	C	18.4	C	18.5	OK	No
2. Wilcox Ave at Cecilia St	A	9.4	A	9.4	OK	No
3. Wilcox Ave at Patata St	A	8.6	A	9.3	OK	No
4. Atlantic Ave at Santa Ana St	C	25.3	C	25.3	OK	No
5A. Atlantic Ave at Cecilia St (North)	A	6.6	A	6.6	OK	No
5B. Atlantic Ave at Cecilia St (South)	A	3.8	A	3.8	OK	No
6. Atlantic Ave at Patata St/ Salt Lake Ave	E[1]	69.1	**F[1]**	**88.4**	**Failed**	**Yes**
7. Atlantic Ave at Azalea West	B	10.8	B	10.6	OK	No
8. Atlantic Ave at Firestone Blvd	D	54.8	E[1]	58.0	OK	No
9. Atlantic Ave at Southern Ave	C	23.5	C	23.6	OK	No
10. Firestone Blvd at Mason St	B	11.0	B	10.3	OK	No
11. Firestone Blvd at Firestone Pl	A	7.8	C	21.2	OK	No
12. Firestone Blvd at Rayo Ave	E[1]	54.6	E[1]	59.8	OK	No

[1] South Gate General Plan 2035: LOS E may be permitted at intersections on truck routes (Policy ME 1.1-P.3).

MITIGATION MEASURE

The following mitigation measures are recommended based on the level-of-service analysis:

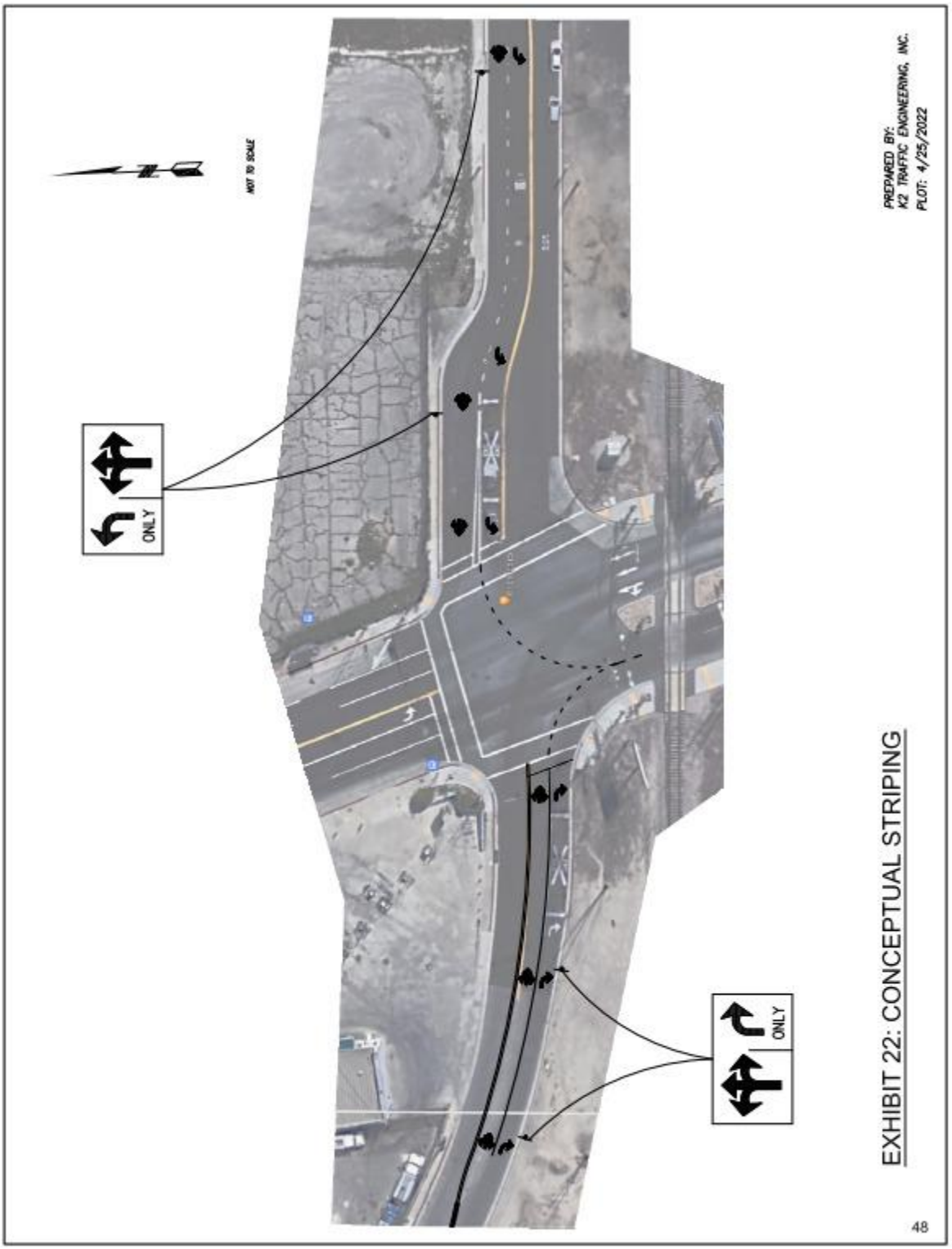
Intersection (#6) of Atlantic Avenue and Patata Street / Salt Lake Avenue:

- Re-stripe Salt Lake Avenue for the eastbound traffic to provide a shared right-thru-left turn lane and an exclusive right-turn lane.
- Re-stripe Patata Street for westbound traffic to provide a shared right-thru-left turn lane and an exclusive left-turn lane.

With implementation of the above operational improvements, the project will not result in any operational deficiency for the study intersection. The subject intersection is expected to reduce delay for both AM and PM peak hours and maintain acceptable level of services in the project opening year. Analysis worksheets can be found in **Appendix C**. The conceptual striping for this intersection is provided in **Exhibit 22**.

Table 12. Operational Improvement Analysis

#6 Atlantic Ave at Patata St / Salt Lake Ave	Opening Year Without Project		Opening Year Plus Project & Operational Improvements			Operational Deficiency
	LOS	Delay	LOS	Delay	Target LOS	
AM Peak Hour	D	54.0	D	41.4	OK	No
PM Peak Hour	E	69.1	E	61.1	OK	No


NOT TO SCALE
ONLY
ONLY
PREPARED BY:
K2 TRAFFIC ENGINEERING, INC.
PLOT: 4/25/2022
EXHIBIT 22: CONCEPTUAL STRIPING
48

QUEUE ANALYSIS- PROJECT OPENING YEAR

The study examined the 95th percentile queue for left-turn and right-turn pockets at the signalized study intersections. The queuing conditions are shown in **Table 13**. Queue analysis outputs can be found in **Appendix D**.

A number of the existing traffic signal systems have been interconnected along Atlantic Avenue and Firestone Boulevard. For example, sychronization of traffic signal has been provided for the following intersections: (1) Atlantic Avenue at Azalea West, (2) Atlantic Avenue at Firestone Boulevard, and (3) Firestone Boulevard at Mason Street. However, it is noted that Atlantic Boulevard at Patata Street/Sal Lake Avenue and other intersections in Cudahy have different cycle lengths from those in South Gate. Atlantic Boulevard has not yet formed a progression network to systematically carry the regional pass-through traffic. It is apparent that a future Corridor Study for signal optimization and queuing management along Atlantic Avenue, Firestone Boulevard, and other major arterials within the County of Los Angeles could greatly benefit nearby cities and communities such as Lynwood, South Gate, Cudahy, Bell, and Maywood.

Nonetheless, this study has identified the following locations where modification of pavement striping may be applied to increase queuing capacity of left-turn pockets:

Intersection (#4) of Atlantic Avenue and Santa Ana Street:

- Revise striping to extend the eastbound left-turn lane from 85 feet to 240 feet.

Intersection (#5) of Atlantic Avenue and Cecelia Street:

- Revise striping to extend the westbound left-turn lane from 70 feet to 110 feet.

Intersection (#9) of Atlantic Avenue and Southern Avenue:

- Evaluate the feasibility of roadway/striping modification for Southern Avenue between Atlantic Avenue and Pinehurst Avenue to increase the queuing length for eastbound left turns.

Intersection (#10) of Firestone Boulevard and Mason Street:

- Post No Stopping Any Time signs for southbound Mason Street within 100' of the crosswalk at Firestone Boulevard.

It is noted that the list above represent the preliminary recommendations and solutions to improve the queuing conditions that appears to be prevalent under existing conditions. The above suggested improvements are subject to thoroughly review and evaluation by the governing authorities at the local and county level for feasibility, constructability, policy consistency, traffic safety, and other applicable considerations.

PRE-EXISTING CONDITIONS AT ENHANCED INTERSECTIONS

The study has revealed a few pre-existing conditions at Enhanced Intersections, where the roadway width may exceed the regular standards as defined in General Plan, worthy of future consideration by the governing authorities.

Intersection (#8) of Atlantic Avenue and Firestone Boulevard:

As a pre-existing condition, excessive queuing has been identified for northbound left turns on Atlantic Avenue in both AM and PM peak hours. Extension of the turn pocket requires modification of the existing raised median and reduction of median landscapes. South Gate General Plan 2035 has identified in the Implementation Actions that Atlantic Avenue should be widened from four lanes to six lanes throughout the City. Roadway widening in this well-developed area require an in-depth feasibility study of right-of-way acquisition. A corridor study of network signal progression may be beneficial to optimize signal timing and reduce queuing.

Intersection (#12) of Firestone Boulevard and Rayo Avenue:

As a pre-existing condition, excessive queuing has been identified for northbound right turns on Rayo Avenue in both AM and PM peak hours. Any modification of these turn pockets may require major street improvement works. Roadway widening in this well-developed area require an in-depth feasibility study of right-of-way acquisition.

TABLE 13. SUMMARY OF QUEUE ANALYSIS - PROJECT OPENING YEAR

Intersection	Turning Movement	Existing Queue Capacity	95th Percentile Queue				Note
			Existing Conditions		Opening Year Plus Project		
			AM	PM	AM	PM	
#4 Atlantic Ave at Santa Ana St	**EBL**	85	**236**	**181**	**242**	**186**	Extend EBL to 240'
	EBR	90	29	19	30	19	
	WBL	95	81	84	83	87	
	WBR	100	35	29	35	29	
	NBL	95	84	**104**	87	**106**	Extend NBL to 110'
	SBL	130	93	112	95	115	
#5 Atlantic Ave at Cecelia St	EBL	95	58	44	59	46	
	WBL	70	**103**	**103**	**105**	**106**	Extend WBL to 110'
	NBL	55	0	41	0	42	
	SBL	60	50	47	51	48	
#6 Atlantic Ave at Patata St/Salt Lake Ave	**EBR**	80	**908**	**821**	**969**	**861**	Provide one additional EBR lane
	WBL	80	**286**	**305**	**347**	**557**	Provide one additional WBL lane
	SBL	100	32	14	42	20	
#7 Atlantic Ave at Azalea West	**EBL**	120	44	**166**	46	**170**	Additional queue length readily provided on Azalea West
	NBL	125	21	31	20	28	
	SBR	150	0	1	0	10	
#8 Atlantic Ave at Firestone Blvd	EBL	310	139	121	151	130	
	WBL	210	140	151	146	157	
	NBL	200	**217**	**295**	**222**	**308**	Pre-existing condition for enhanced intersection, corridor study and synchroization recommended
	SBR	110	0	0	0	0	
#9 Atlantic Ave at Southern Ave	EBL	85	39	42	40	43	
	WBL	100	**116**	**185**	**123**	**193**	Extend WBL to 200'
	NBL	135	64	110	69	114	
	SBL	125	31	30	31	30	
#10 Firestone Blvd at Mason St	**SBR**	40	35	**76**	35	**77**	Paint red curb 80'
#11 Firestone Blvd at Firestone Pl	SBR	60	9	25	9	26	
#12 Firestone Blvd at Rayo Ave	EBL	135	84	119	85	123	
	WBL	610	319	389	341	405	
	NBR	150	**387**	**323**	**427**	**343**	Pre-existing condition for enhanced intersection, corridor study and synchroization recommended
	SBL	170	69	153	70	157	
	SBR	170	0	0	0	0	

QUEUE ANALYSIS- LONG-TERM GROWTH

The subject land use is consistent with the South Gate General Plan and the General Plan Built Out traffic conditions have been sought out in the Circulation Element. However, in order to provide a glance of the potential effects of long-term traffic growth, the City of South Gate has requested for an evaluation of left-turn/right-turn pocket using the queue length of the project completion plus twenty percent (20%).

The regional traffic at the study area has an annual growth rate of 1.4% based on the regional statistical area data in the Congestion Management Plan of the County of Los Angeles, as shown in **Appendix E**. Assuming the same regional traffic growth rate applies consistently, it may roughly take fourteen (14) years after the project opening year (2024) to achieve the additional growth of twenty percent (20%). Therefore, the projected queue length presented in **Table 14** can be viewed as a simplified projection of the future conditions in year 2038.

It is noted that long-term traffic analysis requires complex regional transportation modeling and extensive traffic simulation with consideration of various factors such as model split, sub-regional growth, direction traffic split, arrival pattern, local signal phasing, signal progression, infrastructural improvements, etc. The data in this table are intended for long-term planning reference by the request of the City of South Gate. Such data should not be viewed as the basis of queuing conditions upon project completion.

TABLE 14. SUMMARY OF QUEUE ANALYSIS - LONG-TERM GROWTH (YEAR 2038)

Intersection	Turning Movement	Existing Queue Capacity	Opening Year Plus Project 95th Percentile Queue		Potential Long-Term Growth Opening Year Plus Project plus 20%	
			AM	PM	AM	PM
#4 Atlantic Ave at Santa Ana St	**EBL**	85	**242**	**186**	**290**	**223**
	EBR	90	30	19	36	23
	WBL	95	83	87	100	**104**
	WBR	100	35	29	42	35
	NBL	95	87	**106**	**104**	**127**
	SBL	130	96	115	114	**138**
#5 Atlantic Ave at Cecelia St	EBL	95	59	46	71	55
	WBL	70	**105**	**106**	**126**	**127**
	NBL	55	0	42	0	50
	SBL	60	51	48	61	58
#6 Atlantic Ave at Patata St/Salt Lake Ave	**EBR**	80	**969**	**861**	**1163**	**1033**
	WBL	80	**347**	**557**	**416**	**668**
	SBL	100	42	20	50	24
#7 Atlantic Ave at Azalea West	**EBL**	120	46	**170**	55	**204**
	NBL	125	20	28	24	34
	SBR	150	0	10	0	12
#8 Atlantic Ave at Firestone Blvd	EBL	310	151	130	181	156
	WBL	210	146	157	175	188
	NBL	200	**222**	**308**	**266**	**370**
	SBR	110	0	0	0	0
#9 Atlantic Ave at Southern Ave	EBL	85	40	43	48	52
	WBL	100	**123**	**193**	**148**	**232**
	NBL	135	69	114	83	**137**
	SBL	125	31	30	37	36
#10 Firestone Blvd at Mason St	**SBR**	40	35	**77**	42	**92**
#11 Firestone Blvd at Firestone Pl	SBR	60	9	26	11	31
#12 Firestone Blvd at Rayo Ave	EBL	135	85	123	102	**148**
	WBL	610	341	405	409	486
	NBR	150	**427**	**343**	**512**	**412**
	SBL	170	70	157	84	**188**
	SBR	170	0	0	0	0

BICYCLE LANE

South Gate General Plan 2035 has established the Bicycle Plan in the City, as shown in **Exhibit 23**. The project site is adjacent to the existing bicycle route along the Los Angeles River, which is part of the regional system established and maintained by the County of Los Angeles. The proposed development includes constructing a bicycle lane along the south property line that begins at Wilcox Avenue and ends at the east property line.

Subject to approval by the County of Los Angeles and other governing agencies, this bicycle lane can be extended to connect with the existing bicycle lane on the west side of Los Angeles River. The subject bicycle lane can also be integrated with future bicycle lanes within the city limits of Cudahy, such as Wilcox Avenue, as identified in **Exhibit 24**. The proposed bicycle lane is consistent with the forward-looking approaches to enhance bicycle facilities and encourage use of alternative transportation modes set forth in the General Plans of both South Gate and Cudahy.

ALTERNATIVE TRUCK ROUTE

South Gate General Plan 2035 has identified an improvement measure (Action ME 9) to explore an Alternative Truck Route to Firestone Boulevard. The Cities of South Gate and Cudahy have been collaborating with industrial companies such as "Maersk" to develop a future truck route alternative that connects Patata Street and Firestone Boulevard while bypassing Atlantic Avenue. However, such development is in its early planning stage and not expected to be completed prior to the project opening. Therefore, Alternative Truck Route is not considered in the analysis.

EXHIBIT 23. BICYCLE PLAN MAP - SOUTH GATE

Figure ME 5 Bicycle Plan

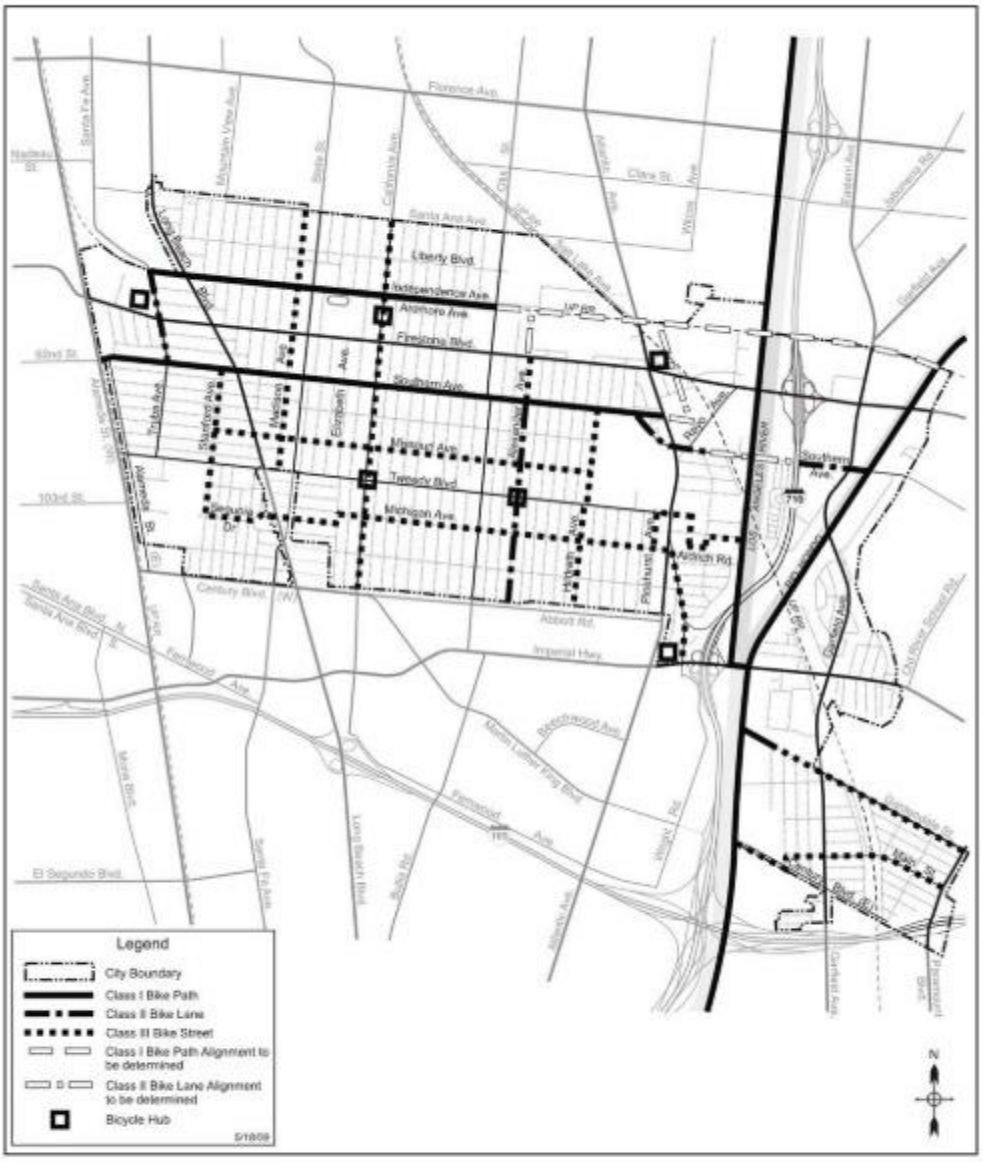
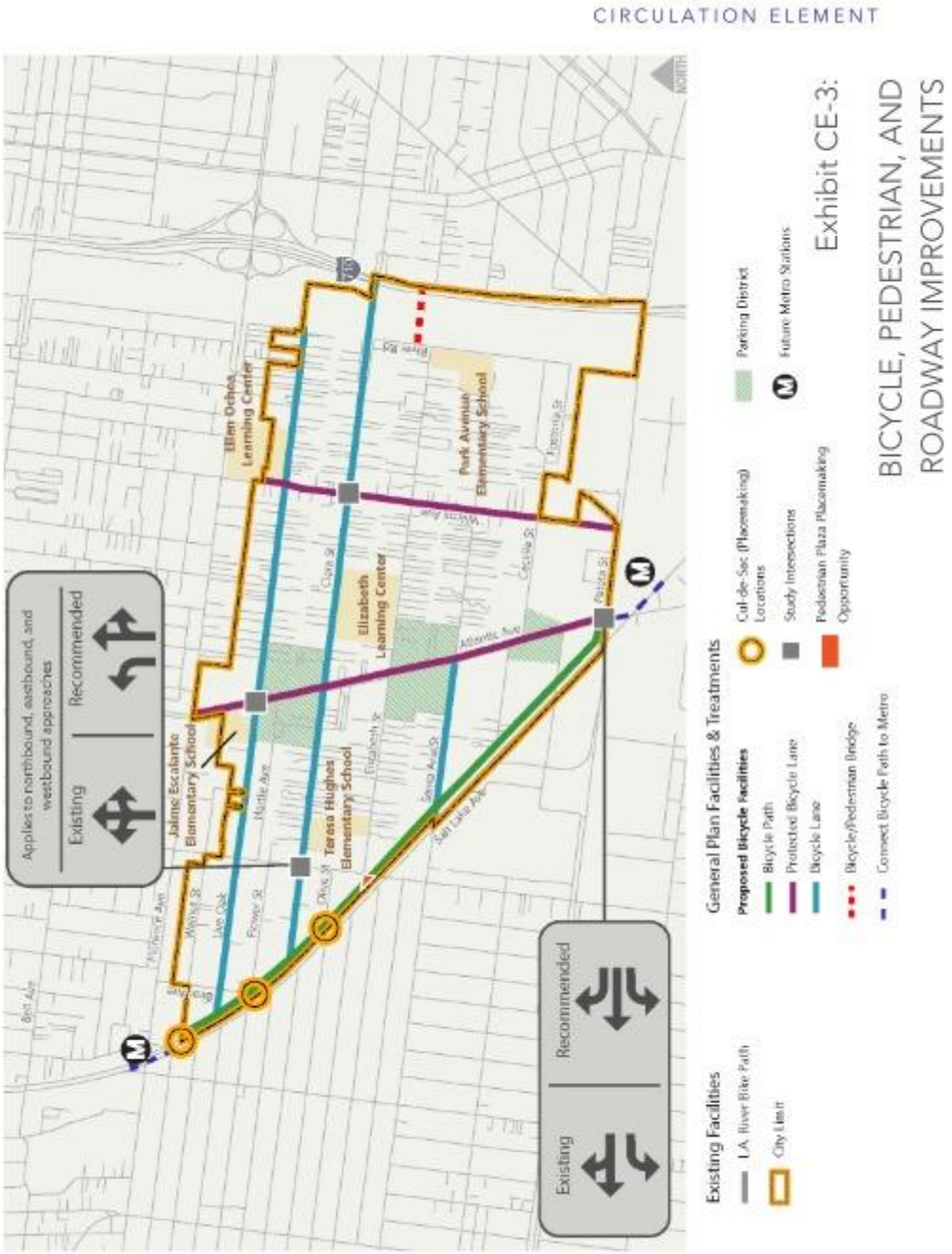


EXHIBIT 24. BICYCLE PLAN MAP - CUDAHY



Cudahy General Plan 2040, Circulation Element 55

UPRR DELIVERY SCHEDULE

There are two at-grade railroad crossings on Atlantic Avenue operated and maintained by Union Pacific Railroad (UPRR). Both lines provide local switching service, with each line typically handling a handful of trains per day. These UPRR trains are operated without a fixed schedule as train delivery are arranged on demand per specific orders of the day placed by industrial manufactories such as Titan Terminal & Transport and Shultz Steel. Generally, Titan Terminal & Transport schedules for train arrival between 5:30 PM and 7:30 PM, Monday through Friday; departure are usually between 10:30 PM and 11:00 PM at the same day.

Traffic delay on Atlantic Avenue is bounded to increase at the railroad crossing upon any train arrival which would trigger railroad pre-emption phases before upholding all through traffic. Our understanding is that there is no apparent coordination or regulation between UPRR and the industrial manufactories to avoid train scheduling within the typical afternoon traffic peak hour between 4:00 PM and 6:00 PM, which could certainly benefit the roadway traffic operations on such major arterial as Atlantic Avenue.

RAILROAD CROSSING

There are two at-grade railroad crossings on Atlantic Avenue between Patata Street and Azalea West. The occasional and random nature of these railroad signal phases cannot be specifically quantified in this level of service analysis as this methodology strictly reply on standard signal phasing for the peak hour traffic volumes on a typical weekday. Traffic signals at railroad crossing are operated on railroad preemption modes as trains arrive. Vehicular delays are anticipated for the duration of several minutes, depending on the speed and length of the incoming train. Active operation of at-grade railroad crossing will naturally generate intermittent traffic jams especially on regional arterials such as Atlantic Avenue and Firestone Boulevard.

Railroad Grade Separation can be one of the most effective measures to mitigate the negative impact of railroad crossings on major arterials with high traffic volumes.

Development and evaluation of such major infrastructures require extensive long-term planning and complex collaborations involving many authorities for various considerations such as the costs, alternatives, feasibility, strategies, and, therefore, not discussed in depth hereon.

SITE ACCESS

Site access is provided by three proposed driveways located in the cul-de-sac of Patata Street just east of Wilcox Avenue. Each driveway will be equipped with a power operated gate for access control. Site access appears adequate for the intended uses, including semi-trailers.

APPENDIX A
SCOPING AGREEMENT

CITY OF SOUTH GATE
SCOPING AGREEMENT FOR TRANSPORTATION IMPACT ANALYSIS

This study acknowledges and follows the Los Angeles County Public Works Transportation Impact Analysis Guidelines dated July 23, 2020.

Project Name: Proposed Industrial Building
Project Address: 5037 Patata Street, South Gate, CA 90280
Project Description: Construct a new industrial building of 435,420 square feet and a truck maintenance building of 12,000 square feet (an ancilliary use to the main industrial building). **See Exhibit 1 for Site Plan.**

	Traffic Consultant	EIR Consultant
Name:	Kay Hsu, PE, TE	Marc Blodgett
	K2 Traffic Engineering, Inc.	Blodgett Baylosis Environmental Planning
Address:	1442 Irvine Blvd, Ste 210	2211 S. Hacienda Blvd, Suite 107
	Tustin, CA 92780	Hacienda Heights, CA 91745
Phone:	714-832-2116	626-336-0033
Email:	khsu@k2traffic.com	blodgett.marc@gmail.com

A. Trip Generation Source: ITE Trip Generation Manual, 11th Edition **(See Appendix A)**

Current Zoning: M3 - Heavy Manufacturing Proposed Zoning: M2 - Light Manufacturing

Total Daily Trips: 2,002

	In	Out	Total
AM Trips	82	23	105
PM Trips	31	81	112

(See Exhibit 2 for Trip Generation)

Internal Trip Allowance: [ ] Yes [X] No (0% Trip Discount)
Pass-By Trip Allowance: [ ] Yes [X] No (0% Trip Discount)

B. Trip Distribution: **See Exhibit 3-1 & 3-2**

C. Background Traffic

Project Completion Year: 2024

Annual Ambient Growth Rate:

1.4% (Per the Los Angeles County CMP, annual growth for Regional Statistical Area (RSA) 21, **See Appendix B**)

Model/Forecast Methodology: Apply growth onto existing traffic

D. Study Intersections: *New count with vehicle classifications to be conducted after schools open.*

1 Wilcox Ave at Santa Ana St
2 Wilcox Ave at Cecelia St
3 Wilcox Ave at Patata St
4 Atlantic Ave at Santa Ana St
5 Atlantic Ave at Cecelia St
6 Atlantic Ave at Patata St/Salt Lake Ave
7 Atlantic Ave at Azalea West
8 Atlantic Ave at Firestone Blvd
9 Atlantic Ave at Southern Ave
10 Firestone Blvd at Mason St/Firestone Pl
11 Firestone Blvd at Rayo Ave

Page 1

E. Study Scenario

1 Existing (2021) Conditions
2 Existing Conditions plus Project
3 Opening Year Cumulative (2023) without Project Conditions
4 Opening Year Cumulative (2023) plus Project Conditions
See Exhibit 4 for Cumulative Projects List

F. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guidelines)

1 Discuss Titan deliveries from UPRR.
2 Discuss future access to MAERSK Trucking at Patata Street and Wilcox Ave.
3 Include queuing/delay analysis for (1) Atlantic Ave at Patata St, (2) Altantic Ave at Firestone Blvd, (3) Atlantic Ave at Azalea West, (4) Firestone Blvd at Mason St/Firestone Pl, (5) Altantic Ave at Cecelia St and (6) Atlantic Ave at Santa Ana St for the AM and PM peak hour
4 Calculate LT/RT pocket length based on projected traffic volumes plus 20% growth.
5 Evaluate signal synchronization as mitigation measures.
6 Evaluate signal improvement/modification as mitigation measures.
7 Evaluate right-of-way acquisition for new lanes as mitigation measures.
8 Provide information on the number of employee, shifts, and hours of operation.
9 List hours of operations.

Recommended by:

Consultant's Representative — Date: 2/10/2022

Scoping Agreement Submitted on: 11/22/2021
Scoping Agreement Submitted (Rev1) on: 1/6/2022
Scoping Agreement Submitted (Rev2) on: 1/28/2022
Scoping Agreement Submitted (Rev3) on: 2/10/2022

Approved Scoping Agreement:

City of South Gate — Date: 2-10-2022 (previously signed on 1-31-2022)

Acknowledged by

City of Cudahy — Date: 2/10/22



EXHIBIT 1. PROPOSED SITE PLAN

EXHIBIT 2. PROJECT TRIP GENERATION

Land Use	Unit	AM Peak In[2]	AM Peak Out[2]	AM Peak Total	PM Peak In[2]	PM Peak Out[2]	PM Peak Total	Daily
Total Vehicle Rates								
High-Cube Cold Storage Warehouse (157)[1]	TSF	0.085	0.025	0.110	0.034	0.086	0.12	2.12
PCE Inbound/Outbound Splits		77%	23%	100%	28%	72%	100%	50%/50%
Passenger Car Equivalent Rate Calculations								
Passenger Cars								
Recommended Mix (%)[3]		79.57%	79.57%	79.57%	79.57%	79.57%	79.57%	79.57%
PCE Factor[3]		1.0	1.0	1.0	1.0	1.0	1.0	1.0
PCE Rates		0.067	0.021	0.088	0.027	0.069	0.095	1.687
2-Axel Trucks								
Recommended Mix (%)[3]		3.46%	3.46%	3.46%	3.46%	3.46%	3.46%	3.46%
PCE Factor[3]		1.5	1.5	1.5	1.5	1.5	1.5	1.5
PCE Rates		0.004	0.001	0.006	0.002	0.005	0.006	0.110
3-Axel Trucks								
Recommended Mix (%)[3]		4.64%	4.64%	4.64%	4.64%	4.64%	4.64%	4.64%
PCE Factor[3]		2.0	2.0	2.0	2.0	2.0	2.0	2.0
PCE Rates		0.008	0.002	0.010	0.003	0.008	0.011	0.197
4+ Axel Trucks								
Recommended Mix (%)[3]		12.33%	12.33%	12.33%	12.33%	12.33%	12.33%	12.33%
PCE Factor		3.0	3.0	3.0	3.0	3.0	3.0	3.0
PCE Rates		0.031	0.009	0.041	0.012	0.032	0.044	0.784
Warehouse NET PCE Rate		0.110	0.033	0.145	0.044	0.114	0.156	2.778
Total Project Trip Generation (Trips, By Vehicle Type)								
High-Cube Cold Storage Warehouse (157)	435.42 TSF							
Passenger Cars		29	9	38	12	30	41	735
2-Axel Trucks		2	0	3	1	2	3	48
3-Axel Trucks		4	1	4	1	3	5	86
4+ Axel Trucks		14	4	18	5	14	19	341
Total Trucks		20	5	25	7	19	27	475
Total Vehicles		49	14	63	19	49	68	1,210
Total Project Trip Generation (Passenger Car Equivalent Trips, By Vehicle Type)								
Passenger Cars		29	9	38	12	30	41	735
Truck PCE								
2-Axel Trucks		3	0	5	2	3	4	72
3-Axel Trucks		8	2	8	2	6	10	172
4+ Axel Trucks		42	12	54	16	42	57	1,023
Total Truck PCE		53	14	67	19	51	71	1,267
Total PCE		**82**	**23**	**105**	**31**	**81**	**112**	**2,002**

TSF = Thousand Square Feet

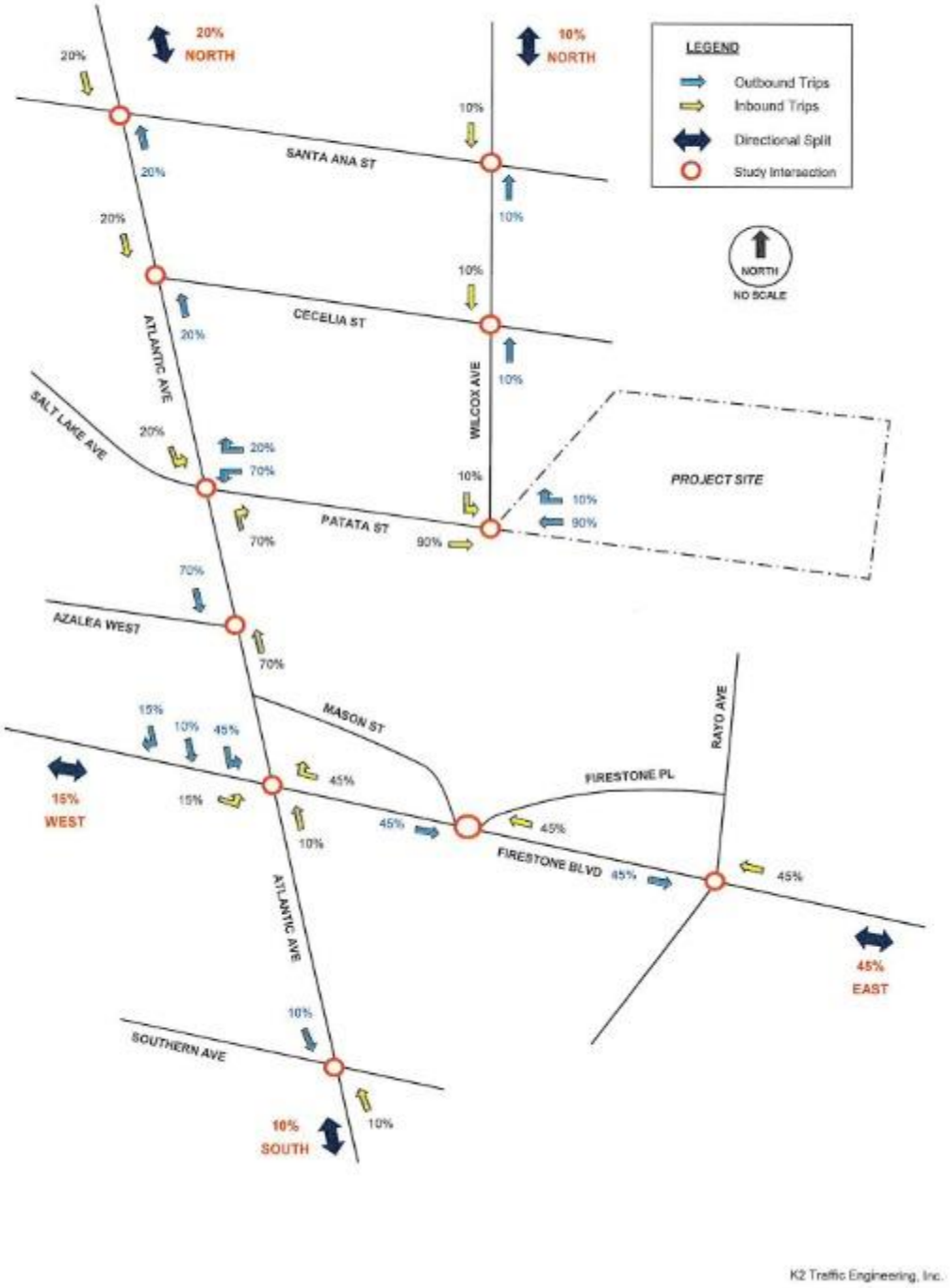
[1] Source: Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition.

[2] Directional distribution is based on Warehousing use (LU: 150)

[3] Recommended Large Truck Mix Percentages per City of Fontana Truck Trip Generation Study for Heavy Warehouse uses, August 2003.

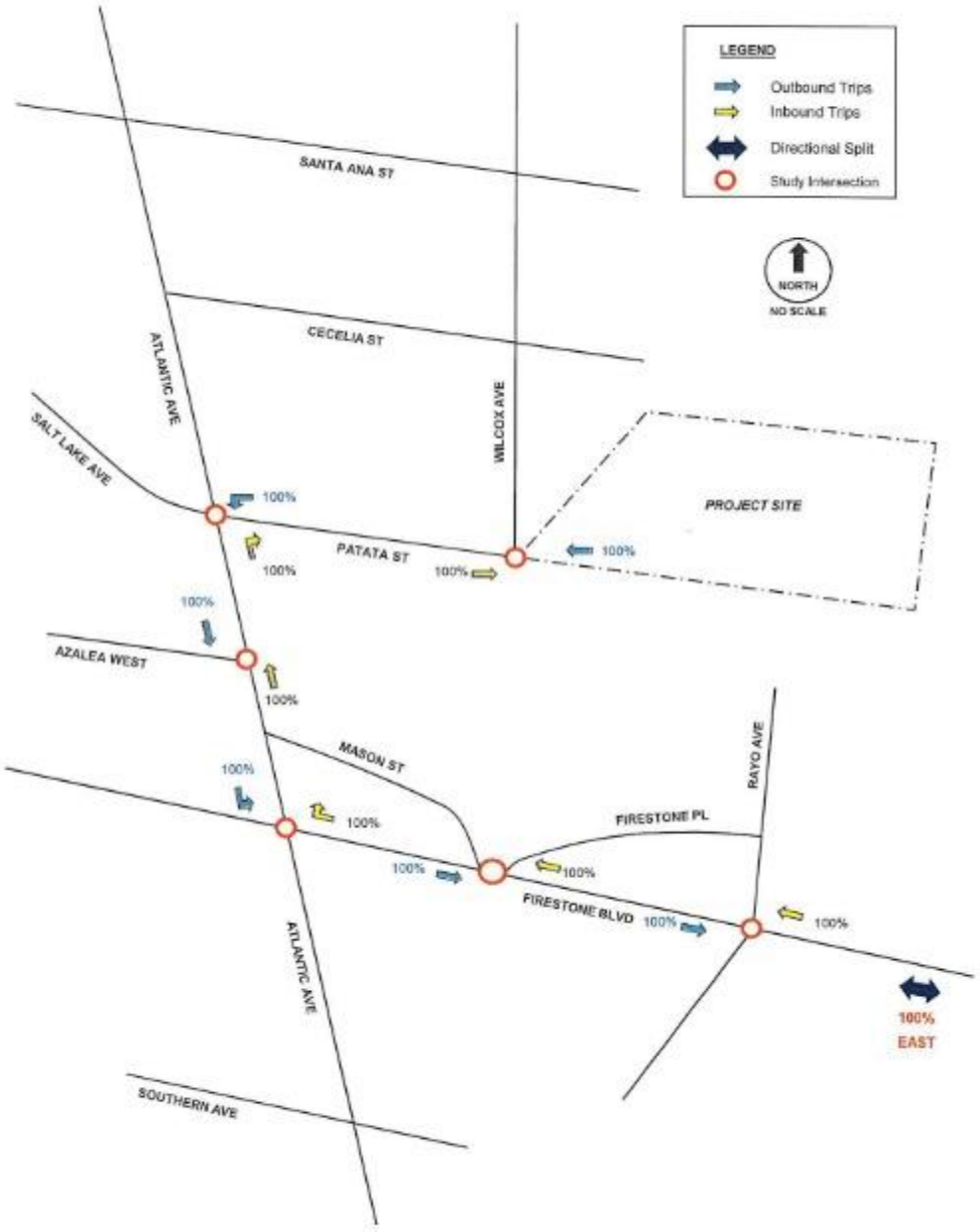
K2 Traffic Engineering, Inc.

EXHIBIT 3-1. TRIP DISTRIBUTION: PASSENGER CAR



K2 Traffic Engineering, Inc.

EXHIBIT 3-2. TRIP DISTRIBUTION: TRUCK



K2 Traffic Engineering, Inc.

EXHIBIT 4. CUMULATIVE PROJECTS LIST

List of Cumulative Projects- City of South Gate (Jan. 2022)

Commercial

~~3297 Tweedy Blvd. 1,825 sq. ft. take out restaurant and drive thru (Wendy's) completed~~

5860 Firestone Blvd. 4,961 sq. ft. take out restaurant and drive thru (Chik-fil-a- submitted)

3125 Firestone 18,000 sq. ft. commercial building and 6,000 sq. ft. commercial building

5949-5951 Firestone 102,616 3-story sq. ft. commercial building (Nova Storage- self storage)

9350 Rayo Ave, a 396-space, off-site parking facility, Amazon DAX7 Distribution Facility

9208 Atlantic Ave, Amazon parking lot

Maersk

Residential

5610 Imperial Hwy. 51,409 sq. ft. 4 story residential development (60 units)

8931 McNerney Ave. 7,100 sq .ft. residential development (4-units)

13400 Paramount Blvd. (10-units)

4136 Santa Ana 4,081 sq. ft. 3 residential units (in progress)

2742 Firestone 7,984 sq. ft. 7 residential units (in progress- pending finals)

10920 Garfield Avenue 208,553 sq. ft. 4-story residential building (244-units in progress)

10136 Adella Ave, 78 residential units

Mixed Use

9923 Atlantic Ave. 5-story development 39, 482 sq ft. commercial building and 91 residential units

13700 Paramount Blvd. 11,300 sq. ft. commercial building and 48 residential units

Educational

2340 Firestone 100,000 sq. ft. educational buildings

8616 Long Beach 30,780 sq. ft educational building (in progress)

EXHIBIT 4. CUMULATIVE PROJECTS LIST (CONTINUED)

City of Cudahy
Cumulative Projects within the last 5 years

5111 Elizabeth Street	6 new detached condominiums
8017 Atlantic Avenue	Façade renovations, demising a 68,267SF building to 3 tenant spaces to include a 40,000SF Chuze Fitness.
6225-011-006 (Walnut Street)	New 4-unit multi-family residential
8111 Atlantic Avenue	Modification to DRP 41-502 & CUP 38-350 for gas station convenience store and exterior alterations.
4935-37 Santa Ana Street	New 6-unit multi-family residential, demo existing units.
7700 Atlantic	New automated car wash
4302-4312 Elizabeth St.	48-unit Multi-Family Residential Development
5306 Clara Street	8-unit multifamily residential development
4254 Elizabeth Street	6-unit multifamily residential development
5017 Clara Street	8-unit multifamily residential development
4936-38 Live Oak St	New 42-unit res. Development with 9 affordable units on a 35,414 lot in the HDR zone
4439 Clara Street	7-unit multifamily residential development
5307 Live Oak Street	20-unit multifamily residential development
5132-5140 Live Oak Street	3 new detached SFR units
5112 Santa Ana Street	8-unit multifamily residential development
7919 Wilcox Avenue	9-unit apartment complex
7801-7835 Otis Ave.	New K-8 Charter School
4938-4932 Clara Street	30-unit multifamily residential development
4827 Santa Ana Street	5 new MFR Units in HDR Zone
4610 Santa Ana Street	Mixed-use Senior Housing Development - 179 units
5210 Santa Ana Street	8 new multifamily residential
4942-4938 Clara Street	44-unit multifamily residential development

APPENDIX A. ITE TRIP GENERATION MANUAL, 11TH EDITION

High-Cube Cold Storage Warehouse (157)

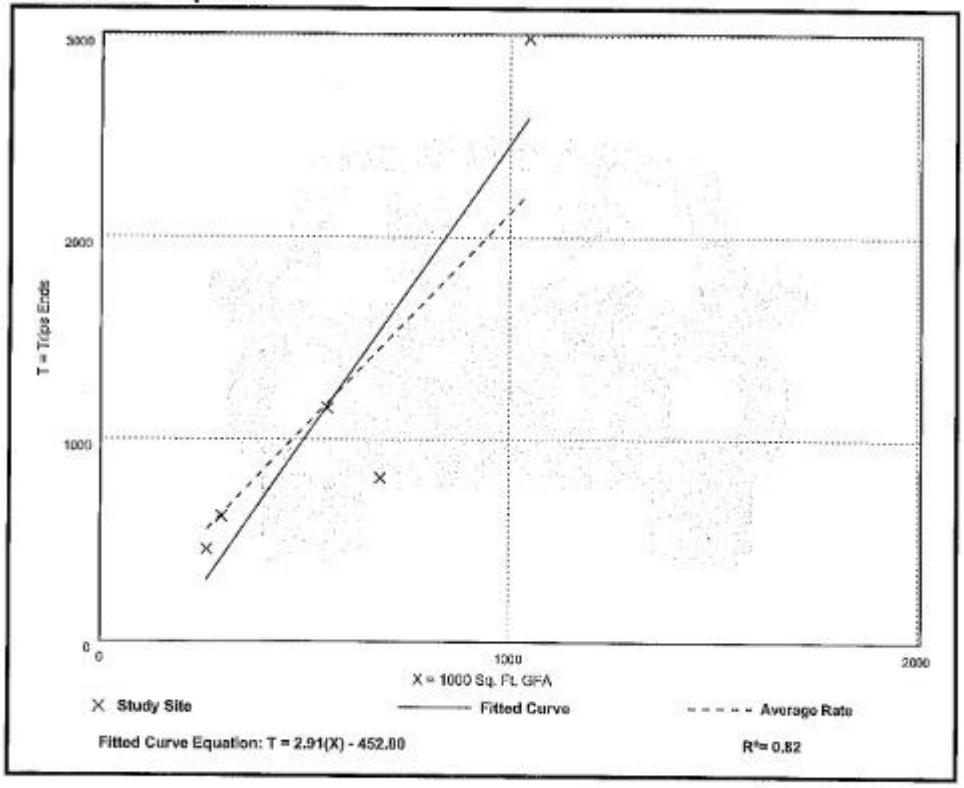
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 569
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.12	1.18 - 2.85	0.73

Data Plot and Equation



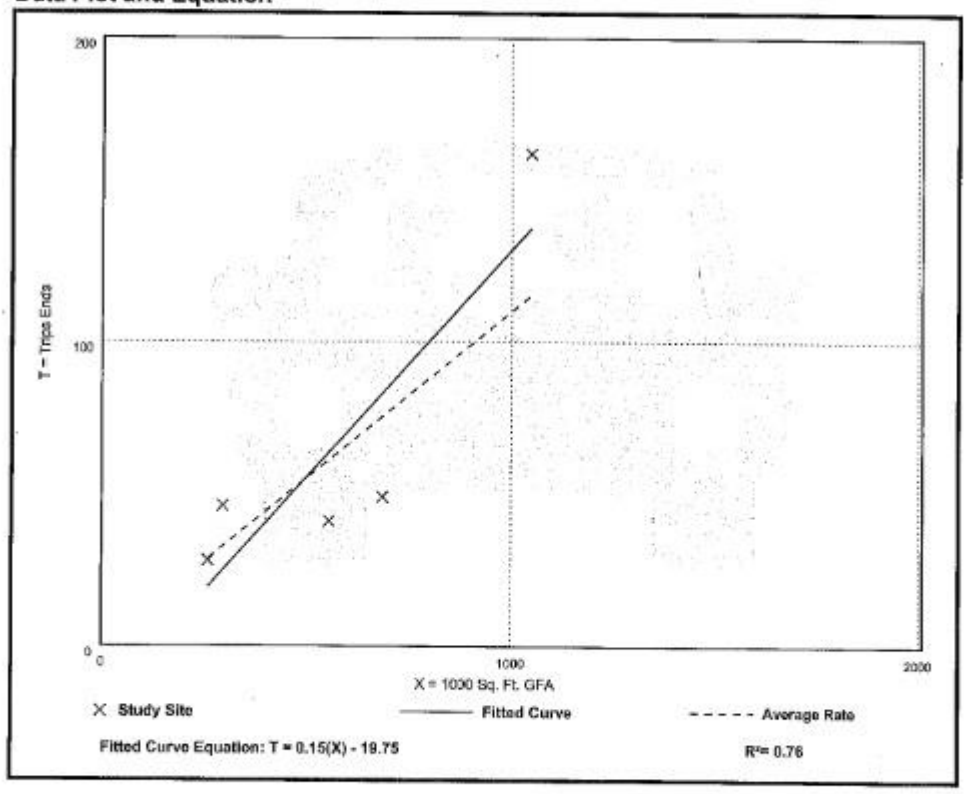
High-Cube Cold Storage Warehouse
(157)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 569
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.11	0.07 - 0.15	0.04

Data Plot and Equation



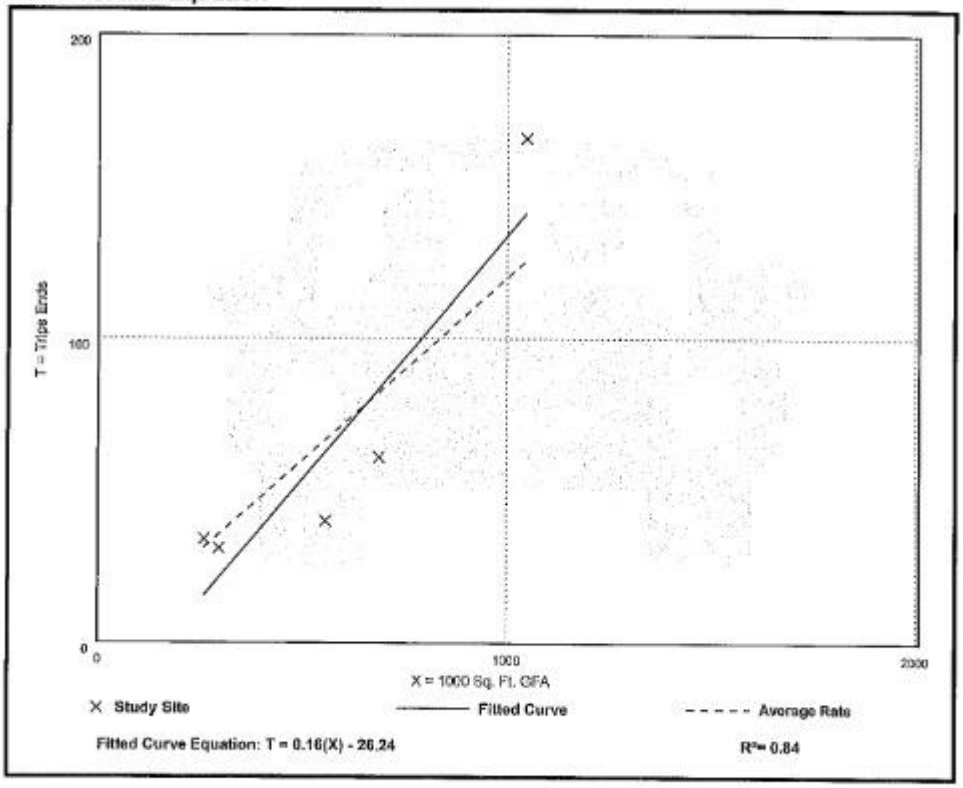
High-Cube Cold Storage Warehouse
(157)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 569
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.12	0.07 - 0.16	0.04

Data Plot and Equation



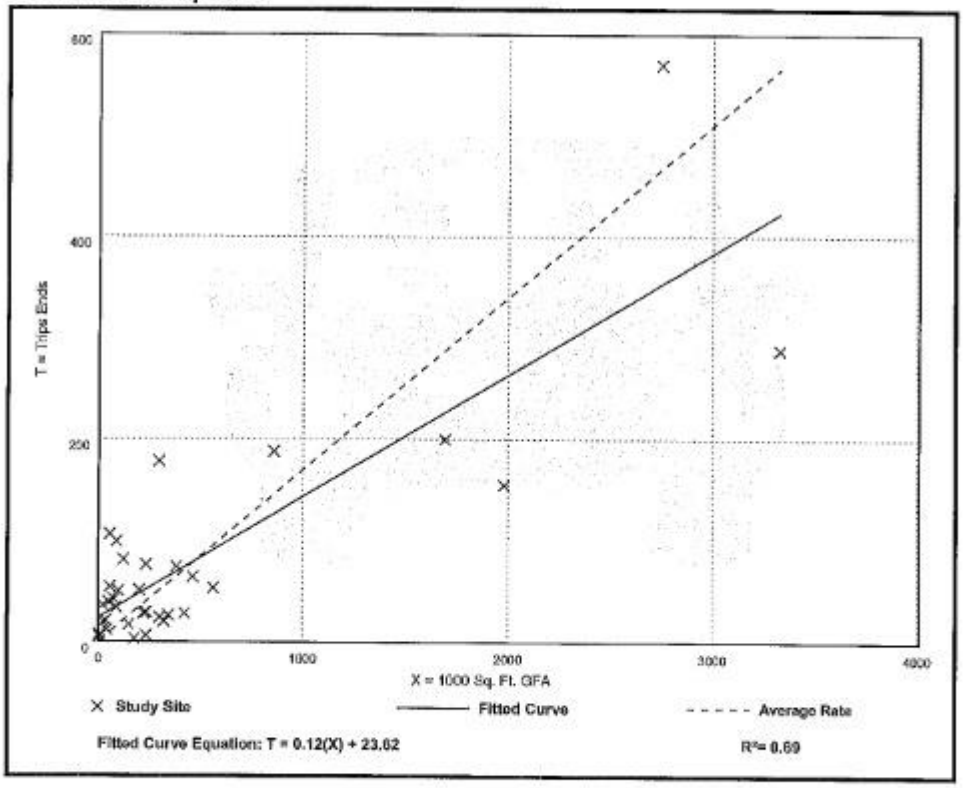
Warehousing
(150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 36
Avg. 1000 Sq. Ft. GFA: 448
Directional Distribution: 77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.19

Data Plot and Equation



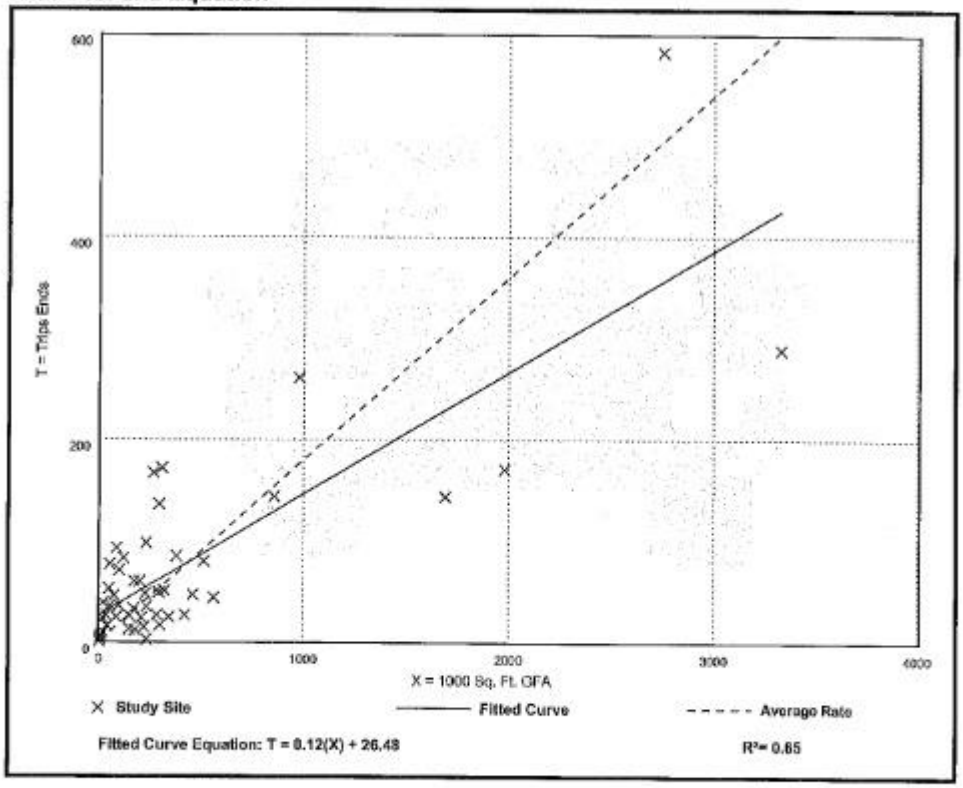
Warehousing
(150)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 49
Avg. 1000 Sq. Ft. GFA: 400
Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.18	0.01 - 1.80	0.18

Data Plot and Equation



APPENDIX B. ANNUAL AMBIENT GROWTH RATE

APPENDIX D - GUIDELINES FOR CMP TRANSPORTATION IMPACT ANALYSIS PAGE D-8

Exhibit D-1

GENERAL TRAFFIC VOLUME GROWTH FACTORS

RSA	Representative City/Place	2010	2015	2020	2025	2030	2035
7	Agoura Hills	1.000	1.020	1.041	1.052	1.063	1.075
8	Santa Clarita	1.000	1.145	1.291	1.348	1.405	1.461
9	Lancaster	1.000	1.214	1.427	1.676	1.924	2.172
10	Palmdale	1.000	1.134	1.267	1.363	1.458	1.553
11	Angeles Forest	1.000	1.151	1.301	1.394	1.487	1.580
12	West S.F. Valley	1.000	1.027	1.054	1.068	1.083	1.097
13	Burbank	1.000	1.024	1.049	1.063	1.077	1.092
14	Sylmar	1.000	1.024	1.049	1.071	1.093	1.114
15	Malibu	1.000	1.027	1.054	1.075	1.096	1.117
16	Santa Monica	1.000	1.014	1.028	1.038	1.049	1.059
17	West/Central L.A.	1.000	1.007	1.014	1.024	1.034	1.044
18	South Bay/LAX	1.000	1.013	1.026	1.035	1.044	1.053
19	Palos Verdes	1.000	1.025	1.051	1.061	1.071	1.081
20	Long Beach	1.000	1.076	1.152	1.160	1.168	1.177
21	Vernon	1.000	1.073	1.146	1.158	1.170	1.182
22	Downey	1.000	1.052	1.104	1.116	1.127	1.139
23	Downtown L.A.	1.000	1.009	1.018	1.030	1.042	1.054
24	Glendale	1.000	1.014	1.027	1.041	1.055	1.068
25	Pasadena	1.000	1.041	1.082	1.098	1.115	1.131
26	West Covina	1.000	1.023	1.046	1.066	1.086	1.106
27	Pomona	1.000	1.081	1.161	1.190	1.219	1.248

Annual Ambient Growth Rate = $(V_{final} / V_{begin})^{1/n} - 1$

= $(1.146/1.000)^{1/10} - 1$

= 0.0137 x 100%

= 1.4%

2010 Congestion Management Program for Los Angeles County

APPENDIX B
TURNING MOVEMENT COUNT DATA

INTERSECTION #1 (CUDAHY)

AM

Raw Data	NORTHBOUND WILCOX AVE			SOUTHBOUND WILCOX AVE			EASTBOUND SANTA ANA ST			WESTBOUND SANTA ANA ST		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
	0	1	0	0	1	0	0	1	0	0	1	0
Begin Peak Hour	7:15 AM											
Passenger Car	16	116	57	43	202	157	238	53	31	42	84	80
2-Axle Trucks	0	0	0	0	2	0	0	0	0	0	1	0
3-Axle Trucks	0	1	0	0	1	0	0	0	0	0	0	0
4-Axle Trucks	0	0	0	0	0	0	0	0	0	1	0	0
Total	16	117	57	43	205	157	238	53	31	43	85	80

PCE Conversion

Passenger Car	1	16	116	57	43	202	157	238	53	31	42	84	80
2-Axle Trucks	1.5	0	0	0	0	3	0	0	0	0	0	2	0
3-Axle Trucks	2	0	2	0	0	2	0	0	0	0	0	0	0
4-Axle Trucks	3	0	0	0	0	0	0	0	0	0	3	0	0
Total		**16**	**118**	**57**	**43**	**207**	**157**	**238**	**53**	**31**	**45**	**86**	**80**

PM

Raw Data	NORTHBOUND WILCOX AVE			SOUTHBOUND WILCOX AVE			EASTBOUND SANTA ANA ST			WESTBOUND SANTA ANA ST		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
	0	1	0	0	1	0	0	1	0	0	1	0
Begin Peak Hour	5:00 PM											
Passenger Car	17	202	39	49	186	157	176	62	15	29	64	53
2-Axle Trucks	0	2	0	0	1	1	0	0	0	0	0	0
3-Axle Trucks	0	0	0	0	0	0	1	0	0	0	0	0
4-Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	204	39	49	187	158	177	62	15	29	64	53

PCE Conversion

Passenger Car	1	17	202	39	49	186	157	176	62	15	29	64	53
2-Axle Trucks	1.5	0	3	0	0	2	2	0	0	0	0	0	0
3-Axle Trucks	2	0	0	0	0	0	0	2	0	0	0	0	0
4-Axle Trucks	3	0	0	0	0	0	0	0	0	0	0	0	0
Total		**17**	**205**	**39**	**49**	**188**	**159**	**178**	**62**	**15**	**29**	**64**	**53**

INTERSECTION #2 (CUDAHY)

AM

	NORTHBOUND WILCOX AVE			SOUTHBOUND WILCOX AVE			EASTBOUND CECELIA ST			WESTBOUND CECELIA ST		
Raw Data	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0
Begin Peak Hour	7:15 AM											
Passenger Car	5	94	5	29	161	55	26	24	10	23	46	31
2-Axle Trucks	0	0	0	0	1	0	0	0	1	1	0	0
3-Axle Trucks	0	1	0	0	0	1	0	0	0	0	0	0
4-Axle Trucks	1	0	0	0	0	0	0	0	0	0	0	0
Total	6	95	5	29	162	56	26	24	11	24	46	31

PCE Conversion

Passenger Car	1	5	94	5	29	161	55	26	24	10	23	46	31
2-Axle Trucks	1.5	0	0	0	0	2	0	0	0	2	2	0	0
3-Axle Trucks	2	0	2	0	0	0	2	0	0	0	0	0	0
4-Axle Trucks	3	3	0	0	0	0	0	0	0	0	0	0	0
Total		**8**	**96**	**5**	**29**	**163**	**57**	**26**	**24**	**12**	**25**	**46**	**31**

PM

Begin Peak Hour	5:00 PM												
Passenger Car	4	170	18	27	160	29	36	23	5	19	29	29	
2-Axle Trucks	0	1	1	0	2	1	1	0	0	0	0	1	
3-Axle Trucks	0	0	0	0	0	0	0	0	1	0	0	0	
4-Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	
Total	4	171	19	27	162	30	37	23	6	19	29	30	

PCE Conversion

Passenger Car	1	4	170	18	27	160	29	36	23	5	19	29	29
2-Axle Trucks	1.5	0	2	2	0	3	2	2	0	0	0	0	2
3-Axle Trucks	2	0	0	0	0	0	0	0	0	2	0	0	0
4-Axle Trucks	3	0	0	0	0	0	0	0	0	0	0	0	0
Total		**4**	**172**	**20**	**27**	**163**	**31**	**38**	**23**	**7**	**19**	**29**	**31**

INTERSECTION #3 (SOUTH GATE)

AM

Raw Data	NORTHBOUND WILCOX AVE			SOUTHBOUND WILCOX AVE			EASTBOUND PATATA ST			WESTBOUND PATATA ST		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
	X	X	X	0	1	0	0	1	0	0	1	0
Begin Peak Hour	7:15 AM											
Passenger Car	0	0	0	17	0	185	111	22	0	0	1	0
2-Axle Trucks	0	0	0	0	0	6	0	0	0	0	0	0
3-Axle Trucks	0	0	0	0	0	2	1	0	0	0	0	0
4-Axle Trucks	0	0	0	0	0	1	2	0	0	0	0	0
Total	0	0	0	17	0	194	114	22	0	0	1	0

PCE Conversion

Passenger Car	1	0	0	0	17	0	185	111	22	0	0	1	0
2-Axle Trucks	1.5	0	0	0	0	0	9	0	0	0	0	0	0
3-Axle Trucks	2	0	0	0	0	0.0	4.0	2	0	0	0	0	0
4-Axle Trucks	3	0	0	0	0	0	3	6	0	0	0	0	0
Total		**0**	**0**	**0**	**17**	**0**	**201**	**119**	**22**	**0**	**0**	**1**	**0**

PM

Begin Peak Hour	5:00 PM												
Passenger Car	0	0	0	2	0	152	171	1	0	0	23	21
2-Axle Trucks	0	0	0	0	0	2	3	0	0	0	0	0
3-Axle Trucks	0	0	0	0	0	2	3	0	0	0	0	0
4-Axle Trucks	0	0	0	0	0	0	4	1	0	0	0	0
Total	0	0	0	2	0	156	181	2	0	0	23	21

PCE Conversion

Passenger Car	1	0	0	0	2	0	152	171	1	0	0	23	21
2-Axle Trucks	1.5	0	0	0	0	0	3	5	0	0	0	0	0
3-Axle Trucks	2	0	0	0	0	0	4	6	0	0	0	0	0
4-Axle Trucks	3	0	0	0	0	0	0	12	3	0	0	0	0
Total		**0**	**0**	**0**	**2**	**0**	**159**	**194**	**4**	**0**	**0**	**23**	**21**

INTERSECTION #4 (CUDAHY)

AM

Raw Data	NORTHBOUND ATLANTIC AVE			SOUTHBOUND ATLANTIC AVE			EASTBOUND SANTA ANA ST			WESTBOUND SANTA ANA ST		
	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 1	ER 1	WL 1	WT 1	WR 1
Begin Peak Hour	7:30 AM											
Passenger Car	51	686	26	59	611	124	198	221	50	69	179	87
2-Axle Trucks	0	12	0	0	10	0	4	0	1	0	0	0
3-Axle Trucks	0	3	0	0	3	0	0	0	0	0	0	0
4-Axle Trucks	0	9	0	0	2	0	0	0	0	0	0	0
Total	51	710	26	59	626	124	202	221	51	69	179	87

PCE Conversion

Passenger Car	1	51	686	26	59	611	124	198	221	50	69	179	87
2-Axle Trucks	1.5	0	18	0	0	15	0	6	0	2	0	0	0
3-Axle Trucks	2	0	6	0	0	6.0	0.0	0	0	0	0	0	0
4-Axle Trucks	3	0	27	0	0	6	0	0	0	0	0	0	0
Total		**51**	**737**	**26**	**59**	**638**	**124**	**204**	**221**	**52**	**69**	**179**	**87**

PM

Begin Peak Hour	4:30 PM											
Passenger Car	67	672	49	76	815	133	138	217	31	59	162	43
2-Axle Trucks	1	3	0	0	6	1	2	0	0	0	0	0
3-Axle Trucks	0	2	0	0	5	2	0	0	0	0	0	0
4-Axle Trucks	0	3	0	0	3	1	0	0	0	0	0	0
Total	68	680	49	76	829	137	140	217	31	59	162	43

PCE Conversion

Passenger Car	1	67	672	49	76	815	133	138	217	31	59	162	43
2-Axle Trucks	1.5	2	5	0	0	9	2	3	0	0	0	0	0
3-Axle Trucks	2	0	4	0	0	10	4	0	0	0	0	0	0
4-Axle Trucks	3	0	9	0	0	9	3	0	0	0	0	0	0
Total		**69**	**690**	**49**	**76**	**843**	**142**	**141**	**217**	**31**	**59**	**162**	**43**

INTERSECTION #5 (CUDAHY)

AM

	NORTHBOUND ATLANTIC AVE			SOUTHBOUND ATLANTIC AVE			EASTBOUND CECELIA ST			WESTBOUND CECELIA ST		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
Raw Data	1	2	0	1	2	0	1	1	0	1	1	0
Begin Peak Hour	7:30 AM											
Passenger Car	8	691	29	22	653	23	19	12	12	54	6	33
2-Axle Trucks	0	8	0	1	7	1	2	1	0	2	0	0
3-Axle Trucks	1	0	0	0	2	0	1	0	0	1	0	0
4-Axle Trucks	4	4	1	0	3	0	2	0	0	3	0	1
Total	13	703	30	23	665	24	24	13	12	60	6	34

PCE Conversion

Passenger Car	1	8	691	29	22	653	23	19	12	12	54	6	33
2-Axle Trucks	1.5	0	12	0	2	11	2	3	2	0	3	0	0
3-Axle Trucks	2	2	0	0	0	4	0	2	0	0	2	0	0
4-Axle Trucks	3	12	12	3	0	9	0	6	0	0	9	0	3
Total		**22**	**715**	**32**	**24**	**677**	**25**	**30**	**14**	**12**	**68**	**6**	**36**

PM

Begin Peak Hour	4:15 PM												
Passenger Car	14	764	33	9	816	29	19	14	37	44	3	28	
2-Axle Trucks	0	3	2	2	8	0	0	1	0	3	0	1	
3-Axle Trucks	2	0	1	2	2	0	1	0	0	2	0	0	
4-Axle Trucks	0	2	0	1	4	2	0	0	1	2	0	1	
Total	16	769	36	14	830	31	20	15	38	51	3	30	

PCE Conversion

Passenger Car	1	14	764	33	9	816	29	19	14	37	44	3	28
2-Axle Trucks	1.5	0	5	3	3	12	0	0	2	0	5	0	2
3-Axle Trucks	2	4	0	2	4	4	0	2	0	0	4	0	0
4-Axle Trucks	3	0	6	0	3	12	6	0	0	3	6	0	3
Total		**18**	**775**	**38**	**19**	**844**	**35**	**21**	**16**	**40**	**59**	**3**	**33**

INTERSECTION #6 (SOUTH GATE)

AM

Raw Data	NORTHBOUND ATLANTIC AVE			SOUTHBOUND ATLANTIC AVE			EASTBOUND PATATA ST			WESTBOUND PATATA ST		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
	0.5	2.5	0	1	2	0	0.5	0.5	1	1	0.5	0.5
Begin Peak Hour	7:15 AM											
Passenger Car	354	741	142	9	614	3	18	9	640	138	8	19
2-Axle Trucks	5	12	1	1	13	1	0	0	13	6	0	2
3-Axle Trucks	10	1	0	2	3	0	0	0	10	2	0	0
4-Axle Trucks	23	3	0	0	9	1	1	0	27	4	1	3
Total	392	757	143	12	639	5	19	9	690	150	9	24

PCE Conversion

Passenger Car	1	354	741	142	9	614	3	18	9	640	138	8	19
2-Axle Trucks	1.5	8	18	2	2	20	2	0	0	20	9	0	3
3-Axle Trucks	2	20	2	0	4	6	0	0	0	20	4	0	0
4-Axle Trucks	3	69	9	0	0	27	3	3	0	81	12	3	9
Total		**451**	**770**	**144**	**15**	**667**	**8**	**21**	**9**	**761**	**163**	**11**	**31**

PM

Begin Peak Hour	4:15 PM												
Passenger Car	387	774	170	5	916	5	0	8	600	156	7	23	
2-Axle Trucks	6	13	4	0	7	0	0	0	7	1	1	0	
3-Axle Trucks	9	1	0	0	2	0	0	0	3	0	0	0	
4-Axle Trucks	5	8	5	0	9	0	1	0	15	1	1	0	
Total	407	796	179	5	934	5	1	8	625	158	9	23	

PCE Conversion

Passenger Car	1	387	774	170	5	916	5	0	8	600	156	7	23
2-Axle Trucks	1.5	9	20	6	0	11	0	0	0	11	2	2	0
3-Axle Trucks	2	18	2	0	0	4	0	0	0	6	0	0	0
4-Axle Trucks	3	15	24	15	0	27	0	3	0	45	3	3	0
Total		**429**	**820**	**191**	**5**	**958**	**5**	**3**	**8**	**662**	**161**	**12**	**23**

INTERSECTION #7 (SOUTH GATE)

AM

	NORTHBOUND ATLATNIC AVE			SOUTHBOUND ATLATNIC AVE			EASTBOUND AZALEA ST			WESTBOUND AZALEA ST		
Raw Data	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
	2	3	0	X	4	1	2	X	1	X	X	X
Begin Peak Hour	7:15 AM											
Passenger Car	33	1,227	0	0	1,404	75	38	0	5	0	0	0
2-Axle Trucks	0	12	0	0	25	2	1	0	4	0	0	0
3-Axle Trucks	1	10	0	0	15	0	0	0	1	0	0	0
4-Axle Trucks	0	28	0	0	39	1	2	0	3	0	0	0
Total	34	1,277	0	0	1,483	78	41	0	13	0	0	0

PCE Conversion

Passenger Car	1	33	1,227	0	0	1,404	75	38	0	5	0	0	0
2-Axle Trucks	1.5	0	18	0	0	38	3	2	0	6	0	0	0
3-Axle Trucks	2	2	20	0	0	30	0	0	0	2	0	0	0
4-Axle Trucks	3	0	84	0	0	117	3	6	0	9	0	0	0
Total		**35**	**1,349**	**0**	**0**	**1,589**	**81**	**46**	**0**	**22**	**0**	**0**	**0**

PM

Begin Peak Hour	4:15 PM												
Passenger Car	51	1,085	0	0	1,404	268	249	0	115	0	0	0	0
2-Axle Trucks	1	7	0	0	23	0	0	0	1	0	0	0	0
3-Axle Trucks	0	9	0	0	8	0	0	0	0	0	0	0	0
4-Axle Trucks	0	19	0	0	25	0	0	0	0	0	0	0	1
Total	52	1,120	0	0	1,460	268	249	0	116	0	0	0	1

PCE Conversion

Passenger Car	1	51	1,085	0	0	1,404	268	249	0	115	0	0	0
2-Axle Trucks	1.5	2	11	0	0	35	0	0	0	2	0	0	0
3-Axle Trucks	2	0	18	0	0	16	0	0	0	0	0	0	0
4-Axle Trucks	3	0	57	0	0	75	0	0	0	0	0	0	3
Total		**53**	**1,171**	**0**	**0**	**1,530**	**268**	**249**	**0**	**117**	**0**	**0**	**3**

INTERSECTION #8 (SOUTH GATE)

AM

	NORTHBOUND ATLANTIC AVE			SOUTHBOUND ATLANTIC AVE			EASTBOUND FIRESTONE BLVD			WESTBOUND FIRESTONE BLVD		
Raw Data	NL 1	NT 3	NR 0	SL 2	ST 2	SR 1	EL 2	ET 3	ER 0	WL 1	WT 3	WR 0
Begin Peak Hour	7:15 AM											
Passenger Car	133	640	58	740	578	95	158	1,213	89	66	1,117	181
2-Axle Trucks	2	3	0	9	4	3	0	16	2	1	17	3
3-Axle Trucks	3	1	0	13	3	0	0	4	2	0	9	12
4-Axle Trucks	2	4	0	38	10	4	0	14	0	1	9	28
Total	140	648	58	800	595	102	158	1,247	93	68	1,152	224

PCE Conversion

Passenger Car	1	133	640	58	740	578	95	158	1,213	89	66	1,117	181
2-Axle Trucks	1.5	3	5	0	14	6	5	0	24	3	2	26	5
3-Axle Trucks	2	6	2	0	26	6	0	0	8	4	0	18	24
4-Axle Trucks	3	6	12	0	114	30	12	0	42	0	3	27	84
Total		**148**	**659**	**58**	**894**	**620**	**112**	**158**	**1,287**	**96**	**71**	**1,188**	**294**

PM

Begin Peak Hour	4:15 PM											
Passenger Car	181	504	52	701	621	121	144	1,273	107	81	1,003	263
2-Axle Trucks	2	4	0	5	7	2	2	6	2	0	10	5
3-Axle Trucks	0	0	0	9	1	0	0	5	0	0	7	8
4-Axle Trucks	1	7	1	20	7	2	1	22	0	0	19	14
Total	184	515	53	735	636	125	147	1,306	109	81	1,039	290

PCE Conversion

Passenger Car	1	181	504	52	701	621	121	144	1,273	107	81	1,003	263
2-Axle Trucks	1.5	3	6	0	8	11	3	3	9	3	0	15	8
3-Axle Trucks	2	0	0	0	18	2	0	0	10	0	0	14	16
4-Axle Trucks	3	3	21	3	60	21	6	3	66	0	0	57	42
Total		**187**	**531**	**55**	**787**	**655**	**130**	**150**	**1,358**	**110**	**81**	**1,089**	**329**

INTERSECTION #9 (SOUTH GATE)

AM

	NORTHBOUND ATLANTIC AVE			SOUTHBOUND ATLANTIC AVE			EASTBOUND SOUTHERN AVE			WESTBOUND SOUTHERN AVE		
Raw Data	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 1	WR 0
Begin Peak Hour	7:30 AM											
Passenger Car	73	750	17	21	668	24	60	202	228	140	149	60
2-Axle Trucks	1	5	0	3	7	2	0	0	5	3	1	4
3-Axle Trucks	1	2	0	0	1	0	0	0	0	1	0	1
4-Axle Trucks	0	5	0	1	3	0	0	0	0	0	0	0
Total	75	762	17	25	679	26	60	202	233	144	150	65

PCE Conversion

Passenger Car	1	73	750	17	21	668	24	60	202	228	140	149	60
2-Axle Trucks	1.5	2	8	0	5	11	3	0	0	8	5	2	6
3-Axle Trucks	2	2	4	0	0	2	0	0	0	0	2	0	2
4-Axle Trucks	3	0	15	0	3	9	0	0	0	0	0	0	0
Total		**77**	**777**	**17**	**29**	**690**	**27**	**60**	**202**	**236**	**147**	**151**	**68**

PM

Begin Peak Hour	4:30 PM												
Passenger Car	105	871	17	23	870	63	53	204	137	210	286	38
2-Axle Trucks	2	3	0	1	8	0	0	2	3	2	1	2
3-Axle Trucks	0	3	0	0	2	0	0	1	0	1	0	1
4-Axle Trucks	0	4	0	0	2	0	0	0	0	1	0	1
Total	107	881	17	24	882	63	53	207	140	214	287	42

PCE Conversion

Passenger Car	1	105	871	17	23	870	63	53	204	137	210	286	38
2-Axle Trucks	1.5	3	5	0	2	12	0	0	3	5	3	2	3
3-Axle Trucks	2	0	6	0	0	4	0	0	2	0	2	0	2
4-Axle Trucks	3	0	12	0	0	6	0	0	0	0	3	0	3
Total		**108**	**894**	**17**	**25**	**892**	**63**	**53**	**209**	**142**	**218**	**288**	**46**

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	1287	96	71	1188	294	148	659	58	894	620	112
Future Volume (veh/h)	158	1287	96	71	1188	294	148	659	58	894	620	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	172	1399	104	77	1291	320	161	716	63	972	674	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	1532	114	129	1328	329	280	929	81	1034	1196	535
Arrive On Green	0.06	0.32	0.32	0.15	0.65	0.65	0.16	0.20	0.20	0.10	0.11	0.00
Sat Flow, veh/h	3442	4830	359	1774	4068	1007	1774	4763	417	3442	3539	1583
Grp Volume(v), veh/h	172	982	521	77	1076	535	161	508	271	972	674	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1799	1774	1695	1685	1774	1695	1789	1721	1770	1583
Q Serve(g_s), s	6.9	39.0	39.0	5.7	42.2	42.3	11.8	19.9	20.1	39.3	25.3	0.0
Cycle Q Clear(g_c), s	6.9	39.0	39.0	5.7	42.2	42.3	11.8	19.9	20.1	39.3	25.3	0.0
Prop In Lane	1.00		0.20	1.00		0.60	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	219	1075	571	129	1107	550	280	662	349	1034	1196	535
V/C Ratio(X)	0.79	0.91	0.91	0.59	0.97	0.97	0.58	0.77	0.78	0.94	0.56	0.00
Avail Cap(c_a), veh/h	221	1104	586	129	1114	554	280	662	349	1057	1196	535
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.96	0.96	0.00
Uniform Delay (d), s/veh	64.6	45.9	46.0	57.8	23.7	23.7	54.6	53.3	53.4	61.8	52.4	0.0
Incr Delay (d2), s/veh	16.8	11.3	18.6	6.2	18.5	28.6	2.9	8.4	15.4	14.7	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	20.0	22.3	3.0	22.0	23.4	6.0	10.1	11.4	20.9	12.7	0.0
LnGrp Delay(d),s/veh	81.5	57.2	64.5	64.1	42.2	52.3	57.5	61.7	68.9	76.5	54.3	0.0
LnGrp LOS	F	E	E	E	D	D	E	E	E	E	D	
Approach Vol, veh/h		1675			1688			940			1646	
Approach Delay, s/veh		62.0			46.4			63.0			67.4	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.1	31.3	14.2	48.4	26.1	51.3	12.9	49.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	26.0	9.4	45.6	21.7	47.3	9.0	46.0
Max Q Clear Time (g_c+I1), s	41.3	22.1	7.7	41.0	13.8	27.3	8.9	44.3
Green Ext Time (p_c), s	0.8	1.7	0.0	3.4	0.2	4.4	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	59.2
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	202	236	147	151	68	77	777	17	29	690	27
Future Volume (veh/h)	60	202	236	147	151	68	77	777	17	29	690	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	220	257	160	164	74	84	845	18	32	750	29
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	600	537	331	413	186	120	1293	28	116	1261	49
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1138	1770	1583	914	1217	549	1774	3544	75	1774	3474	134
Grp Volume(v), veh/h	65	220	257	160	0	238	84	422	441	32	382	397
Grp Sat Flow(s),veh/h/ln	1138	1770	1583	914	0	1766	1774	1770	1849	1774	1770	1839
Q Serve(g_s), s	2.4	4.9	6.7	8.7	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.1
Cycle Q Clear(g_c), s	7.8	4.9	6.7	15.4	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.1
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	407	600	537	331	0	599	120	646	675	116	642	667
V/C Ratio(X)	0.16	0.37	0.48	0.48	0.00	0.40	0.70	0.65	0.65	0.27	0.59	0.60
Avail Cap(c_a), veh/h	425	629	562	346	0	627	191	646	675	187	642	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	13.0	13.6	19.6	0.0	13.1	23.8	13.8	13.8	23.2	13.5	13.5
Incr Delay (d2), s/veh	0.2	0.4	0.7	1.1	0.0	0.4	7.2	5.1	4.9	1.3	4.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.4	3.0	2.3	0.0	2.6	1.4	6.0	6.2	0.5	5.2	5.4
LnGrp Delay(d),s/veh	16.3	13.4	14.2	20.7	0.0	13.6	31.0	18.9	18.7	24.4	17.5	17.4
LnGrp LOS	B	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		542			398			947			811	
Approach Delay, s/veh		14.1			16.5			19.9			17.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	23.0		21.7	7.5	22.9		21.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	19.0		18.5	5.6	18.9		18.5
Max Q Clear Time (g_c+I1), s	2.9	12.4		9.8	4.4	11.1		17.4
Green Ext Time (p_c), s	0.0	2.8		2.2	0.0	2.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2323	1562	204	15	18
Future Volume (veh/h)	0	2323	1562	204	15	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2525	1698	222	16	20
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3326	2980	388	512	457
Arrive On Green	0.00	0.65	1.00	1.00	0.29	0.29
Sat Flow, veh/h	0	5421	4723	593	1774	1583
Grp Volume(v), veh/h	0	2525	1262	658	16	20
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1758	1774	1583
Q Serve(g_s), s	0.0	47.8	0.0	0.0	0.9	1.3
Cycle Q Clear(g_c), s	0.0	47.8	0.0	0.0	0.9	1.3
Prop In Lane	0.00			0.34	1.00	1.00
Lane Grp Cap(c), veh/h	0	3326	2218	1150	512	457
V/C Ratio(X)	0.00	0.76	0.57	0.57	0.03	0.04
Avail Cap(c_a), veh/h	0	4032	2688	1394	512	457
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.26	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	0.0	16.6	0.0	0.0	35.7	35.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.3	0.1	0.1	0.5	0.6
LnGrp Delay(d),s/veh	0.0	16.8	0.2	0.4	35.8	36.0
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2525	1920		36	
Approach Delay, s/veh		16.8	0.3		36.0	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				95.6		44.4		95.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				49.8		3.3		2.0
Green Ext Time (p_c), s				41.8		0.1		29.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2338	1560	0	15	2
Future Volume (veh/h)	0	2338	1560	0	15	2
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2541	1696	0	16	2
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3049	3049	0	609	544
Arrive On Green	0.00	1.00	0.60	0.00	0.34	0.34
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2541	1696	0	16	2
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	28.1	0.0	0.8	0.1
Cycle Q Clear(g_c), s	0.0	0.0	28.1	0.0	0.8	0.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3049	3049	0	609	544
V/C Ratio(X)	0.00	0.83	0.56	0.00	0.03	0.00
Avail Cap(c_a), veh/h	0	4032	4032	0	609	544
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.63	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.8	0.0	30.5	30.2
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	13.1	0.0	0.4	0.1
LnGrp Delay(d),s/veh	0.0	0.9	16.9	0.0	30.5	30.2
LnGrp LOS		A	B		C	C
Approach Vol, veh/h		2541	1696		18	
Approach Delay, s/veh		0.9	16.9		30.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				76.5		63.5		76.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		2.8		30.1
Green Ext Time (p_c), s				59.1		0.0		21.9

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

INTERSECTION #10-11 (SOUTH GATE)

AM

	SOUTHBOUND MASON ST (#10)			SOUTHBOUND FIRESTONE PL (#11)			EASTBOUND FIRESTONE BLVD			WESTBOUND FIRESTONE BLVD		
	SL	ST	SR	SL	ST	SR	EL	ET	ER	WL	WT	WR
Raw Data	1	X	1	1	X	1	X	3	0	X	3	X
Begin Peak Hour	7:15 AM											
Passenger Car	6	0	9	13	0	2	1	2,125	5	0	1,400	196
2-Axle Trucks	0	0	0	1	0	0	0	23	0	0	20	1
3-Axle Trucks	0	0	0	0	0	0	0	11	1	0	17	0
4-Axle Trucks	3	0	3	0	0	0	0	47	0	0	32	2
Total	9	0	12	14	0	2	1	2,206	6	0	1,469	199

PCE Conversion

Passenger Car	1	6	0	0	9	13	0	2	1	2,125	5	0	1,400	196
2-Axle Trucks	1.5	0	0	0	0	2	0	0	0	35	0	0	30	2
3-Axle Trucks	2	0	0	0	0	0	0	0	0	22	2	0	34	0
4-Axle Trucks	3	9	0	0	9	0	0	0	0	141	0	0	96	6
Total		**15**	**0**	**0**	**18**	**15**	**0**	**2**	**1**	**2,323**	**7**	**0**	**1,560**	**204**

PM

Begin Peak Hour	4:15 PM												
Passenger Car	18	0	39	19	0	18	4	2,031	17	0	1,335	208
2-Axle Trucks	0	0	1	1	0	0	0	11	1	0	16	2
3-Axle Trucks	3	0	1	0	0	0	0	14	0	0	15	2
4-Axle Trucks	6	0	1	0	0	0	0	39	0	0	26	0
Total	27	0	42	20	0	18	4	2,095	18	0	1,392	212

PCE Conversion

Passenger Car	1	18	0	39	19	0	18	4	2,031	17	0	1,335	208
2-Axle Trucks	1.5	0	0	2	2	0	0	0	17	2	0	24	3
3-Axle Trucks	2	6	0	2	0	0	0	0	28	0	0	30	4
4-Axle Trucks	3	18	0	3	0	0	0	0	117	0	0	78	0
Total		**42**	**0**	**46**	**21**	**0**	**18**	**4**	**2,193**	**19**	**0**	**1,467**	**215**

INTERSECTION #12 (SOUTH GATE)

AM

	NORTHBOUND RAYO AVE			SOUTHBOUND RAYO AVE			EASTBOUND FIRESTONE BLVD			WESTBOUND FIRESTONE BLVD		
Raw Data	NL 0.5	NT 0.5	NR 2	SL 1	ST 1	SR 1	EL 1	ET 3	ER 0	WL 2	WT 3	WR 0
Begin Peak Hour	7:15 AM											
Passenger Car	7	2	881	11	2	2	23	2,037	15	366	1,557	35
2-Axle Trucks	0	0	7	0	0	0	1	26	1	1	23	1
3-Axle Trucks	0	3	3	5	0	0	1	13	2	4	15	7
4-Axle Trucks	0	1	14	4	0	1	4	38	2	1	30	6
Total	7	6	905	20	2	3	29	2,114	20	372	1,625	49

PCE Conversion

Passenger Car	1	7	2	881	11	2	2	23	2,037	15	366	1,557	35
2-Axle Trucks	1.5	0	0	11	0	0	0	2	39	2	2	35	2
3-Axle Trucks	2	0	6	6	10	0	0	2	26	4	8	30	14
4-Axle Trucks	3	0	3	42	12	0	3	12	114	6	3	90	18
Total		**7**	**11**	**940**	**33**	**2**	**5**	**39**	**2,216**	**27**	**379**	**1,712**	**69**

PM

Begin Peak Hour	4:30 PM												
Passenger Car	20	25	728	54	11	3	48	1,925	19	477	1,440	34	
2-Axle Trucks	4	0	13	1	2	0	0	11	0	4	15	5	
3-Axle Trucks	0	0	4	5	1	0	0	10	0	1	17	3	
4-Axle Trucks	0	1	4	8	1	0	5	25	0	7	28	6	
Total	24	26	749	68	15	3	53	1,971	19	489	1,500	48	

PCE Conversion

Passenger Car	1	20	25	728	54	11	3	48	1,925	19	477	1,440	34
2-Axle Trucks	1.5	6	0	20	2	3	0	0	17	0	6	23	8
3-Axle Trucks	2	0	0	8	10	2	0	0	20	0	2	34	6
4-Axle Trucks	3	0	3	12	24	3	0	15	75	0	21	84	18
Total		**26**	**28**	**768**	**90**	**19**	**3**	**63**	**2,037**	**19**	**506**	**1,581**	**66**

APPENDIX C
LEVEL OF SERVICE ANALYSIS

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/06/2022

Intersection	
Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	238	53	31	45	86	80	16	118	57	43	207	157
Future Vol, veh/h	238	53	31	45	86	80	16	118	57	43	207	157
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	259	58	34	49	93	87	17	128	62	47	225	171
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.5	15.1	14.4	26.4
HCM LOS	C	C	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	74%	21%	11%
Vol Thru, %	62%	16%	41%	51%
Vol Right, %	30%	10%	38%	39%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	322	211	407
LT Vol	16	238	45	43
Through Vol	118	53	86	207
RT Vol	57	31	80	157
Lane Flow Rate	208	350	229	442
Geometry Grp	1	1	1	1
Degree of Util (X)	0.397	0.65	0.437	0.76
Departure Headway (Hd)	6.886	6.798	6.862	6.181
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	525	536	527	580
Service Time	4.903	4.798	4.862	4.281
HCM Lane V/C Ratio	0.396	0.653	0.435	0.762
HCM Control Delay	14.4	21.5	15.1	26.4
HCM Lane LOS	B	C	C	D
HCM 95th-tile Q	1.9	4.6	2.2	6.8

Existing AM 03/15/2022 Baseline Synchro 10 Report
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HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/06/2022

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	24	12	25	46	31	8	96	5	29	163	57
Future Vol, veh/h	26	24	12	25	46	31	8	96	5	29	163	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	26	13	27	50	34	9	104	5	32	177	62
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	8.6	8.5	9.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	42%	25%	12%
Vol Thru, %	88%	39%	45%	65%
Vol Right, %	5%	19%	30%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	62	102	249
LT Vol	8	26	25	29
Through Vol	96	24	46	163
RT Vol	5	12	31	57
Lane Flow Rate	118	67	111	271
Geometry Grp	1	1	1	1
Degree of Util (X)	0.153	0.092	0.147	0.33
Departure Headway (Hd)	4.655	4.927	4.769	4.392
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	769	724	749	817
Service Time	2.694	2.974	2.812	2.424
HCM Lane V/C Ratio	0.153	0.093	0.148	0.332
HCM Control Delay	8.5	8.5	8.6	9.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.3	0.5	1.4

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/06/2022

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	119	22	1	0	17	201
Future Vol, veh/h	119	22	1	0	17	201
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	129	24	1	0	18	218
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.7	7.6	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	84%	0%	8%
Vol Thru, %	16%	100%	0%
Vol Right, %	0%	0%	92%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	141	1	218
LT Vol	119	0	17
Through Vol	22	1	0
RT Vol	0	0	201
Lane Flow Rate	153	1	237
Geometry Grp	1	1	1
Degree of Util (X)	0.192	0.001	0.248
Departure Headway (Hd)	4.521	4.589	3.772
Convergence, Y/N	Yes	Yes	Yes
Cap	786	782	957
Service Time	2.594	2.603	1.772
HCM Lane V/C Ratio	0.195	0.001	0.248
HCM Control Delay	8.7	7.6	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0	1

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	221	52	69	179	87	51	737	26	59	638	124
Future Volume (veh/h)	204	221	52	69	179	87	51	737	26	59	638	124
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	222	240	57	75	195	95	55	801	28	64	693	135
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	582	495	287	582	495	318	1396	49	333	1207	235
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.36	0.80	0.80	0.19	0.41	0.41
Sat Flow, veh/h	1085	1863	1583	1078	1863	1583	1774	3489	122	1774	2955	575
Grp Volume(v), veh/h	222	240	57	75	195	95	55	406	423	64	415	413
Grp Sat Flow(s),veh/h/ln	1085	1863	1583	1078	1863	1583	1774	1770	1841	1774	1770	1761
Q Serve(g_s), s	23.7	12.2	3.1	7.1	9.6	5.3	2.5	10.2	10.2	3.6	21.7	21.8
Cycle Q Clear(g_c), s	33.4	12.2	3.1	19.3	9.6	5.3	2.5	10.2	10.2	3.6	21.7	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.33
Lane Grp Cap(c), veh/h	312	582	495	287	582	495	318	708	736	333	723	719
V/C Ratio(X)	0.71	0.41	0.12	0.26	0.34	0.19	0.17	0.57	0.57	0.19	0.57	0.57
Avail Cap(c_a), veh/h	407	745	633	382	745	633	318	708	736	333	723	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	32.6	29.4	40.2	31.7	30.2	32.4	8.2	8.2	41.1	27.4	27.4
Incr Delay (d2), s/veh	4.0	0.5	0.1	0.5	0.3	0.2	0.3	3.3	3.2	0.3	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	6.3	1.4	2.1	5.0	2.3	1.2	5.4	5.6	1.8	11.3	11.2
LnGrp Delay(d),s/veh	48.5	33.0	29.5	40.7	32.0	30.4	32.6	11.5	11.4	41.4	30.7	30.8
LnGrp LOS	D	C	C	D	C	C	C	B	B	D	C	C
Approach Vol, veh/h		519			365			884			892	
Approach Delay, s/veh		39.3			33.4			12.8			31.5	
Approach LOS		D			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.5	52.0		41.5	25.5	53.0		41.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	48.0		48.0	11.0	49.0		48.0
Max Q Clear Time (g_c+I1), s	5.6	12.2		35.4	4.5	23.8		21.3
Green Ext Time (p_c), s	0.1	5.8		2.1	0.0	5.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/06/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	68	36	715	32	24	677
Future Volume (veh/h)	68	36	715	32	24	677
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	74	39	777	35	26	736
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	103	92	2070	93	429	3097
Arrive On Green	0.06	0.06	0.60	0.60	0.48	1.00
Sat Flow, veh/h	1774	1583	3543	155	1774	3632
Grp Volume(v), veh/h	74	39	399	413	26	736
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1835	1774	1770
Q Serve(g_s), s	4.9	2.9	14.0	14.0	0.9	0.0
Cycle Q Clear(g_c), s	4.9	2.9	14.0	14.0	0.9	0.0
Prop In Lane	1.00	1.00		0.08	1.00	
Lane Grp Cap(c), veh/h	103	92	1062	1101	429	3097
V/C Ratio(X)	0.72	0.42	0.38	0.38	0.06	0.24
Avail Cap(c_a), veh/h	325	290	1062	1101	429	3097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.98
Uniform Delay (d), s/veh	55.5	54.6	12.4	12.4	23.7	0.0
Incr Delay (d2), s/veh	8.9	3.1	1.0	1.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.3	7.1	7.3	0.5	0.1
LnGrp Delay(d),s/veh	64.4	57.6	13.4	13.4	23.8	0.2
LnGrp LOS	E	E	B	B	C	A
Approach Vol, veh/h	113		812			762
Approach Delay, s/veh	62.1		13.4			1.0
Approach LOS	E		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		109.0			33.0	76.0		11.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		90.0			14.0	72.0		22.0
Max Q Clear Time (g_c+I1), s		2.0			2.9	16.0		6.9
Green Ext Time (p_c), s		5.9			0.0	5.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	12	22	715	677	25
Future Volume (veh/h)	30	12	22	715	677	25
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	33	13	24	777	736	27
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	58	52	504	3188	2031	74
Arrive On Green	0.03	0.03	0.28	0.90	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3575	128
Grp Volume(v), veh/h	33	13	24	777	374	389
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1840
Q Serve(g_s), s	2.2	1.0	1.2	3.4	0.0	0.0
Cycle Q Clear(g_c), s	2.2	1.0	1.2	3.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	58	52	504	3188	1032	1073
V/C Ratio(X)	0.57	0.25	0.05	0.24	0.36	0.36
Avail Cap(c_a), veh/h	355	317	504	3188	1032	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.97	0.97	0.93	0.93
Uniform Delay (d), s/veh	57.2	56.6	31.2	0.8	0.0	0.0
Incr Delay (d2), s/veh	8.5	2.5	0.0	0.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.5	0.6	1.7	0.3	0.3
LnGrp Delay(d),s/veh	65.7	59.1	31.2	0.9	0.9	0.9
LnGrp LOS	E	E	C	A	A	A
Approach Vol, veh/h	46			801	763	
Approach Delay, s/veh	63.8			1.8	0.9	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	38.1	74.0		7.9		112.1		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	14.0	70.0		24.0		88.0		
Max Q Clear Time (g_c+I1), s	3.2	2.0		4.2		5.4		
Green Ext Time (p_c), s	0.0	5.4		0.1		6.3		

Intersection Summary	
HCM 2010 Ctrl Delay	3.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	9	761	163	11	31	451	770	144	15	667	8
Future Volume (veh/h)	21	9	761	163	11	31	451	770	144	15	667	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	10	827	177	12	34	490	837	157	16	725	9
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	68	880	200	118	334	688	1285	242	385	777	10
Arrive On Green	0.13	0.13	0.13	0.11	0.27	0.27	0.42	0.42	0.42	0.22	0.22	0.22
Sat Flow, veh/h	981	514	1583	1774	430	1218	1627	3039	573	1774	3580	44
Grp Volume(v), veh/h	33	0	827	177	0	46	537	465	483	16	358	376
Grp Sat Flow(s),veh/h/ln	1494	0	1583	1774	0	1648	1781	1695	1762	1774	1770	1855
Q Serve(g_s), s	1.7	0.0	18.6	13.8	0.0	2.9	34.8	30.5	30.5	1.0	27.8	27.8
Cycle Q Clear(g_c), s	2.5	0.0	18.6	13.8	0.0	2.9	34.8	30.5	30.5	1.0	27.8	27.8
Prop In Lane	0.70		1.00	1.00		0.74	0.91		0.33	1.00		0.02
Lane Grp Cap(c), veh/h	242	0	880	200	0	452	753	717	745	385	384	403
V/C Ratio(X)	0.14	0.00	0.94	0.88	0.00	0.10	0.71	0.65	0.65	0.04	0.93	0.93
Avail Cap(c_a), veh/h	242	0	880	215	0	466	753	717	745	393	392	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	17.9	61.2	0.0	37.9	33.4	32.1	32.1	43.3	53.8	53.8
Incr Delay (d2), s/veh	0.3	0.0	17.5	30.9	0.0	0.1	5.7	4.5	4.3	0.0	28.9	28.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	36.2	8.5	0.0	1.3	18.3	15.1	15.6	0.5	16.7	17.4
LnGrp Delay(d),s/veh	53.9	0.0	35.5	92.1	0.0	38.0	39.0	36.6	36.4	43.3	82.7	81.8
LnGrp LOS	D		D	F		D	D	D	D	D	F	F
Approach Vol, veh/h		860			223			1484			750	
Approach Delay, s/veh		36.2			81.0			37.4			81.4	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		63.2	19.8	22.6		34.4		42.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		57.4	17.0	18.6		31.0		39.6
Max Q Clear Time (g_c+I1), s		36.8	15.8	20.6		29.8		4.9
Green Ext Time (p_c), s		9.9	0.1	0.0		0.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	50.0
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	22	35	1349	1589	81
Future Volume (veh/h)	46	22	35	1349	1589	81
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	50	24	38	1466	1727	88
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	116	53	95	4623	5466	1351
Arrive On Green	0.03	0.03	0.06	1.00	0.85	0.85
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	50	24	38	1466	1727	88
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	2.0	2.1	1.5	0.0	7.6	1.2
Cycle Q Clear(g_c), s	2.0	2.1	1.5	0.0	7.6	1.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	116	53	95	4623	5466	1351
V/C Ratio(X)	0.43	0.45	0.40	0.32	0.32	0.07
Avail Cap(c_a), veh/h	565	260	295	4623	5466	1351
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.50	0.50	1.00	1.00
Uniform Delay (d), s/veh	66.3	66.4	65.0	0.0	2.1	1.6
Incr Delay (d2), s/veh	2.5	5.8	1.4	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.9	0.7	0.0	3.3	0.5
LnGrp Delay(d),s/veh	68.8	72.2	66.4	0.1	2.2	1.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	74			1504	1815	
Approach Delay, s/veh	69.9			1.8	2.2	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		131.3		8.7	7.9	123.4		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		109.0		23.0	12.0	93.0		
Max Q Clear Time (g_c+I1), s		2.0		4.1	3.5	9.6		
Green Ext Time (p_c), s		16.8		0.2	0.0	25.4		

Intersection Summary	
HCM 2010 Ctrl Delay	3.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	1287	96	71	1188	294	148	659	58	894	620	112
Future Volume (veh/h)	158	1287	96	71	1188	294	148	659	58	894	620	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	172	1399	104	77	1291	320	161	716	63	972	674	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	1532	114	129	1328	329	280	929	81	1034	1196	535
Arrive On Green	0.06	0.32	0.32	0.15	0.65	0.65	0.16	0.20	0.20	0.10	0.11	0.00
Sat Flow, veh/h	3442	4830	359	1774	4068	1007	1774	4763	417	3442	3539	1583
Grp Volume(v), veh/h	172	982	521	77	1076	535	161	508	271	972	674	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1799	1774	1695	1685	1774	1695	1789	1721	1770	1583
Q Serve(g_s), s	6.9	39.0	39.0	5.7	42.2	42.3	11.8	19.9	20.1	39.3	25.3	0.0
Cycle Q Clear(g_c), s	6.9	39.0	39.0	5.7	42.2	42.3	11.8	19.9	20.1	39.3	25.3	0.0
Prop In Lane	1.00		0.20	1.00		0.60	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	219	1075	571	129	1107	550	280	662	349	1034	1196	535
V/C Ratio(X)	0.79	0.91	0.91	0.59	0.97	0.97	0.58	0.77	0.78	0.94	0.56	0.00
Avail Cap(c_a), veh/h	221	1104	586	129	1114	554	280	662	349	1057	1196	535
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.96	0.96	0.00
Uniform Delay (d), s/veh	64.6	45.9	46.0	57.8	23.7	23.7	54.6	53.3	53.4	61.8	52.4	0.0
Incr Delay (d2), s/veh	16.8	11.3	18.6	6.2	18.5	28.6	2.9	8.4	15.4	14.7	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	20.0	22.3	3.0	22.0	23.4	6.0	10.1	11.4	20.9	12.7	0.0
LnGrp Delay(d),s/veh	81.5	57.2	64.5	64.1	42.2	52.3	57.5	61.7	68.9	76.5	54.3	0.0
LnGrp LOS	F	E	E	E	D	D	E	E	E	E	D	
Approach Vol, veh/h		1675			1688			940			1646	
Approach Delay, s/veh		62.0			46.4			63.0			67.4	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.1	31.3	14.2	48.4	26.1	51.3	12.9	49.7
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	26.0	9.4	45.6	21.7	47.3	9.0	46.0
Max Q Clear Time (g_c+I1), s	41.3	22.1	7.7	41.0	13.8	27.3	8.9	44.3
Green Ext Time (p_c), s	0.8	1.7	0.0	3.4	0.2	4.4	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	59.2
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	202	236	147	151	68	77	777	17	29	690	27
Future Volume (veh/h)	60	202	236	147	151	68	77	777	17	29	690	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	220	257	160	164	74	84	845	18	32	750	29
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	600	537	331	413	186	120	1293	28	116	1261	49
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1138	1770	1583	914	1217	549	1774	3544	75	1774	3474	134
Grp Volume(v), veh/h	65	220	257	160	0	238	84	422	441	32	382	397
Grp Sat Flow(s),veh/h/ln	1138	1770	1583	914	0	1766	1774	1770	1849	1774	1770	1839
Q Serve(g_s), s	2.4	4.9	6.7	8.7	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.1
Cycle Q Clear(g_c), s	7.8	4.9	6.7	15.4	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.1
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	407	600	537	331	0	599	120	646	675	116	642	667
V/C Ratio(X)	0.16	0.37	0.48	0.48	0.00	0.40	0.70	0.65	0.65	0.27	0.59	0.60
Avail Cap(c_a), veh/h	425	629	562	346	0	627	191	646	675	187	642	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	13.0	13.6	19.6	0.0	13.1	23.8	13.8	13.8	23.2	13.5	13.5
Incr Delay (d2), s/veh	0.2	0.4	0.7	1.1	0.0	0.4	7.2	5.1	4.9	1.3	4.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.4	3.0	2.3	0.0	2.6	1.4	6.0	6.2	0.5	5.2	5.4
LnGrp Delay(d),s/veh	16.3	13.4	14.2	20.7	0.0	13.6	31.0	18.9	18.7	24.4	17.5	17.4
LnGrp LOS	B	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		542			398			947			811	
Approach Delay, s/veh		14.1			16.5			19.9			17.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	23.0		21.7	7.5	22.9		21.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	19.0		18.5	5.6	18.9		18.5
Max Q Clear Time (g_c+I1), s	2.9	12.4		9.8	4.4	11.1		17.4
Green Ext Time (p_c), s	0.0	2.8		2.2	0.0	2.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2323	1562	204	15	18
Future Volume (veh/h)	0	2323	1562	204	15	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2525	1698	222	16	20
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3326	2980	388	512	457
Arrive On Green	0.00	0.65	1.00	1.00	0.29	0.29
Sat Flow, veh/h	0	5421	4723	593	1774	1583
Grp Volume(v), veh/h	0	2525	1262	658	16	20
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1758	1774	1583
Q Serve(g_s), s	0.0	47.8	0.0	0.0	0.9	1.3
Cycle Q Clear(g_c), s	0.0	47.8	0.0	0.0	0.9	1.3
Prop In Lane	0.00			0.34	1.00	1.00
Lane Grp Cap(c), veh/h	0	3326	2218	1150	512	457
V/C Ratio(X)	0.00	0.76	0.57	0.57	0.03	0.04
Avail Cap(c_a), veh/h	0	4032	2688	1394	512	457
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.26	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	0.0	16.6	0.0	0.0	35.7	35.9
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.3	0.1	0.1	0.5	0.6
LnGrp Delay(d),s/veh	0.0	16.8	0.2	0.4	35.8	36.0
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2525	1920		36	
Approach Delay, s/veh		16.8	0.3		36.0	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				95.6		44.4		95.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				49.8		3.3		2.0
Green Ext Time (p_c), s				41.8		0.1		29.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2338	1560	0	15	2
Future Volume (veh/h)	0	2338	1560	0	15	2
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2541	1696	0	16	2
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3049	3049	0	609	544
Arrive On Green	0.00	1.00	0.60	0.00	0.34	0.34
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2541	1696	0	16	2
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	28.1	0.0	0.8	0.1
Cycle Q Clear(g_c), s	0.0	0.0	28.1	0.0	0.8	0.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3049	3049	0	609	544
V/C Ratio(X)	0.00	0.83	0.56	0.00	0.03	0.00
Avail Cap(c_a), veh/h	0	4032	4032	0	609	544
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.63	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.8	0.0	30.5	30.2
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	13.1	0.0	0.4	0.1
LnGrp Delay(d),s/veh	0.0	0.9	16.9	0.0	30.5	30.2
LnGrp LOS		A	B		C	C
Approach Vol, veh/h		2541	1696		18	
Approach Delay, s/veh		0.9	16.9		30.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				76.5		63.5		76.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		2.8		30.1
Green Ext Time (p_c), s				59.1		0.0		21.9

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	2216	27	379	1721	69	7	11	940	33	2	5
Future Volume (veh/h)	39	2216	27	379	1721	69	7	11	940	33	2	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	2409	29	412	1871	75	8	12	1022	36	2	5
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	2341	28	427	2736	110	142	213	886	219	230	195
Arrive On Green	0.03	0.45	0.45	0.12	0.55	0.55	0.19	0.19	0.19	0.12	0.12	0.12
Sat Flow, veh/h	1774	5180	62	3442	5017	201	730	1096	2787	1774	1863	1583
Grp Volume(v), veh/h	42	1575	863	412	1264	682	20	0	1022	36	2	5
Grp Sat Flow(s),veh/h/ln	1774	1695	1852	1721	1695	1827	1826	0	1393	1774	1863	1583
Q Serve(g_s), s	3.5	67.8	67.8	17.9	40.5	40.6	1.3	0.0	29.1	2.7	0.1	0.4
Cycle Q Clear(g_c), s	3.5	67.8	67.8	17.9	40.5	40.6	1.3	0.0	29.1	2.7	0.1	0.4
Prop In Lane	1.00		0.03	1.00		0.11	0.40		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1532	837	427	1849	997	354	0	886	219	230	195
V/C Ratio(X)	0.78	1.03	1.03	0.97	0.68	0.68	0.06	0.00	1.15	0.16	0.01	0.03
Avail Cap(c_a), veh/h	108	1532	837	427	1849	997	354	0	886	219	230	195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.2	41.1	41.1	65.4	24.7	24.7	49.3	0.0	51.1	58.8	57.7	57.8
Incr Delay (d2), s/veh	15.5	27.0	34.6	34.6	1.0	2.0	0.3	0.0	81.9	1.6	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	37.5	42.7	10.6	19.2	21.0	0.7	0.0	28.5	1.4	0.1	0.2
LnGrp Delay(d),s/veh	87.7	68.1	75.7	99.9	25.7	26.7	49.6	0.0	133.0	60.4	57.8	58.1
LnGrp LOS	F	F	F	F	C	C	D		F	E	E	E
Approach Vol, veh/h		2480			2358			1042			43	
Approach Delay, s/veh		71.1			39.0			131.4			60.0	
Approach LOS		E			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		33.1	22.6	71.8		22.5	8.6	85.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		29.1	18.6	67.8		18.5	9.1	77.3
Max Q Clear Time (g_c+I1), s		31.1	19.9	69.8		4.7	5.5	42.6
Green Ext Time (p_c), s		0.0	0.0	0.0		0.1	0.0	19.3

Intersection Summary	
HCM 2010 Ctrl Delay	68.8
HCM 2010 LOS	E

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/07/2022

Intersection	
Intersection Delay, s/veh	21.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	238	53	31	45	86	80	16	119	57	43	210	157
Future Vol, veh/h	238	53	31	45	86	80	16	119	57	43	210	157
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	259	58	34	49	93	87	17	129	62	47	228	171
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	22.2	15.2	14.5	27.1
HCM LOS	C	C	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	74%	21%	10%
Vol Thru, %	62%	16%	41%	51%
Vol Right, %	30%	10%	38%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	192	322	211	410
LT Vol	16	238	45	43
Through Vol	119	53	86	210
RT Vol	57	31	80	157
Lane Flow Rate	209	350	229	446
Geometry Grp	1	1	1	1
Degree of Util (X)	0.4	0.662	0.439	0.767
Departure Headway (Hd)	6.908	6.81	6.887	6.315
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	522	532	525	575
Service Time	4.947	4.821	4.903	4.315
HCM Lane V/C Ratio	0.4	0.658	0.436	0.776
HCM Control Delay	14.5	22.2	15.2	27.1
HCM Lane LOS	B	C	C	D
HCM 95th-tile Q	1.9	4.8	2.2	7

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/07/2022

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	26	24	12	25	46	31	8	97	5	29	166	57
Future Vol, veh/h	26	24	12	25	46	31	8	97	5	29	166	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	26	13	27	50	34	9	105	5	32	180	62
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	8.7	8.6	9.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	42%	25%	12%
Vol Thru, %	88%	39%	45%	66%
Vol Right, %	5%	19%	30%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	62	102	252
LT Vol	8	26	25	29
Through Vol	97	24	46	166
RT Vol	5	12	31	57
Lane Flow Rate	120	67	111	274
Geometry Grp	1	1	1	1
Degree of Util (X)	0.155	0.092	0.147	0.334
Departure Headway (Hd)	4.659	4.939	4.78	4.395
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	768	723	748	816
Service Time	2.698	2.986	2.823	2.427
HCM Lane V/C Ratio	0.156	0.093	0.148	0.336
HCM Control Delay	8.6	8.5	8.7	9.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.3	0.5	1.5

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/07/2022

Intersection	
Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	119	101	23	1	20	201
Future Vol, veh/h	119	101	23	1	20	201
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	129	110	25	1	22	218
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9.6	7.9	8.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	9%
Vol Thru, %	46%	96%	0%
Vol Right, %	0%	4%	91%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	220	24	221
LT Vol	119	0	20
Through Vol	101	23	0
RT Vol	0	1	201
Lane Flow Rate	239	26	240
Geometry Grp	1	1	1
Degree of Util (X)	0.306	0.034	0.27
Departure Headway (Hd)	4.608	4.699	4.044
Convergence, Y/N	Yes	Yes	Yes
Cap	784	761	891
Service Time	2.608	2.732	2.061
HCM Lane V/C Ratio	0.305	0.034	0.269
HCM Control Delay	9.6	7.9	8.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.3	0.1	1.1

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/07/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	221	52	69	179	87	51	739	26	59	644	124
Future Volume (veh/h)	204	221	52	69	179	87	51	739	26	59	644	124
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	222	240	57	75	195	95	55	803	28	64	700	135
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	582	495	287	582	495	318	1396	49	333	1209	233
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	0.36	0.80	0.80	0.19	0.41	0.41
Sat Flow, veh/h	1085	1863	1583	1078	1863	1583	1774	3489	122	1774	2961	571
Grp Volume(v), veh/h	222	240	57	75	195	95	55	407	424	64	418	417
Grp Sat Flow(s),veh/h/ln	1085	1863	1583	1078	1863	1583	1774	1770	1841	1774	1770	1762
Q Serve(g_s), s	23.7	12.2	3.1	7.1	9.6	5.3	2.5	10.2	10.2	3.6	22.0	22.0
Cycle Q Clear(g_c), s	33.4	12.2	3.1	19.3	9.6	5.3	2.5	10.2	10.2	3.6	22.0	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.32
Lane Grp Cap(c), veh/h	312	582	495	287	582	495	318	708	737	333	723	719
V/C Ratio(X)	0.71	0.41	0.12	0.26	0.34	0.19	0.17	0.58	0.58	0.19	0.58	0.58
Avail Cap(c_a), veh/h	407	745	633	382	745	633	318	708	737	333	723	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	32.6	29.4	40.2	31.7	30.2	32.4	8.2	8.2	41.1	27.5	27.5
Incr Delay (d2), s/veh	4.0	0.5	0.1	0.5	0.3	0.2	0.3	3.3	3.2	0.3	3.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	6.3	1.4	2.1	5.0	2.3	1.2	5.4	5.6	1.8	11.4	11.3
LnGrp Delay(d),s/veh	48.5	33.0	29.5	40.7	32.0	30.4	32.6	11.5	11.4	41.4	30.9	30.9
LnGrp LOS	D	C	C	D	C	C	C	B	B	D	C	C
Approach Vol, veh/h		519			365			886			899	
Approach Delay, s/veh		39.3			33.4			12.8			31.6	
Approach LOS		D			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.5	52.0		41.5	25.5	53.0		41.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	48.0		48.0	11.0	49.0		48.0
Max Q Clear Time (g_c+I1), s	5.6	12.2		35.4	4.5	24.0		21.3
Green Ext Time (p_c), s	0.1	5.8		2.1	0.0	5.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/07/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	68	36	717	32	24	683
Future Volume (veh/h)	68	36	717	32	24	683
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	74	39	779	35	26	742
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	103	92	2070	93	429	3097
Arrive On Green	0.06	0.06	0.60	0.60	0.48	1.00
Sat Flow, veh/h	1774	1583	3543	155	1774	3632
Grp Volume(v), veh/h	74	39	399	415	26	742
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1835	1774	1770
Q Serve(g_s), s	4.9	2.9	14.0	14.0	0.9	0.0
Cycle Q Clear(g_c), s	4.9	2.9	14.0	14.0	0.9	0.0
Prop In Lane	1.00	1.00		0.08	1.00	
Lane Grp Cap(c), veh/h	103	92	1062	1101	429	3097
V/C Ratio(X)	0.72	0.42	0.38	0.38	0.06	0.24
Avail Cap(c_a), veh/h	325	290	1062	1101	429	3097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	55.5	54.6	12.4	12.4	23.7	0.0
Incr Delay (d2), s/veh	8.9	3.1	1.0	1.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.3	7.1	7.3	0.5	0.1
LnGrp Delay(d),s/veh	64.4	57.6	13.4	13.4	23.8	0.2
LnGrp LOS	E	E	B	B	C	A
Approach Vol, veh/h	113		814			768
Approach Delay, s/veh	62.1		13.4			1.0
Approach LOS	E		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		109.0			33.0	76.0		11.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		90.0			14.0	72.0		22.0
Max Q Clear Time (g_c+I1), s		2.0			2.9	16.0		6.9
Green Ext Time (p_c), s		6.0			0.0	5.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/07/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	12	22	717	683	25
Future Volume (veh/h)	30	12	22	717	683	25
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	33	13	24	779	742	27
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	58	52	504	3188	2032	74
Arrive On Green	0.03	0.03	0.28	0.90	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3576	127
Grp Volume(v), veh/h	33	13	24	779	377	392
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1840
Q Serve(g_s), s	2.2	1.0	1.2	3.4	0.0	0.0
Cycle Q Clear(g_c), s	2.2	1.0	1.2	3.4	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	58	52	504	3188	1032	1074
V/C Ratio(X)	0.57	0.25	0.05	0.24	0.37	0.37
Avail Cap(c_a), veh/h	355	317	504	3188	1032	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.97	0.97	0.93	0.93
Uniform Delay (d), s/veh	57.2	56.6	31.2	0.8	0.0	0.0
Incr Delay (d2), s/veh	8.5	2.5	0.0	0.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.5	0.6	1.7	0.3	0.3
LnGrp Delay(d),s/veh	65.7	59.1	31.2	0.9	0.9	0.9
LnGrp LOS	E	E	C	A	A	A
Approach Vol, veh/h	46			803	769	
Approach Delay, s/veh	63.8			1.8	0.9	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	38.1	74.0		7.9		112.1		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	14.0	70.0		24.0		88.0		
Max Q Clear Time (g_c+I1), s	3.2	2.0		4.2		5.4		
Green Ext Time (p_c), s	0.0	5.4		0.1		6.4		

Intersection Summary	
HCM 2010 Ctrl Delay	3.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/07/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	9	761	183	11	33	451	770	217	21	667	8
Future Volume (veh/h)	21	9	761	183	11	33	451	770	217	21	667	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	23	10	827	199	12	36	490	837	236	23	725	9
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	68	866	215	116	349	636	1183	336	385	777	10
Arrive On Green	0.13	0.13	0.13	0.12	0.28	0.28	0.41	0.41	0.41	0.22	0.22	0.22
Sat Flow, veh/h	980	513	1583	1774	411	1234	1534	2855	812	1774	3580	44
Grp Volume(v), veh/h	33	0	827	199	0	48	570	493	500	23	358	376
Grp Sat Flow(s),veh/h/ln	1493	0	1583	1774	0	1645	1786	1695	1719	1774	1770	1855
Q Serve(g_s), s	1.7	0.0	18.6	15.5	0.0	3.0	38.5	33.6	33.6	1.4	27.8	27.8
Cycle Q Clear(g_c), s	2.5	0.0	18.6	15.5	0.0	3.0	38.5	33.6	33.6	1.4	27.8	27.8
Prop In Lane	0.70		1.00	1.00		0.75	0.86		0.47	1.00		0.02
Lane Grp Cap(c), veh/h	242	0	866	215	0	465	740	702	713	385	384	403
V/C Ratio(X)	0.14	0.00	0.95	0.92	0.00	0.10	0.77	0.70	0.70	0.06	0.93	0.93
Avail Cap(c_a), veh/h	242	0	866	215	0	465	740	702	713	393	392	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	18.6	60.9	0.0	37.1	35.3	33.8	33.8	43.5	53.8	53.8
Incr Delay (d2), s/veh	0.3	0.0	20.3	40.8	0.0	0.1	7.6	5.8	5.7	0.1	28.9	28.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	36.8	10.1	0.0	1.4	20.6	16.9	17.1	0.7	16.7	17.4
LnGrp Delay(d),s/veh	53.9	0.0	38.9	101.6	0.0	37.2	42.9	39.6	39.5	43.5	82.7	81.8
LnGrp LOS	D		D	F		D	D	D	D	D	F	F
Approach Vol, veh/h		860			247			1563			757	
Approach Delay, s/veh		39.4			89.1			40.8			81.1	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		62.0	21.0	22.6		34.4		43.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		57.4	17.0	18.6		31.0		39.6
Max Q Clear Time (g_c+I1), s		40.5	17.5	20.6		29.8		5.0
Green Ext Time (p_c), s		9.5	0.0	0.0		0.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.8
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/07/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	22	35	1422	1609	81
Future Volume (veh/h)	46	22	35	1422	1609	81
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	50	24	38	1546	1749	88
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	116	53	95	4623	5466	1351
Arrive On Green	0.03	0.03	0.06	1.00	0.85	0.85
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	50	24	38	1546	1749	88
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	2.0	2.1	1.5	0.0	7.7	1.2
Cycle Q Clear(g_c), s	2.0	2.1	1.5	0.0	7.7	1.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	116	53	95	4623	5466	1351
V/C Ratio(X)	0.43	0.45	0.40	0.33	0.32	0.07
Avail Cap(c_a), veh/h	565	260	295	4623	5466	1351
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	1.00	1.00
Uniform Delay (d), s/veh	66.3	66.4	65.0	0.0	2.1	1.6
Incr Delay (d2), s/veh	2.5	5.8	1.3	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.9	0.7	0.0	3.3	0.5
LnGrp Delay(d),s/veh	68.8	72.2	66.3	0.1	2.2	1.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	74			1584	1837	
Approach Delay, s/veh	69.9			1.7	2.2	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		131.3		8.7	7.9	123.4		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		109.0		23.0	12.0	93.0		
Max Q Clear Time (g_c+I1), s		2.0		4.1	3.5	9.7		
Green Ext Time (p_c), s		18.6		0.2	0.0	26.1		

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/07/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	1287	96	71	1188	360	148	662	58	912	621	113
Future Volume (veh/h)	162	1287	96	71	1188	360	148	662	58	912	621	113
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	176	1399	104	77	1291	391	161	720	63	991	675	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	1532	114	134	1273	385	275	901	78	1046	1196	535
Arrive On Green	0.06	0.32	0.32	0.15	0.66	0.66	0.15	0.19	0.19	0.10	0.11	0.00
Sat Flow, veh/h	3442	4830	359	1774	3875	1171	1774	4765	414	3442	3539	1583
Grp Volume(v), veh/h	176	982	521	77	1129	553	161	511	272	991	675	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1799	1774	1695	1656	1774	1695	1790	1721	1770	1583
Q Serve(g_s), s	7.1	39.0	39.0	5.6	46.0	46.0	11.8	20.1	20.4	40.1	25.3	0.0
Cycle Q Clear(g_c), s	7.1	39.0	39.0	5.6	46.0	46.0	11.8	20.1	20.4	40.1	25.3	0.0
Prop In Lane	1.00		0.20	1.00		0.71	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	221	1075	571	134	1114	544	275	641	338	1046	1196	535
V/C Ratio(X)	0.80	0.91	0.91	0.57	1.01	1.02	0.59	0.80	0.80	0.95	0.56	0.00
Avail Cap(c_a), veh/h	221	1104	586	134	1114	544	275	641	338	1057	1196	535
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	0.96	0.96	0.00
Uniform Delay (d), s/veh	64.6	45.9	46.0	57.3	24.0	24.0	55.0	54.2	54.3	61.9	52.4	0.0
Incr Delay (d2), s/veh	18.0	11.3	18.6	4.9	28.3	39.7	3.2	10.0	18.1	16.0	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	20.0	22.3	2.9	25.4	26.6	6.1	10.3	11.8	21.5	12.7	0.0
LnGrp Delay(d),s/veh	82.6	57.2	64.5	62.2	52.3	63.7	58.2	64.2	72.4	77.9	54.3	0.0
LnGrp LOS	F	E	E	E	F	F	E	E	E	E	D	
Approach Vol, veh/h		1679			1759			944			1666	
Approach Delay, s/veh		62.2			56.3			65.5			68.3	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.5	30.5	14.6	48.4	25.7	51.3	13.0	50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	26.0	9.4	45.6	21.7	47.3	9.0	46.0
Max Q Clear Time (g_c+I1), s	42.1	22.4	7.6	41.0	13.8	27.3	9.1	48.0
Green Ext Time (p_c), s	0.5	1.7	0.0	3.4	0.2	4.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.7
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/07/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	202	236	147	151	68	77	780	17	29	691	27
Future Volume (veh/h)	60	202	236	147	151	68	77	780	17	29	691	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	220	257	160	164	74	84	848	18	32	751	29
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	600	537	331	413	186	120	1293	27	116	1261	49
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1138	1770	1583	914	1217	549	1774	3544	75	1774	3475	134
Grp Volume(v), veh/h	65	220	257	160	0	238	84	423	443	32	382	398
Grp Sat Flow(s),veh/h/ln	1138	1770	1583	914	0	1766	1774	1770	1849	1774	1770	1839
Q Serve(g_s), s	2.4	4.9	6.7	8.7	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.2
Cycle Q Clear(g_c), s	7.8	4.9	6.7	15.4	0.0	5.4	2.4	10.4	10.4	0.9	9.1	9.2
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	407	600	537	331	0	599	120	646	675	116	642	667
V/C Ratio(X)	0.16	0.37	0.48	0.48	0.00	0.40	0.70	0.66	0.66	0.27	0.60	0.60
Avail Cap(c_a), veh/h	425	629	562	346	0	627	191	646	675	187	642	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	13.0	13.6	19.6	0.0	13.1	23.8	13.8	13.8	23.2	13.5	13.5
Incr Delay (d2), s/veh	0.2	0.4	0.7	1.1	0.0	0.4	7.2	5.1	4.9	1.3	4.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.4	3.0	2.3	0.0	2.6	1.4	6.0	6.2	0.5	5.2	5.4
LnGrp Delay(d),s/veh	16.3	13.4	14.2	20.7	0.0	13.6	31.0	19.0	18.7	24.4	17.5	17.4
LnGrp LOS	B	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		542			398			950			812	
Approach Delay, s/veh		14.1			16.5			19.9			17.7	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	23.0		21.7	7.5	22.9		21.7
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	19.0		18.5	5.6	18.9		18.5
Max Q Clear Time (g_c+I1), s	2.9	12.4		9.8	4.4	11.2		17.4
Green Ext Time (p_c), s	0.0	2.8		2.2	0.0	2.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/07/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2341	1628	204	15	18
Future Volume (veh/h)	0	2341	1628	204	15	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2545	1770	222	16	20
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3347	3015	376	505	451
Arrive On Green	0.00	0.66	1.00	1.00	0.28	0.28
Sat Flow, veh/h	0	5421	4748	571	1774	1583
Grp Volume(v), veh/h	0	2545	1308	684	16	20
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1762	1774	1583
Q Serve(g_s), s	0.0	47.9	0.0	0.0	0.9	1.3
Cycle Q Clear(g_c), s	0.0	47.9	0.0	0.0	0.9	1.3
Prop In Lane	0.00			0.32	1.00	1.00
Lane Grp Cap(c), veh/h	0	3347	2232	1160	505	451
V/C Ratio(X)	0.00	0.76	0.59	0.59	0.03	0.04
Avail Cap(c_a), veh/h	0	4032	2688	1397	505	451
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.25	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	0.0	16.4	0.0	0.0	36.2	36.3
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.2	0.1	0.1	0.5	0.6
LnGrp Delay(d),s/veh	0.0	16.5	0.2	0.4	36.3	36.5
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2545	1992		36	
Approach Delay, s/veh		16.5	0.3		36.4	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				96.2		43.8		96.2
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				49.9		3.3		2.0
Green Ext Time (p_c), s				42.2		0.1		32.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/07/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2356	1626	0	15	2
Future Volume (veh/h)	0	2356	1626	0	15	2
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2561	1767	0	16	2
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3079	3079	0	598	534
Arrive On Green	0.00	1.00	0.61	0.00	0.34	0.34
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2561	1767	0	16	2
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	29.4	0.0	0.8	0.1
Cycle Q Clear(g_c), s	0.0	0.0	29.4	0.0	0.8	0.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3079	3079	0	598	534
V/C Ratio(X)	0.00	0.83	0.57	0.00	0.03	0.00
Avail Cap(c_a), veh/h	0	4032	4032	0	598	534
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.59	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.7	0.0	31.0	30.8
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	13.8	0.0	0.4	0.1
LnGrp Delay(d),s/veh	0.0	0.9	16.8	0.0	31.1	30.8
LnGrp LOS		A	B		C	C
Approach Vol, veh/h		2561	1767		18	
Approach Delay, s/veh		0.9	16.8		31.1	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				77.5		62.5		77.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		2.8		31.4
Green Ext Time (p_c), s				60.2		0.0		23.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/07/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	2234	27	379	1778	69	7	11	940	33	2	5
Future Volume (veh/h)	39	2234	27	379	1778	69	7	11	940	33	2	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	42	2428	29	412	1933	75	8	12	1022	36	2	5
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	54	2341	28	427	2740	106	142	213	886	219	230	195
Arrive On Green	0.03	0.45	0.45	0.12	0.55	0.55	0.19	0.19	0.19	0.12	0.12	0.12
Sat Flow, veh/h	1774	5180	62	3442	5024	195	730	1096	2787	1774	1863	1583
Grp Volume(v), veh/h	42	1587	870	412	1303	705	20	0	1022	36	2	5
Grp Sat Flow(s),veh/h/ln	1774	1695	1852	1721	1695	1828	1826	0	1393	1774	1863	1583
Q Serve(g_s), s	3.5	67.8	67.8	17.9	42.6	42.8	1.3	0.0	29.1	2.7	0.1	0.4
Cycle Q Clear(g_c), s	3.5	67.8	67.8	17.9	42.6	42.8	1.3	0.0	29.1	2.7	0.1	0.4
Prop In Lane	1.00		0.03	1.00		0.11	0.40		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	1532	837	427	1849	997	354	0	886	219	230	195
V/C Ratio(X)	0.78	1.04	1.04	0.97	0.70	0.71	0.06	0.00	1.15	0.16	0.01	0.03
Avail Cap(c_a), veh/h	108	1532	837	427	1849	997	354	0	886	219	230	195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.2	41.1	41.1	65.4	25.2	25.2	49.3	0.0	51.1	58.8	57.7	57.8
Incr Delay (d2), s/veh	15.4	29.5	36.9	34.6	1.2	2.3	0.3	0.0	81.9	1.6	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	38.0	43.2	10.6	20.2	22.2	0.7	0.0	28.5	1.4	0.1	0.2
LnGrp Delay(d),s/veh	87.6	70.6	78.0	99.9	26.4	27.5	49.6	0.0	133.0	60.4	57.8	58.1
LnGrp LOS	F	F	F	F	C	C	D		F	E	E	E
Approach Vol, veh/h		2499			2420			1042			43	
Approach Delay, s/veh		73.5			39.3			131.4			60.0	
Approach LOS		E			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		33.1	22.6	71.8		22.5	8.6	85.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		29.1	18.6	67.8		18.5	9.1	77.3
Max Q Clear Time (g_c+I1), s		31.1	19.9	69.8		4.7	5.5	44.8
Green Ext Time (p_c), s		0.0	0.0	0.0		0.1	0.0	19.4

Intersection Summary	
HCM 2010 Ctrl Delay	69.6
HCM 2010 LOS	E

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/07/2022

Intersection	
Intersection Delay, s/veh	24.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	245	56	32	46	92	82	16	121	59	44	213	161
Future Vol, veh/h	245	56	32	46	92	82	16	121	59	44	213	161
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	61	35	50	100	89	17	132	64	48	232	175
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	24.7	16.2	15.3	32.3
HCM LOS	C	C	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	74%	21%	11%
Vol Thru, %	62%	17%	42%	51%
Vol Right, %	30%	10%	37%	39%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	333	220	418
LT Vol	16	245	46	44
Through Vol	121	56	92	213
RT Vol	59	32	82	161
Lane Flow Rate	213	362	239	454
Geometry Grp	1	1	1	1
Degree of Util (X)	0.421	0.699	0.468	0.818
Departure Headway (Hd)	7.107	6.948	7.052	6.478
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	505	518	509	563
Service Time	5.181	5.015	5.129	4.478
HCM Lane V/C Ratio	0.422	0.699	0.47	0.806
HCM Control Delay	15.3	24.7	16.2	32.3
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	2.1	5.4	2.5	8.2

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/07/2022

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	25	12	26	47	32	8	99	5	30	168	59
Future Vol, veh/h	27	25	12	26	47	32	8	99	5	30	168	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	27	13	28	51	35	9	108	5	33	183	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	8.7	8.6	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	42%	25%	12%
Vol Thru, %	88%	39%	45%	65%
Vol Right, %	4%	19%	30%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	112	64	105	257
LT Vol	8	27	26	30
Through Vol	99	25	47	168
RT Vol	5	12	32	59
Lane Flow Rate	122	70	114	279
Geometry Grp	1	1	1	1
Degree of Util (X)	0.158	0.096	0.152	0.343
Departure Headway (Hd)	4.684	4.967	4.803	4.414
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	763	719	744	813
Service Time	2.725	3.018	2.85	2.446
HCM Lane V/C Ratio	0.16	0.097	0.153	0.343
HCM Control Delay	8.6	8.6	8.7	9.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.5	1.5

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/07/2022

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	122	23	1	0	17	207
Future Vol, veh/h	122	23	1	0	17	207
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	133	25	1	0	18	225
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.7	7.6	8.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	84%	0%	8%
Vol Thru, %	16%	100%	0%
Vol Right, %	0%	0%	92%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	145	1	224
LT Vol	122	0	17
Through Vol	23	1	0
RT Vol	0	0	207
Lane Flow Rate	158	1	243
Geometry Grp	1	1	1
Degree of Util (X)	0.198	0.001	0.256
Departure Headway (Hd)	4.53	4.609	3.782
Convergence, Y/N	Yes	Yes	Yes
Cap	783	778	954
Service Time	2.609	2.626	1.782
HCM Lane V/C Ratio	0.202	0.001	0.255
HCM Control Delay	8.7	7.6	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0	1

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	228	53	73	185	90	52	759	28	61	661	127
Future Volume (veh/h)	210	228	53	73	185	90	52	759	28	61	661	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	228	248	58	79	201	98	57	825	30	66	718	138
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	598	508	292	598	508	303	1393	51	318	1210	232
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.34	0.80	0.80	0.18	0.41	0.41
Sat Flow, veh/h	1076	1863	1583	1069	1863	1583	1774	3483	127	1774	2963	569
Grp Volume(v), veh/h	228	248	58	79	201	98	57	419	436	66	429	427
Grp Sat Flow(s),veh/h/ln	1076	1863	1583	1069	1863	1583	1774	1770	1840	1774	1770	1762
Q Serve(g_s), s	24.6	12.5	3.1	7.5	9.9	5.4	2.7	10.8	10.8	3.8	22.7	22.7
Cycle Q Clear(g_c), s	34.4	12.5	3.1	20.0	9.9	5.4	2.7	10.8	10.8	3.8	22.7	22.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.32
Lane Grp Cap(c), veh/h	317	598	508	292	598	508	303	708	736	318	723	720
V/C Ratio(X)	0.72	0.41	0.11	0.27	0.34	0.19	0.19	0.59	0.59	0.21	0.59	0.59
Avail Cap(c_a), veh/h	402	745	633	376	745	633	303	708	736	318	723	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	31.9	28.7	39.7	31.0	29.5	33.7	8.3	8.3	42.0	27.7	27.7
Incr Delay (d2), s/veh	4.5	0.5	0.1	0.5	0.3	0.2	0.3	3.5	3.4	0.3	3.6	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.5	1.4	2.3	5.1	2.4	1.4	5.6	5.8	1.9	11.8	11.8
LnGrp Delay(d),s/veh	48.6	32.4	28.8	40.2	31.3	29.7	34.0	11.8	11.7	42.3	31.3	31.3
LnGrp LOS	D	C	C	D	C	C	C	B	B	D	C	C
Approach Vol, veh/h		534			378			912			922	
Approach Delay, s/veh		38.9			32.8			13.1			32.1	
Approach LOS		D			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.5	52.0		42.5	24.5	53.0		42.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	48.0		48.0	11.0	49.0		48.0
Max Q Clear Time (g_c+I1), s	5.8	12.8		36.4	4.7	24.7		22.0
Green Ext Time (p_c), s	0.1	6.0		2.1	0.0	5.7		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/25/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	37	737	33	25	702
Future Volume (veh/h)	70	37	737	33	25	702
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	76	40	801	36	27	763
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	106	94	2070	93	427	3093
Arrive On Green	0.06	0.06	0.60	0.60	0.48	1.00
Sat Flow, veh/h	1774	1583	3543	155	1774	3632
Grp Volume(v), veh/h	76	40	411	426	27	763
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1835	1774	1770
Q Serve(g_s), s	5.1	2.9	14.5	14.5	1.0	0.0
Cycle Q Clear(g_c), s	5.1	2.9	14.5	14.5	1.0	0.0
Prop In Lane	1.00	1.00		0.08	1.00	
Lane Grp Cap(c), veh/h	106	94	1062	1101	427	3093
V/C Ratio(X)	0.72	0.42	0.39	0.39	0.06	0.25
Avail Cap(c_a), veh/h	325	290	1062	1101	427	3093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	55.4	54.4	12.5	12.5	23.9	0.0
Incr Delay (d2), s/veh	8.8	3.0	1.1	1.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.4	7.4	7.7	0.5	0.1
LnGrp Delay(d),s/veh	64.3	57.5	13.6	13.5	24.0	0.2
LnGrp LOS	E	E	B	B	C	A
Approach Vol, veh/h	116		837			790
Approach Delay, s/veh	61.9		13.5			1.0
Approach LOS	E		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		108.9			32.9	76.0		11.1
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		90.0			14.0	72.0		22.0
Max Q Clear Time (g_c+I1), s		2.0			3.0	16.5		7.1
Green Ext Time (p_c), s		6.2			0.0	6.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/25/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	12	23	737	702	26
Future Volume (veh/h)	31	12	23	737	702	26
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	34	13	25	801	763	28
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	58	52	503	3187	2031	75
Arrive On Green	0.03	0.03	0.28	0.90	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3575	128
Grp Volume(v), veh/h	34	13	25	801	388	403
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1840
Q Serve(g_s), s	2.3	1.0	1.2	3.5	0.0	0.0
Cycle Q Clear(g_c), s	2.3	1.0	1.2	3.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	58	52	503	3187	1032	1073
V/C Ratio(X)	0.58	0.25	0.05	0.25	0.38	0.38
Avail Cap(c_a), veh/h	355	317	503	3187	1032	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.92	0.92
Uniform Delay (d), s/veh	57.2	56.6	31.2	0.8	0.0	0.0
Incr Delay (d2), s/veh	8.8	2.5	0.0	0.2	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.5	0.6	1.7	0.3	0.3
LnGrp Delay(d),s/veh	66.0	59.0	31.3	1.0	1.0	0.9
LnGrp LOS	E	E	C	A	A	A
Approach Vol, veh/h	47			826	791	
Approach Delay, s/veh	64.1			1.9	0.9	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	38.0	74.0		8.0		112.0		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	14.0	70.0		24.0		88.0		
Max Q Clear Time (g_c+I1), s	3.2	2.0		4.3		5.5		
Green Ext Time (p_c), s	0.0	5.6		0.1		6.6		

Intersection Summary	
HCM 2010 Ctrl Delay	3.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	783	168	11	32	465	794	148	15	693	8
Future Volume (veh/h)	22	9	783	168	11	32	465	794	148	15	693	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	10	851	183	12	35	505	863	161	16	753	9
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	66	868	206	117	340	676	1263	237	393	793	9
Arrive On Green	0.13	0.13	0.13	0.12	0.28	0.28	0.42	0.42	0.42	0.22	0.22	0.22
Sat Flow, veh/h	992	497	1583	1774	420	1226	1627	3041	570	1774	3582	43
Grp Volume(v), veh/h	34	0	851	183	0	47	553	479	498	16	372	390
Grp Sat Flow(s),veh/h/ln	1489	0	1583	1774	0	1646	1781	1695	1762	1774	1770	1855
Q Serve(g_s), s	1.8	0.0	18.6	14.2	0.0	3.0	36.8	32.2	32.2	1.0	29.0	29.0
Cycle Q Clear(g_c), s	2.6	0.0	18.6	14.2	0.0	3.0	36.8	32.2	32.2	1.0	29.0	29.0
Prop In Lane	0.71		1.00	1.00		0.74	0.91		0.32	1.00		0.02
Lane Grp Cap(c), veh/h	242	0	868	206	0	457	740	704	732	393	392	411
V/C Ratio(X)	0.14	0.00	0.98	0.89	0.00	0.10	0.75	0.68	0.68	0.04	0.95	0.95
Avail Cap(c_a), veh/h	242	0	868	215	0	466	740	704	732	393	392	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	18.5	61.0	0.0	37.6	34.7	33.3	33.3	42.8	53.7	53.7
Incr Delay (d2), s/veh	0.3	0.0	25.7	32.3	0.0	0.1	6.8	5.2	5.0	0.0	32.6	31.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	39.1	8.8	0.0	1.4	19.5	16.0	16.6	0.5	17.7	18.5
LnGrp Delay(d),s/veh	54.0	0.0	44.2	93.3	0.0	37.7	41.5	38.6	38.4	42.9	86.3	85.4
LnGrp LOS	D		D	F		D	D	D	D	D	F	F
Approach Vol, veh/h		885			230			1529			778	
Approach Delay, s/veh		44.6			81.9			39.6			85.0	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		62.1	20.3	22.6		35.0		42.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		57.4	17.0	18.6		31.0		39.6
Max Q Clear Time (g_c+I1), s		38.8	16.2	20.6		31.0		5.0
Green Ext Time (p_c), s		9.7	0.0	0.0		0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	54.0
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/25/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	23	36	1388	1638	85
Future Volume (veh/h)	48	23	36	1388	1638	85
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	52	25	39	1509	1780	92
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	117	54	96	4622	5463	1350
Arrive On Green	0.03	0.03	0.06	1.00	0.85	0.85
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	52	25	39	1509	1780	92
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	2.1	2.2	1.5	0.0	7.9	1.3
Cycle Q Clear(g_c), s	2.1	2.2	1.5	0.0	7.9	1.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	117	54	96	4622	5463	1350
V/C Ratio(X)	0.45	0.47	0.41	0.33	0.33	0.07
Avail Cap(c_a), veh/h	565	260	295	4622	5463	1350
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	1.00	1.00
Uniform Delay (d), s/veh	66.3	66.4	65.0	0.0	2.1	1.6
Incr Delay (d2), s/veh	2.6	6.1	1.2	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.0	0.7	0.0	3.5	0.6
LnGrp Delay(d),s/veh	69.0	72.5	66.2	0.1	2.3	1.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	77			1548	1872	
Approach Delay, s/veh	70.1			1.7	2.2	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		131.3		8.7	7.9	123.3		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		109.0		23.0	12.0	93.0		
Max Q Clear Time (g_c+I1), s		2.0		4.2	3.5	9.9		
Green Ext Time (p_c), s		17.7		0.2	0.0	27.1		

Intersection Summary	
HCM 2010 Ctrl Delay	3.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	1325	100	73	1222	304	152	678	60	921	640	117
Future Volume (veh/h)	163	1325	100	73	1222	304	152	678	60	921	640	117
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	177	1440	109	79	1328	330	165	737	65	1001	696	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	1548	117	128	1336	331	275	893	78	1051	1196	535
Arrive On Green	0.06	0.32	0.32	0.14	0.66	0.66	0.15	0.19	0.19	0.10	0.11	0.00
Sat Flow, veh/h	3442	4823	365	1774	4066	1009	1774	4762	418	3442	3539	1583
Grp Volume(v), veh/h	177	1012	537	79	1107	551	165	524	278	1001	696	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1798	1774	1695	1685	1774	1695	1789	1721	1770	1583
Q Serve(g_s), s	7.1	40.5	40.5	5.9	45.2	45.4	12.1	20.8	21.0	40.5	26.2	0.0
Cycle Q Clear(g_c), s	7.1	40.5	40.5	5.9	45.2	45.4	12.1	20.8	21.0	40.5	26.2	0.0
Prop In Lane	1.00		0.20	1.00		0.60	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	221	1088	577	128	1114	554	275	636	335	1051	1196	535
V/C Ratio(X)	0.80	0.93	0.93	0.62	0.99	1.00	0.60	0.82	0.83	0.95	0.58	0.00
Avail Cap(c_a), veh/h	221	1104	586	128	1114	554	275	636	335	1057	1196	535
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	64.6	46.0	46.0	58.1	23.9	23.9	55.1	54.7	54.7	61.9	52.8	0.0
Incr Delay (d2), s/veh	18.5	13.5	21.5	7.5	23.4	34.2	3.6	11.6	20.7	16.8	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	21.0	23.6	3.1	24.2	25.8	6.2	10.8	12.3	21.8	13.2	0.0
LnGrp Delay(d),s/veh	83.1	59.5	67.6	65.6	47.2	58.1	58.7	66.2	75.4	78.7	54.8	0.0
LnGrp LOS	F	E	E	E	D	E	E	E	E	E	D	
Approach Vol, veh/h		1726			1737			967			1697	
Approach Delay, s/veh		64.4			51.5			67.6			68.9	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.8	30.2	14.1	48.9	25.7	51.3	13.0	50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	26.0	9.4	45.6	21.7	47.3	9.0	46.0
Max Q Clear Time (g_c+I1), s	42.5	23.0	7.9	42.5	14.1	28.2	9.1	47.4
Green Ext Time (p_c), s	0.3	1.4	0.0	2.4	0.2	4.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.5
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	208	243	151	155	70	79	799	17	30	712	28
Future Volume (veh/h)	62	208	243	151	155	70	79	799	17	30	712	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	67	226	264	164	168	76	86	868	18	33	774	30
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	409	611	547	330	420	190	121	1279	27	117	1246	48
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1131	1770	1583	903	1216	550	1774	3546	74	1774	3474	135
Grp Volume(v), veh/h	67	226	264	164	0	244	86	433	453	33	394	410
Grp Sat Flow(s),veh/h/ln	1131	1770	1583	903	0	1766	1774	1770	1850	1774	1770	1839
Q Serve(g_s), s	2.5	5.0	6.9	9.2	0.0	5.5	2.5	10.9	10.9	0.9	9.7	9.7
Cycle Q Clear(g_c), s	8.0	5.0	6.9	16.1	0.0	5.5	2.5	10.9	10.9	0.9	9.7	9.7
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	409	611	547	330	0	610	121	638	667	117	635	660
V/C Ratio(X)	0.16	0.37	0.48	0.50	0.00	0.40	0.71	0.68	0.68	0.28	0.62	0.62
Avail Cap(c_a), veh/h	415	621	556	335	0	620	189	638	667	185	635	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	12.9	13.5	19.9	0.0	13.1	24.0	14.3	14.3	23.4	13.9	13.9
Incr Delay (d2), s/veh	0.2	0.4	0.7	1.2	0.0	0.4	7.6	5.7	5.5	1.3	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.5	3.1	2.4	0.0	2.7	1.5	6.3	6.6	0.5	5.5	5.7
LnGrp Delay(d),s/veh	16.3	13.3	14.2	21.0	0.0	13.5	31.6	20.0	19.7	24.7	18.5	18.3
LnGrp LOS	B	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		557			408			972			837	
Approach Delay, s/veh		14.1			16.5			20.9			18.6	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	23.0		22.2	7.6	22.9		22.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	19.0		18.5	5.6	18.9		18.5
Max Q Clear Time (g_c+I1), s	2.9	12.9		10.0	4.5	11.7		18.1
Green Ext Time (p_c), s	0.0	2.7		2.3	0.0	2.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/25/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2390	1607	210	15	19
Future Volume (veh/h)	0	2390	1607	210	15	19
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2598	1747	228	16	21
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3402	3048	396	486	434
Arrive On Green	0.00	0.67	1.00	1.00	0.27	0.27
Sat Flow, veh/h	0	5421	4725	592	1774	1583
Grp Volume(v), veh/h	0	2598	1297	678	16	21
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1758	1774	1583
Q Serve(g_s), s	0.0	48.4	0.0	0.0	0.9	1.4
Cycle Q Clear(g_c), s	0.0	48.4	0.0	0.0	0.9	1.4
Prop In Lane	0.00			0.34	1.00	1.00
Lane Grp Cap(c), veh/h	0	3402	2268	1176	486	434
V/C Ratio(X)	0.00	0.76	0.57	0.58	0.03	0.05
Avail Cap(c_a), veh/h	0	4032	2688	1394	486	434
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.21	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	0.0	15.7	0.0	0.0	37.2	37.4
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.4	0.1	0.1	0.5	0.6
LnGrp Delay(d),s/veh	0.0	15.8	0.2	0.4	37.4	37.6
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2598	1975		37	
Approach Delay, s/veh		15.8	0.3		37.5	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				97.7		42.3		97.7
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				50.4		3.4		2.0
Green Ext Time (p_c), s				43.3		0.1		32.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/25/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2406	1605	0	15	2
Future Volume (veh/h)	0	2406	1605	0	15	2
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2615	1745	0	16	2
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2754	2754	0	712	635
Arrive On Green	0.00	1.00	0.54	0.00	0.40	0.40
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2615	1745	0	16	2
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	33.5	0.0	0.8	0.1
Cycle Q Clear(g_c), s	0.0	0.0	33.5	0.0	0.8	0.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2754	2754	0	712	635
V/C Ratio(X)	0.00	0.95	0.63	0.00	0.02	0.00
Avail Cap(c_a), veh/h	0	4032	4032	0	712	635
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.71	0.60	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.4	0.0	25.3	25.1
Incr Delay (d2), s/veh	0.0	3.4	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	15.7	0.0	0.4	0.0
LnGrp Delay(d),s/veh	0.0	3.4	22.5	0.0	25.4	25.1
LnGrp LOS		A	C		C	C
Approach Vol, veh/h		2615	1745		18	
Approach Delay, s/veh		3.4	22.5		25.3	
Approach LOS		A	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				74.4		65.6		74.4
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		2.8		35.5
Green Ext Time (p_c), s				63.0		0.0		23.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	2280	32	397	1761	71	8	11	969	34	2	5
Future Volume (veh/h)	40	2280	32	397	1761	71	8	11	969	34	2	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	2478	35	432	1914	77	9	12	1053	37	2	5
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	2336	33	427	2732	110	152	202	886	219	230	195
Arrive On Green	0.03	0.45	0.45	0.12	0.54	0.54	0.19	0.19	0.19	0.12	0.12	0.12
Sat Flow, veh/h	1774	5167	73	3442	5016	201	782	1042	2787	1774	1863	1583
Grp Volume(v), veh/h	43	1624	889	432	1293	698	21	0	1053	37	2	5
Grp Sat Flow(s),veh/h/ln	1774	1695	1850	1721	1695	1827	1824	0	1393	1774	1863	1583
Q Serve(g_s), s	3.6	67.8	67.8	18.6	42.1	42.3	1.4	0.0	29.1	2.8	0.1	0.4
Cycle Q Clear(g_c), s	3.6	67.8	67.8	18.6	42.1	42.3	1.4	0.0	29.1	2.8	0.1	0.4
Prop In Lane	1.00		0.04	1.00		0.11	0.43		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	55	1532	836	427	1847	995	354	0	886	219	230	195
V/C Ratio(X)	0.78	1.06	1.06	1.01	0.70	0.70	0.06	0.00	1.19	0.17	0.01	0.03
Avail Cap(c_a), veh/h	108	1532	836	427	1847	995	354	0	886	219	230	195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.1	41.1	41.1	65.7	25.1	25.2	49.3	0.0	51.1	58.9	57.7	57.8
Incr Delay (d2), s/veh	14.9	37.4	44.8	46.7	1.2	2.2	0.3	0.0	96.0	1.7	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	39.7	45.0	11.6	19.9	21.8	0.7	0.0	30.2	1.5	0.1	0.2
LnGrp Delay(d),s/veh	87.0	78.5	85.9	112.4	26.3	27.4	49.6	0.0	147.2	60.5	57.8	58.1
LnGrp LOS	F	F	F	F	C	C	D		F	E	E	E
Approach Vol, veh/h		2556			2423			1074			44	
Approach Delay, s/veh		81.2			42.0			145.3			60.1	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		33.1	22.6	71.8		22.5	8.7	85.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		29.1	18.6	67.8		18.5	9.1	77.3
Max Q Clear Time (g_c+I1), s		31.1	20.6	69.8		4.8	5.6	44.3
Green Ext Time (p_c), s		0.0	0.0	0.0		0.1	0.0	19.4

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/07/2022

Intersection	
Intersection Delay, s/veh	24.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	245	56	32	46	92	82	16	122	59	44	216	161
Future Vol, veh/h	245	56	32	46	92	82	16	122	59	44	216	161
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	266	61	35	50	100	89	17	133	64	48	235	175
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	24.9	16.3	15.4	33
HCM LOS	C	C	C	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	74%	21%	10%
Vol Thru, %	62%	17%	42%	51%
Vol Right, %	30%	10%	37%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	197	333	220	421
LT Vol	16	245	46	44
Through Vol	122	56	92	216
RT Vol	59	32	82	161
Lane Flow Rate	214	362	239	458
Geometry Grp	1	1	1	1
Degree of Util (X)	0.424	0.701	0.47	0.825
Departure Headway (Hd)	7.128	6.974	7.08	6.492
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	503	518	507	563
Service Time	5.203	5.039	5.155	4.492
HCM Lane V/C Ratio	0.425	0.699	0.471	0.813
HCM Control Delay	15.4	24.9	16.3	33
HCM Lane LOS	C	C	C	D
HCM 95th-tile Q	2.1	5.5	2.5	8.4

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/07/2022

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	25	12	26	47	32	8	100	5	30	171	59
Future Vol, veh/h	27	25	12	26	47	32	8	100	5	30	171	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	27	13	28	51	35	9	109	5	33	186	64
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	8.7	8.6	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	42%	25%	12%
Vol Thru, %	88%	39%	45%	66%
Vol Right, %	4%	19%	30%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	113	64	105	260
LT Vol	8	27	26	30
Through Vol	100	25	47	171
RT Vol	5	12	32	59
Lane Flow Rate	123	70	114	283
Geometry Grp	1	1	1	1
Degree of Util (X)	0.16	0.096	0.153	0.347
Departure Headway (Hd)	4.688	4.977	4.813	4.416
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	763	717	742	814
Service Time	2.731	3.031	2.861	2.451
HCM Lane V/C Ratio	0.161	0.098	0.154	0.348
HCM Control Delay	8.6	8.6	8.7	9.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.3	0.5	1.6

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/07/2022

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰↱	
Traffic Vol, veh/h	122	102	23	1	20	207
Future Vol, veh/h	122	102	23	1	20	207
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	133	111	25	1	22	225
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9.7	7.9	8.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	0%	9%
Vol Thru, %	46%	96%	0%
Vol Right, %	0%	4%	91%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	224	24	227
LT Vol	122	0	20
Through Vol	102	23	0
RT Vol	0	1	207
Lane Flow Rate	243	26	247
Geometry Grp	1	1	1
Degree of Util (X)	0.311	0.034	0.278
Departure Headway (Hd)	4.598	4.719	4.053
Convergence, Y/N	Yes	Yes	Yes
Cap	782	758	888
Service Time	2.624	2.753	2.068
HCM Lane V/C Ratio	0.311	0.034	0.278
HCM Control Delay	9.7	7.9	8.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.3	0.1	1.1

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	228	53	73	185	90	52	761	28	61	667	127
Future Volume (veh/h)	210	228	53	73	185	90	52	761	28	61	667	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	228	248	58	79	201	98	57	827	30	66	725	138
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	598	508	292	598	508	303	1393	51	318	1212	231
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.34	0.80	0.80	0.18	0.41	0.41
Sat Flow, veh/h	1076	1863	1583	1069	1863	1583	1774	3484	126	1774	2968	565
Grp Volume(v), veh/h	228	248	58	79	201	98	57	420	437	66	432	431
Grp Sat Flow(s),veh/h/ln	1076	1863	1583	1069	1863	1583	1774	1770	1840	1774	1770	1763
Q Serve(g_s), s	24.6	12.5	3.1	7.5	9.9	5.4	2.7	10.8	10.8	3.8	22.9	23.0
Cycle Q Clear(g_c), s	34.4	12.5	3.1	20.0	9.9	5.4	2.7	10.8	10.8	3.8	22.9	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.32
Lane Grp Cap(c), veh/h	317	598	508	292	598	508	303	708	736	318	723	720
V/C Ratio(X)	0.72	0.41	0.11	0.27	0.34	0.19	0.19	0.59	0.59	0.21	0.60	0.60
Avail Cap(c_a), veh/h	402	745	633	376	745	633	303	708	736	318	723	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	31.9	28.7	39.7	31.0	29.5	33.7	8.3	8.3	42.0	27.8	27.8
Incr Delay (d2), s/veh	4.5	0.5	0.1	0.5	0.3	0.2	0.3	3.6	3.4	0.3	3.6	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.5	1.4	2.3	5.1	2.4	1.4	5.6	5.8	1.9	11.9	11.9
LnGrp Delay(d),s/veh	48.6	32.4	28.8	40.2	31.3	29.7	34.0	11.8	11.7	42.3	31.4	31.4
LnGrp LOS	D	C	C	D	C	C	C	B	B	D	C	C
Approach Vol, veh/h		534			378			914			929	
Approach Delay, s/veh		38.9			32.8			13.2			32.2	
Approach LOS		D			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.5	52.0		42.5	24.5	53.0		42.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	48.0		48.0	11.0	49.0		48.0
Max Q Clear Time (g_c+I1), s	5.8	12.8		36.4	4.7	25.0		22.0
Green Ext Time (p_c), s	0.1	6.0		2.1	0.0	5.7		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/25/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	37	739	33	25	708
Future Volume (veh/h)	70	37	739	33	25	708
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	76	40	803	36	27	770
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	106	94	2070	93	427	3093
Arrive On Green	0.06	0.06	0.60	0.60	0.48	1.00
Sat Flow, veh/h	1774	1583	3544	155	1774	3632
Grp Volume(v), veh/h	76	40	412	427	27	770
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1835	1774	1770
Q Serve(g_s), s	5.1	2.9	14.6	14.6	1.0	0.0
Cycle Q Clear(g_c), s	5.1	2.9	14.6	14.6	1.0	0.0
Prop In Lane	1.00	1.00		0.08	1.00	
Lane Grp Cap(c), veh/h	106	94	1062	1101	427	3093
V/C Ratio(X)	0.72	0.42	0.39	0.39	0.06	0.25
Avail Cap(c_a), veh/h	325	290	1062	1101	427	3093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	55.4	54.4	12.5	12.5	23.9	0.0
Incr Delay (d2), s/veh	8.8	3.0	1.1	1.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.4	7.4	7.7	0.5	0.1
LnGrp Delay(d),s/veh	64.3	57.5	13.6	13.5	24.0	0.2
LnGrp LOS	E	E	B	B	C	A
Approach Vol, veh/h	116		839			797
Approach Delay, s/veh	61.9		13.6			1.0
Approach LOS	E		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		108.9			32.9	76.0		11.1
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		90.0			14.0	72.0		22.0
Max Q Clear Time (g_c+I1), s		2.0			3.0	16.6		7.1
Green Ext Time (p_c), s		6.3			0.0	6.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/25/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	12	23	739	708	26
Future Volume (veh/h)	31	12	23	739	708	26
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	34	13	25	803	770	28
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	58	52	503	3187	2032	74
Arrive On Green	0.03	0.03	0.28	0.90	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3576	127
Grp Volume(v), veh/h	34	13	25	803	391	407
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1840
Q Serve(g_s), s	2.3	1.0	1.2	3.5	0.0	0.0
Cycle Q Clear(g_c), s	2.3	1.0	1.2	3.5	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.07
Lane Grp Cap(c), veh/h	58	52	503	3187	1032	1074
V/C Ratio(X)	0.58	0.25	0.05	0.25	0.38	0.38
Avail Cap(c_a), veh/h	355	317	503	3187	1032	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.91	0.91
Uniform Delay (d), s/veh	57.2	56.6	31.2	0.8	0.0	0.0
Incr Delay (d2), s/veh	8.8	2.5	0.0	0.2	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.5	0.6	1.8	0.3	0.3
LnGrp Delay(d),s/veh	66.0	59.0	31.3	1.0	1.0	0.9
LnGrp LOS	E	E	C	A	A	A
Approach Vol, veh/h	47			828	798	
Approach Delay, s/veh	64.1			1.9	1.0	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	38.0	74.0		8.0		112.0		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	14.0	70.0		24.0		88.0		
Max Q Clear Time (g_c+I1), s	3.2	2.0		4.3		5.5		
Green Ext Time (p_c), s	0.0	5.7		0.1		6.6		

Intersection Summary	
HCM 2010 Ctrl Delay	3.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	783	188	11	34	465	794	221	21	693	8
Future Volume (veh/h)	22	9	783	188	11	34	465	794	221	21	693	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	10	851	204	12	37	505	863	240	23	753	9
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	66	860	215	114	351	630	1174	329	393	793	9
Arrive On Green	0.13	0.13	0.13	0.12	0.28	0.28	0.41	0.41	0.41	0.22	0.22	0.22
Sat Flow, veh/h	991	496	1583	1774	403	1241	1537	2862	802	1774	3582	43
Grp Volume(v), veh/h	34	0	851	204	0	49	587	507	515	23	372	390
Grp Sat Flow(s),veh/h/ln	1487	0	1583	1774	0	1644	1786	1695	1721	1774	1770	1855
Q Serve(g_s), s	1.8	0.0	18.6	16.0	0.0	3.1	40.4	35.2	35.2	1.4	29.0	29.0
Cycle Q Clear(g_c), s	2.6	0.0	18.6	16.0	0.0	3.1	40.4	35.2	35.2	1.4	29.0	29.0
Prop In Lane	0.71		1.00	1.00		0.76	0.86		0.47	1.00		0.02
Lane Grp Cap(c), veh/h	241	0	860	215	0	465	732	695	706	393	392	411
V/C Ratio(X)	0.14	0.00	0.99	0.95	0.00	0.11	0.80	0.73	0.73	0.06	0.95	0.95
Avail Cap(c_a), veh/h	241	0	860	215	0	465	732	695	706	393	392	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	18.9	61.1	0.0	37.1	36.3	34.8	34.8	43.0	53.7	53.7
Incr Delay (d2), s/veh	0.3	0.0	28.2	46.4	0.0	0.1	9.0	6.6	6.5	0.1	32.6	31.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	39.6	10.6	0.0	1.4	21.7	17.7	18.0	0.7	17.7	18.5
LnGrp Delay(d),s/veh	54.0	0.0	47.0	107.5	0.0	37.2	45.3	41.4	41.3	43.1	86.3	85.4
LnGrp LOS	D		D	F		D	D	D	D	D	F	F
Approach Vol, veh/h		885			253			1608			785	
Approach Delay, s/veh		47.3			93.9			42.8			84.6	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		61.4	21.0	22.6		35.0		43.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		57.4	17.0	18.6		31.0		39.6
Max Q Clear Time (g_c+I1), s		42.4	18.0	20.6		31.0		5.1
Green Ext Time (p_c), s		9.0	0.0	0.0		0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	56.9
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/25/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	23	36	1461	1658	85
Future Volume (veh/h)	48	23	36	1461	1658	85
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	52	25	39	1588	1802	92
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	117	54	96	4622	5463	1350
Arrive On Green	0.03	0.03	0.06	1.00	0.85	0.85
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	52	25	39	1588	1802	92
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	2.1	2.2	1.5	0.0	8.1	1.3
Cycle Q Clear(g_c), s	2.1	2.2	1.5	0.0	8.1	1.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	117	54	96	4622	5463	1350
V/C Ratio(X)	0.45	0.47	0.41	0.34	0.33	0.07
Avail Cap(c_a), veh/h	565	260	295	4622	5463	1350
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.41	0.41	1.00	1.00
Uniform Delay (d), s/veh	66.3	66.4	65.0	0.0	2.1	1.6
Incr Delay (d2), s/veh	2.6	6.1	1.1	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.0	0.7	0.0	3.6	0.6
LnGrp Delay(d),s/veh	69.0	72.5	66.1	0.1	2.3	1.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	77			1627	1894	
Approach Delay, s/veh	70.1			1.7	2.3	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		131.3		8.7	7.9	123.3		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		109.0		23.0	12.0	93.0		
Max Q Clear Time (g_c+I1), s		2.0		4.2	3.5	10.1		
Green Ext Time (p_c), s		19.6		0.2	0.0	27.7		

Intersection Summary	
HCM 2010 Ctrl Delay	3.4
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	1325	100	73	1222	370	152	681	60	939	641	118
Future Volume (veh/h)	167	1325	100	73	1222	370	152	681	60	939	641	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	182	1440	109	79	1328	402	165	740	65	1021	697	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	1548	117	128	1274	384	275	885	77	1057	1196	535
Arrive On Green	0.06	0.32	0.32	0.14	0.66	0.66	0.16	0.19	0.19	0.10	0.11	0.00
Sat Flow, veh/h	3442	4823	365	1774	3877	1170	1774	4763	416	3442	3539	1583
Grp Volume(v), veh/h	182	1012	537	79	1161	569	165	525	280	1021	697	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1798	1774	1695	1656	1774	1695	1789	1721	1770	1583
Q Serve(g_s), s	7.3	40.5	40.5	5.9	46.0	46.0	12.1	20.9	21.1	41.4	26.2	0.0
Cycle Q Clear(g_c), s	7.3	40.5	40.5	5.9	46.0	46.0	12.1	20.9	21.1	41.4	26.2	0.0
Prop In Lane	1.00		0.20	1.00		0.71	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	221	1088	577	128	1114	544	275	630	332	1057	1196	535
V/C Ratio(X)	0.82	0.93	0.93	0.62	1.04	1.05	0.60	0.83	0.84	0.97	0.58	0.00
Avail Cap(c_a), veh/h	221	1104	586	128	1114	544	275	630	332	1057	1196	535
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.84	0.84	0.84	1.00	1.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	64.7	46.0	46.0	58.1	24.0	24.0	55.1	54.9	55.0	62.2	52.8	0.0
Incr Delay (d2), s/veh	21.5	13.5	21.5	7.4	36.4	48.0	3.6	12.4	22.0	19.3	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	21.0	23.6	3.1	26.7	27.8	6.2	10.9	12.4	22.6	13.2	0.0
LnGrp Delay(d),s/veh	86.2	59.5	67.6	65.5	60.4	72.0	58.7	67.3	77.0	81.4	54.8	0.0
LnGrp LOS	F	E	E	E	F	F	E	E	E	F	D	
Approach Vol, veh/h		1731			1809			970			1718	
Approach Delay, s/veh		64.8			64.3			68.6			70.6	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.0	30.0	14.1	48.9	25.7	51.3	13.0	50.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	43.0	26.0	9.4	45.6	21.7	47.3	9.0	46.0
Max Q Clear Time (g_c+I1), s	43.4	23.1	7.9	42.5	14.1	28.2	9.3	48.0
Green Ext Time (p_c), s	0.0	1.4	0.0	2.4	0.2	4.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	66.9
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	208	243	151	155	70	79	802	17	30	713	28
Future Volume (veh/h)	62	208	243	151	155	70	79	802	17	30	713	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	67	226	264	164	168	76	86	872	18	33	775	30
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	409	611	547	330	420	190	121	1279	26	117	1247	48
Arrive On Green	0.35	0.35	0.35	0.35	0.35	0.35	0.07	0.36	0.36	0.07	0.36	0.36
Sat Flow, veh/h	1131	1770	1583	903	1216	550	1774	3546	73	1774	3474	134
Grp Volume(v), veh/h	67	226	264	164	0	244	86	435	455	33	395	410
Grp Sat Flow(s),veh/h/ln	1131	1770	1583	903	0	1766	1774	1770	1850	1774	1770	1839
Q Serve(g_s), s	2.5	5.0	6.9	9.2	0.0	5.5	2.5	11.0	11.0	0.9	9.7	9.7
Cycle Q Clear(g_c), s	8.0	5.0	6.9	16.1	0.0	5.5	2.5	11.0	11.0	0.9	9.7	9.7
Prop In Lane	1.00		1.00	1.00		0.31	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	409	611	547	330	0	610	121	638	667	117	635	660
V/C Ratio(X)	0.16	0.37	0.48	0.50	0.00	0.40	0.71	0.68	0.68	0.28	0.62	0.62
Avail Cap(c_a), veh/h	415	621	556	335	0	620	189	638	667	185	635	660
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	12.9	13.5	19.9	0.0	13.1	24.0	14.3	14.3	23.4	13.9	13.9
Incr Delay (d2), s/veh	0.2	0.4	0.7	1.2	0.0	0.4	7.6	5.8	5.6	1.3	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.5	3.1	2.4	0.0	2.7	1.5	6.3	6.6	0.5	5.5	5.7
LnGrp Delay(d),s/veh	16.3	13.3	14.2	21.0	0.0	13.5	31.6	20.1	19.8	24.7	18.5	18.3
LnGrp LOS	B	B	B	C		B	C	C	B	C	B	B
Approach Vol, veh/h		557			408			976			838	
Approach Delay, s/veh		14.1			16.5			21.0			18.6	
Approach LOS		B			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	23.0		22.2	7.6	22.9		22.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	19.0		18.5	5.6	18.9		18.5
Max Q Clear Time (g_c+I1), s	2.9	13.0		10.0	4.5	11.7		18.1
Green Ext Time (p_c), s	0.0	2.7		2.3	0.0	2.8		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/25/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2408	1673	210	15	19
Future Volume (veh/h)	0	2408	1673	210	15	19
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2617	1818	228	16	21
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3421	3082	384	479	428
Arrive On Green	0.00	0.67	1.00	1.00	0.27	0.27
Sat Flow, veh/h	0	5421	4749	571	1774	1583
Grp Volume(v), veh/h	0	2617	1342	704	16	21
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1762	1774	1583
Q Serve(g_s), s	0.0	48.6	0.0	0.0	0.9	1.4
Cycle Q Clear(g_c), s	0.0	48.6	0.0	0.0	0.9	1.4
Prop In Lane	0.00			0.32	1.00	1.00
Lane Grp Cap(c), veh/h	0	3421	2281	1185	479	428
V/C Ratio(X)	0.00	0.76	0.59	0.59	0.03	0.05
Avail Cap(c_a), veh/h	0	4032	2688	1397	479	428
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.20	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	0.0	15.4	0.0	0.0	37.6	37.8
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.6	0.1	0.1	0.5	0.6
LnGrp Delay(d),s/veh	0.0	15.6	0.2	0.4	37.8	38.0
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2617	2046		37	
Approach Delay, s/veh		15.6	0.3		37.9	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				98.2		41.8		98.2
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				50.6		3.4		2.0
Green Ext Time (p_c), s				43.6		0.1		34.8

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/25/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2424	1671	0	15	2
Future Volume (veh/h)	0	2424	1671	0	15	2
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2635	1816	0	16	2
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2595	2595	0	767	685
Arrive On Green	0.00	1.00	0.51	0.00	0.43	0.43
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2635	1816	0	16	2
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	71.5	38.1	0.0	0.7	0.1
Cycle Q Clear(g_c), s	0.0	71.5	38.1	0.0	0.7	0.1
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2595	2595	0	767	685
V/C Ratio(X)	0.00	1.02	0.70	0.00	0.02	0.00
Avail Cap(c_a), veh/h	0	4032	4032	0	767	685
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.70	0.56	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	26.1	0.0	22.8	22.6
Incr Delay (d2), s/veh	0.0	14.1	0.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	17.9	0.0	0.4	0.0
LnGrp Delay(d),s/veh	0.0	14.1	26.3	0.0	22.8	22.6
LnGrp LOS		F	C		C	C
Approach Vol, veh/h		2635	1816		18	
Approach Delay, s/veh		14.1	26.3		22.8	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				91.7		48.3		91.7
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				73.5		2.7		40.1
Green Ext Time (p_c), s				30.5		0.0		24.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/25/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	2298	32	397	1827	71	8	11	969	34	2	5
Future Volume (veh/h)	40	2298	32	397	1827	71	8	11	969	34	2	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	43	2498	35	432	1986	77	9	12	1053	37	2	5
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	2336	33	427	2737	106	152	202	886	219	230	195
Arrive On Green	0.03	0.45	0.45	0.12	0.54	0.54	0.19	0.19	0.19	0.12	0.12	0.12
Sat Flow, veh/h	1774	5168	72	3442	5024	194	782	1042	2787	1774	1863	1583
Grp Volume(v), veh/h	43	1637	896	432	1339	724	21	0	1053	37	2	5
Grp Sat Flow(s),veh/h/ln	1774	1695	1850	1721	1695	1828	1824	0	1393	1774	1863	1583
Q Serve(g_s), s	3.6	67.8	67.8	18.6	44.6	44.8	1.4	0.0	29.1	2.8	0.1	0.4
Cycle Q Clear(g_c), s	3.6	67.8	67.8	18.6	44.6	44.8	1.4	0.0	29.1	2.8	0.1	0.4
Prop In Lane	1.00		0.04	1.00		0.11	0.43		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	55	1532	836	427	1847	996	354	0	886	219	230	195
V/C Ratio(X)	0.78	1.07	1.07	1.01	0.72	0.73	0.06	0.00	1.19	0.17	0.01	0.03
Avail Cap(c_a), veh/h	108	1532	836	427	1847	996	354	0	886	219	230	195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.1	41.1	41.1	65.7	25.7	25.7	49.3	0.0	51.1	58.9	57.7	57.8
Incr Delay (d2), s/veh	14.8	40.4	47.6	46.7	1.4	2.7	0.3	0.0	96.0	1.7	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	40.3	45.7	11.6	21.2	23.3	0.7	0.0	30.2	1.5	0.1	0.2
LnGrp Delay(d),s/veh	86.9	81.5	88.7	112.4	27.1	28.4	49.6	0.0	147.2	60.5	57.8	58.1
LnGrp LOS	F	F	F	F	C	C	D		F	E	E	E
Approach Vol, veh/h		2576			2495			1074			44	
Approach Delay, s/veh		84.1			42.3			145.3			60.1	
Approach LOS		F			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		33.1	22.6	71.8		22.5	8.7	85.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		29.1	18.6	67.8		18.5	9.1	77.3
Max Q Clear Time (g_c+I1), s		31.1	20.6	69.8		4.8	5.6	46.8
Green Ext Time (p_c), s		0.0	0.0	0.0		0.1	0.0	19.3

Intersection Summary	
HCM 2010 Ctrl Delay	77.7
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/22/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	783	188	11	34	465	794	221	21	693	8
Future Volume (veh/h)	22	9	783	188	11	34	465	794	221	21	693	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	10	851	204	12	37	505	863	240	23	753	9
Adj No. of Lanes	0	1	2	2	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	157	58	1606	254	95	292	682	1269	356	418	844	10
Arrive On Green	0.13	0.13	0.13	0.07	0.24	0.24	0.44	0.44	0.44	0.24	0.24	0.24
Sat Flow, veh/h	854	439	2787	3442	403	1241	1537	2862	802	1774	3582	43
Grp Volume(v), veh/h	34	0	851	204	0	49	587	507	515	23	372	390
Grp Sat Flow(s),veh/h/ln	1293	0	1393	1721	0	1644	1786	1695	1721	1774	1770	1855
Q Serve(g_s), s	1.9	0.0	18.6	8.2	0.0	3.3	38.1	33.2	33.2	1.4	28.5	28.5
Cycle Q Clear(g_c), s	5.2	0.0	18.6	8.2	0.0	3.3	38.1	33.2	33.2	1.4	28.5	28.5
Prop In Lane	0.71		1.00	1.00		0.76	0.86		0.47	1.00		0.02
Lane Grp Cap(c), veh/h	216	0	1606	254	0	387	792	752	763	418	417	437
V/C Ratio(X)	0.16	0.00	0.53	0.80	0.00	0.13	0.74	0.67	0.67	0.06	0.89	0.89
Avail Cap(c_a), veh/h	216	0	1606	320	0	418	792	752	763	469	468	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	0.0	16.5	63.8	0.0	42.2	32.3	30.9	30.9	41.4	51.8	51.8
Incr Delay (d2), s/veh	0.3	0.0	0.3	11.1	0.0	0.1	6.2	4.8	4.7	0.1	17.7	17.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	16.5	4.3	0.0	1.5	20.1	16.5	16.7	0.7	16.0	16.7
LnGrp Delay(d),s/veh	55.5	0.0	16.8	74.9	0.0	42.3	38.5	35.7	35.7	41.5	69.5	68.9
LnGrp LOS	E		B	E		D	D	D	D	D	E	E
Approach Vol, veh/h		885			253			1608			785	
Approach Delay, s/veh		18.3			68.6			36.7			68.4	
Approach LOS		B			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		66.1	14.3	22.6		37.0		36.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		55.4	13.0	18.6		37.0		35.6
Max Q Clear Time (g_c+I1), s		40.1	10.2	20.6		30.5		5.3
Green Ext Time (p_c), s		9.1	0.2	0.0		2.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/06/2022

Intersection	
Intersection Delay, s/veh	17
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	178	62	15	29	64	53	17	205	39	49	188	159
Future Vol, veh/h	178	62	15	29	64	53	17	205	39	49	188	159
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	193	67	16	32	70	58	18	223	42	53	204	173
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.1	12.4	15	20.7
HCM LOS	C	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	70%	20%	12%
Vol Thru, %	79%	24%	44%	47%
Vol Right, %	15%	6%	36%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	261	255	146	396
LT Vol	17	178	29	49
Through Vol	205	62	64	188
RT Vol	39	15	53	159
Lane Flow Rate	284	277	159	430
Geometry Grp	1	1	1	1
Degree of Util (X)	0.486	0.504	0.291	0.689
Departure Headway (Hd)	6.168	6.544	6.6	5.764
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	582	549	543	624
Service Time	4.223	4.598	4.664	3.813
HCM Lane V/C Ratio	0.488	0.505	0.293	0.689
HCM Control Delay	15	16.1	12.4	20.7
HCM Lane LOS	B	C	B	C
HCM 95th-tile Q	2.6	2.8	1.2	5.4

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/06/2022

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	38	23	7	19	29	31	4	172	20	27	163	31
Future Vol, veh/h	38	23	7	19	29	31	4	172	20	27	163	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	25	8	21	32	34	4	187	22	29	177	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	8.6	9.3	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	56%	24%	12%
Vol Thru, %	88%	34%	37%	74%
Vol Right, %	10%	10%	39%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	196	68	79	221
LT Vol	4	38	19	27
Through Vol	172	23	29	163
RT Vol	20	7	31	31
Lane Flow Rate	213	74	86	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.269	0.105	0.116	0.301
Departure Headway (Hd)	4.546	5.126	4.875	4.514
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	788	696	732	795
Service Time	2.585	3.181	2.928	2.552
HCM Lane V/C Ratio	0.27	0.106	0.117	0.302
HCM Control Delay	9.3	8.8	8.6	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.4	0.4	1.3

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/06/2022

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Vol, veh/h	194	4	23	21	2	159
Future Vol, veh/h	194	4	23	21	2	159
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	211	4	25	23	2	173
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9.2	7.5	7.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	98%	0%	1%
Vol Thru, %	2%	52%	0%
Vol Right, %	0%	48%	99%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	198	44	161
LT Vol	194	0	2
Through Vol	4	23	0
RT Vol	0	21	159
Lane Flow Rate	215	48	175
Geometry Grp	1	1	1
Degree of Util (X)	0.268	0.057	0.193
Departure Headway (Hd)	4.477	4.253	3.962
Convergence, Y/N	Yes	Yes	Yes
Cap	792	844	910
Service Time	2.564	2.272	1.965
HCM Lane V/C Ratio	0.271	0.057	0.192
HCM Control Delay	9.2	7.5	7.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.2	0.7

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	217	31	59	162	43	69	690	49	76	843	142
Future Volume (veh/h)	141	217	31	59	162	43	69	690	49	76	843	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	153	236	34	64	176	47	75	750	53	83	916	154
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	442	376	200	442	376	333	1565	111	347	1441	242
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.38	0.93	0.93	0.20	0.47	0.47
Sat Flow, veh/h	1153	1863	1583	1105	1863	1583	1774	3354	237	1774	3033	510
Grp Volume(v), veh/h	153	236	34	64	176	47	75	396	407	83	534	536
Grp Sat Flow(s),veh/h/ln	1153	1863	1583	1105	1863	1583	1774	1770	1821	1774	1770	1773
Q Serve(g_s), s	15.5	13.3	2.0	6.4	9.5	2.8	3.5	3.2	3.2	4.7	27.3	27.3
Cycle Q Clear(g_c), s	25.0	13.3	2.0	19.7	9.5	2.8	3.5	3.2	3.2	4.7	27.3	27.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.29
Lane Grp Cap(c), veh/h	242	442	376	200	442	376	333	826	850	347	841	842
V/C Ratio(X)	0.63	0.53	0.09	0.32	0.40	0.12	0.23	0.48	0.48	0.24	0.64	0.64
Avail Cap(c_a), veh/h	324	574	488	278	574	488	333	826	850	347	841	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	39.9	35.7	48.6	38.5	36.0	31.5	2.2	2.2	40.7	23.7	23.7
Incr Delay (d2), s/veh	2.7	1.0	0.1	0.9	0.6	0.1	0.3	1.9	1.9	0.4	3.7	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.9	0.9	2.0	5.0	1.2	1.7	1.8	1.8	2.4	14.1	14.1
LnGrp Delay(d),s/veh	51.8	40.9	35.8	49.5	39.1	36.1	31.9	4.2	4.1	41.1	27.3	27.4
LnGrp LOS	D	D	D	D	D	D	C	A	A	D	C	C
Approach Vol, veh/h		423			287			878			1153	
Approach Delay, s/veh		44.4			40.9			6.5			28.3	
Approach LOS		D			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	27.5	60.0		32.5	26.5	61.0		32.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	15.0	56.0		37.0	14.0	57.0		37.0
Max Q Clear Time (g_c+I1), s	6.7	5.2		27.0	5.5	29.3		21.7
Green Ext Time (p_c), s	0.1	5.7		1.5	0.1	7.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/06/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	33	775	38	19	844
Future Volume (veh/h)	59	33	775	38	19	844
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	64	36	842	41	21	917
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	89	80	2895	141	36	3156
Arrive On Green	0.05	0.05	0.84	0.84	0.02	0.89
Sat Flow, veh/h	1774	1583	3529	167	1774	3632
Grp Volume(v), veh/h	64	36	434	449	21	917
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1833	1774	1770
Q Serve(g_s), s	4.9	3.0	7.1	7.1	1.6	5.2
Cycle Q Clear(g_c), s	4.9	3.0	7.1	7.1	1.6	5.2
Prop In Lane	1.00	1.00		0.09	1.00	
Lane Grp Cap(c), veh/h	89	80	1491	1545	36	3156
V/C Ratio(X)	0.72	0.45	0.29	0.29	0.59	0.29
Avail Cap(c_a), veh/h	296	264	1491	1545	180	3156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	64.5	63.7	2.3	2.3	67.1	1.1
Incr Delay (d2), s/veh	10.1	3.9	0.5	0.5	14.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.4	3.6	3.7	0.9	2.5
LnGrp Delay(d),s/veh	74.7	67.6	2.8	2.7	81.1	1.3
LnGrp LOS	E	E	A	A	F	A
Approach Vol, veh/h	100		883			938
Approach Delay, s/veh	72.1		2.8			3.1
Approach LOS	E		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		127.0			6.8	120.3		11.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		107.0			14.0	89.0		23.0
Max Q Clear Time (g_c+I1), s		7.2			3.6	9.1		6.9
Green Ext Time (p_c), s		8.0			0.0	6.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	40	18	775	844	35
Future Volume (veh/h)	21	40	18	775	844	35
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	23	43	20	842	917	38
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	70	63	36	3163	2910	121
Arrive On Green	0.04	0.04	0.02	0.89	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3557	144
Grp Volume(v), veh/h	23	43	20	842	469	486
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1837
Q Serve(g_s), s	1.5	3.2	1.3	4.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	3.2	1.3	4.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	70	63	36	3163	1487	1544
V/C Ratio(X)	0.33	0.69	0.56	0.27	0.32	0.32
Avail Cap(c_a), veh/h	325	290	163	3163	1487	1544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.88	0.88
Uniform Delay (d), s/veh	56.1	56.9	58.2	0.9	0.0	0.0
Incr Delay (d2), s/veh	2.7	12.5	12.3	0.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.6	0.8	2.0	0.2	0.2
LnGrp Delay(d),s/veh	58.8	69.4	70.6	1.1	0.5	0.5
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	66			862	955	
Approach Delay, s/veh	65.7			2.7	0.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	6.4	104.8		8.7		111.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	11.0	75.0		22.0		90.0		
Max Q Clear Time (g_c+I1), s	3.3	2.0		5.2		6.0		
Green Ext Time (p_c), s	0.0	7.4		0.1		7.1		

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	8	662	161	12	23	429	820	191	5	958	5
Future Volume (veh/h)	3	8	662	161	12	23	429	820	191	5	958	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	3	9	720	175	13	25	466	891	208	5	1041	5
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	192	752	191	153	295	501	1042	246	538	1095	5
Arrive On Green	0.13	0.13	0.13	0.11	0.27	0.27	0.34	0.34	0.34	0.30	0.30	0.30
Sat Flow, veh/h	298	1456	1583	1774	571	1098	1463	3041	717	1774	3612	17
Grp Volume(v), veh/h	12	0	720	175	0	38	570	491	503	5	510	536
Grp Sat Flow(s),veh/h/ln	1754	0	1583	1774	0	1669	1790	1695	1736	1774	1770	1860
Q Serve(g_s), s	0.0	0.0	18.5	13.7	0.0	2.4	43.0	37.6	37.6	0.3	39.5	39.5
Cycle Q Clear(g_c), s	0.8	0.0	18.5	13.7	0.0	2.4	43.0	37.6	37.6	0.3	39.5	39.5
Prop In Lane	0.25		1.00	1.00		0.66	0.82		0.41	1.00		0.01
Lane Grp Cap(c), veh/h	264	0	752	191	0	448	613	581	595	538	536	564
V/C Ratio(X)	0.05	0.00	0.96	0.91	0.00	0.08	0.93	0.85	0.85	0.01	0.95	0.95
Avail Cap(c_a), veh/h	264	0	752	191	0	448	613	581	595	545	544	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	24.2	61.8	0.0	38.3	44.4	42.6	42.6	34.1	47.8	47.8
Incr Delay (d2), s/veh	0.1	0.0	23.0	41.8	0.0	0.1	22.7	14.2	13.9	0.0	26.6	25.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	32.6	8.9	0.0	1.1	25.1	19.9	20.3	0.1	23.2	24.3
LnGrp Delay(d),s/veh	53.1	0.0	47.2	103.6	0.0	38.4	67.1	56.8	56.5	34.1	74.3	73.5
LnGrp LOS	D		D	F		D	E	E	E	C	E	E
Approach Vol, veh/h		732			213			1565			1051	
Approach Delay, s/veh		47.3			92.0			60.5			73.7	
Approach LOS		D			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		52.0	19.1	22.5		46.4		41.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		47.4	15.1	18.5		43.0		37.6
Max Q Clear Time (g_c+I1), s		45.0	15.7	20.5		41.5		4.4
Green Ext Time (p_c), s		1.9	0.0	0.0		0.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	63.5
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	249	117	53	1171	1530	268
Future Volume (veh/h)	249	117	53	1171	1530	268
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	271	127	58	1273	1663	291
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	162	110	4274	4998	1235
Arrive On Green	0.10	0.10	0.06	1.00	0.78	0.78
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	271	127	58	1273	1663	291
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	10.7	11.0	2.3	0.0	10.8	6.9
Cycle Q Clear(g_c), s	10.7	11.0	2.3	0.0	10.8	6.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	352	162	110	4274	4998	1235
V/C Ratio(X)	0.77	0.78	0.53	0.30	0.33	0.24
Avail Cap(c_a), veh/h	836	385	295	4274	4998	1235
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.69	0.69	1.00	1.00
Uniform Delay (d), s/veh	61.2	61.3	64.5	0.0	4.6	4.2
Incr Delay (d2), s/veh	3.6	8.0	2.7	0.1	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	9.7	1.1	0.0	4.8	3.1
LnGrp Delay(d),s/veh	64.8	69.4	67.2	0.1	4.8	4.6
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	398			1331	1954	
Approach Delay, s/veh	66.3			3.0	4.7	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		121.7		18.3	8.5	113.2		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		98.0		34.0	12.0	82.0		
Max Q Clear Time (g_c+I1), s		2.0		13.0	4.3	12.8		
Green Ext Time (p_c), s		13.0		1.4	0.1	25.1		

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	1358	110	81	1089	329	187	531	55	787	655	130
Future Volume (veh/h)	150	1358	110	81	1089	329	187	531	55	787	655	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	163	1476	120	88	1184	358	203	577	60	855	712	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	1627	132	108	1314	397	313	1002	103	935	1095	490
Arrive On Green	0.06	0.34	0.34	0.12	0.68	0.68	0.18	0.21	0.21	0.09	0.10	0.00
Sat Flow, veh/h	3442	4794	390	1774	3875	1171	1774	4686	482	3442	3539	1583
Grp Volume(v), veh/h	163	1044	552	88	1036	506	203	416	221	855	712	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1794	1774	1695	1656	1774	1695	1778	1721	1770	1583
Q Serve(g_s), s	6.5	41.1	41.1	6.8	35.4	35.4	14.9	15.4	15.6	34.5	27.1	0.0
Cycle Q Clear(g_c), s	6.5	41.1	41.1	6.8	35.4	35.4	14.9	15.4	15.6	34.5	27.1	0.0
Prop In Lane	1.00		0.22	1.00		0.71	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	211	1151	609	108	1149	561	313	725	380	935	1095	490
V/C Ratio(X)	0.77	0.91	0.91	0.82	0.90	0.90	0.65	0.57	0.58	0.91	0.65	0.00
Avail Cap(c_a), veh/h	236	1187	628	133	1208	590	313	725	380	1008	1095	490
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	64.8	44.1	44.1	60.7	20.6	20.6	53.6	49.3	49.4	62.1	55.6	0.0
Incr Delay (d2), s/veh	13.3	10.0	16.7	23.3	8.1	14.8	4.7	3.3	6.4	11.4	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	20.9	23.2	4.0	17.4	18.0	7.7	7.5	8.4	18.0	13.7	0.0
LnGrp Delay(d),s/veh	78.1	54.1	60.9	84.1	28.7	35.4	58.3	52.6	55.8	73.6	58.4	0.0
LnGrp LOS	E	D	E	F	C	D	E	D	E	E	E	
Approach Vol, veh/h		1759			1630			840			1567	
Approach Delay, s/veh		58.4			33.7			54.8			66.7	
Approach LOS		E			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.0	33.9	12.5	51.5	28.7	47.3	12.6	51.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	41.0	23.5	10.5	49.0	21.2	43.3	9.6	49.9
Max Q Clear Time (g_c+I1), s	36.5	17.6	8.8	43.1	16.9	29.1	8.5	37.4
Green Ext Time (p_c), s	1.5	2.0	0.0	4.4	0.2	4.1	0.1	8.1

Intersection Summary	
HCM 2010 Ctrl Delay	53.2
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	209	142	218	288	46	108	894	17	25	892	63
Future Volume (veh/h)	53	209	142	218	288	46	108	894	17	25	892	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	227	154	237	313	50	117	972	18	27	970	68
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	698	454	375	532	85	149	1357	25	134	1252	88
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.08	0.38	0.38	0.08	0.37	0.37
Sat Flow, veh/h	1015	2057	1339	998	1568	250	1774	3555	66	1774	3356	235
Grp Volume(v), veh/h	58	194	187	237	0	363	117	484	506	27	512	526
Grp Sat Flow(s),veh/h/ln	1015	1770	1626	998	0	1819	1774	1770	1851	1774	1770	1821
Q Serve(g_s), s	3.0	4.8	5.1	13.7	0.0	9.7	3.8	13.7	13.7	0.8	15.0	15.0
Cycle Q Clear(g_c), s	12.7	4.8	5.1	18.8	0.0	9.7	3.8	13.7	13.7	0.8	15.0	15.0
Prop In Lane	1.00		0.82	1.00		0.14	1.00		0.04	1.00		0.13
Lane Grp Cap(c), veh/h	299	600	552	375	0	617	149	675	706	134	660	680
V/C Ratio(X)	0.19	0.32	0.34	0.63	0.00	0.59	0.78	0.72	0.72	0.20	0.77	0.77
Avail Cap(c_a), veh/h	299	600	552	375	0	617	181	675	706	165	660	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	14.5	14.5	21.6	0.0	16.1	26.5	15.5	15.5	25.6	16.3	16.3
Incr Delay (d2), s/veh	0.3	0.3	0.4	3.4	0.0	1.5	16.7	6.4	6.1	0.7	8.6	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.4	2.3	4.1	0.0	5.1	2.5	7.8	8.1	0.4	8.8	9.0
LnGrp Delay(d),s/veh	21.6	14.8	14.9	25.0	0.0	17.6	43.2	21.9	21.7	26.3	24.9	24.7
LnGrp LOS	C	B	B	C		B	D	C	C	C	C	C
Approach Vol, veh/h		439			600			1107			1065	
Approach Delay, s/veh		15.7			20.5			24.1			24.9	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	26.5		24.0	9.0	26.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	22.5		20.0	6.0	22.0		20.0
Max Q Clear Time (g_c+I1), s	2.8	15.7		14.7	5.8	17.0		20.8
Green Ext Time (p_c), s	0.0	3.3		1.2	0.0	2.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2193	1485	215	42	46
Future Volume (veh/h)	0	2193	1485	215	42	46
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2384	1614	234	46	50
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3152	2783	402	573	512
Arrive On Green	0.00	0.62	1.00	1.00	0.32	0.32
Sat Flow, veh/h	0	5421	4657	649	1774	1583
Grp Volume(v), veh/h	0	2384	1217	631	46	50
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1748	1774	1583
Q Serve(g_s), s	0.0	47.0	0.0	0.0	2.5	3.1
Cycle Q Clear(g_c), s	0.0	47.0	0.0	0.0	2.5	3.1
Prop In Lane	0.00			0.37	1.00	1.00
Lane Grp Cap(c), veh/h	0	3152	2101	1084	573	512
V/C Ratio(X)	0.00	0.76	0.58	0.58	0.08	0.10
Avail Cap(c_a), veh/h	0	3959	2640	1361	573	512
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.30	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.1	0.0	0.0	32.9	33.1
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.5	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	21.9	0.1	0.1	1.3	1.4
LnGrp Delay(d),s/veh	0.0	19.3	0.2	0.5	33.2	33.5
LnGrp LOS		B	A	A	C	C
Approach Vol, veh/h		2384	1848		96	
Approach Delay, s/veh		19.3	0.3		33.4	
Approach LOS		B	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				90.8		49.2		90.8
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				109.0		23.0		109.0
Max Q Clear Time (g_c+I1), s				49.0		5.1		2.0
Green Ext Time (p_c), s				37.8		0.2		27.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2235	1467	0	21	18
Future Volume (veh/h)	0	2235	1467	0	21	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2429	1595	0	23	20
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2685	2685	0	736	657
Arrive On Green	0.00	1.00	0.53	0.00	0.41	0.41
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2429	1595	0	23	20
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	30.2	0.0	1.1	1.0
Cycle Q Clear(g_c), s	0.0	0.0	30.2	0.0	1.1	1.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2685	2685	0	736	657
V/C Ratio(X)	0.00	0.90	0.59	0.00	0.03	0.03
Avail Cap(c_a), veh/h	0	4032	4032	0	736	657
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.73	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.7	0.0	24.3	24.3
Incr Delay (d2), s/veh	0.0	1.7	0.2	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	14.1	0.0	0.5	0.5
LnGrp Delay(d),s/veh	0.0	1.7	22.9	0.0	24.4	24.4
LnGrp LOS		A	C		C	C
Approach Vol, veh/h		2429	1595		43	
Approach Delay, s/veh		1.7	22.9		24.4	
Approach LOS		A	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				68.6		71.4		68.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		3.1		32.2
Green Ext Time (p_c), s				53.3		0.1		19.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.2
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	2037	19	506	1581	66	26	28	768	90	19	3
Future Volume (veh/h)	63	2037	19	506	1581	66	26	28	768	90	19	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	2214	21	550	1718	72	28	30	835	98	21	3
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	2270	22	587	2799	117	142	152	926	220	231	196
Arrive On Green	0.05	0.44	0.44	0.17	0.56	0.56	0.16	0.16	0.16	0.12	0.12	0.12
Sat Flow, veh/h	1774	5195	49	3442	5006	210	878	941	2787	1774	1863	1583
Grp Volume(v), veh/h	68	1444	791	550	1163	627	58	0	835	98	21	3
Grp Sat Flow(s),veh/h/ln	1774	1695	1854	1721	1695	1826	1819	0	1393	1774	1863	1583
Q Serve(g_s), s	5.7	62.7	62.8	23.7	34.5	34.6	4.1	0.0	24.2	7.7	1.5	0.2
Cycle Q Clear(g_c), s	5.7	62.7	62.8	23.7	34.5	34.6	4.1	0.0	24.2	7.7	1.5	0.2
Prop In Lane	1.00		0.03	1.00		0.11	0.48		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	86	1482	810	587	1896	1021	294	0	926	220	231	196
V/C Ratio(X)	0.79	0.97	0.98	0.94	0.61	0.61	0.20	0.00	0.90	0.45	0.09	0.02
Avail Cap(c_a), veh/h	147	1483	811	587	1896	1021	294	0	926	220	231	196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.6	41.4	41.5	61.4	22.2	22.2	54.4	0.0	47.7	60.9	58.2	57.7
Incr Delay (d2), s/veh	11.2	14.5	21.4	22.7	0.6	1.1	1.5	0.0	13.6	6.4	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	32.3	36.9	13.1	16.3	17.7	2.2	0.0	18.2	4.2	0.8	0.1
LnGrp Delay(d),s/veh	81.8	55.9	62.9	84.1	22.8	23.3	55.9	0.0	61.4	67.3	59.0	57.8
LnGrp LOS	F	E	E	F	C	C	E		E	E	E	E
Approach Vol, veh/h		2303			2340			893			122	
Approach Delay, s/veh		59.1			37.3			61.0			65.7	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.2	29.6	69.6		22.6	11.3	87.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		24.2	25.6	65.6		18.6	12.4	78.8
Max Q Clear Time (g_c+I1), s		26.2	25.7	64.8		9.7	7.7	36.6
Green Ext Time (p_c), s		0.0	0.0	0.7		0.2	0.0	18.8

Intersection Summary	
HCM 2010 Ctrl Delay	50.5
HCM 2010 LOS	D

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/06/2022

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	178	62	15	29	64	53	17	208	39	49	189	159
Future Vol, veh/h	178	62	15	29	64	53	17	208	39	49	189	159
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	193	67	16	32	70	58	18	226	42	53	205	173
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.2	12.4	15.1	20.9
HCM LOS	C	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	70%	20%	12%
Vol Thru, %	79%	24%	44%	48%
Vol Right, %	15%	6%	36%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	264	255	146	397
LT Vol	17	178	29	49
Through Vol	208	62	64	189
RT Vol	39	15	53	159
Lane Flow Rate	287	277	159	432
Geometry Grp	1	1	1	1
Degree of Util (X)	0.492	0.505	0.292	0.692
Departure Headway (Hd)	6.177	6.562	6.62	5.777
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	583	549	541	626
Service Time	4.232	4.617	4.684	3.825
HCM Lane V/C Ratio	0.492	0.505	0.294	0.69
HCM Control Delay	15.1	16.2	12.4	20.9
HCM Lane LOS	C	C	B	C
HCM 95th-tile Q	2.7	2.8	1.2	5.5

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/06/2022

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	38	23	7	19	29	31	4	175	20	27	164	31
Future Vol, veh/h	38	23	7	19	29	31	4	175	20	27	164	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	25	8	21	32	34	4	190	22	29	178	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	8.6	9.3	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	56%	24%	12%
Vol Thru, %	88%	34%	37%	74%
Vol Right, %	10%	10%	39%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	199	68	79	222
LT Vol	4	38	19	27
Through Vol	175	23	29	164
RT Vol	20	7	31	31
Lane Flow Rate	216	74	86	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.273	0.105	0.117	0.303
Departure Headway (Hd)	4.549	5.137	4.886	4.518
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	787	694	730	794
Service Time	2.589	3.193	2.939	2.558
HCM Lane V/C Ratio	0.274	0.107	0.118	0.304
HCM Control Delay	9.3	8.8	8.6	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.4	0.4	1.3

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/06/2022

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	194	46	131	24	3	159
Future Vol, veh/h	194	46	131	24	3	159
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	211	50	142	26	3	173
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	10.1	8.8	8.5
HCM LOS	B	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	2%
Vol Thru, %	19%	85%	0%
Vol Right, %	0%	15%	98%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	240	155	162
LT Vol	194	0	3
Through Vol	46	131	0
RT Vol	0	24	159
Lane Flow Rate	261	168	176
Geometry Grp	1	1	1
Degree of Util (X)	0.339	0.212	0.212
Departure Headway (Hd)	4.676	4.535	4.339
Convergence, Y/N	Yes	Yes	Yes
Cap	767	790	826
Service Time	2.711	2.572	2.371
HCM Lane V/C Ratio	0.34	0.213	0.213
HCM Control Delay	10.1	8.8	8.5
HCM Lane LOS	B	A	A
HCM 95th-tile Q	1.5	0.8	0.8

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	217	31	59	162	43	69	696	49	76	846	142
Future Volume (veh/h)	141	217	31	59	162	43	69	696	49	76	846	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	153	236	34	64	176	47	75	757	53	83	920	154
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	442	376	200	442	376	333	1566	110	347	1442	241
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.38	0.93	0.93	0.20	0.47	0.47
Sat Flow, veh/h	1153	1863	1583	1105	1863	1583	1774	3356	235	1774	3035	508
Grp Volume(v), veh/h	153	236	34	64	176	47	75	399	411	83	536	538
Grp Sat Flow(s),veh/h/ln	1153	1863	1583	1105	1863	1583	1774	1770	1821	1774	1770	1773
Q Serve(g_s), s	15.5	13.3	2.0	6.4	9.5	2.8	3.5	3.3	3.3	4.7	27.4	27.4
Cycle Q Clear(g_c), s	25.0	13.3	2.0	19.7	9.5	2.8	3.5	3.3	3.3	4.7	27.4	27.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		0.29
Lane Grp Cap(c), veh/h	242	442	376	200	442	376	333	826	850	347	841	842
V/C Ratio(X)	0.63	0.53	0.09	0.32	0.40	0.12	0.23	0.48	0.48	0.24	0.64	0.64
Avail Cap(c_a), veh/h	324	574	488	278	574	488	333	826	850	347	841	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	39.9	35.7	48.6	38.5	36.0	31.5	2.2	2.2	40.7	23.7	23.7
Incr Delay (d2), s/veh	2.7	1.0	0.1	0.9	0.6	0.1	0.3	2.0	1.9	0.4	3.7	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	6.9	0.9	2.0	5.0	1.2	1.7	1.8	1.8	2.4	14.1	14.2
LnGrp Delay(d),s/veh	51.8	40.9	35.8	49.5	39.1	36.1	31.9	4.2	4.2	41.1	27.4	27.4
LnGrp LOS	D	D	D	D	D	D	C	A	A	D	C	C
Approach Vol, veh/h		423			287			885			1157	
Approach Delay, s/veh		44.4			40.9			6.5			28.4	
Approach LOS		D			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	27.5	60.0		32.5	26.5	61.0		32.5
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	15.0	56.0		37.0	14.0	57.0		37.0
Max Q Clear Time (g_c+I1), s	6.7	5.3		27.0	5.5	29.4		21.7
Green Ext Time (p_c), s	0.1	5.8		1.5	0.1	7.9		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/06/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	33	781	38	19	847
Future Volume (veh/h)	59	33	781	38	19	847
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	64	36	849	41	21	921
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	89	80	2896	140	36	3156
Arrive On Green	0.05	0.05	0.84	0.84	0.02	0.89
Sat Flow, veh/h	1774	1583	3530	166	1774	3632
Grp Volume(v), veh/h	64	36	437	453	21	921
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1833	1774	1770
Q Serve(g_s), s	4.9	3.0	7.1	7.1	1.6	5.3
Cycle Q Clear(g_c), s	4.9	3.0	7.1	7.1	1.6	5.3
Prop In Lane	1.00	1.00		0.09	1.00	
Lane Grp Cap(c), veh/h	89	80	1491	1545	36	3156
V/C Ratio(X)	0.72	0.45	0.29	0.29	0.59	0.29
Avail Cap(c_a), veh/h	296	264	1491	1545	180	3156
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	64.5	63.7	2.3	2.3	67.1	1.1
Incr Delay (d2), s/veh	10.1	3.9	0.5	0.5	14.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.4	3.6	3.7	0.9	2.5
LnGrp Delay(d),s/veh	74.7	67.6	2.8	2.8	81.1	1.3
LnGrp LOS	E	E	A	A	F	A
Approach Vol, veh/h	100		890			942
Approach Delay, s/veh	72.1		2.8			3.1
Approach LOS	E		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		127.0			6.8	120.3		11.0
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		107.0			14.0	89.0		23.0
Max Q Clear Time (g_c+I1), s		7.3			3.6	9.1		6.9
Green Ext Time (p_c), s		8.0			0.0	6.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	40	18	781	847	35
Future Volume (veh/h)	21	40	18	781	847	35
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	23	43	20	849	921	38
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	70	63	36	3163	2911	120
Arrive On Green	0.04	0.04	0.02	0.89	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3557	143
Grp Volume(v), veh/h	23	43	20	849	470	489
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1838
Q Serve(g_s), s	1.5	3.2	1.3	4.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	3.2	1.3	4.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	70	63	36	3163	1487	1544
V/C Ratio(X)	0.33	0.69	0.56	0.27	0.32	0.32
Avail Cap(c_a), veh/h	325	290	163	3163	1487	1544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.87	0.87
Uniform Delay (d), s/veh	56.1	56.9	58.2	0.9	0.0	0.0
Incr Delay (d2), s/veh	2.7	12.5	12.3	0.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.6	0.8	2.0	0.2	0.2
LnGrp Delay(d),s/veh	58.8	69.4	70.5	1.1	0.5	0.5
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	66			869	959	
Approach Delay, s/veh	65.7			2.7	0.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	6.4	104.8		8.7		111.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	11.0	75.0		22.0		90.0		
Max Q Clear Time (g_c+I1), s	3.3	2.0		5.2		6.0		
Green Ext Time (p_c), s	0.0	7.4		0.1		7.2		

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	8	662	263	12	29	429	820	230	8	958	5
Future Volume (veh/h)	3	8	662	263	12	29	429	820	230	8	958	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	3	9	720	286	13	32	466	891	250	9	1041	5
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	192	752	191	128	316	486	1009	287	538	1095	5
Arrive On Green	0.13	0.13	0.13	0.11	0.27	0.27	0.34	0.34	0.34	0.30	0.30	0.30
Sat Flow, veh/h	297	1454	1583	1774	478	1177	1419	2946	836	1774	3612	17
Grp Volume(v), veh/h	12	0	720	286	0	45	588	506	513	9	510	536
Grp Sat Flow(s),veh/h/ln	1751	0	1583	1774	0	1655	1792	1695	1715	1774	1770	1860
Q Serve(g_s), s	0.0	0.0	18.5	15.1	0.0	2.9	45.0	39.2	39.2	0.5	39.5	39.5
Cycle Q Clear(g_c), s	0.8	0.0	18.5	15.1	0.0	2.9	45.0	39.2	39.2	0.5	39.5	39.5
Prop In Lane	0.25		1.00	1.00		0.71	0.79		0.49	1.00		0.01
Lane Grp Cap(c), veh/h	264	0	752	191	0	444	614	581	587	538	537	564
V/C Ratio(X)	0.05	0.00	0.96	1.49	0.00	0.10	0.96	0.87	0.87	0.02	0.95	0.95
Avail Cap(c_a), veh/h	264	0	752	191	0	444	614	581	587	545	544	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	24.2	62.5	0.0	38.5	45.0	43.1	43.2	34.2	47.8	47.8
Incr Delay (d2), s/veh	0.1	0.0	23.0	248.1	0.0	0.1	27.4	16.4	16.3	0.0	26.6	25.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	32.6	20.6	0.0	1.3	26.9	20.9	21.2	0.2	23.2	24.3
LnGrp Delay(d),s/veh	53.1	0.0	47.2	310.6	0.0	38.6	72.5	59.6	59.5	34.2	74.3	73.5
LnGrp LOS	D		D	F		D	E	E	E	C	E	E
Approach Vol, veh/h		732			331			1607			1055	
Approach Delay, s/veh		47.3			273.6			64.3			73.6	
Approach LOS		D			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		52.0	19.1	22.5		46.4		41.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		47.4	15.1	18.5		43.0		37.6
Max Q Clear Time (g_c+I1), s		47.0	17.1	20.5		41.5		4.9
Green Ext Time (p_c), s		0.3	0.0	0.0		0.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	82.2
HCM 2010 LOS	F

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	249	117	53	1210	1632	268
Future Volume (veh/h)	249	117	53	1210	1632	268
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	271	127	58	1315	1774	291
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	352	162	110	4274	4998	1235
Arrive On Green	0.10	0.10	0.06	1.00	0.78	0.78
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	271	127	58	1315	1774	291
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	10.7	11.0	2.3	0.0	11.8	6.9
Cycle Q Clear(g_c), s	10.7	11.0	2.3	0.0	11.8	6.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	352	162	110	4274	4998	1235
V/C Ratio(X)	0.77	0.78	0.53	0.31	0.35	0.24
Avail Cap(c_a), veh/h	836	385	295	4274	4998	1235
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.62	0.62	1.00	1.00
Uniform Delay (d), s/veh	61.2	61.3	64.5	0.0	4.7	4.2
Incr Delay (d2), s/veh	3.6	8.0	2.4	0.1	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	9.7	1.1	0.0	5.2	3.1
LnGrp Delay(d),s/veh	64.8	69.4	66.9	0.1	4.9	4.6
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	398			1373	2065	
Approach Delay, s/veh	66.3			2.9	4.8	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		121.7		18.3	8.5	113.2		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		98.0		34.0	12.0	82.0		
Max Q Clear Time (g_c+I1), s		2.0		13.0	4.3	13.8		
Green Ext Time (p_c), s		13.7		1.4	0.1	28.0		

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	1358	110	81	1089	365	187	532	55	882	658	134
Future Volume (veh/h)	152	1358	110	81	1089	365	187	532	55	882	658	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	165	1476	120	88	1184	397	203	578	60	959	715	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	1627	132	108	1275	427	313	906	93	1006	1095	490
Arrive On Green	0.06	0.34	0.34	0.12	0.68	0.68	0.18	0.19	0.19	0.10	0.10	0.00
Sat Flow, veh/h	3442	4794	390	1774	3768	1262	1774	4687	481	3442	3539	1583
Grp Volume(v), veh/h	165	1044	552	88	1065	516	203	416	222	959	715	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1794	1774	1695	1640	1774	1695	1778	1721	1770	1583
Q Serve(g_s), s	6.6	41.1	41.1	6.8	38.2	38.3	14.9	15.8	16.1	38.8	27.2	0.0
Cycle Q Clear(g_c), s	6.6	41.1	41.1	6.8	38.2	38.3	14.9	15.8	16.1	38.8	27.2	0.0
Prop In Lane	1.00		0.22	1.00		0.77	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	213	1151	609	108	1147	555	313	655	344	1006	1095	490
V/C Ratio(X)	0.78	0.91	0.91	0.82	0.93	0.93	0.65	0.64	0.64	0.95	0.65	0.00
Avail Cap(c_a), veh/h	236	1187	628	133	1208	585	313	655	344	1008	1095	490
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	64.7	44.1	44.1	60.7	21.1	21.2	53.6	51.9	52.0	62.3	55.6	0.0
Incr Delay (d2), s/veh	13.7	10.0	16.7	23.4	10.7	18.8	4.7	4.7	9.0	17.4	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	20.9	23.2	4.0	19.1	19.8	7.7	7.8	8.7	20.9	13.8	0.0
LnGrp Delay(d),s/veh	78.4	54.1	60.9	84.1	31.9	40.0	58.3	56.6	61.0	79.7	58.5	0.0
LnGrp LOS	E	D	E	F	C	D	E	E	E	E	E	
Approach Vol, veh/h		1761			1669			841			1674	
Approach Delay, s/veh		58.5			37.1			58.2			70.6	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	44.9	31.1	12.5	51.5	28.7	47.3	12.6	51.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	41.0	23.5	10.5	49.0	21.2	43.3	9.6	49.9
Max Q Clear Time (g_c+I1), s	40.8	18.1	8.8	43.1	16.9	29.2	8.6	40.3
Green Ext Time (p_c), s	0.1	1.9	0.0	4.4	0.2	4.1	0.0	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	55.9
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	209	142	218	288	46	108	895	17	25	895	63
Future Volume (veh/h)	53	209	142	218	288	46	108	895	17	25	895	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	227	154	237	313	50	117	973	18	27	973	68
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	698	454	375	532	85	149	1357	25	134	1252	88
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.08	0.38	0.38	0.08	0.37	0.37
Sat Flow, veh/h	1015	2057	1339	998	1568	250	1774	3555	66	1774	3356	235
Grp Volume(v), veh/h	58	194	187	237	0	363	117	484	507	27	513	528
Grp Sat Flow(s),veh/h/ln	1015	1770	1626	998	0	1819	1774	1770	1851	1774	1770	1821
Q Serve(g_s), s	3.0	4.8	5.1	13.7	0.0	9.7	3.8	13.7	13.7	0.8	15.1	15.1
Cycle Q Clear(g_c), s	12.7	4.8	5.1	18.8	0.0	9.7	3.8	13.7	13.7	0.8	15.1	15.1
Prop In Lane	1.00		0.82	1.00		0.14	1.00		0.04	1.00		0.13
Lane Grp Cap(c), veh/h	299	600	552	375	0	617	149	675	706	134	660	680
V/C Ratio(X)	0.19	0.32	0.34	0.63	0.00	0.59	0.78	0.72	0.72	0.20	0.78	0.78
Avail Cap(c_a), veh/h	299	600	552	375	0	617	181	675	706	165	660	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	14.5	14.5	21.6	0.0	16.1	26.5	15.5	15.5	25.6	16.3	16.3
Incr Delay (d2), s/veh	0.3	0.3	0.4	3.4	0.0	1.5	16.7	6.4	6.2	0.7	8.7	8.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.4	2.3	4.1	0.0	5.1	2.5	7.8	8.1	0.4	8.9	9.1
LnGrp Delay(d),s/veh	21.6	14.8	14.9	25.0	0.0	17.6	43.2	22.0	21.7	26.3	25.0	24.8
LnGrp LOS	C	B	B	C		B	D	C	C	C	C	C
Approach Vol, veh/h		439			600			1108			1068	
Approach Delay, s/veh		15.7			20.5			24.1			25.0	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	26.5		24.0	9.0	26.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	22.5		20.0	6.0	22.0		20.0
Max Q Clear Time (g_c+I1), s	2.8	15.7		14.7	5.8	17.1		20.8
Green Ext Time (p_c), s	0.0	3.3		1.2	0.0	2.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2288	1521	215	42	46
Future Volume (veh/h)	0	2288	1521	215	42	46
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2487	1653	234	46	50
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3265	2892	408	534	476
Arrive On Green	0.00	0.64	1.00	1.00	0.30	0.30
Sat Flow, veh/h	0	5421	4673	635	1774	1583
Grp Volume(v), veh/h	0	2487	1242	645	46	50
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1751	1774	1583
Q Serve(g_s), s	0.0	48.0	0.0	0.0	2.6	3.2
Cycle Q Clear(g_c), s	0.0	48.0	0.0	0.0	2.6	3.2
Prop In Lane	0.00			0.36	1.00	1.00
Lane Grp Cap(c), veh/h	0	3265	2176	1124	534	476
V/C Ratio(X)	0.00	0.76	0.57	0.57	0.09	0.10
Avail Cap(c_a), veh/h	0	3959	2640	1363	534	476
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.25	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	0.0	17.6	0.0	0.0	35.1	35.3
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.4	0.1	0.1	1.3	1.5
LnGrp Delay(d),s/veh	0.0	17.7	0.2	0.4	35.4	35.8
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2487	1887		96	
Approach Delay, s/veh		17.7	0.3		35.6	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				93.9		46.1		93.9
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				109.0		23.0		109.0
Max Q Clear Time (g_c+I1), s				50.0		5.2		2.0
Green Ext Time (p_c), s				39.9		0.2		28.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2330	1503	0	21	18
Future Volume (veh/h)	0	2330	1503	0	21	18
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2533	1634	0	23	20
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3036	3036	0	613	547
Arrive On Green	0.00	1.00	0.60	0.00	0.35	0.35
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2533	1634	0	23	20
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	26.7	0.0	1.2	1.2
Cycle Q Clear(g_c), s	0.0	0.0	26.7	0.0	1.2	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3036	3036	0	613	547
V/C Ratio(X)	0.00	0.83	0.54	0.00	0.04	0.04
Avail Cap(c_a), veh/h	0	4032	4032	0	613	547
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.72	0.71	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.7	0.0	30.4	30.3
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	12.4	0.0	0.6	0.5
LnGrp Delay(d),s/veh	0.0	0.9	16.8	0.0	30.5	30.5
LnGrp LOS		A	B		C	C
Approach Vol, veh/h		2533	1634		43	
Approach Delay, s/veh		0.9	16.8		30.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				76.1		63.9		76.1
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		3.2		28.7
Green Ext Time (p_c), s				58.7		0.1		20.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	2132	19	506	1617	66	26	28	768	90	19	3
Future Volume (veh/h)	63	2132	19	506	1617	66	26	28	768	90	19	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	68	2317	21	550	1758	72	28	30	835	98	21	3
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	2273	21	587	2804	115	142	152	925	220	231	196
Arrive On Green	0.05	0.44	0.44	0.17	0.56	0.56	0.16	0.16	0.16	0.12	0.12	0.12
Sat Flow, veh/h	1774	5198	47	3442	5012	205	878	941	2787	1774	1863	1583
Grp Volume(v), veh/h	68	1510	828	550	1189	641	58	0	835	98	21	3
Grp Sat Flow(s),veh/h/ln	1774	1695	1854	1721	1695	1827	1819	0	1393	1774	1863	1583
Q Serve(g_s), s	5.7	65.6	65.6	23.7	35.7	35.7	4.1	0.0	24.2	7.7	1.5	0.2
Cycle Q Clear(g_c), s	5.7	65.6	65.6	23.7	35.7	35.7	4.1	0.0	24.2	7.7	1.5	0.2
Prop In Lane	1.00		0.03	1.00		0.11	0.48		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	86	1483	811	587	1897	1022	293	0	925	220	231	196
V/C Ratio(X)	0.79	1.02	1.02	0.94	0.63	0.63	0.20	0.00	0.90	0.45	0.09	0.02
Avail Cap(c_a), veh/h	147	1483	811	587	1897	1022	293	0	925	220	231	196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.6	42.2	42.2	61.4	22.4	22.4	54.5	0.0	47.8	60.9	58.2	57.7
Incr Delay (d2), s/veh	11.0	24.7	32.1	22.7	0.7	1.2	1.5	0.0	13.7	6.4	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	35.8	40.8	13.1	16.8	18.3	2.2	0.0	18.3	4.2	0.8	0.1
LnGrp Delay(d),s/veh	81.6	66.9	74.3	84.1	23.1	23.7	56.0	0.0	61.5	67.3	59.0	57.8
LnGrp LOS	F	F	F	F	C	C	E		E	E	E	E
Approach Vol, veh/h		2406			2380			893			122	
Approach Delay, s/veh		69.9			37.3			61.1			65.7	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.2	29.6	69.6		22.6	11.3	87.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		24.2	25.6	65.6		18.6	12.4	78.8
Max Q Clear Time (g_c+I1), s		26.2	25.7	67.6		9.7	7.7	37.7
Green Ext Time (p_c), s		0.0	0.0	0.0		0.2	0.0	19.2

Intersection Summary	
HCM 2010 Ctrl Delay	55.1
HCM 2010 LOS	E

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/06/2022

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	183	68	15	30	68	54	17	211	40	50	193	163
Future Vol, veh/h	183	68	15	30	68	54	17	211	40	50	193	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	199	74	16	33	74	59	18	229	43	54	210	177
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.3	12.9	15.9	22.9
HCM LOS	C	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	69%	20%	12%
Vol Thru, %	79%	26%	45%	48%
Vol Right, %	15%	6%	36%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	268	266	152	406
LT Vol	17	183	30	50
Through Vol	211	68	68	193
RT Vol	40	15	54	163
Lane Flow Rate	291	289	165	441
Geometry Grp	1	1	1	1
Degree of Util (X)	0.511	0.536	0.31	0.723
Departure Headway (Hd)	6.315	6.672	6.764	5.895
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	568	538	529	613
Service Time	4.384	4.74	4.845	3.953
HCM Lane V/C Ratio	0.512	0.537	0.312	0.719
HCM Control Delay	15.9	17.3	12.9	22.9
HCM Lane LOS	C	C	B	C
HCM 95th-tile Q	2.9	3.1	1.3	6.1

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/06/2022

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	24	7	20	30	32	4	177	21	28	168	32
Future Vol, veh/h	39	24	7	20	30	32	4	177	21	28	168	32
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	26	8	22	33	35	4	192	23	30	183	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.7	9.4	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	56%	24%	12%
Vol Thru, %	88%	34%	37%	74%
Vol Right, %	10%	10%	39%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	70	82	228
LT Vol	4	39	20	28
Through Vol	177	24	30	168
RT Vol	21	7	32	32
Lane Flow Rate	220	76	89	248
Geometry Grp	1	1	1	1
Degree of Util (X)	0.279	0.109	0.122	0.313
Departure Headway (Hd)	4.572	5.169	4.917	4.541
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	784	689	725	791
Service Time	2.615	3.23	2.975	2.582
HCM Lane V/C Ratio	0.281	0.11	0.123	0.314
HCM Control Delay	9.4	8.9	8.7	9.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.4	0.4	1.3

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/06/2022

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	199	4	24	22	2	163
Future Vol, veh/h	199	4	24	22	2	163
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	216	4	26	24	2	177
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9.3	7.6	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	98%	0%	1%
Vol Thru, %	2%	52%	0%
Vol Right, %	0%	48%	99%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	203	46	165
LT Vol	199	0	2
Through Vol	4	24	0
RT Vol	0	22	163
Lane Flow Rate	221	50	179
Geometry Grp	1	1	1
Degree of Util (X)	0.275	0.059	0.198
Departure Headway (Hd)	4.484	4.271	3.979
Convergence, Y/N	Yes	Yes	Yes
Cap	790	841	908
Service Time	2.576	2.288	1.982
HCM Lane V/C Ratio	0.28	0.059	0.197
HCM Control Delay	9.3	7.6	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	1.1	0.2	0.7

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	224	32	62	167	45	71	709	53	79	865	146
Future Volume (veh/h)	145	224	32	62	167	45	71	709	53	79	865	146
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	158	243	35	67	182	49	77	771	58	86	940	159
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	247	456	387	204	456	387	320	1557	117	335	1439	243
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.36	0.93	0.93	0.19	0.47	0.47
Sat Flow, veh/h	1145	1863	1583	1097	1863	1583	1774	3337	251	1774	3030	512
Grp Volume(v), veh/h	158	243	35	67	182	49	77	409	420	86	549	550
Grp Sat Flow(s),veh/h/ln	1145	1863	1583	1097	1863	1583	1774	1770	1818	1774	1770	1772
Q Serve(g_s), s	16.1	13.6	2.0	6.8	9.8	2.9	3.6	3.4	3.4	5.0	28.3	28.4
Cycle Q Clear(g_c), s	25.9	13.6	2.0	20.4	9.8	2.9	3.6	3.4	3.4	5.0	28.3	28.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.29
Lane Grp Cap(c), veh/h	247	456	387	204	456	387	320	826	849	335	841	842
V/C Ratio(X)	0.64	0.53	0.09	0.33	0.40	0.13	0.24	0.49	0.50	0.26	0.65	0.65
Avail Cap(c_a), veh/h	319	574	488	274	574	488	320	826	849	335	841	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	39.4	35.0	48.2	37.9	35.3	32.6	2.2	2.2	41.5	24.0	24.0
Incr Delay (d2), s/veh	2.8	1.0	0.1	0.9	0.6	0.1	0.4	2.1	2.0	0.4	3.9	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	7.1	0.9	2.1	5.1	1.3	1.8	1.8	1.9	2.5	14.6	14.7
LnGrp Delay(d),s/veh	51.5	40.3	35.1	49.1	38.5	35.5	33.0	4.3	4.3	41.9	27.9	27.9
LnGrp LOS	D	D	D	D	D	D	C	A	A	D	C	C
Approach Vol, veh/h		436			298			906			1185	
Approach Delay, s/veh		44.0			40.4			6.7			28.9	
Approach LOS		D			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.6	60.0		33.4	25.6	61.0		33.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	15.0	56.0		37.0	14.0	57.0		37.0
Max Q Clear Time (g_c+I1), s	7.0	5.4		27.9	5.6	30.4		22.4
Green Ext Time (p_c), s	0.1	6.0		1.5	0.1	8.1		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/06/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	34	799	39	20	868
Future Volume (veh/h)	61	34	799	39	20	868
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	66	37	868	42	22	943
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	92	82	2889	140	37	3151
Arrive On Green	0.05	0.05	0.84	0.84	0.02	0.89
Sat Flow, veh/h	1774	1583	3530	166	1774	3632
Grp Volume(v), veh/h	66	37	447	463	22	943
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1833	1774	1770
Q Serve(g_s), s	5.1	3.1	7.4	7.4	1.7	5.5
Cycle Q Clear(g_c), s	5.1	3.1	7.4	7.4	1.7	5.5
Prop In Lane	1.00	1.00		0.09	1.00	
Lane Grp Cap(c), veh/h	92	82	1488	1541	37	3151
V/C Ratio(X)	0.72	0.45	0.30	0.30	0.60	0.30
Avail Cap(c_a), veh/h	296	264	1488	1541	180	3151
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	64.5	63.5	2.3	2.3	67.0	1.1
Incr Delay (d2), s/veh	10.1	3.9	0.5	0.5	14.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.5	3.8	3.9	1.0	2.7
LnGrp Delay(d),s/veh	74.5	67.4	2.9	2.8	81.2	1.4
LnGrp LOS	E	E	A	A	F	A
Approach Vol, veh/h	103		910			965
Approach Delay, s/veh	72.0		2.9			3.2
Approach LOS	E		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		126.9			6.8	120.0		11.1
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		107.0			14.0	89.0		23.0
Max Q Clear Time (g_c+I1), s		7.5			3.7	9.4		7.1
Green Ext Time (p_c), s		8.3			0.0	6.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Open + Cumulative PM 03/15/2022 Baseline

Synchro 10 Report
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HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	41	19	799	868	36
Future Volume (veh/h)	22	41	19	799	868	36
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	24	45	21	868	943	39
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	73	65	37	3157	2902	120
Arrive On Green	0.04	0.04	0.02	0.89	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3557	143
Grp Volume(v), veh/h	24	45	21	868	482	500
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1837
Q Serve(g_s), s	1.6	3.4	1.4	4.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	3.4	1.4	4.2	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	73	65	37	3157	1483	1539
V/C Ratio(X)	0.33	0.69	0.56	0.27	0.32	0.32
Avail Cap(c_a), veh/h	325	290	163	3157	1483	1539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.86	0.86
Uniform Delay (d), s/veh	55.9	56.8	58.2	0.9	0.0	0.0
Incr Delay (d2), s/veh	2.6	12.2	12.2	0.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	0.8	2.0	0.2	0.2
LnGrp Delay(d),s/veh	58.5	69.0	70.4	1.1	0.5	0.5
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	69			889	982	
Approach Delay, s/veh	65.3			2.8	0.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	6.5	104.5		8.9		111.1		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	11.0	75.0		22.0		90.0		
Max Q Clear Time (g_c+I1), s	3.4	2.0		5.4		6.2		
Green Ext Time (p_c), s	0.0	7.7		0.1		7.4		

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	8	681	166	12	24	442	846	196	5	985	5
Future Volume (veh/h)	3	8	681	166	12	24	442	846	196	5	985	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	3	9	740	180	13	26	480	920	213	5	1071	5
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	192	746	191	149	298	495	1032	241	544	1109	5
Arrive On Green	0.13	0.13	0.13	0.11	0.27	0.27	0.34	0.34	0.34	0.31	0.31	0.31
Sat Flow, veh/h	298	1456	1583	1774	556	1111	1462	3047	713	1774	3613	17
Grp Volume(v), veh/h	12	0	740	180	0	39	588	506	519	5	525	551
Grp Sat Flow(s),veh/h/ln	1753	0	1583	1774	0	1667	1790	1695	1737	1774	1770	1860
Q Serve(g_s), s	0.0	0.0	18.5	14.1	0.0	2.5	45.2	39.4	39.5	0.3	40.9	40.9
Cycle Q Clear(g_c), s	0.8	0.0	18.5	14.1	0.0	2.5	45.2	39.4	39.5	0.3	40.9	40.9
Prop In Lane	0.25		1.00	1.00		0.67	0.82		0.41	1.00		0.01
Lane Grp Cap(c), veh/h	264	0	746	191	0	448	606	574	589	544	543	571
V/C Ratio(X)	0.05	0.00	0.99	0.94	0.00	0.09	0.97	0.88	0.88	0.01	0.97	0.97
Avail Cap(c_a), veh/h	264	0	746	191	0	448	606	574	589	545	544	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	24.5	62.0	0.0	38.3	45.6	43.6	43.6	33.7	47.8	47.8
Incr Delay (d2), s/veh	0.1	0.0	31.0	48.2	0.0	0.1	29.7	17.5	17.3	0.0	30.0	29.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	35.0	9.5	0.0	1.1	27.4	21.2	21.7	0.1	24.5	25.6
LnGrp Delay(d),s/veh	53.1	0.0	55.4	110.2	0.0	38.4	75.2	61.2	60.9	33.7	77.8	77.0
LnGrp LOS	D		E	F		D	E	E	E	C	E	E
Approach Vol, veh/h		752			219			1613			1081	
Approach Delay, s/veh		55.4			97.4			66.2			77.2	
Approach LOS		E			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		51.4	19.1	22.5		47.0		41.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		47.4	15.1	18.5		43.0		37.6
Max Q Clear Time (g_c+I1), s		47.2	16.1	20.5		42.9		4.5
Green Ext Time (p_c), s		0.1	0.0	0.0		0.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	69.1
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	257	120	54	1206	1573	276
Future Volume (veh/h)	257	120	54	1206	1573	276
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	279	130	59	1311	1710	300
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	359	165	111	4264	4984	1231
Arrive On Green	0.10	0.10	0.06	1.00	0.78	0.78
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	279	130	59	1311	1710	300
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	11.1	11.2	2.3	0.0	11.3	7.3
Cycle Q Clear(g_c), s	11.1	11.2	2.3	0.0	11.3	7.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	359	165	111	4264	4984	1231
V/C Ratio(X)	0.78	0.79	0.53	0.31	0.34	0.24
Avail Cap(c_a), veh/h	836	385	295	4264	4984	1231
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.64	0.64	1.00	1.00
Uniform Delay (d), s/veh	61.1	61.2	64.5	0.0	4.7	4.3
Incr Delay (d2), s/veh	3.6	8.0	2.5	0.1	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	9.9	1.1	0.0	5.1	3.3
LnGrp Delay(d),s/veh	64.7	69.2	67.0	0.1	4.9	4.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	409			1370	2010	
Approach Delay, s/veh	66.1			3.0	4.9	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		121.4		18.6	8.5	112.9		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		98.0		34.0	12.0	82.0		
Max Q Clear Time (g_c+I1), s		2.0		13.2	4.3	13.3		
Green Ext Time (p_c), s		13.6		1.4	0.1	26.4		

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	1396	113	83	1121	340	192	546	57	810	673	134
Future Volume (veh/h)	155	1396	113	83	1121	340	192	546	57	810	673	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	168	1517	123	90	1218	370	209	593	62	880	732	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	1646	133	110	1326	402	304	952	99	954	1095	490
Arrive On Green	0.06	0.34	0.34	0.12	0.69	0.69	0.17	0.20	0.20	0.09	0.10	0.00
Sat Flow, veh/h	3442	4796	389	1774	3871	1175	1774	4683	485	3442	3539	1583
Grp Volume(v), veh/h	168	1072	568	90	1067	521	209	428	227	880	732	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1794	1774	1695	1655	1774	1695	1777	1721	1770	1583
Q Serve(g_s), s	6.7	42.5	42.6	6.9	37.4	37.5	15.5	16.1	16.4	35.5	27.9	0.0
Cycle Q Clear(g_c), s	6.7	42.5	42.6	6.9	37.4	37.5	15.5	16.1	16.4	35.5	27.9	0.0
Prop In Lane	1.00		0.22	1.00		0.71	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	215	1163	616	110	1161	567	304	689	361	954	1095	490
V/C Ratio(X)	0.78	0.92	0.92	0.82	0.92	0.92	0.69	0.62	0.63	0.92	0.67	0.00
Avail Cap(c_a), veh/h	236	1187	628	133	1208	590	304	689	361	1008	1095	490
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	64.7	44.2	44.2	60.6	20.4	20.4	54.5	50.8	51.0	62.1	55.9	0.0
Incr Delay (d2), s/veh	14.2	11.6	19.1	24.1	9.7	17.2	6.4	4.2	8.1	12.4	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	21.8	24.4	4.1	18.4	19.2	8.1	7.9	8.8	18.6	14.2	0.0
LnGrp Delay(d),s/veh	78.8	55.8	63.2	84.6	30.1	37.6	60.9	55.0	59.0	74.5	59.0	0.0
LnGrp LOS	E	E	E	F	C	D	E	E	E	E	E	
Approach Vol, veh/h		1808			1678			864			1612	
Approach Delay, s/veh		60.3			35.3			57.5			67.5	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.8	32.5	12.7	52.0	28.0	47.3	12.8	52.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	41.0	23.5	10.5	49.0	21.2	43.3	9.6	49.9
Max Q Clear Time (g_c+I1), s	37.5	18.4	8.9	44.6	17.5	29.9	8.7	39.5
Green Ext Time (p_c), s	1.3	1.8	0.0	3.5	0.2	4.1	0.0	7.3

Intersection Summary	
HCM 2010 Ctrl Delay	54.8
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	215	146	224	296	47	111	919	17	26	917	65
Future Volume (veh/h)	54	215	146	224	296	47	111	919	17	26	917	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	234	159	243	322	51	121	999	18	28	997	71
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	695	454	368	531	84	154	1353	24	139	1247	89
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.09	0.38	0.38	0.08	0.37	0.37
Sat Flow, veh/h	1005	2054	1341	987	1570	249	1774	3557	64	1774	3352	239
Grp Volume(v), veh/h	59	200	193	243	0	373	121	497	520	28	526	542
Grp Sat Flow(s),veh/h/ln	1005	1770	1626	987	0	1819	1774	1770	1851	1774	1770	1821
Q Serve(g_s), s	3.1	5.0	5.3	14.5	0.0	10.1	4.0	14.3	14.3	0.9	15.7	15.7
Cycle Q Clear(g_c), s	13.2	5.0	5.3	19.8	0.0	10.1	4.0	14.3	14.3	0.9	15.7	15.7
Prop In Lane	1.00		0.83	1.00		0.14	1.00		0.03	1.00		0.13
Lane Grp Cap(c), veh/h	290	598	550	368	0	615	154	673	704	139	658	677
V/C Ratio(X)	0.20	0.33	0.35	0.66	0.00	0.61	0.79	0.74	0.74	0.20	0.80	0.80
Avail Cap(c_a), veh/h	290	598	550	368	0	615	180	673	704	165	658	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	14.6	14.7	22.1	0.0	16.3	26.5	15.8	15.8	25.5	16.6	16.6
Incr Delay (d2), s/veh	0.3	0.3	0.4	4.3	0.0	1.7	17.5	7.1	6.8	0.7	9.8	9.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.5	2.4	4.4	0.0	5.4	2.7	8.2	8.6	0.5	9.4	9.6
LnGrp Delay(d),s/veh	22.1	14.9	15.1	26.5	0.0	18.0	44.0	22.9	22.6	26.2	26.4	26.2
LnGrp LOS	C	B	B	C		B	D	C	C	C	C	C
Approach Vol, veh/h		452			616			1138			1096	
Approach Delay, s/veh		15.9			21.3			25.0			26.3	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	26.5		24.0	9.1	26.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	22.5		20.0	6.0	22.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	16.3		15.2	6.0	17.7		21.8
Green Ext Time (p_c), s	0.0	3.2		1.2	0.0	2.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

Open + Cumulative PM 03/15/2022 Baseline

Synchro 10 Report
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HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2255	1528	221	43	47
Future Volume (veh/h)	0	2255	1528	221	43	47
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2451	1661	240	47	51
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3226	2850	410	547	488
Arrive On Green	0.00	0.63	1.00	1.00	0.31	0.31
Sat Flow, veh/h	0	5421	4660	646	1774	1583
Grp Volume(v), veh/h	0	2451	1252	649	47	51
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1749	1774	1583
Q Serve(g_s), s	0.0	47.6	0.0	0.0	2.6	3.2
Cycle Q Clear(g_c), s	0.0	47.6	0.0	0.0	2.6	3.2
Prop In Lane	0.00			0.37	1.00	1.00
Lane Grp Cap(c), veh/h	0	3226	2151	1109	547	488
V/C Ratio(X)	0.00	0.76	0.58	0.59	0.09	0.10
Avail Cap(c_a), veh/h	0	3959	2640	1361	547	488
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.26	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	0.0	18.1	0.0	0.0	34.4	34.6
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.5	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.1	0.1	0.1	1.3	1.5
LnGrp Delay(d),s/veh	0.0	18.3	0.2	0.5	34.7	35.0
LnGrp LOS		B	A	A	C	D
Approach Vol, veh/h		2451	1901		98	
Approach Delay, s/veh		18.3	0.3		34.9	
Approach LOS		B	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				92.8		47.2		92.8
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				109.0		23.0		109.0
Max Q Clear Time (g_c+I1), s				49.6		5.2		2.0
Green Ext Time (p_c), s				39.2		0.2		29.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2298	1509	0	22	19
Future Volume (veh/h)	0	2298	1509	0	22	19
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2498	1640	0	24	21
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2981	2981	0	633	565
Arrive On Green	0.00	1.00	0.59	0.00	0.36	0.36
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2498	1640	0	24	21
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	0.0	27.6	0.0	1.2	1.2
Cycle Q Clear(g_c), s	0.0	0.0	27.6	0.0	1.2	1.2
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2981	2981	0	633	565
V/C Ratio(X)	0.00	0.84	0.55	0.00	0.04	0.04
Avail Cap(c_a), veh/h	0	4032	4032	0	633	565
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.73	0.68	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	17.7	0.0	29.4	29.4
Incr Delay (d2), s/veh	0.0	0.9	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	12.9	0.0	0.6	0.6
LnGrp Delay(d),s/veh	0.0	0.9	17.8	0.0	29.5	29.5
LnGrp LOS		A	B		C	C
Approach Vol, veh/h		2498	1640		45	
Approach Delay, s/veh		0.9	17.8		29.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				74.5		65.5		74.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				2.0		3.2		29.6
Green Ext Time (p_c), s				56.9		0.1		20.5

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	2095	20	520	1626	68	28	29	794	93	20	3
Future Volume (veh/h)	65	2095	20	520	1626	68	28	29	794	93	20	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	71	2277	22	565	1767	74	30	32	863	101	22	3
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	2271	22	587	2791	117	142	151	925	220	231	196
Arrive On Green	0.05	0.44	0.44	0.17	0.56	0.56	0.16	0.16	0.16	0.12	0.12	0.12
Sat Flow, veh/h	1774	5194	50	3442	5007	209	880	939	2787	1774	1863	1583
Grp Volume(v), veh/h	71	1485	814	565	1196	645	62	0	863	101	22	3
Grp Sat Flow(s),veh/h/ln	1774	1695	1854	1721	1695	1826	1819	0	1393	1774	1863	1583
Q Serve(g_s), s	5.9	65.6	65.6	24.4	36.2	36.3	4.4	0.0	24.2	7.9	1.6	0.2
Cycle Q Clear(g_c), s	5.9	65.6	65.6	24.4	36.2	36.3	4.4	0.0	24.2	7.9	1.6	0.2
Prop In Lane	1.00		0.03	1.00		0.11	0.48		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	1483	811	587	1890	1018	293	0	925	220	231	196
V/C Ratio(X)	0.79	1.00	1.00	0.96	0.63	0.63	0.21	0.00	0.93	0.46	0.10	0.02
Avail Cap(c_a), veh/h	147	1483	811	587	1890	1018	293	0	925	220	231	196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.73	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	42.2	42.2	61.7	22.7	22.7	54.6	0.0	48.5	61.0	58.2	57.7
Incr Delay (d2), s/veh	10.9	20.4	27.8	27.8	0.7	1.3	1.6	0.0	17.2	6.8	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	34.9	39.8	13.9	17.1	18.6	2.4	0.0	19.5	4.3	0.9	0.1
LnGrp Delay(d),s/veh	81.3	62.6	70.0	89.5	23.4	24.0	56.2	0.0	65.7	67.8	59.1	57.8
LnGrp LOS	F	F	F	F	C	C	E		E	E	E	E
Approach Vol, veh/h		2370			2406			925			126	
Approach Delay, s/veh		65.7			39.1			65.1			66.0	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.2	29.6	69.6		22.6	11.6	87.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		24.2	25.6	65.6		18.6	12.4	78.8
Max Q Clear Time (g_c+I1), s		26.2	26.4	67.6		9.9	7.9	38.3
Green Ext Time (p_c), s		0.0	0.0	0.0		0.2	0.0	19.3

Intersection Summary	
HCM 2010 Ctrl Delay	54.6
HCM 2010 LOS	D

HCM 2010 AWSC
1: Wilcox Ave & Santa Ana St 04/06/2022

Intersection	
Intersection Delay, s/veh	18.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	183	68	15	30	68	54	17	214	40	50	194	163
Future Vol, veh/h	183	68	15	30	68	54	17	214	40	50	194	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	199	74	16	33	74	59	18	233	43	54	211	177
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.3	12.9	16.1	23.1
HCM LOS	C	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	69%	20%	12%
Vol Thru, %	79%	26%	45%	48%
Vol Right, %	15%	6%	36%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	271	266	152	407
LT Vol	17	183	30	50
Through Vol	214	68	68	194
RT Vol	40	15	54	163
Lane Flow Rate	295	289	165	442
Geometry Grp	1	1	1	1
Degree of Util (X)	0.518	0.537	0.311	0.726
Departure Headway (Hd)	6.325	6.69	6.784	5.908
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	569	538	527	610
Service Time	4.393	4.76	4.867	3.967
HCM Lane V/C Ratio	0.518	0.537	0.313	0.725
HCM Control Delay	16.1	17.3	12.9	23.1
HCM Lane LOS	C	C	B	C
HCM 95th-tile Q	3	3.2	1.3	6.1

HCM 2010 AWSC
2: Wilcox Ave & Cecelia St 04/06/2022

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	24	7	20	30	32	4	180	21	28	169	32
Future Vol, veh/h	39	24	7	20	30	32	4	180	21	28	169	32
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	26	8	22	33	35	4	196	23	30	184	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	8.7	9.4	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	56%	24%	12%
Vol Thru, %	88%	34%	37%	74%
Vol Right, %	10%	10%	39%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	205	70	82	229
LT Vol	4	39	20	28
Through Vol	180	24	30	169
RT Vol	21	7	32	32
Lane Flow Rate	223	76	89	249
Geometry Grp	1	1	1	1
Degree of Util (X)	0.283	0.109	0.122	0.314
Departure Headway (Hd)	4.575	5.18	4.928	4.545
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	782	689	724	789
Service Time	2.617	3.239	2.984	2.586
HCM Lane V/C Ratio	0.285	0.11	0.123	0.316
HCM Control Delay	9.4	8.9	8.7	9.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.2	0.4	0.4	1.3

HCM 2010 AWSC
3: Patata St & Wilcox Ave 04/06/2022

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	199	46	132	25	3	163
Future Vol, veh/h	199	46	132	25	3	163
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	216	50	143	27	3	177
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	10.2	8.8	8.6
HCM LOS	B	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	81%	0%	2%
Vol Thru, %	19%	84%	0%
Vol Right, %	0%	16%	98%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	245	157	166
LT Vol	199	0	3
Through Vol	46	132	0
RT Vol	0	25	163
Lane Flow Rate	266	171	180
Geometry Grp	1	1	1
Degree of Util (X)	0.347	0.216	0.218
Departure Headway (Hd)	4.69	4.55	4.359
Convergence, Y/N	Yes	Yes	Yes
Cap	764	787	823
Service Time	2.728	2.589	2.392
HCM Lane V/C Ratio	0.348	0.217	0.219
HCM Control Delay	10.2	8.8	8.6
HCM Lane LOS	B	A	A
HCM 95th-tile Q	1.6	0.8	0.8

HCM 2010 Signalized Intersection Summary
4: Atlantic Ave & Santa Ana St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	224	32	62	167	45	71	715	53	79	868	146
Future Volume (veh/h)	145	224	32	62	167	45	71	715	53	79	868	146
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	158	243	35	67	182	49	77	777	58	86	943	159
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	247	456	387	204	456	387	320	1558	116	335	1440	243
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.36	0.93	0.93	0.19	0.47	0.47
Sat Flow, veh/h	1145	1863	1583	1097	1863	1583	1774	3339	249	1774	3031	511
Grp Volume(v), veh/h	158	243	35	67	182	49	77	412	423	86	550	552
Grp Sat Flow(s),veh/h/ln	1145	1863	1583	1097	1863	1583	1774	1770	1819	1774	1770	1773
Q Serve(g_s), s	16.1	13.6	2.0	6.8	9.8	2.9	3.6	3.5	3.5	5.0	28.4	28.5
Cycle Q Clear(g_c), s	25.9	13.6	2.0	20.4	9.8	2.9	3.6	3.5	3.5	5.0	28.4	28.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.29
Lane Grp Cap(c), veh/h	247	456	387	204	456	387	320	826	849	335	841	842
V/C Ratio(X)	0.64	0.53	0.09	0.33	0.40	0.13	0.24	0.50	0.50	0.26	0.65	0.66
Avail Cap(c_a), veh/h	319	574	488	274	574	488	320	826	849	335	841	842
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	39.4	35.0	48.2	37.9	35.3	32.6	2.2	2.2	41.5	24.0	24.0
Incr Delay (d2), s/veh	2.8	1.0	0.1	0.9	0.6	0.1	0.4	2.1	2.0	0.4	4.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	7.1	0.9	2.1	5.1	1.3	1.8	1.9	1.9	2.5	14.7	14.9
LnGrp Delay(d),s/veh	51.5	40.3	35.1	49.1	38.5	35.5	33.0	4.3	4.3	41.9	28.0	28.0
LnGrp LOS	D	D	D	D	D	D	C	A	A	D	C	C
Approach Vol, veh/h		436			298			912			1188	
Approach Delay, s/veh		44.0			40.4			6.7			29.0	
Approach LOS		D			D			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.6	60.0		33.4	25.6	61.0		33.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	15.0	56.0		37.0	14.0	57.0		37.0
Max Q Clear Time (g_c+I1), s	7.0	5.5		27.9	5.6	30.5		22.4
Green Ext Time (p_c), s	0.1	6.0		1.5	0.1	8.1		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
5A: Atlantic Ave & Cecelia St

04/06/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	34	805	39	20	871
Future Volume (veh/h)	61	34	805	39	20	871
Number	3	18	6	16	5	2
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	66	37	875	42	22	947
Adj No. of Lanes	1	1	2	0	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	92	82	2891	139	37	3151
Arrive On Green	0.05	0.05	0.84	0.84	0.02	0.89
Sat Flow, veh/h	1774	1583	3531	165	1774	3632
Grp Volume(v), veh/h	66	37	450	467	22	947
Grp Sat Flow(s),veh/h/ln	1774	1583	1770	1834	1774	1770
Q Serve(g_s), s	5.1	3.1	7.5	7.5	1.7	5.5
Cycle Q Clear(g_c), s	5.1	3.1	7.5	7.5	1.7	5.5
Prop In Lane	1.00	1.00		0.09	1.00	
Lane Grp Cap(c), veh/h	92	82	1488	1542	37	3151
V/C Ratio(X)	0.72	0.45	0.30	0.30	0.60	0.30
Avail Cap(c_a), veh/h	296	264	1488	1542	180	3151
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	64.5	63.5	2.3	2.3	67.0	1.1
Incr Delay (d2), s/veh	10.1	3.9	0.5	0.5	14.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.5	3.8	4.0	1.0	2.7
LnGrp Delay(d),s/veh	74.5	67.4	2.9	2.9	81.1	1.4
LnGrp LOS	E	E	A	A	F	A
Approach Vol, veh/h	103		917			969
Approach Delay, s/veh	72.0		2.9			3.2
Approach LOS	E		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		126.9			6.8	120.0		11.1
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0
Max Green Setting (Gmax), s		107.0			14.0	89.0		23.0
Max Q Clear Time (g_c+I1), s		7.5			3.7	9.5		7.1
Green Ext Time (p_c), s		8.4			0.0	7.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Open + Cumulative + Project PM 03/15/2022 Baseline

Synchro 10 Report
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HCM 2010 Signalized Intersection Summary
5B: Atlantic Ave & Cecelia St

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	41	19	805	871	36
Future Volume (veh/h)	22	41	19	805	871	36
Number	7	14	1	6	2	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	24	45	21	875	947	39
Adj No. of Lanes	1	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	73	65	37	3157	2903	120
Arrive On Green	0.04	0.04	0.02	0.89	1.00	1.00
Sat Flow, veh/h	1774	1583	1774	3632	3558	143
Grp Volume(v), veh/h	24	45	21	875	484	502
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1770	1838
Q Serve(g_s), s	1.6	3.4	1.4	4.3	0.0	0.0
Cycle Q Clear(g_c), s	1.6	3.4	1.4	4.3	0.0	0.0
Prop In Lane	1.00	1.00	1.00			0.08
Lane Grp Cap(c), veh/h	73	65	37	3157	1483	1540
V/C Ratio(X)	0.33	0.69	0.56	0.28	0.33	0.33
Avail Cap(c_a), veh/h	325	290	163	3157	1483	1540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	0.86	0.86
Uniform Delay (d), s/veh	55.9	56.8	58.2	0.9	0.0	0.0
Incr Delay (d2), s/veh	2.6	12.2	12.2	0.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	0.8	2.0	0.2	0.2
LnGrp Delay(d),s/veh	58.5	69.0	70.4	1.1	0.5	0.5
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	69			896	986	
Approach Delay, s/veh	65.3			2.8	0.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	6.5	104.5		8.9		111.1		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	11.0	75.0		22.0		90.0		
Max Q Clear Time (g_c+I1), s	3.4	2.0		5.4		6.3		
Green Ext Time (p_c), s	0.0	7.7		0.1		7.5		

Intersection Summary	
HCM 2010 Ctrl Delay	3.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	8	681	268	12	30	442	846	235	8	985	5
Future Volume (veh/h)	3	8	681	268	12	30	442	846	235	8	985	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	3	9	740	291	13	33	480	920	255	9	1071	5
Adj No. of Lanes	0	1	1	1	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	192	746	191	125	319	481	1001	281	544	1109	5
Arrive On Green	0.13	0.13	0.13	0.11	0.27	0.27	0.34	0.34	0.34	0.31	0.31	0.31
Sat Flow, veh/h	297	1454	1583	1774	467	1186	1420	2955	828	1774	3613	17
Grp Volume(v), veh/h	12	0	740	291	0	46	606	521	528	9	525	551
Grp Sat Flow(s),veh/h/ln	1751	0	1583	1774	0	1653	1792	1695	1717	1774	1770	1860
Q Serve(g_s), s	0.0	0.0	18.5	15.1	0.0	2.9	47.3	41.1	41.2	0.5	40.9	40.9
Cycle Q Clear(g_c), s	0.8	0.0	18.5	15.1	0.0	2.9	47.3	41.1	41.2	0.5	40.9	40.9
Prop In Lane	0.25		1.00	1.00		0.72	0.79		0.48	1.00		0.01
Lane Grp Cap(c), veh/h	264	0	746	191	0	444	607	574	582	544	543	571
V/C Ratio(X)	0.05	0.00	0.99	1.52	0.00	0.10	1.00	0.91	0.91	0.02	0.97	0.97
Avail Cap(c_a), veh/h	264	0	746	191	0	444	607	574	582	545	544	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	24.5	62.5	0.0	38.5	46.2	44.2	44.2	33.8	47.8	47.8
Incr Delay (d2), s/veh	0.1	0.0	31.0	259.2	0.0	0.1	35.9	20.5	20.5	0.0	30.0	29.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	35.0	21.2	0.0	1.4	29.4	22.5	22.8	0.2	24.5	25.6
LnGrp Delay(d),s/veh	53.1	0.0	55.4	321.7	0.0	38.6	82.2	64.7	64.7	33.8	77.8	77.0
LnGrp LOS	D		E	F		D	F	E	E	C	E	E
Approach Vol, veh/h		752			337			1655			1085	
Approach Delay, s/veh		55.4			283.0			71.1			77.0	
Approach LOS		E			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		51.4	19.1	22.5		47.0		41.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		47.4	15.1	18.5		43.0		37.6
Max Q Clear Time (g_c+I1), s		49.3	17.1	20.5		42.9		4.9
Green Ext Time (p_c), s		0.0	0.0	0.0		0.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	88.4
HCM 2010 LOS	F

Open + Cumulative + Project PM 03/15/2022 Baseline

Synchro 10 Report
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HCM 2010 Signalized Intersection Summary
7: Atlantic Ave & Azalea West

04/06/2022

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	257	120	54	1245	1675	276
Future Volume (veh/h)	257	120	54	1245	1675	276
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	279	130	59	1353	1821	300
Adj No. of Lanes	2	1	2	3	4	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	359	165	111	4264	4984	1231
Arrive On Green	0.10	0.10	0.06	1.00	0.78	0.78
Sat Flow, veh/h	3442	1583	3442	5253	6669	1583
Grp Volume(v), veh/h	279	130	59	1353	1821	300
Grp Sat Flow(s),veh/h/ln	1721	1583	1721	1695	1602	1583
Q Serve(g_s), s	11.1	11.2	2.3	0.0	12.4	7.3
Cycle Q Clear(g_c), s	11.1	11.2	2.3	0.0	12.4	7.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	359	165	111	4264	4984	1231
V/C Ratio(X)	0.78	0.79	0.53	0.32	0.37	0.24
Avail Cap(c_a), veh/h	836	385	295	4264	4984	1231
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.56	0.56	1.00	1.00
Uniform Delay (d), s/veh	61.1	61.2	64.5	0.0	4.8	4.3
Incr Delay (d2), s/veh	3.6	8.0	2.2	0.1	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	9.9	1.1	0.0	5.5	3.3
LnGrp Delay(d),s/veh	64.7	69.2	66.7	0.1	5.0	4.7
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	409			1412	2121	
Approach Delay, s/veh	66.1			2.9	5.0	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		121.4		18.6	8.5	112.9		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		98.0		34.0	12.0	82.0		
Max Q Clear Time (g_c+I1), s		2.0		13.2	4.3	14.4		
Green Ext Time (p_c), s		14.4		1.4	0.1	29.4		

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
8: Atlantic Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	1396	113	83	1121	376	192	547	57	905	676	138
Future Volume (veh/h)	157	1396	113	83	1121	376	192	547	57	905	676	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	171	1517	123	90	1218	409	209	595	62	984	735	0
Adj No. of Lanes	2	3	0	1	3	0	1	3	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	1646	133	112	1292	433	301	873	90	1008	1095	490
Arrive On Green	0.06	0.34	0.34	0.13	0.69	0.69	0.17	0.19	0.19	0.10	0.10	0.00
Sat Flow, veh/h	3442	4796	389	1774	3767	1263	1774	4684	483	3442	3539	1583
Grp Volume(v), veh/h	171	1072	568	90	1096	531	209	429	228	984	735	0
Grp Sat Flow(s),veh/h/ln	1721	1695	1794	1774	1695	1640	1774	1695	1777	1721	1770	1583
Q Serve(g_s), s	6.9	42.5	42.6	6.9	40.2	40.4	15.5	16.5	16.8	39.9	28.0	0.0
Cycle Q Clear(g_c), s	6.9	42.5	42.6	6.9	40.2	40.4	15.5	16.5	16.8	39.9	28.0	0.0
Prop In Lane	1.00		0.22	1.00		0.77	1.00		0.27	1.00		1.00
Lane Grp Cap(c), veh/h	218	1163	616	112	1163	563	301	632	331	1008	1095	490
V/C Ratio(X)	0.78	0.92	0.92	0.80	0.94	0.94	0.69	0.68	0.69	0.98	0.67	0.00
Avail Cap(c_a), veh/h	236	1187	628	133	1208	584	301	632	331	1008	1095	490
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	0.93	0.93	0.00
Uniform Delay (d), s/veh	64.6	44.2	44.2	60.3	20.7	20.8	54.7	53.1	53.2	62.7	56.0	0.0
Incr Delay (d2), s/veh	14.7	11.6	19.1	21.9	12.5	21.4	6.7	5.8	11.1	21.7	3.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	21.8	24.4	4.0	20.3	21.0	8.2	8.3	9.3	22.1	14.2	0.0
LnGrp Delay(d),s/veh	79.3	55.8	63.2	82.1	33.2	42.1	61.4	58.9	64.3	84.5	59.1	0.0
LnGrp LOS	E	E	E	F	C	D	E	E	E	F	E	
Approach Vol, veh/h		1811			1717			866			1719	
Approach Delay, s/veh		60.3			38.6			60.9			73.6	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	45.0	30.1	12.9	52.0	27.8	47.3	12.9	52.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	41.0	23.5	10.5	49.0	21.2	43.3	9.6	49.9
Max Q Clear Time (g_c+I1), s	41.9	18.8	8.9	44.6	17.5	30.0	8.9	42.4
Green Ext Time (p_c), s	0.0	1.7	0.0	3.5	0.2	4.1	0.0	5.7

Intersection Summary	
HCM 2010 Ctrl Delay	58.0
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
9: Atlantic Ave & Southern Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	215	146	224	296	47	111	920	17	26	920	65
Future Volume (veh/h)	54	215	146	224	296	47	111	920	17	26	920	65
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	59	234	159	243	322	51	121	1000	18	28	1000	71
Adj No. of Lanes	1	2	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	695	454	368	531	84	154	1353	24	139	1247	89
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.09	0.38	0.38	0.08	0.37	0.37
Sat Flow, veh/h	1005	2054	1341	987	1570	249	1774	3557	64	1774	3352	238
Grp Volume(v), veh/h	59	200	193	243	0	373	121	497	521	28	528	543
Grp Sat Flow(s),veh/h/ln	1005	1770	1626	987	0	1819	1774	1770	1851	1774	1770	1821
Q Serve(g_s), s	3.1	5.0	5.3	14.5	0.0	10.1	4.0	14.3	14.3	0.9	15.8	15.8
Cycle Q Clear(g_c), s	13.2	5.0	5.3	19.8	0.0	10.1	4.0	14.3	14.3	0.9	15.8	15.8
Prop In Lane	1.00		0.83	1.00		0.14	1.00		0.03	1.00		0.13
Lane Grp Cap(c), veh/h	290	598	550	368	0	615	154	673	704	139	658	677
V/C Ratio(X)	0.20	0.33	0.35	0.66	0.00	0.61	0.79	0.74	0.74	0.20	0.80	0.80
Avail Cap(c_a), veh/h	290	598	550	368	0	615	180	673	704	165	658	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	14.6	14.7	22.1	0.0	16.3	26.5	15.8	15.8	25.5	16.6	16.6
Incr Delay (d2), s/veh	0.3	0.3	0.4	4.3	0.0	1.7	17.5	7.1	6.8	0.7	9.9	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.5	2.4	4.4	0.0	5.4	2.7	8.2	8.6	0.5	9.4	9.7
LnGrp Delay(d),s/veh	22.1	14.9	15.1	26.5	0.0	18.0	44.0	22.9	22.6	26.2	26.6	26.3
LnGrp LOS	C	B	B	C		B	D	C	C	C	C	C
Approach Vol, veh/h		452			616			1139			1099	
Approach Delay, s/veh		15.9			21.3			25.0			26.4	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	26.5		24.0	9.1	26.0		24.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	5.5	22.5		20.0	6.0	22.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	16.3		15.2	6.0	17.8		21.8
Green Ext Time (p_c), s	0.0	3.2		1.2	0.0	2.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
10: Firestone Ave & Mason St

04/06/2022

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2350	1564	221	43	47
Future Volume (veh/h)	0	2350	1564	221	43	47
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	0	2554	1700	240	47	51
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	2
Cap, veh/h	0	3334	2955	415	510	455
Arrive On Green	0.00	0.66	1.00	1.00	0.29	0.29
Sat Flow, veh/h	0	5421	4676	633	1774	1583
Grp Volume(v), veh/h	0	2554	1276	664	47	51
Grp Sat Flow(s),veh/h/ln	0	1695	1695	1751	1774	1583
Q Serve(g_s), s	0.0	48.7	0.0	0.0	2.7	3.3
Cycle Q Clear(g_c), s	0.0	48.7	0.0	0.0	2.7	3.3
Prop In Lane	0.00			0.36	1.00	1.00
Lane Grp Cap(c), veh/h	0	3334	2223	1148	510	455
V/C Ratio(X)	0.00	0.77	0.57	0.58	0.09	0.11
Avail Cap(c_a), veh/h	0	3959	2640	1363	510	455
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	0.21	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	0.0	16.7	0.0	0.0	36.5	36.7
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.4	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	22.8	0.1	0.1	1.4	1.5
LnGrp Delay(d),s/veh	0.0	16.9	0.2	0.4	36.9	37.2
LnGrp LOS		B	A	A	D	D
Approach Vol, veh/h		2554	1940		98	
Approach Delay, s/veh		16.9	0.3		37.1	
Approach LOS		B	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				95.8		44.2		95.8
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				109.0		23.0		109.0
Max Q Clear Time (g_c+I1), s				50.7		5.3		2.0
Green Ext Time (p_c), s				41.1		0.2		30.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Open + Cumulative + Project PM 03/15/2022 Baseline

Synchro 10 Report
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HCM 2010 Signalized Intersection Summary
11: Firestone Ave & Firestone Pl

04/06/2022

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations		↑↑↑	↑↑↑		↰	↱
Traffic Volume (veh/h)	0	2393	1545	0	22	19
Future Volume (veh/h)	0	2393	1545	0	22	19
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	0	2601	1679	0	24	21
Adj No. of Lanes	0	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2535	2535	0	788	703
Arrive On Green	0.00	1.00	0.50	0.00	0.44	0.44
Sat Flow, veh/h	0	5421	5421	0	1774	1583
Grp Volume(v), veh/h	0	2601	1679	0	24	21
Grp Sat Flow(s),veh/h/ln	0	1695	1695	0	1774	1583
Q Serve(g_s), s	0.0	69.8	34.6	0.0	1.1	1.0
Cycle Q Clear(g_c), s	0.0	69.8	34.6	0.0	1.1	1.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2535	2535	0	788	703
V/C Ratio(X)	0.00	1.03	0.66	0.00	0.03	0.03
Avail Cap(c_a), veh/h	0	4032	4032	0	788	703
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.71	0.66	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.2	26.3	0.0	21.9	21.9
Incr Delay (d2), s/veh	0.0	17.5	0.2	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	16.2	0.0	0.5	0.5
LnGrp Delay(d),s/veh	0.0	17.7	26.5	0.0	22.0	22.0
LnGrp LOS		F	C		C	C
Approach Vol, veh/h		2601	1679		45	
Approach Delay, s/veh		17.7	26.5		22.0	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				90.4		49.6		90.4
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				111.0		21.0		111.0
Max Q Clear Time (g_c+I1), s				71.8		3.1		36.6
Green Ext Time (p_c), s				31.2		0.1		21.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
12: Rayo Ave & Firestone Ave

04/06/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	2190	20	520	1662	68	28	29	794	93	20	3
Future Volume (veh/h)	65	2190	20	520	1662	68	28	29	794	93	20	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	71	2380	22	565	1807	74	30	32	863	101	22	3
Adj No. of Lanes	1	3	0	2	3	0	0	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	2273	21	587	2794	114	142	151	925	220	231	196
Arrive On Green	0.05	0.44	0.44	0.17	0.56	0.56	0.16	0.16	0.16	0.12	0.12	0.12
Sat Flow, veh/h	1774	5196	48	3442	5012	205	880	939	2787	1774	1863	1583
Grp Volume(v), veh/h	71	1552	850	565	1222	659	62	0	863	101	22	3
Grp Sat Flow(s),veh/h/ln	1774	1695	1854	1721	1695	1827	1819	0	1393	1774	1863	1583
Q Serve(g_s), s	5.9	65.6	65.6	24.4	37.4	37.5	4.4	0.0	24.2	7.9	1.6	0.2
Cycle Q Clear(g_c), s	5.9	65.6	65.6	24.4	37.4	37.5	4.4	0.0	24.2	7.9	1.6	0.2
Prop In Lane	1.00		0.03	1.00		0.11	0.48		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	90	1483	811	587	1890	1018	293	0	925	220	231	196
V/C Ratio(X)	0.79	1.05	1.05	0.96	0.65	0.65	0.21	0.00	0.93	0.46	0.10	0.02
Avail Cap(c_a), veh/h	147	1483	811	587	1890	1018	293	0	925	220	231	196
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	42.2	42.2	61.7	23.0	23.0	54.6	0.0	48.5	61.0	58.2	57.7
Incr Delay (d2), s/veh	10.6	33.2	40.3	27.8	0.8	1.4	1.6	0.0	17.2	6.8	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	37.5	42.6	13.9	17.7	19.3	2.4	0.0	19.5	4.3	0.9	0.1
LnGrp Delay(d),s/veh	81.1	75.4	82.5	89.5	23.7	24.4	56.2	0.0	65.7	67.8	59.1	57.8
LnGrp LOS	F	F	F	F	C	C	E		E	E	E	E
Approach Vol, veh/h		2473			2446			925			126	
Approach Delay, s/veh		78.0			39.1			65.1			66.0	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		28.2	29.6	69.6		22.6	11.6	87.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		24.2	25.6	65.6		18.6	12.4	78.8
Max Q Clear Time (g_c+I1), s		26.2	26.4	67.6		9.9	7.9	39.5
Green Ext Time (p_c), s		0.0	0.0	0.0		0.2	0.0	19.7

Intersection Summary	
HCM 2010 Ctrl Delay	59.8
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
6: Atlantic Ave & Salt Lake Ave/Patata St

04/22/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	8	681	268	12	30	442	846	235	8	985	5
Future Volume (veh/h)	3	8	681	268	12	30	442	846	235	8	985	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	3	9	740	291	13	33	480	920	255	9	1071	5
Adj No. of Lanes	0	1	2	2	1	0	0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	71	192	1336	324	119	302	493	1026	288	554	1127	5
Arrive On Green	0.13	0.13	0.13	0.09	0.25	0.25	0.35	0.35	0.35	0.31	0.31	0.31
Sat Flow, veh/h	297	1454	2787	3442	467	1186	1420	2955	828	1774	3613	17
Grp Volume(v), veh/h	12	0	740	291	0	46	606	521	528	9	525	551
Grp Sat Flow(s),veh/h/ln	1751	0	1393	1721	0	1653	1792	1695	1717	1774	1770	1860
Q Serve(g_s), s	0.0	0.0	18.5	11.7	0.0	3.0	46.7	40.6	40.6	0.5	40.6	40.6
Cycle Q Clear(g_c), s	0.8	0.0	18.5	11.7	0.0	3.0	46.7	40.6	40.6	0.5	40.6	40.6
Prop In Lane	0.25		1.00	1.00		0.72	0.79		0.48	1.00		0.01
Lane Grp Cap(c), veh/h	264	0	1336	324	0	422	622	589	596	554	552	580
V/C Ratio(X)	0.05	0.00	0.55	0.90	0.00	0.11	0.97	0.89	0.89	0.02	0.95	0.95
Avail Cap(c_a), veh/h	264	0	1336	324	0	422	622	589	596	561	560	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	23.8	62.7	0.0	40.0	45.1	43.1	43.1	33.3	47.1	47.1
Incr Delay (d2), s/veh	0.1	0.0	0.5	25.9	0.0	0.1	30.1	17.6	17.5	0.0	26.0	25.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	14.4	6.7	0.0	1.4	28.2	21.8	22.1	0.2	23.8	24.9
LnGrp Delay(d),s/veh	53.1	0.0	24.3	88.6	0.0	40.1	75.1	60.6	60.6	33.3	73.1	72.2
LnGrp LOS	D		C	F		D	E	E	E	C	E	E
Approach Vol, veh/h		752			337			1655			1085	
Approach Delay, s/veh		24.7			82.0			65.9			72.3	
Approach LOS		C			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		52.6	17.2	22.5		47.7		39.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s		48.0	13.2	18.5		44.3		35.7
Max Q Clear Time (g_c+I1), s		48.7	13.7	20.5		42.6		5.0
Green Ext Time (p_c), s		0.0	0.0	0.0		1.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	61.1
HCM 2010 LOS	E

APPENDIX D
QUEUE ANALYSIS

Queues
4: Atlantic Ave & Santa Ana St

04/12/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	240	57	75	195	95	55	829	64	828
v/c Ratio	0.91	0.49	0.12	0.36	0.40	0.20	0.43	0.41	0.45	0.41
Control Delay	79.8	39.2	8.0	38.2	37.0	6.2	57.5	12.8	62.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	39.2	8.0	38.2	37.0	6.2	57.5	12.8	62.1	16.8
Queue Length 50th (ft)	166	157	1	47	124	0	42	94	48	181
Queue Length 95th (ft)	236	203	29	81	166	35	84	318	93	297
Internal Link Dist (ft)		432			1873			618		579
Turn Bay Length (ft)	85		90	95		100	95		130	
Base Capacity (vph)	372	745	666	315	745	690	162	2020	177	2012
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.32	0.09	0.24	0.26	0.14	0.34	0.41	0.36	0.41

Intersection Summary

Queues
5A: Atlantic Ave & Cecelia St 04/12/2022

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	74	39	812	26	736
v/c Ratio	0.48	0.23	0.30	0.16	0.24
Control Delay	62.1	18.0	6.1	41.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	62.1	18.0	6.1	41.1	0.4
Queue Length 50th (ft)	56	0	116	19	1
Queue Length 95th (ft)	103	34	165	50	1
Internal Link Dist (ft)	1542		486		153
Turn Bay Length (ft)	70			60	
Base Capacity (vph)	324	322	2748	206	3082
Starvation Cap Reductn	0	0	0	0	1211
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.12	0.30	0.13	0.39

Intersection Summary

Queues
5B: Atlantic Ave & Cecelia St

04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	33	13	24	777	763
v/c Ratio	0.29	0.11	0.15	0.24	0.26
Control Delay	59.3	25.2	63.5	0.4	1.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	59.3	25.2	63.5	0.6	1.3
Queue Length 50th (ft)	25	0	20	1	34
Queue Length 95th (ft)	58	21	0	11	42
Internal Link Dist (ft)	211			153	618
Turn Bay Length (ft)	95		55		
Base Capacity (vph)	354	327	206	3240	2908
Starvation Cap Reductn	0	0	0	1424	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.04	0.12	0.43	0.26

Intersection Summary

Queues
6: Atlantic Ave & Salt Lake Ave/Patata St 04/12/2022

Lane Group	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	33	827	177	46	1484	16	734
v/c Ratio	0.38	0.88	0.86	0.14	0.58	0.04	0.94
Control Delay	75.0	35.9	95.1	19.2	14.2	43.3	74.9
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	75.0	35.9	95.1	19.2	14.4	43.3	74.9
Queue Length 50th (ft)	30	594	160	9	159	12	348
Queue Length 95th (ft)	65	#908	#286	43	175	32	#470
Internal Link Dist (ft)	368			1130	332		486
Turn Bay Length (ft)		80	80			100	
Base Capacity (vph)	188	941	214	492	2557	391	782
Starvation Cap Reductn	0	0	0	0	219	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.88	0.83	0.09	0.63	0.04	0.94

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
7: Atlantic Ave & Azalea West 04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	50	24	38	1466	1727	88
v/c Ratio	0.27	0.23	0.22	0.32	0.32	0.07
Control Delay	67.0	26.8	86.0	0.4	2.2	0.2
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	67.0	26.8	86.0	0.7	2.2	0.2
Queue Length 50th (ft)	23	0	15	7	64	0
Queue Length 95th (ft)	44	31	m21	m10	m85	m0
Internal Link Dist (ft)	386			596	161	
Turn Bay Length (ft)	120		125			150
Base Capacity (vph)	563	280	294	4623	5409	1350
Starvation Cap Reductn	0	0	0	2277	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.13	0.62	0.32	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Atlantic Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	172	1503	77	1611	161	779	972	674	122
v/c Ratio	0.78	0.92	0.64	0.98	0.59	0.80	0.94	0.56	0.08
Control Delay	88.1	55.0	79.4	54.7	64.6	60.9	51.1	29.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	88.1	55.0	79.4	54.7	64.6	60.9	51.1	29.6	0.1
Queue Length 50th (ft)	80	479	64	379	138	250	339	199	0
Queue Length 95th (ft)	#139	545	#140	#609	217	302	#555	241	0
Internal Link Dist (ft)		568		935		347		596	
Turn Bay Length (ft)	310		210		200				110
Base Capacity (vph)	220	1645	120	1651	274	969	1054	1195	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.91	0.64	0.98	0.59	0.80	0.92	0.56	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Atlantic Ave & Southern Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	477	160	238	84	863	32	779
v/c Ratio	0.22	0.42	0.70	0.43	0.38	0.53	0.15	0.52
Control Delay	15.2	7.5	34.8	13.9	27.8	12.7	24.1	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.2	7.5	34.8	13.9	27.8	12.7	24.1	13.8
Queue Length 50th (ft)	15	26	43	46	25	73	9	98
Queue Length 95th (ft)	39	55	#116	94	#64	181	31	160
Internal Link Dist (ft)		420		425		528		1683
Turn Bay Length (ft)	85		100		135		125	
Base Capacity (vph)	421	1494	322	759	221	1627	217	1493
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.50	0.31	0.38	0.53	0.15	0.52

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
10: Firestone Ave & Mason St

04/12/2022

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2525	1920	16	20
v/c Ratio	0.65	0.50	0.05	0.07
Control Delay	3.0	2.8	51.5	19.8
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	3.1	2.9	51.5	19.8
Queue Length 50th (ft)	66	55	13	0
Queue Length 95th (ft)	89	57	35	25
Internal Link Dist (ft)	935	169	340	
Turn Bay Length (ft)			40	
Base Capacity (vph)	4031	3975	309	293
Starvation Cap Reductn	372	346	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.53	0.05	0.07

Intersection Summary

Queues
11: Firestone Ave & Firestone Pl 04/12/2022

Lane Group	EBT	WBT	SWL	SWR
Lane Group Flow (vph)	2541	1696	16	2
v/c Ratio	0.65	0.43	0.05	0.01
Control Delay	0.9	5.8	51.6	35.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	5.8	51.6	35.0
Queue Length 50th (ft)	5	149	13	0
Queue Length 95th (ft)	8	168	35	9
Internal Link Dist (ft)	169	1015	513	
Turn Bay Length (ft)				60
Base Capacity (vph)	4031	4031	306	275
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.42	0.05	0.01

Intersection Summary

Queues
12: Rayo Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	42	2438	412	1946	20	1022	36	2	5
v/c Ratio	0.45	1.06	0.97	0.72	0.11	0.95	0.17	0.01	0.02
Control Delay	83.3	77.6	101.2	28.7	51.8	41.4	61.1	58.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.3	77.6	101.2	28.7	51.8	41.4	61.1	58.0	0.2
Queue Length 50th (ft)	40	~960	210	533	16	310	32	2	0
Queue Length 95th (ft)	84	#1046	#319	593	42	#387	69	11	0
Internal Link Dist (ft)		1015		797	540			574	
Turn Bay Length (ft)	135		610			150	170		170
Base Capacity (vph)	107	2294	425	2707	183	1079	218	229	278
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.06	0.97	0.72	0.11	0.95	0.17	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Atlantic Ave & Santa Ana St

04/12/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	228	248	58	79	201	98	57	857	66	863
v/c Ratio	0.91	0.49	0.12	0.37	0.40	0.20	0.44	0.43	0.46	0.44
Control Delay	78.5	38.4	8.2	37.6	36.1	6.0	57.7	13.7	62.4	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.5	38.4	8.2	37.6	36.1	6.0	57.7	13.7	62.4	17.8
Queue Length 50th (ft)	171	161	2	50	127	0	43	97	49	196
Queue Length 95th (ft)	242	206	30	83	168	35	87	336	95	320
Internal Link Dist (ft)		432			1873			618		579
Turn Bay Length (ft)	85		90	95		100	95		130	
Base Capacity (vph)	369	745	665	312	745	692	162	1986	177	1979
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.33	0.09	0.25	0.27	0.14	0.35	0.43	0.37	0.44

Intersection Summary

Queues
5A: Atlantic Ave & Cecelia St

04/12/2022

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	76	40	839	27	770
v/c Ratio	0.49	0.23	0.31	0.17	0.25
Control Delay	62.2	17.6	6.2	40.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	62.2	17.6	6.2	40.2	0.5
Queue Length 50th (ft)	57	0	121	20	1
Queue Length 95th (ft)	105	33	172	51	2
Internal Link Dist (ft)	1542		486		153
Turn Bay Length (ft)	70			60	
Base Capacity (vph)	324	322	2745	206	3078
Starvation Cap Reductn	0	0	0	0	1143
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.12	0.31	0.13	0.40

Intersection Summary

Queues
5B: Atlantic Ave & Cecelia St

04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	34	13	25	803	798
v/c Ratio	0.30	0.11	0.16	0.25	0.27
Control Delay	59.4	25.2	63.3	0.4	1.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	59.4	25.2	63.3	0.6	1.3
Queue Length 50th (ft)	26	0	21	1	36
Queue Length 95th (ft)	59	21	0	11	42
Internal Link Dist (ft)	211			153	618
Turn Bay Length (ft)	95		55		
Base Capacity (vph)	354	327	206	3238	2907
Starvation Cap Reductn	0	0	0	1379	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.04	0.12	0.43	0.27

Intersection Summary

Queues
6: Atlantic Ave & Salt Lake Ave/Patata St 04/12/2022

Lane Group	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	34	851	204	49	1608	23	762
v/c Ratio	0.39	0.92	0.95	0.15	0.64	0.06	0.97
Control Delay	75.3	42.0	111.0	18.6	16.5	43.7	80.3
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	75.3	42.0	111.0	18.6	16.6	43.7	80.3
Queue Length 50th (ft)	30	648	187	9	183	17	365
Queue Length 95th (ft)	67	#969	#347	43	200	42	#500
Internal Link Dist (ft)	368			1130	332		486
Turn Bay Length (ft)		80	80			100	
Base Capacity (vph)	187	925	214	493	2516	391	782
Starvation Cap Reductn	0	0	0	0	176	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.92	0.95	0.10	0.69	0.06	0.97

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
7: Atlantic Ave & Azalea West

04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	52	25	39	1588	1802	92
v/c Ratio	0.28	0.23	0.23	0.34	0.33	0.07
Control Delay	67.0	26.5	85.1	0.4	2.3	0.3
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay	67.0	26.5	85.1	0.8	2.3	0.3
Queue Length 50th (ft)	23	0	17	8	74	0
Queue Length 95th (ft)	46	31	m20	m10	m91	m0
Internal Link Dist (ft)	386			596	161	
Turn Bay Length (ft)	120		125			150
Base Capacity (vph)	563	280	294	4620	5404	1349
Starvation Cap Reductn	0	0	0	2223	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.13	0.66	0.33	0.07

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Atlantic Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	182	1549	79	1730	165	805	1021	697	128
v/c Ratio	0.83	0.94	0.67	1.05	0.60	0.85	0.97	0.58	0.08
Control Delay	93.1	57.9	82.9	73.2	65.3	64.4	56.5	29.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.1	57.9	82.9	73.2	65.3	64.4	56.5	29.9	0.1
Queue Length 50th (ft)	86	500	64	~597	142	260	396	208	0
Queue Length 95th (ft)	#151	#598	#146	#536	222	313	#603	249	0
Internal Link Dist (ft)		568		935		347		596	
Turn Bay Length (ft)	310		210		200				110
Base Capacity (vph)	220	1644	118	1651	274	942	1054	1195	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.94	0.67	1.05	0.60	0.85	0.97	0.58	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Atlantic Ave & Southern Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	67	490	164	244	86	890	33	805
v/c Ratio	0.22	0.42	0.73	0.44	0.39	0.55	0.15	0.54
Control Delay	15.3	7.4	37.1	13.9	28.4	13.1	24.3	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	7.4	37.1	13.9	28.4	13.1	24.3	14.2
Queue Length 50th (ft)	15	26	44	47	26	80	10	106
Queue Length 95th (ft)	40	57	#123	97	#69	188	31	166
Internal Link Dist (ft)		420		425		528		1683
Turn Bay Length (ft)	85		100		135		125	
Base Capacity (vph)	411	1488	311	753	219	1612	215	1480
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.33	0.53	0.32	0.39	0.55	0.15	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
10: Firestone Ave & Mason St 04/12/2022

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2617	2046	16	21
v/c Ratio	0.66	0.52	0.05	0.08
Control Delay	2.8	2.8	51.7	19.5
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	2.9	2.8	51.7	19.5
Queue Length 50th (ft)	81	57	13	0
Queue Length 95th (ft)	m93	61	35	26
Internal Link Dist (ft)	935	169	340	
Turn Bay Length (ft)			40	
Base Capacity (vph)	4031	3974	291	278
Starvation Cap Reductn	375	131	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.53	0.05	0.08

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Firestone Ave & Firestone Pl 04/12/2022

Lane Group	EBT	WBT	SWL	SWR
Lane Group Flow (vph)	2635	1816	16	2
v/c Ratio	0.66	0.46	0.06	0.01
Control Delay	0.9	5.6	51.7	35.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	0.9	5.6	51.7	35.0
Queue Length 50th (ft)	9	165	13	0
Queue Length 95th (ft)	9	185	35	9
Internal Link Dist (ft)	169	1015	513	
Turn Bay Length (ft)				60
Base Capacity (vph)	4031	4031	288	260
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.45	0.06	0.01

Intersection Summary

Queues
12: Rayo Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	2533	432	2063	21	1053	37	2	5
v/c Ratio	0.45	1.10	1.02	0.76	0.12	0.98	0.17	0.01	0.02
Control Delay	83.5	92.8	111.4	30.3	52.2	47.7	61.2	58.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.5	92.8	111.4	30.3	52.2	47.7	61.2	58.0	0.2
Queue Length 50th (ft)	41	~1031	~229	589	17	331	33	2	0
Queue Length 95th (ft)	85	#1115	#341	652	44	#427	70	11	0
Internal Link Dist (ft)		1015		797	540			574	
Turn Bay Length (ft)	135		610			150	170		170
Base Capacity (vph)	107	2294	425	2706	175	1077	218	229	278
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	1.10	1.02	0.76	0.12	0.98	0.17	0.01	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Atlantic Ave & Santa Ana St

04/12/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	153	236	34	64	176	47	75	803	83	1070
v/c Ratio	0.89	0.65	0.10	0.52	0.48	0.14	0.49	0.36	0.50	0.49
Control Delay	90.9	51.5	7.1	55.8	45.6	10.3	62.4	12.6	61.6	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.9	51.5	7.1	55.8	45.6	10.3	62.4	12.6	61.6	14.6
Queue Length 50th (ft)	117	171	0	45	123	0	56	158	62	218
Queue Length 95th (ft)	181	228	19	84	172	29	104	267	112	370
Internal Link Dist (ft)		432			1873			618		579
Turn Bay Length (ft)	85		90	95		100	95		130	
Base Capacity (vph)	269	574	519	194	574	520	206	2204	221	2205
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.41	0.07	0.33	0.31	0.09	0.36	0.36	0.38	0.49

Intersection Summary

Queues
5A: Atlantic Ave & Cecelia St 04/12/2022

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	64	36	883	21	917
v/c Ratio	0.48	0.24	0.30	0.23	0.29
Control Delay	72.6	20.8	4.0	67.9	1.9
Queue Delay	0.0	0.0	0.0	0.0	1.5
Total Delay	72.6	20.8	4.0	67.9	3.4
Queue Length 50th (ft)	56	0	100	18	55
Queue Length 95th (ft)	103	34	154	47	89
Internal Link Dist (ft)	1542		486		153
Turn Bay Length (ft)	70			60	
Base Capacity (vph)	295	293	2936	179	3142
Starvation Cap Reductn	0	0	0	0	1967
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.12	0.30	0.12	0.78

Intersection Summary

Queues
5B: Atlantic Ave & Cecelia St 04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	23	43	20	842	955
v/c Ratio	0.22	0.32	0.20	0.27	0.32
Control Delay	58.1	22.0	57.7	1.4	0.5
Queue Delay	0.0	0.0	0.0	1.2	0.0
Total Delay	58.1	22.0	57.7	2.6	0.5
Queue Length 50th (ft)	17	0	15	36	1
Queue Length 95th (ft)	44	37	41	56	18
Internal Link Dist (ft)	211			153	618
Turn Bay Length (ft)	95		55		
Base Capacity (vph)	324	325	162	3172	3012
Starvation Cap Reductn	0	0	0	2017	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.13	0.12	0.73	0.32

Intersection Summary

Queues
6: Atlantic Ave & Salt Lake Ave/Patata St 04/12/2022

Lane Group	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	12	720	175	38	1565	5	1046
v/c Ratio	0.15	0.89	0.92	0.15	0.68	0.01	0.96
Control Delay	67.8	44.4	108.3	25.1	17.9	34.0	67.5
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	67.8	44.4	108.3	25.1	18.2	34.0	67.5
Queue Length 50th (ft)	11	551	161	11	165	3	494
Queue Length 95th (ft)	33	#821	#305	42	287	14	#637
Internal Link Dist (ft)	368			1130	332		486
Turn Bay Length (ft)		80	80			100	
Base Capacity (vph)	222	810	190	468	2300	543	1086
Starvation Cap Reductn	0	0	0	0	223	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.89	0.92	0.08	0.75	0.01	0.96

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
7: Atlantic Ave & Azalea West 04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	271	127	58	1273	1663	291
v/c Ratio	0.67	0.43	0.30	0.30	0.34	0.23
Control Delay	67.6	13.2	75.6	1.6	4.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	13.2	75.6	1.6	4.4	0.3
Queue Length 50th (ft)	123	0	23	12	93	1
Queue Length 95th (ft)	166	59	m31	16	m114	m1
Internal Link Dist (ft)	386			596	161	
Turn Bay Length (ft)	120		125			150
Base Capacity (vph)	833	480	294	4198	4840	1259
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.26	0.20	0.30	0.34	0.23

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Atlantic Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	163	1596	88	1542	203	637	855	712	141
v/c Ratio	0.71	0.91	0.70	0.87	0.76	0.66	0.90	0.64	0.09
Control Delay	80.7	51.9	83.2	41.7	75.4	56.3	44.1	28.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.7	51.9	83.2	41.7	75.4	56.3	44.1	28.5	0.1
Queue Length 50th (ft)	76	502	71	310	180	201	317	228	0
Queue Length 95th (ft)	#121	569	#151	358	#295	249	419	299	0
Internal Link Dist (ft)		568		935		347		596	
Turn Bay Length (ft)	310		210		200				110
Base Capacity (vph)	235	1766	132	1788	268	960	1005	1114	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.90	0.67	0.86	0.76	0.66	0.85	0.64	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Atlantic Ave & Southern Ave 04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	58	381	237	363	117	990	27	1038
v/c Ratio	0.28	0.33	0.83	0.63	0.60	0.59	0.15	0.73
Control Delay	19.2	9.6	44.5	21.5	42.1	14.2	27.3	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.2	9.6	44.5	21.5	42.1	14.2	27.3	19.5
Queue Length 50th (ft)	15	30	76	102	42	110	9	170
Queue Length 95th (ft)	42	58	#185	178	#110	222	30	#244
Internal Link Dist (ft)		420		425		528		1683
Turn Bay Length (ft)	85		100		135		125	
Base Capacity (vph)	239	1315	336	677	194	1684	178	1429
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.29	0.71	0.54	0.60	0.59	0.15	0.73

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
10: Firestone Ave & Mason St 04/12/2022

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2384	1848	46	50
v/c Ratio	0.64	0.50	0.12	0.13
Control Delay	2.1	3.1	49.5	13.7
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	2.1	3.1	49.5	13.7
Queue Length 50th (ft)	46	52	35	0
Queue Length 95th (ft)	44	52	76	38
Internal Link Dist (ft)	935	169	340	
Turn Bay Length (ft)			40	
Base Capacity (vph)	3959	3897	372	372
Starvation Cap Reductn	0	435	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.53	0.12	0.13

Intersection Summary

Queues
11: Firestone Ave & Firestone Pl 04/12/2022

Lane Group	EBT	WBT	SWL	SWR
Lane Group Flow (vph)	2429	1595	23	20
v/c Ratio	0.64	0.42	0.07	0.06
Control Delay	1.7	6.5	51.0	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.7	6.5	51.0	19.7
Queue Length 50th (ft)	23	155	18	0
Queue Length 95th (ft)	39	154	46	25
Internal Link Dist (ft)	169	1015	513	
Turn Bay Length (ft)				60
Base Capacity (vph)	4031	4031	337	317
Starvation Cap Reductn	3	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.40	0.07	0.06

Intersection Summary

Queues
12: Rayo Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	68	2235	550	1790	58	835	98	21	3
v/c Ratio	0.56	1.01	0.94	0.64	0.89	0.81	0.45	0.09	0.01
Control Delay	84.2	62.2	86.0	25.1	145.1	31.9	68.1	59.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.2	62.2	86.0	25.1	145.1	31.9	68.1	59.4	0.0
Queue Length 50th (ft)	65	~804	277	449	56	254	90	19	0
Queue Length 95th (ft)	119	#924	#389	510	#151	323	153	47	0
Internal Link Dist (ft)		1015		797	540			574	
Turn Bay Length (ft)	135		610			150	170		170
Base Capacity (vph)	146	2222	585	2797	65	1028	219	231	279
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.01	0.94	0.64	0.89	0.81	0.45	0.09	0.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Atlantic Ave & Santa Ana St

04/12/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	243	35	67	182	49	77	835	86	1102
v/c Ratio	0.90	0.64	0.10	0.53	0.48	0.14	0.50	0.38	0.52	0.51
Control Delay	92.1	50.6	7.2	56.0	44.9	9.8	62.7	13.2	62.2	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.1	50.6	7.2	56.0	44.9	9.8	62.7	13.2	62.2	15.3
Queue Length 50th (ft)	121	175	0	47	126	0	58	171	64	233
Queue Length 95th (ft)	186	232	19	87	176	29	106	284	115	392
Internal Link Dist (ft)		432			1873			618		579
Turn Bay Length (ft)	85		90	95		100	95		130	
Base Capacity (vph)	266	574	519	191	574	521	206	2180	221	2181
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.42	0.07	0.35	0.32	0.09	0.37	0.38	0.39	0.51

Intersection Summary

Queues
5A: Atlantic Ave & Cecelia St 04/12/2022

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	66	37	917	22	947
v/c Ratio	0.49	0.24	0.31	0.24	0.30
Control Delay	72.7	20.6	4.2	68.2	1.9
Queue Delay	0.0	0.0	0.0	0.0	1.6
Total Delay	72.7	20.6	4.2	68.2	3.5
Queue Length 50th (ft)	58	0	105	19	59
Queue Length 95th (ft)	106	35	164	48	94
Internal Link Dist (ft)	1542		486		153
Turn Bay Length (ft)	70			60	
Base Capacity (vph)	295	294	2930	179	3138
Starvation Cap Reductn	0	0	0	0	1939
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.13	0.31	0.12	0.79

Intersection Summary

Queues
5B: Atlantic Ave & Cecelia St 04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	24	45	21	875	986
v/c Ratio	0.23	0.33	0.20	0.28	0.33
Control Delay	58.2	21.7	57.8	1.4	0.5
Queue Delay	0.0	0.0	0.0	1.2	0.0
Total Delay	58.2	21.7	57.8	2.6	0.5
Queue Length 50th (ft)	18	0	16	38	1
Queue Length 95th (ft)	46	38	42	60	20
Internal Link Dist (ft)	211			153	618
Turn Bay Length (ft)	95		55		
Base Capacity (vph)	324	326	162	3171	3008
Starvation Cap Reductn	0	0	0	1990	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.14	0.13	0.74	0.33

Intersection Summary

Queues
6: Atlantic Ave & Salt Lake Ave/Patata St 04/12/2022

Lane Group	EBT	EBR	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	12	740	291	46	1655	9	1076
v/c Ratio	0.15	0.91	1.53	0.18	0.72	0.02	0.99
Control Delay	67.9	47.9	304.1	22.6	19.5	34.1	73.2
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	67.9	47.9	304.1	22.6	19.8	34.1	73.2
Queue Length 50th (ft)	11	583	~370	11	184	6	514
Queue Length 95th (ft)	33	#861	#557	46	300	20	#668
Internal Link Dist (ft)	368			1130	332		486
Turn Bay Length (ft)		80	80			100	
Base Capacity (vph)	221	809	190	470	2298	543	1086
Starvation Cap Reductn	0	0	0	0	195	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.91	1.53	0.10	0.79	0.02	0.99

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
7: Atlantic Ave & Azalea West 04/12/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	279	130	59	1353	1821	300
v/c Ratio	0.68	0.43	0.31	0.32	0.38	0.24
Control Delay	67.6	12.9	78.3	1.1	6.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	12.9	78.3	1.1	6.1	1.4
Queue Length 50th (ft)	127	0	24	12	132	10
Queue Length 95th (ft)	170	60	m28	m17	m143	m10
Internal Link Dist (ft)	386			596	161	
Turn Bay Length (ft)	120		125			150
Base Capacity (vph)	833	482	294	4187	4827	1253
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.20	0.32	0.38	0.24

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Atlantic Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	171	1640	90	1627	209	657	984	735	150
v/c Ratio	0.73	0.93	0.69	0.91	0.78	0.77	0.98	0.67	0.09
Control Delay	82.7	53.8	81.8	43.9	77.4	61.8	56.6	31.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.7	53.8	81.8	43.9	77.4	61.8	56.6	31.0	0.1
Queue Length 50th (ft)	80	522	74	344	186	208	419	248	0
Queue Length 95th (ft)	#130	#600	#157	384	#308	257	#594	324	0
Internal Link Dist (ft)		568		935		347		596	
Turn Bay Length (ft)	310		210		200				110
Base Capacity (vph)	235	1766	132	1786	268	850	1008	1098	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.93	0.68	0.91	0.78	0.77	0.98	0.67	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Atlantic Ave & Southern Ave 04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	393	243	373	121	1018	28	1071
v/c Ratio	0.29	0.34	0.84	0.63	0.63	0.61	0.16	0.76
Control Delay	19.4	9.5	47.3	21.5	44.0	14.7	27.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	9.5	47.3	21.5	44.0	14.7	27.5	20.7
Queue Length 50th (ft)	15	31	79	106	43	114	10	177
Queue Length 95th (ft)	43	60	#193	184	#114	231	30	#282
Internal Link Dist (ft)		420		425		528		1683
Turn Bay Length (ft)	85		100		135		125	
Base Capacity (vph)	230	1306	326	670	192	1665	176	1414
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.30	0.75	0.56	0.63	0.61	0.16	0.76

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
10: Firestone Ave & Mason St 04/12/2022

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2554	1940	47	51
v/c Ratio	0.66	0.51	0.15	0.15
Control Delay	1.6	2.7	51.3	13.8
Queue Delay	0.1	0.0	0.0	0.0
Total Delay	1.7	2.8	51.3	13.8
Queue Length 50th (ft)	39	47	37	0
Queue Length 95th (ft)	m47	55	77	39
Internal Link Dist (ft)	935	169	340	
Turn Bay Length (ft)			40	
Base Capacity (vph)	3959	3897	324	332
Starvation Cap Reductn	375	351	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.55	0.15	0.15

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Queues
11: Firestone Ave & Firestone Pl 04/12/2022

Lane Group	EBT	WBT	SWL	SWR
Lane Group Flow (vph)	2601	1679	24	21
v/c Ratio	0.66	0.43	0.08	0.07
Control Delay	1.9	5.5	52.1	19.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	1.9	5.5	52.1	19.5
Queue Length 50th (ft)	42	146	19	0
Queue Length 95th (ft)	43	165	48	26
Internal Link Dist (ft)	169	1015	513	
Turn Bay Length (ft)				60
Base Capacity (vph)	4031	4031	294	280
Starvation Cap Reductn	1	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.42	0.08	0.07

Intersection Summary

Queues
12: Rayo Ave & Firestone Ave

04/12/2022

Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	71	2402	565	1881	62	863	101	22	3
v/c Ratio	0.57	1.08	0.97	0.69	1.02	0.84	0.46	0.10	0.01
Control Delay	85.2	85.3	90.8	27.3	180.2	34.5	68.6	59.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.2	85.3	90.8	27.3	180.2	34.5	68.6	59.5	0.0
Queue Length 50th (ft)	68	~960	286	487	~62	271	93	19	0
Queue Length 95th (ft)	123	#1047	#405	550	#166	343	157	48	0
Internal Link Dist (ft)		1015		797	540			574	
Turn Bay Length (ft)	135		610			150	170		170
Base Capacity (vph)	146	2222	585	2721	61	1024	219	231	279
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	1.08	0.97	0.69	1.02	0.84	0.46	0.10	0.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.