200 Manabe Ow Road Distribution Facility

Initial Study / Mitigated Negative Declaration

Community Development Department
250 Main Street
Watsonville, CA 95076

October 2022

Prepared with the assistance of MIG, Inc.

200 MANABE OW ROAD DISTRIBUTION FACILITY PROJECT INITIAL STUDY

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Chapter 1. Introduction

This Initial Study has been prepared to conform to the requirements of the Public Resources Code - California Environmental Quality Act (CEQA Statutes), the California Code of Regulations - Section 15000 et. seq. (CEQA Guidelines), and the regulations and policies of the City of Watsonville. The report is intended to inform City of Watsonville (City) decision-makers, responsible agencies, and the general public of the 200 Manabe Ow Road Distribution Facility (project) and its environmental consequences. The City of Watsonville is the Lead Agency under CEQA and has prepared this Initial Study to address the impacts of implementing the proposed project. The primary objective of the project is to build an industrial warehouse distribution center building totaling 156,961 square feet, including approximately 15,900 square feet of office space.

1.1 PROJECT BACKGROUND AND OVERVIEW

The project proposes to construct a rectangular two-story industrial warehouse structure totaling 156,961 square feet, including a two-story office within the building containing approximately 15,900 square feet of office space and a 555-square foot receiving office. An additional area totaling approximately 17,360 square feet would be available on the south side of the building for a possible future expansion, although no expansion is currently proposed or included in the project. Any future expansion of the building would be subject to a separate review by the City. A new 12-foot, six-inch tall screen wall would be constructed along the northwestern boundary of the proposed truck court. A nine-foot tall decorative security fence would be constructed around the western, southern, and eastern boundary of the truck court area and exit driveway. The proposed warehouse would operate as a distribution facility that operates 24 hours per day, Monday through Friday. Proposed operations would include multiple shifts of warehouse, delivery, and office employees. The site would be accessed via two driveways along the northern border of the site.

Construction is anticipated to last approximately 14 months, beginning in mid to late January, 2023, (324 total active work days) and include the following phases (some phases overlap):

- site preparation (10 working days),
- grading (48 working days),
- foundation (45 working days),
- building construction (218 working days)
- architectural coating (20 working days), and
- paving (10 working days).

1.2 REGULATORY GUIDANCE

The California Environmental Quality Act (CEQA; Public Resources Code § 21000 et seq.) and the CEQA Guidelines (14 CCR §15000 et seq.) establish the City of Watsonville (City) as the lead agency for the project. The lead agency is defined in CEQA Guidelines Section 15367 as, “the public agency which has the principal responsibility for carrying out or approving a project.” The lead agency is responsible for preparing the appropriate environmental review document under CEQA. The Watsonville Planning Commission serves as the decision-making body for the City and is responsible for adopting the CEQA document and approving the project.

CEQA Guidelines Section 15070 states a public agency shall prepare a proposed Negative Declaration or a Mitigated Negative Declaration when:

1. The Initial Study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

2. The Initial Study identifies potentially significant effects, but:

    - Revisions in the project plans made before a proposed Mitigated Negative Declaration and Initial Study are released for public review would avoid the effects or mitigate the effects to a point where no significant effects would occur, and

    - There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

Pursuant to Section 15070, the City has determined a Mitigated Negative Declaration is the appropriate environmental review document for the 200 Manabe Ow Distribution Facility Project.

To ensure that the mitigation measures and project revisions identified in a Mitigated Negative Declaration (MND) are implemented, CEQA Guidelines Section 15097(a) requires the City to adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. The City shall prepare a Mitigation, Monitoring and Reporting Plan based on the mitigation measures contained in this IS/MND.

1.3 LEAD AGENCY CONTACT INFORMATION

The lead agency for the project is the City of Watsonville. The contact person for the lead agency is:

Matt Orbach, Principal Planner
City of Watsonville Community Development Department
Planning Division
250 Main Street
Watsonville, CA 95076
(831) 768-3050; Direct: (831) 768-3075
matt.orbach@cityofwatsonville.org

1.4 DOCUMENT PURPOSE AND ORGANIZATION

The purpose of this document is to evaluate the potential environmental effects of the 200 Manabe Ow Distribution Facility Project. This document is organized as follows:

- Chapter 1 – Introduction. This chapter introduces the project and describes the purpose and organization of this document.

- Chapter 2 – Project Description. This chapter describes the project location, area, site, objectives, and characteristics.

- Chapter 3 – Environmental Checklist and Responses. This chapter contains the Environmental Checklist that identifies the significance of potential environmental impacts (by environmental issue) and a brief discussion of each impact resulting from implementation of the proposed project. This chapter also contains the Mandatory Findings of Significance.

- Chapter 4 – Report Preparation. This chapter provides a list of those involved in the preparation of this document.

- Appendices

Chapter 2. Project Description

2.1 PROJECT PURPOSE

The purpose of the project is to construct a warehouse distribution facility.

2.2 PROJECT LOCATION AND SURROUNDING LAND USES

The project site is located at 200 Manabe Ow Road, (APN 018-711-33) at the southwest corner of Manabe Ow Road in the southwest portion of the City. Highway 1 lies approximately 80 feet to the west and a Southern Pacific Railroad right-of-way runs adjacent to the southern border of the site. (See Figure 1, Regional Location and Figure 2, Site Location)

Surrounding Land Uses.

The vacant site is located within a planned industrial park (Manabe Ow Business Park Specific Plan), and bordered on the north by Watsonville Slough. An unpaved pedestrian/bike trail runs along the northern edge of the slough. Beyond the slough to the north is an existing FedEx warehouse facility. An existing single-family residential neighborhood is located adjacent to the east side of the FedEx site. To the east of the project site is additional vacant land within the business park boundaries that extends beyond Ohlone Drive. To the west of the site beyond Highway 1 are existing industrial and distribution warehouse uses. To the south are various industrial uses, including a lumber store, a scrap metal business, and packaging companies.

General Plan and Zoning

The project site is designated as Industrial on the General Plan Land Use Map and is within the Industrial Park (IP) Zoning District. Additionally, the site is designated as Business Park within the Manabe-Ow Business Park Specific Plan.

2.3 SITE FEATURES

The site is currently undeveloped with no site improvements and grassland vegetation covering most of the site, with dense brush occurring in areas along Watsonville Slough to the north and an existing drainage ditch to the west. Manabe Ow Road is located adjacent to the northeast corner of the parcel, and is improved with curbs, gutters, and sidewalks from the bridge over Watsonville Slough north to the FedEx property. Watsonville Slough borders the site to the north, Highway 1 borders the site to the west, another undeveloped parcel borders the site to the east, and the Southern Pacific Railroad right-of-way borders the site to the south.

The south side of Manabe Ow Road, from the bridge east to Ohlone Parkway is improved with curbs, gutters, sidewalks, and ADA ramps, including along the project's northern frontage. Stormwater runoff treatment facilities and street trees are included within the parkway areas of the street right-of-way. Bike lanes have also been established on both sides of the street. Photos of the project site are shown on Figures 3, 4, 5, and 6.

2.4 PROJECT FEATURES

The project applicant proposes to construct a rectangular two-story industrial warehouse distribution structure totaling 156,961 square feet, including a 9,582 square foot mezzanine. An additional area totaling approximately 17,360 square feet would be available on the south side of the building for a possible future expansion, although no expansion is currently proposed or

included in the project. Any future expansion of the building would be subject to a separate review by the City. A nine-foot tall decorative black galvanized steel security fence would be constructed around the perimeter of the site (see Figure 7, Site Plan). The building renderings and 3D modeling are shown on Figures 8 through 10.

The proposed warehouse would operate as a distribution facility that operates 24 hours per day, Monday through Friday. Proposed operations would include multiple shifts of warehouse, delivery, and office employees for a total of approximately 75 employees. The site would be accessed via two driveways along the northern border of the site at Manabe Ow Road.

There is an existing 29-foot wide storm drain easement including a ditch and 12-foot wide City access road along the western property boundary. A proposed retaining wall will wrap around the northwest corner of the parcel.

Circulation and Parking

The project would include two unsignalized access driveways along the northern border of the site: one full access (two-way) driveway for passenger vehicles and delivery vans at the northeast corner of the site on Manabe Ow Road; and one wider full access (two-way) driveway primarily for trucks and heavy vehicles at the elbow on Manabe Ow Road south of the bridge, in the northern portion of the site. A small traffic circle or center median will be constructed in the knuckle /partial cul-de-sac) at the truck/heavy vehicle entrance. The two driveways connect to two-way drive aisles that form a loop around the periphery of the site and provide access to parking stalls along the east and north sides of the building, as well as to truck trailer parking areas and loading bays on the west side of the building. Short term bicycle racks are provided at the front of the building, and long-term bicycle storage lockers are provided inside the building.

The project proposes to provide the following:

- 93 automobile parking stalls
- 20 truck dock stalls
- 33 truck trailer parking stalls
- 10 bicycle stalls (in racks)
- 10 long-term bicycle lockers
- 8 accessible parking spaces
- 10 electric vehicle parking spaces
- 16 clean air/vanpool electric vehicle parking stalls

Landscaping

The project would remove existing brush and shrubs on the site, and install new landscaping including turf, shrubs, groundcovers and trees around the borders of the site, and trees within the parking areas. Approximately 102 24-inch box sized trees are proposed to be planted along the perimeter and within the automobile parking areas of the site, with a total area of approximately 102,048 square feet proposed to be landscaped (see Figure 11, Conceptual Landscaping Plan). The proposed landscaping includes approximately 40,071 square feet of bioretention areas as part of the project's onsite stormwater runoff treatment system and 1,286 square feet of native riparian vegetation plantings off-site along the City access road adjacent to the slough. The native

riparian vegetation is proposed to include coyote brush, California grey rush, yellow monkeyflower, deer grass, California coffee berry and blue-eyed grass.

Lighting

Outdoor lighting for the project would be provided using 20- and 35-foot pole-mounted LED fixtures in the parking areas. The number of fixtures per pole would vary with the location of the pole but would be determined by the lighting plan included in the project. All of the fixtures would be cut-off type, with light being directed downward. The proposed building would have LED architectural wall sconces, with the number and location of the fixtures being determined by the lighting plan. All proposed lighting would be designed in conformance with City standards.

Grading

The project site is relatively flat, however, grading would be required for the construction of the proposed facilities. The preliminary grading plan for the project are shown on Figure 12. The proposed cut is approximately 10,800 cubic yards (CY) of material, with a proposed fill of approximately 24,800 CY, requiring an import of 14,000 CY of fill. The import of fill would be required to create elevated building pads for to construct finished floor elevations above the base flood elevations.

Construction

Construction is anticipated to last approximately 14 months, beginning in mid to late January, 2023. Construction is estimated at 324 total active work days and includes the following phases (some phases overlap):

- site preparation (10 working days),
- grading (48 working days),
- foundation (45 working days),
- building construction (218 working days)
- architectural coating (20 working days), and
- paving (10 working days).



Z:\Shared\Berkeley\9000_CAP\909117-Watsonville_City\917.07 Manabe Ow East & West\Applications\Manabe Ow West\GIS\MXD\Figure1_Site Vicinity_2022-0215.mxd 10/4/2022

Figure 1 Site Vicinity

Watsonville Manabe Ow West Distribution Facility project



Source: Google Earth 9/2021; MIG 2022

0 0.05 0.1 0.2 Miles

Project Vicinty

Figure 2 Site Location

Watsonville Manabe Ow West Distribution Facility project



Photo 1. Viewing southwest across the northwest corner of the site from the Manabe Ow Road bridge.



Photo 2. Viewing south across the site from Manabe Ow Road.

Source: MIG 7/10/2022

Figure 3 Site Photos 1 and 2

Watsonville Manabe Ow West Distribution Facility Project



Photo 3. Viewing northeast along the Manabe Ow Road frontage of the site.



Photo 4. Viewing southwest along the Manabe Ow Road frontage of the site.

Source: MIG 7/10/2022

Figure 4 Site Photos 3 and 4



Photo 5. Viewing south along the northeast property line from Manabe Ow Road.



Photo 6. Viewing southwest across the site from the northeast corner at Manabe Ow Road.

Source: MIG 7/10/2022

Figure 5 Site Photos 5 and 6



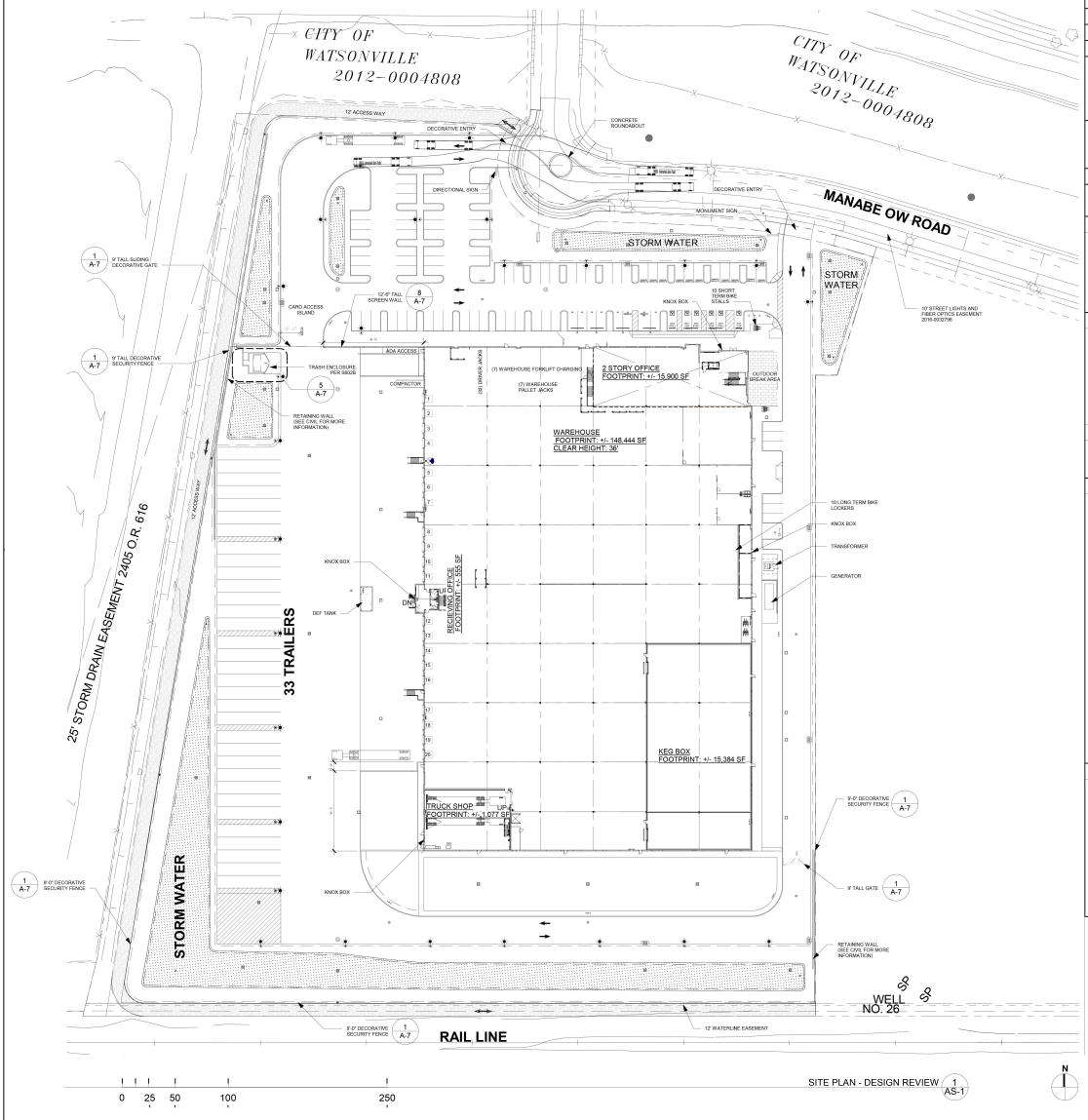
Photo 7. Viewing southwest at Watsonville Slough from the Manabe Ow Road bridge, at the northwest corner of the site.



Photo 8. Viewing northeast at Watsonville Slough from the Manabe Ow Road bridge, north of the site.

Source: MIG 7/10/2022

Figure 6 Site Photos 7 and 8



PROJECT INFORMATION

ASSESSOR'S PARCEL NUMBER:	018-711-33
ZONING:	MANABE OW SPECIFIC PLAN IL -INDUSTRIAL
LEGAL DESCRIPTION:	REFER TO TITLE SHEET
PROJECT DESCRIPTION:	± 11.5 AC OF THE TOTAL SITE WILL BE DEVELOPED FOR A NEW DISTRIBUTION FACILITY. THE BUILDING IS ±156,200 SF. THERE WILL BE A ±7,900 SF MEZZANINE FOR THE OFFICE. NEW LANDSCAPING, NEW PARKING, NEW SITE LIGHTING, NEW STORM WATER DETENTION. 9'-0" TALL SECURITY FENCING WILL BE PLACED AROUND THE TRUCK COURT.
CURRENT LAND USE:	VACANT COMMERCIAL LAND LOCATED IN THE MANABE OW SPECIFIC PLAN AREA. SITE IS DESIGNATED AS BUSINESS PARK WITH INDUSTRIAL USE.
PROPOSED LAND USE:	INDUSTRIAL USE WAREHOUSE AND DISTRIBUTION
LANDSCAPE AREA:	103,334 SQ.FT. 103,334 SQ.FT. / 502,351.6 SQ.FT = 21%

SITE SUMMARY:		
	GROSS SITE AREA:	+/- 502,351.6 SQ.FT. (11.5 ACRES)
	DETENTION AREA:	+/- 59,000 SQ.FT. (@ 8.5%)
	DRIVE AISLE AREA:	+/- 492,284.7 SQ.FT.

FAR CALCULATION:		
	BUILDING FOOTPRINT:	+/- 147,379 SQ.FT. (@25.8%)
	MEZZANINE:	+/- 9,582 SQ.FT.
	TOTAL BUILDING AREA:	+/- 156,961 SQ.FT.
		FAR = G/B
		FAR = 502,351.6 / 158,026
		FAR = .31

BUILDING SUMMARY:	
	BUILDING TYPE: TYPE IIIB FULLY SPRINKLERED ESFR
	BUILDING OCCUPANCY: PRIMARY S-2 ACCESSORY S-1, B, A
	UNLIMITED BUILDING AREA PER CBC 507

PARKING SUMMARY:		
	AUTO STALLS REQUIRED:	OFFICE: 0 TO 20,000 SQUARE FEET FLOOR AREA, 1 SPACE FOR EACH 300 SF FLOOR AREA, PLUS 1 SPACE FOR EACH 800 SF FLOOR AREA IN EXCESS OF 20,000 SQUARE FEET = 53 STALLS WAREHOUSE: 5 SPACES, PLUS 1 SPACE FOR EACH EMPLOYEE ON THE SHIFT WITH THE MAXIMUM NUMBER OF PERSONNEL = 40 STALLS TOTAL REQUIRED = 93 STALLS
	TRUCK DOCKS PROVIDED:	20 STALLS
	TRAILER STALL PROVIDED:	33 TRAILERS
	TRAILER BAY:	2 STALLS
	GRADE DOORS:	6
	AUTO STALLS PROVIDED:	93 STALLS @ .7/1000
	BICYCLE STALLS PROVIDED: RACKS	REQUIRED: 9 PROVIDED: 10
	LONG TERM LOCKERS	REQUIRED: 9 PROVIDED: 10
	ADA STALLS:	REQUIRED: 7 PROVIDED: 8
	EV STALLS:	REQUIRED: 10 PROVIDED: 10
	CLEAN AIR/VANPOOL/EV STALLS:	REQUIRED: 16 PROVIDED: 16

EMPLOYEE SCHEDULE:				
	DELIVERY - GROUP A	8	MONDAY THRU FRIDAY	4:00AM TO 1:00PM
	DELIVERY - GROUP B	8	MONDAY THRU FRIDAY	5:30AM TO 2:30PM
	DELIVERY - GROUP C	8	MONDAY THRU FRIDAY	7:00AM TO 4:00PM
	WAREHOUSE - DAY	6	MONDAY THRU FRIDAY	5:00AM TO 2:00PM
	WAREHOUSE - SWING	3	MONDAY THRU FRIDAY	11:00AM TO 8:00PM
	WAREHOUSE - NIGHT	15	SUNDAY THRU THURSDAY	6:00PM TO 4:00AM
	SALES	25	N/A	N/A
	ADMIN	2	MONDAY THRU FRIDAY	8:00AM TO 5:00PM

GENERAL NOTES:

1. ALL GATES WILL REQUIRE THE INSTALLATION OF KNOX OVERRIDE SWITCHES.
2. EMERGENCY RESPONDER RADIO COVERAGE SYSTEM WILL BE REQUIRED.
3. ALL FIRE HYDRANTS WILL BE PRIVATE HYDRANTS AND WILL BE PAINTED SAFETY RED AND MAINTAINED IN ACCORDANCE WITH NFPA 20 & 24.
4. CLASS I STANDPIPES SHALL BE INSTALLED.
5. NO TRUCK WASHING WILL BE PERFORMED ON SITE, NO SEWER ALLOWED IN TRUCK AREA.

Source: Ryan A+E Inc. 7/15/2022

Figure 7 Site Plan

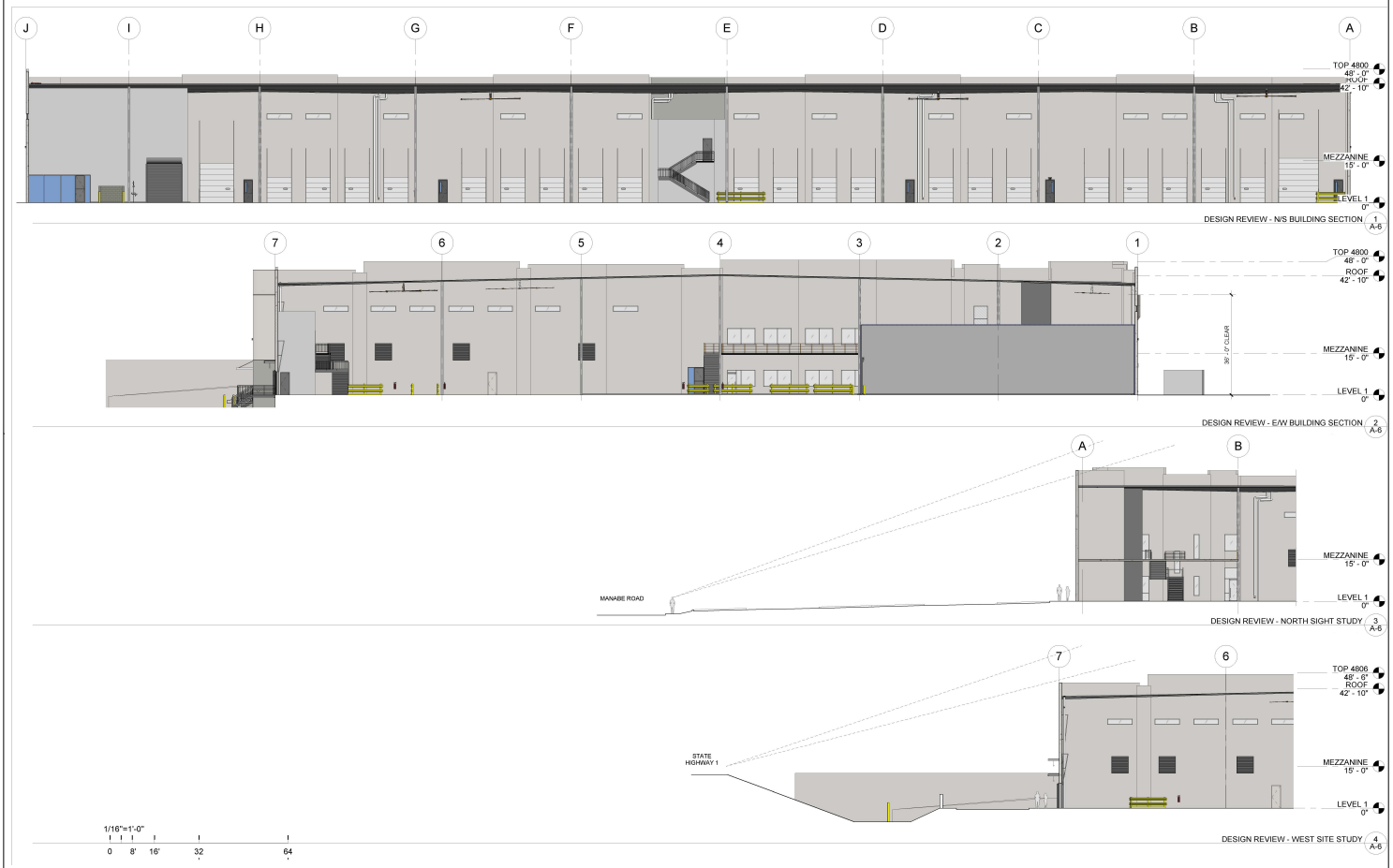
Watsonville Manabe Ow West Distribution Facility Project



Source: Ryan A+E Inc. 7/15/2022

Figure 8 Building Elevations

Watsonville Manabe Ow West Distribution Facility Project



Source: Ryan A+E Inc. 7/15/2022

Figure 9 Building Elevations

Watsonville Manabe Ow West Distribution Facility Project



NORTH-EAST CORNER BUILDING PERPECTIVE 1 A-8



SOUTH-WEST CORNER BUILDING PERPECTIVE 2 A-8

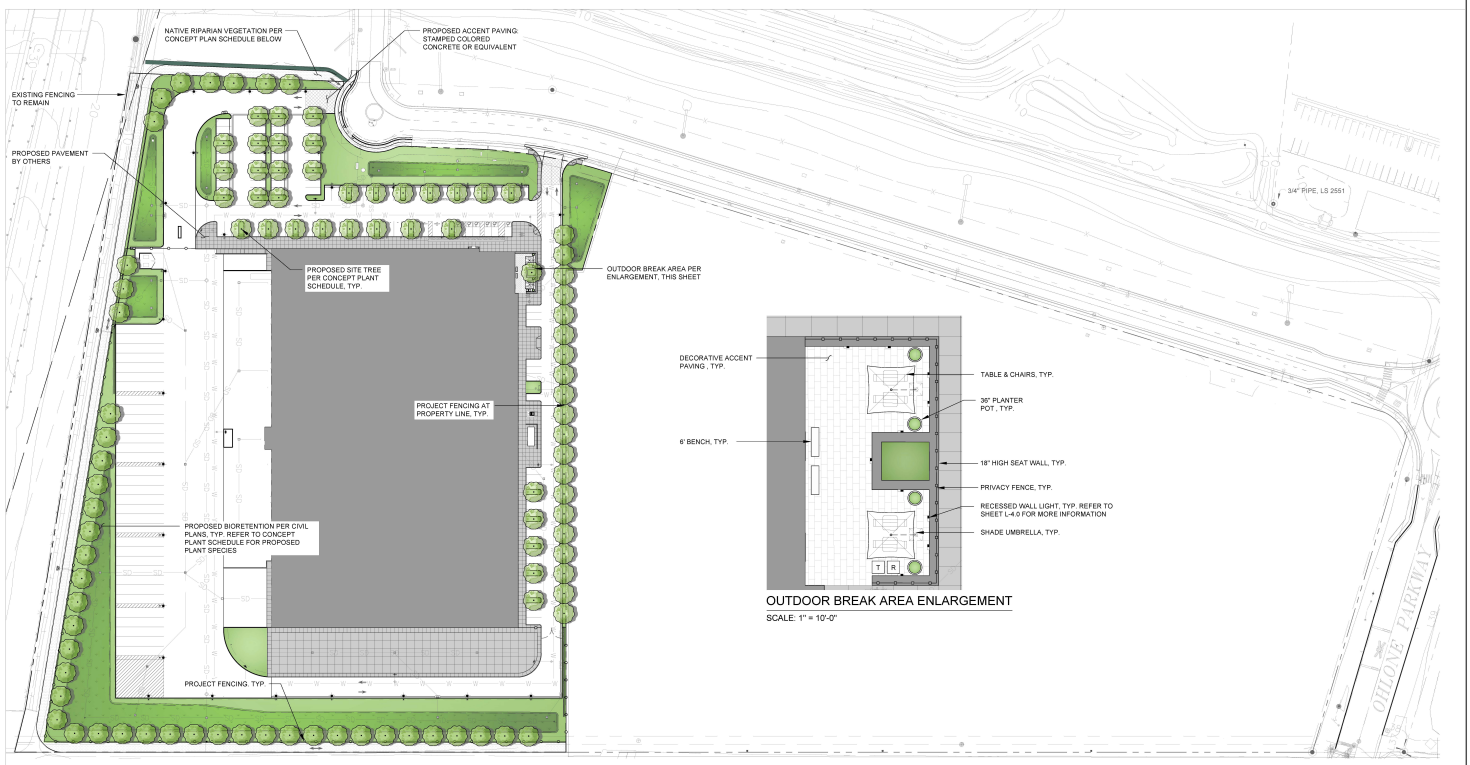


NORTH BUILDING PERPECTIVE 3 A-8

Source: Ryan A+E Inc. 7/15/2022

Figure 10 Building 3D Views

Watsonville Manabe Ow West Distribution Facility Project



OUTDOOR BREAK AREA ENLARGEMENT

SCALE: 1" = 10'-0"

CONCEPT PLANT SCHEDULE

	SIZE	QTY	WUCOLS
SITE TREES			
ACER RUBRUM / RED MAPLE	24" BOX	99	MED
ARBUTUS X 'MARINA' / MARINA STRAWBERRY TREE			LOW
JACARANDA MIMOSIFOLIA / JACARANDA			MED
LAGERSTROEMIA INDICA X FAURIEI 'NATCHEZ' / NATCHEZ CRAPE MYRTLE			LOW
PISTACIA CHINENSIS / CHINESE PISTACHE			LOW
PLATANUS X ACERIFOLIA 'COLUMBIA' / COLUMBIA LONDON PLANE TREE			MED
QUARCUS AGRIFOLIA / COAST LIVE OAK			LOW
PLANTING AREAS		61,362 SF	
AGAVE ATTENUATA / FOXTAIL AGAVE	5 GAL		VERY LOW
AGAVE PARRYI HUACHUCENSIS / ARTICHOKE PARRY'S AGAVE	5 GAL		LOW
ANIGOZANTHOS X 'BUSH DAWN' / BUSH DAWN KANGAROO PAW	5 GAL		LOW
ARCTOSTAPHYLOS X 'PACIFIC MIST' / PACIFIC MIST MANZANITA	1 GAL		LOW
BACCHARIS PILLULARIS 'PIGEON POINT' / PIGEON POINT COYOTE BRUSH	1 GAL		LOW
DIETES BICOLOR / FORTNIGHT LILY	1 GAL		LOW
LANTANA MONTEVIDENSIS / TRAILING LANTANA	1 GAL		LOW
LOMANDRA LONGIFOLIA 'BREEZE' TM / BREEZE MAT RUSH	1 GAL		LOW
MUHLENBERGIA RIGENS / DEER GRASS	5 GAL		LOW
SENECIO MANDRALISCAE / BLUE FINGERS	1 GAL		LOW
BIOSWALE		40,071 SF	
ACHILLEA X 'MOONSHINE' / MOONSHINE YARROW	1 GAL		LOW
CAREX DIVULSA / EUROPEAN GREY SEDGE	1 GAL		LOW
CAREX PANSA / SANDDUNE SEDGE	FLATS		MED
CERCIS OCCIDENTALIS / WESTERN REDBUD	15 GAL		VERY LOW
JUNCUS PATENS / CALIFORNIA GRAY RUSH	1 GAL		LOW
MUHLENBERGIA RIGENS / DEER GRASS	5 GAL		LOW
RHAMNUS CALIFORNICA 'EVE CASE' / CALIFORNIA COFFEEBERRY	5 GAL		LOW
NATIVE RIPARIAN VEGETATION			
BACCHARIS PILLULARIS / COYOTE BUSH	5 GAL	1,286	LOW
JUNCUS PATENS / CALIFORNIA GRAY RUSH	1 GAL		LOW
MIMULUS GUTTATUS / YELLOW MONKEYFLOWER	1 GAL		LOW
MUHLENBERGIA RIGENS / DEER GRASS	5 GAL		LOW
RHAMNUS CALIFORNICA 'EVE CASE' / CALIFORNIA COFFEEBERRY	5 GAL		LOW
SISYRINCHIUM BELLUM / BLUE EYED GRASS	1 GAL		VERY LOW

PLANTING NOTES

1. PLANT COUNTS SHOWN ARE FOR BIDDING REFERENCE ONLY. CONTRACTOR SHALL SUPPLY ALL PLANTS REQUIRED TO FULFILL DESIGN INTENT AS SHOWN. ADDITIONALLY, IF A GROUNDCOVER SYMBOL OR PATTERN IS SHOWN STOPPING AT THE EDGE OF A TREE OR SHRUB CANOPY SYMBOL, THE INTENT IS THAT THE GROUNDCOVER CONTINUE UNDERNEATH THE CANOPY SYMBOL(S) TO PROVIDE AN EVENLY COVERED GROUND PLANE.
2. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL PLANT MATERIAL FROM THE TIME OF DELIVERY TO THE TIME OF PROJECT ACCEPTANCE. THE OWNER SHALL NOT BE RESPONSIBLE FOR LOSSES DUE TO VANDALISM, THEFT, OR SEVERE WEATHER.
3. CONTRACTOR SHALL PLACE PLANT MATERIALS SO THEY DO NOT INTERFERE WITH IRRIGATION SYSTEM OR INHIBIT REQUIRED COVERAGE. PLANT LOCATIONS MAY BE ADJUSTED AS LONG AS DESIGN IS NOT ALTERED SIGNIFICANTLY. CONTRACTOR SHALL SET OUT PLANT MATERIAL IN THEIR CONTAINERS AS SHOWN AND RECEIVE ACCEPTANCE FROM PROJECT MANAGER WITH RESPECT TO PLANT HEALTH/APPEARANCE AND LOCATION PRIOR TO INSTALLATION. CONTRACTOR SHALL GIVE A MINIMUM OF 2 WORKING DAY NOTICE FOR INSPECTION/OBSERVATION AND SHALL HAVE ALL MATERIAL IN SPECIFIED LOCATIONS FOR REVIEW AT ONE TIME.
4. ALL NON-TURF PLANTING AREAS SHALL RECEIVE A PRE-EMERGENT HERBICIDE TREATMENT AND A 3" LAYER OF MAHOGANY COOLOR PRO CHIP MULCH TOP DRESS (1-3" PIECES-SUBMIT SAMPLES) AVAILABLE AT SOUTH BAY MATERIALS, SAN JOSE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. ALL PLANTING AREAS SHALL BE MAINTAINED IN A WEED FREE CONDITION UNTIL PROJECT ACCEPTANCE.
6. PLANTS CAN BE INSPECTED AND REJECTED UPON DELIVERY.

WELO NOTES

1. A HORTICULTURAL SOIL ANALYST TEST SHALL BE CONDUCTED AT A MINIMUM OF (3) LOCATIONS THROUGHOUT THE PROJECT SITE, IN ADDITION TO AN ANALYSIS OF ANY TOP SOIL IMPORTED TO PROJECT PLANTING AREAS. CONTRACTOR TO FOLLOW AMENDMENT RECOMMENDATIONS FROM A QUALIFIED SOILS LABORATORY BASED ON TEST RESULTS.
2. SOIL AMENDMENT AND COMPOST TO BE ADDED TO PLANTING AREAS AT A RATE OF 4 CUBIC YARDS PER 1,000 SF. INCORPORATED TO A DEPTH OF SIX INCHES INTO THE SOIL.
3. A MINIMUM (3") LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT IN TURF AREAS. REFER TO PLANTING PLAN FOR MULCH SPECIFICATION.
4. REFER TO CIVIL IMPROVEMENT PLANS FOR PLANTING AREA GRADING.
5. A LANDSCAPE IRRIGATION AUDIT SHALL BE CONDUCTED BY EIEHR A LOCAL AGENCY LANDSCAPE IRRIGATION AUDITOR OR A THIRD PARTY LANDSCAPE IRRIGATION AUDITOR PER SECTION 492.12 OF THE CITY OF WATSONVILLE WATER EFFICIENT LANDSCAPE ORDINANCE.
6. LANDSCAPE CONTRACT TO INSTALL THIS IRRIGATION SYSTEM PER PLAN AND PER ALL REQUIREMENTS OF THE CITY OF WATSONVILLE WATER EFFICIENT LANDSCAPE ORDINANCE.

I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE IRRIGATION DESIGN PLAN.

X_____

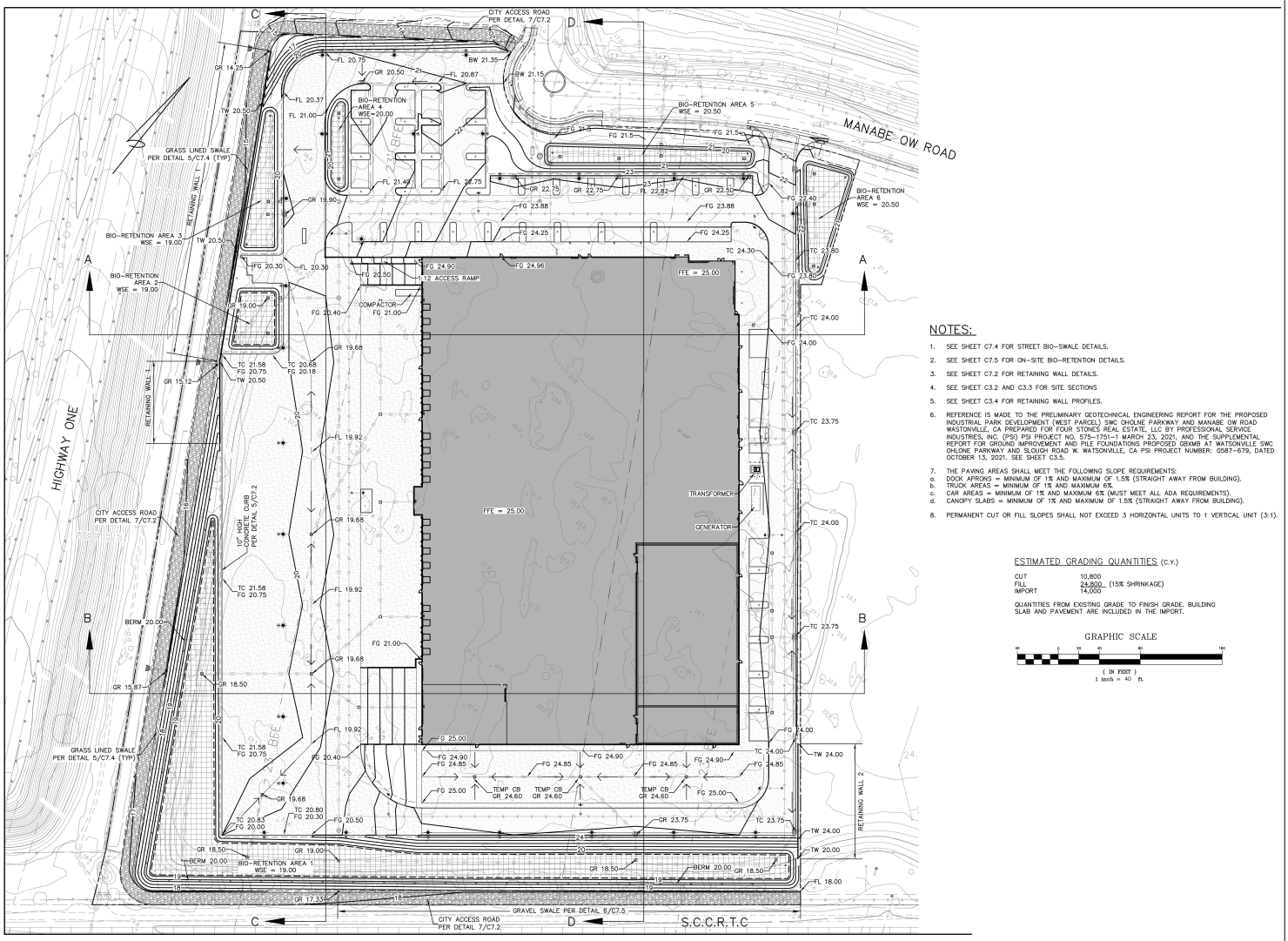
North

0 30 60 120

Source: Ryan A+E Inc. 4/15/2022; SSA 1/14/2022

Figure 11 Conceptual Landscape Plan

Watsonville Manabe Ow West Distribution Facility Project



NOTES:

1. SEE SHEET C7.4 FOR STREET BIO-SWALE DETAILS.
2. SEE SHEET C7.5 FOR ON-SITE BIO-RETENTION DETAILS.
3. SEE SHEET C7.2 FOR RETAINING WALL DETAILS.
4. SEE SHEET C3.2 AND C3.3 FOR SITE SECTIONS
5. SEE SHEET C3.4 FOR RETAINING WALL PROFILES.
6. REFERENCE IS MADE TO THE PRELIMINARY GEOTECHNICAL ENGINEERING REPORT FOR THE PROPOSED INDUSTRIAL PARK DEVELOPMENT (WEST PARCEL) SWC OHOLNE PARKWAY AND MANABE OW ROAD WASTONVILLE, CA PREPARED FOR FOUR STONES REAL ESTATE, LLC BY PROFESSIONAL SERVICE INDUSTRIES, INC. (PSI) PSI PROJECT NO. 575-1751-1 MARCH 23, 2021, AND THE SUPPLEMENTAL REPORT FOR GROUND IMPROVEMENT AND PILE FOUNDATIONS PROPOSED GRXMB AT WATSONVILLE SWC OHLONE PARKWAY AND SLOUGH ROAD W. WATSONVILLE, CA PSI PROJECT NUMBER: 0587-679, DATED OCTOBER 13, 2021. SEE SHEET C3.5.
7. THE PAVING AREAS SHALL MEET THE FOLLOWING SLOPE REQUIREMENTS:
   a. DOCK APRONS = MINIMUM OF 1% AND MAXIMUM OF 1.5% (STRAIGHT AWAY FROM BUILDING).
   b. TRUCK AREAS = MINIMUM OF 1% AND MAXIMUM 6%.
   c. CAR AREAS = MINIMUM OF 1% AND MAXIMUM 6% (MUST MEET ALL ADA REQUIREMENTS).
   d. CANOPY SLABS = MINIMUM OF 1% AND MAXIMUM OF 1.5% (STRAIGHT AWAY FROM BUILDING).
8. PERMANENT CUT OR FILL SLOPES SHALL NOT EXCEED 3 HORIZONTAL UNITS TO 1 VERTICAL UNIT (3:1).

ESTIMATED GRADING QUANTITIES (C.Y.)

CUT	10,800
FILL	24,800 (15% SHRINKAGE)
IMPORT	14,000

QUANTITIES FROM EXISTING GRADE TO FINISH GRADE. BUILDING SLAB AND PAVEMENT ARE INCLUDED IN THE IMPORT.

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

Source: Bowman & Williams 4/15/2022

Figure 12 Preliminary Grading Plan

Watsonville Manabe Ow West Distribution Facility Project

2.5 STANDARD DESIGN AND CONSTRUCTION MEASURES

The proposed project would be implemented consistent with all relevant federal, state, regional, and local regulations aimed at preventing or reducing environmental impacts. Table 2.5-1 lists the Standard Designs and Construction Measures that have been incorporated into the planning, design, construction, operation, and maintenance of the proposed project to minimize the potential adverse effects of the project on the surrounding community and the environment. These Standard Design and Construction Measures, will be included in project construction drawings and/or specifications or included as Conditions of Approval and as such are considered a part of the project and are not considered mitigation measures.

Table 2.5-1: Standard Design and Construction Measures

Impact Section	Standard Design and Construction Measure
Air Quality	**Fugitive Dust** – To reduce potential fugitive dust that may be generated by project construction activities, the City or its contractor shall implement the following BAAQMD basic construction measures when they are appropriate: • All active construction areas will be watered twice daily or more often if necessary. Increased watering frequency will be required whenever wind speeds exceed 15 miles-per-hour. • Cover stockpiles of debris, soil, sand, and any other materials that can be windblown. Trucks transporting these materials will be covered. • All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day or as often as necessary to keep them free of dust and debris associated with site construction. The use of dry power sweeping is prohibited. Subsequent to clearing, grading, or excavating, exposed portions of the site will be watered, landscaped, treated with soil stabilizers, or covered as soon as possible. Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas and previously graded areas inactive for 10 days or more. • Installation of sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replanting of vegetation in disturbed areas as soon as possible after completion of construction. • Idling times will be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes. Clear signage will be provided for construction workers at all access points. • All construction equipment will be maintained and properly tuned in accordance with manufacturer's specifications. All equipment will be checked by a certified mechanic and

	determined to be running in proper condition prior to operation. • Post a publicly visible sign with the telephone number and person to contact at the City of Cupertino regarding dust complaints. This person will respond and take corrective action within 48 hours. The BAAQMD's phone number will also be visible to ensure compliance with applicable regulations
Air Quality	**Construction Fugitive Dust and Exhaust Emissions Best Management Practices:** The City shall require the applicant to incorporate the following construction air quality best management practices into all applicable project bid, design, and engineering documents: 1) All exposed surfaces (e.g., parking areas, staging area, soil piles, graded areas, and unpaved access roads) shall be watered at once per day, at a minimum. 2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. 4) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 5) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 6) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 7) Stage construction equipment and materials as far away as possible from residential land uses to the extent feasible.
Geology/Paleontological Resources	**Paleontological Resources**: The following measures shall be applied to development of the project site to reduce and/or avoid impacts to paleontological resources: If vertebrate fossils or other paleontological resources are discovered during construction, all work on the site shall stop

	immediately until a qualified professional paleontologist can assess the nature and importance of the find and recommend appropriate treatment. Treatment may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection and may also include preparation of a report for publication describing the finds. The City of Watsonville's Project Manager or other suitable representative shall be responsible for submitting the paleontologist's report to the Director of Public Works and implementing the recommendations of the qualified professional paleontologist. The representative shall submit a report to the Director of Public Works indicating how the paleontologist's recommendations were complied with as soon as all measures have been incorporated into the project.
Hydrology/Water Quality	**Phase 1 and Phase 2 Preliminary Stormwater Pollution Prevention Plans**. The project includes preliminary stormwater pollution prevention plans to prevent erosion and protect water quality during construction. The plans include best management practices including, but not limited to, the use of hydraulic much, geotextiles, plastic covers, erosion control blankets, earth dikes, drainage swales, lined ditches, silt fences, sediment traps, fiber rolls, street sweeping, wind erosion control, vehicle and equipment cleaning, fueling, and maintenance, stockpile, solid, and hazardous waste management. Project plans also include the City of Watsonville's Erosion Control Standards plan sheets which are required during the rainy season (October 16- April 15). **General Permit for Construction Activity.** The project disturbs more than one acre of land and therefore requires compliance with the requirements of the California General Permit For Stormwater Discharges associated with Construction Activity (Construction General Permit). The Construction General Permit requires the filing of a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) during construction. In order to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) program for construction, construction contractors shall install and maintain appropriate BMPs, as shown in the erosion control plans and in accordance with the SWPPP, on all construction projects. BMPs shall be installed in accordance with industry recommended standards, and/or in accordance with the Construction General Permit issued by the state. sediment, construction materials, debris and wastes, and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, wind, or vehicle tracking to the extent feasible. Under direction of the Contractor's qualified SWPPP practitioner (QSP), erosion and/or sediment control devices shall be modified as needed as the project progresses to ensure

	effectiveness. The contractor shall download and keep a copy of the SWPPP on site and available for review throughout the entire construction period.
Noise	**Construction Noise Control BMPs:** To reduce potential construction noise levels from project construction activities, the City shall require the applicant: • Restrict Work Hours: All construction-related work activities, including deliveries, shall follow more restrictive noise measures than those required in Watsonville Municipal Code. • Construction activities shall not take place between the hours of 7PM and 7 AM on weekdays, nor prior to 8AM or after 5PM on Saturday. No work shall occur on Sundays or holidays. • A sign shall be posted at a conspicuous location near the main entry to the site, prominently displaying these hour restrictions and identifying the phone number of the job superintendent. • Control Construction Traffic and Site Access. Construction traffic, including soil and debris hauling, shall follow City-designated truck routes and shall avoid routes that contain residential dwelling units to the maximum extent feasible given specific Project location and access needs. • Construction Equipment Selection, Use, and Noise Control Measures. The following measures shall apply to Project construction equipment: • Contractors shall use the smallest size equipment capable of safely completing necessary work activities. • Construction staging shall occur as far away from residential and other noise-sensitive land uses as possible. • All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from noise-sensitive land uses as practical. Shielding may consist of structures or three- or four-sided enclosures provided the structure/enclosure breaks the line of sight between the equipment and the noise-sensitive land use and provides for proper ventilation and equipment operation. • Heavy equipment engines shall be equipped with standard noise suppression devices such as mufflers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment shall be maintained in accordance with

	manufacturer's recommendations during active construction activities. • Pneumatic tools shall include a noise suppression device on the compressed air exhaust. • The Project shall connect to existing electrical service at the site to avoid the use of stationary power generators (if technically, logistically, and economically feasible and approved by the electric service provider). • No radios or other amplified sound devices shall be audible beyond the Project property line. • Prepare a Construction Noise Complaint Plan. The Construction Noise Complaint Plan shall: a. Identify the name and/or title and contact information (including phone number and email) for a designated Project and City representative responsible for addressing construction-related noise issues. The Project representative shall be the property owner or construction job superintendent. The City representative shall be the City Engineer or designee. b. Include procedures describing how the designated Project representative will receive, respond, and resolve construction noise complaints. At a minimum, upon receipt of a noise complaint, the Project representative shall notify the City contact, identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.

2.6 CITY ACTIONS/ APPROVAL

As proposed, the following would be required for approval of the project:

- Design Review – City of Watsonville Planning Commission
- Special Use Permit – City of Watsonville Planning Commission
- Sign Permit

The proposed warehouse use is permitted in the Manabe-Ow Business Park Specific Plan Business Park designation. However, the Specific Plan requires a Special Use Permit for any proposed use that has the potential to generate significant impacts, such as noise, and for any warehousing exceeding 30 percent of the floor area of a business requires a Special Use Permit. The Watsonville Zoning Ordinance requires a Design Review by the Planning Commission for new construction.

2.7 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Greenhouse Gas Emissions	☐	Public Services
☐	Agricultural and Forestry Resources	☒	Hazards and Hazardous Materials	☐	Recreation
☐	Air Quality	☐	Hydrology/Water Quality	☒	Transportation
☒	Biological Resources	☐	Land Use/Planning	☒	Tribal Cultural Resources
☒	Cultural Resources	☐	Mineral Resources	☐	Utilities/Service Systems
☐	Energy	☒	Noise	☐	Wildfire
☐	Geology/Soils	☐	Population/Housing	☒	Mandatory Findings of Significance

2.8 SUMMARY OF FINDINGS: IMPACTS AND MITIGATIONS

Impact findings and mitigation measures identified in this Initial Study checklist and narrative are summarized below. The mitigations listed below represent conditions of approval for the Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed project.

Aesthetics

No significant impacts have been identified; no mitigation is necessary.

Agricultural and Forestry Resources

No significant impacts have been identified; no mitigation is necessary.

Air Quality

No significant impacts have been identified; no mitigation is necessary.

Biological Resources

Implementation of the following mitigation measures would ensure impacts are less than significant.

Mitigation Measure BIO-1a. Pre-Activity Focused Survey for Santa Cruz Tarplant. Prior to initial ground disturbance in grassland and wetland habitats, and during the appropriate blooming period (June to October), a focused survey for Santa Cruz tarplant shall be conducted by a qualified plant ecologist within suitable habitat in the project footprint and a 50-foot buffer around the project footprint, where feasible. The purpose of the survey will be to assess the presence or absence of Santa Cruz tarplant. If Santa Cruz tarplant is not found in the impact area or the identified buffer, then no further mitigation will be warranted. If Santa Cruz tarplant is found in the impact area, then Mitigation Measures BIO-1b shall be implemented. The results of the survey shall be documented.

A qualified plant ecologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for special-status plant species that may be present within the project area. During or following academic training, the qualified plant ecologist will have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-1b. Avoidance Buffers. To the extent feasible, and in consultation with a qualified plant ecologist, the project proponent shall construct the project to avoid impacts on all populations of special-status plant species within the project site or within the identified buffer of the impact area, to the extent feasible. Avoided special-status plant populations shall be protected by establishing and observing the identified buffer between plant populations and the impact area. All such populations located in the impact area or the identified buffer, and their associated designated avoidance areas, shall be clearly depicted on any construction plans. In addition, prior to initial ground disturbance or vegetation removal, the limits of the identified buffer around special-status plants to be avoided shall be flagged or fenced. The flagging will be maintained intact and in good condition throughout project-related construction activities.

If avoidance is not feasible, then CDFW shall be consulted to determine the appropriate mitigation measures, which may include salvage and relocation of individual plants and/or off-site preservation, enhancement, and management of occupied habitat for the species.

Mitigation Measure BIO-2a. Conduct Preconstruction Survey. No more than 24 hours prior to the date of initial ground disturbance, a pre-construction survey for California red-legged frog and western pond turtle shall be conducted within the impact area by a qualified biologist. The survey will consist of walking the limits of impact to ascertain the possible presence of the species. The qualified biologist shall investigate all potential areas that could be used by California red-legged frog and western pond turtle for feeding, sheltering, movement, and other essential behaviors.

A qualified biologist is an individual who shall have a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for each amphibian and reptile special-status species that may be present within the project area. During or following academic training, the qualified biologist shall have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements. Additionally, the qualified biologist must be permitted or authorized to handle and relocate California red-legged frog and western pond turtle.

Mitigation Measure BIO-2b. Worker Environmental Awareness Program. All construction personnel shall participate in a worker environmental awareness program. These personnel shall be informed about the possible presence of all special-status species and habitats associated with the species identified here to be potentially present in the parcel and that unlawful take of the animal or destruction of its habitat is a violation of law. Prior to construction activities, a qualified biologist shall instruct all construction personnel about (1) the description and status of the species; (2) the importance of their associated habitats; (3) a list of measures being taken to reduce impacts on these species during project construction and implementation; and (4) measures to be followed if special-status species are encountered during construction activities. A fact sheet conveying this information shall be prepared for distribution to the construction crew and anyone else who enters the project site.

Mitigation Measure BIO-2c. Install Wildlife Exclusion Barrier. Prior to any ground disturbance in the work area, a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist shall inspect the area prior to installation of the barrier. The

barrier will be designed to allow the California red-legged frog and western pond turtle to leave the work area and prevent them from entering the work area. The fence shall remain in place until all development activities have been completed. This barrier shall be inspected daily and maintained and repaired as necessary to ensure that it is functional and is not a hazard to California red-legged frogs on the outer side of the barrier.

Mitigation Measure BIO-2d. Vegetation Removal. All vegetation within the work area shall be cut to four inches in height by a high-wheel mower or weed-whip just prior to the initiation of grading to remove cover that might be used by California red-legged frogs and/or western pond turtles. A qualified biologist authorized to handle California red-legged frogs and/or western pond turtles shall walk with the mower/whip to monitor for species during the vegetation removal.

Mitigation Measure BIO-2e. Construction Monitoring. A qualified biologist or biological monitor shall be onsite during all project activities that may result in take of any special-status species. The qualified biologist shall be given the authority to freely communicate verbally, by telephone, electronic mail, or in writing at any time with construction personnel, any other person(s) at the project site, otherwise associated with the project, and regulatory agencies (e.g., USFWS or CDFW). The qualified biologist or biological monitor shall have oversight over implementation of all the mitigation measures and shall have the authority and responsibility to stop project activities if they determine any of the measures are not being fulfilled.

A biological monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project, experience with construction-level biological monitoring, be able to recognize species that may be present within the project area and be familiar with the habits and behavior of those species.

Mitigation Measure BIO-2f. Relocation of California Red-legged Frog and Western Pond Turtle. If a red-legged frog or western pond turtle is found during project activities, work shall stop until a qualified biologist that is permitted to handle California red-legged frog or authorized to handle western pond turtle relocates the animal from the impact area before groundwork starts again. Only a qualified biologist shall capture, handle, and move California red-legged frog and western pond turtle. The qualified biologist shall monitor any relocated frog or turtle until it is determined that it is not imperiled by predators or other dangers. See Mitigation Measure BIO-2a for the definition of a qualified biologist.

Mitigation Measure BIO-2g. Daytime Restriction. No work shall be performed during nighttime hours. If construction is necessary at dawn or dusk, lights shall be directed away from Watsonville Slough and the Cattail Marsh habitats.

Mitigation Measure BIO-2h. Food and Trash. To eliminate an attraction for the predators of the California red-legged frog and western pond turtle, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in solid, closed containers (trash cans) and removed at the end of each working day from the entire construction site. Dogs or other pets shall not be allowed on site during construction.

Mitigation Measure BIO-2i. Steep-walled Holes and Trenches. To prevent inadvertent entrapment of the California red-legged frog or western pond turtle, a qualified biologist, biological monitor, and/or construction foreman/manager shall ensure that all excavated, steep-walled holes or trenches more than one foot deep are completely covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks and inspected by a qualified biologist. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals by a qualified biologist and/or construction

foreman/manager. If at any time a trapped California red-legged frog or western pond turtle is discovered by a qualified biologist or anyone else, the steps in Mitigation Measure BIO-6 Relocation of California red-legged frog and Western Pond Turtle shall be followed.

Mitigation Measure BIO-2j. Prohibition of Plastic Mono-filament Netting. To prevent trapping California red-legged frogs or other species at the project site, erosion control materials containing plastic mono-filament netting or similar material shall not be used, even if it is labeled as biodegradable. Acceptable substitutes include coconut coir matting, straw/coconut finer erosion blanket, straw wattles wrapped in burlap, coir logs, and/or tackifier.

Mitigation Measure BIO-3a: Conduct Pre-construction Surveys for Burrowing Owls. Pre-construction surveys for burrowing owls shall be conducted prior to the initiation of all project activities within suitable burrowing owl nesting and roosting habitat (i.e., Wild Oats and Annual Brome Grassland in the 200 Manabe Ow Road project area). Pre-construction surveys shall be completed in conformance with the CDFW's 2012 guidelines (CDFG 2012), which include the following:

- At least 2 weeks prior to the onset of vegetation mowing/removal or ground disturbing activities, an initial habitat assessment shall be conducted by a qualified biologist to determine if suitable burrowing owl habitat is present. During the habitat assessment, the biologist shall survey the entire activity area for burrows that could be used by burrowing owls for nesting and roosting, and signs of use (e.g., feathers, pellets, whitewash).
- The survey shall also include all areas within 250 feet of the site, as access allows.
- If no suitable burrowing owl habitat is present, no additional surveys shall be required.
- If suitable burrows and signs of activity are found, an additional survey shall be conducted within the 24-hour period prior to the initiation of project activities in any given area.
- The results of the surveys shall be documented.

If burrowing owls are observed during the surveys, then Mitigation Measure BIO-3b shall be implemented.

A qualified biologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for burrowing owl. During or following academic training, the qualified biologist will have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-3b: Implement Buffer Zones for Burrowing Owls. If burrowing owls are present during the nonbreeding season (September 1 to January 31), a 150-foot buffer zone shall be maintained around the occupied burrow(s), if feasible relative to property lines. If maintaining such a buffer is not feasible, then the buffer must be great enough to avoid injury or mortality of individual owls. During the breeding season (February 1 to August 31), a 250-foot buffer, within which no newly initiated project-related activities will be permissible, shall be maintained between project activities and occupied burrows. Owls present between February 1 and August 31 shall be assumed to be nesting, and the 250-foot protected area shall remain in effect until August 31. If monitoring indicates that the owls are no longer nesting or the young owls are foraging independently, the buffer may be reduced, or the owls may be relocated prior to August 31, as determined by a qualified biologist. Relocation of owls shall be completed by a qualified biologist using one-way doors, which should be installed in all burrows within the impact area and left in-place for at least two nights. These one-way doors should then be removed and the burrows back-filled immediately prior to vegetation mowing/removal or grading.

Mitigation Measure BIO-4: Pre-Construction/Pre-Disturbance Survey for Nesting Birds.

Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts to nesting birds protected under the MBTA and California Fish and Game Code would be avoided. The nesting season for most birds in Santa Cruz County extends from February 1 through September 15.

Pre-Construction Surveys. To avoid impacts to nesting birds and violation of state and federal laws pertaining to birds, all construction-related activities (including but not limited to mobilization and staging, clearing, grubbing, vegetation removal, fence installation, demolition, and grading) should occur outside the avian nesting season (that is, prior to February 1 or after September 15). If construction and construction noise occurs within the avian nesting season (from February 1 to September 15), all suitable habitats located within the project's area of disturbance, including staging and storage areas plus a 250-foot (passerines) and 1,000-foot (raptor nests) buffer around these areas shall be thoroughly surveyed, as feasible, for the presence of active nests. The surveys shall be conducted by a qualified biologist no more than five (5) days before commencement of any vegetation trimming, site disturbance activities and equipment mobilization. If project activities are delayed by more than 5 days, an additional nesting bird survey shall be performed. Active nesting is present if a bird is building a nest, sitting in a nest, a nest has eggs or chicks in it, or adults are observed carrying food to the nest. The results of the surveys shall be documented.

If pre-construction nesting bird surveys result in the location of active nests, no site disturbance and mobilization of heavy equipment (including but not limited to equipment staging, fence installation, clearing, grubbing, vegetation removal, fence installation, demolition, and grading), shall take place within 250 feet of non-raptor nests and 1,000 feet of raptor nests, unless smaller buffers are determined by a qualified biologist. The buffer shall remain in place until the chicks have fledged. Monitoring will ensure compliance with MBTA and relevant California Fish and Game Code requirements. Monitoring dates and findings shall be documented.

Mitigation Measure BIO-5: Standards for Bird Safe Buildings. The project shall implement the following bird-safe design considerations:

- Use glazing or window coatings/markings that reduce bird strike hazard caused by transparency, reflectance, black hole, or passage effect, etc., such as Guardian Bird1st etch glass or similar. See recommendations by the American Bird Conservatory at https://abcbirds.org/.
- Minimize plants or landscaped areas behind glass.
- Minimize concentrations of plantings adjacent to glass facades.

Cultural Resources

Implementation of the following mitigation measures would ensure impacts are less than significant.

Mitigation Measure CUL-1: Conduct Archaeological Sensitivity Training for Construction Personnel. The project applicant shall retain a qualified professional archaeologist who meets U.S. Secretary of the Interior's Professional Qualifications and Standards to conduct an archaeological sensitivity training for construction personnel prior to commencement of excavation activities. The training session shall be carried out by a cultural resource professional

with expertise in archaeology, who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. The Applicant and/or qualified professional archaeologist shall propose a date for scheduling the training at the pre-construction meeting with City staff. The Applicant shall notify the City at least 48 hours before holding the training and keep a log of all attendees. The training session shall include a handout and shall focus on how to identify archaeological resources that may be encountered during earthmoving activities and the procedures to be followed in such an event, the duties of archaeological monitors, and the general steps a qualified professional archaeologist would follow in conducting a salvage investigation, if one is necessary.

Mitigation Measure CUL-2: Conduct Archaeological Monitoring During Ground Disturbing Phases of Construction. Ground-disturbing activities beyond surface level soils shall be observed by a qualified archaeological monitor either meeting the Secretary of the Interior's Professional Qualifications Standards, or under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards. Monitoring activities shall be coordinated with a Native American monitor if required under Mitigation Measure CUL-3. If archaeological resources are encountered Mitigation Measure CUL-3 will apply. Archaeological monitoring may be reduced or halted at the discretion of the monitor as warranted by conditions such as encountering bedrock, ground disturbance is occurring in fill, or other indications that discovery is extremely unlikely. If monitoring is reduced to spot-checking, spot-checking shall occur when ground-disturbance moves to a new location within the project site and when ground disturbance will extend to depths not previously reached, unless those depths are within bedrock.

Mitigation Measure CUL-3: Discovery of cultural, historic, or archaeological resources During Construction. The project applicant shall ensure that if any previously undisturbed cultural, historic, or archaeological resources are uncovered in the course of site preparation, clearing or grading activities that the City of Watsonville Community Development Director is notified and operations within 25 feet of the discovery are halted until such time as a qualified professional archaeologist can be consulted to evaluate the find and recommend appropriate action for collection, recordation, analysis, and reporting. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented subject to review and approval by the City of Watsonville Community Development Department.

Mitigation Measure CUL-4: Inadvertent Discovery of Human Remains If human remains of Native American origin are discovered during ground disturbing activities, the project applicant shall comply with state laws relating to the dispositions of Native American burials, which falls within the jurisdiction of the California Native American Heritage Commission (NAHC) (Public Resources Code, Section 5097.98). If human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the planning area or any nearby area reasonably suspected to overlie adjacent human remains until:

- The Santa Cruz County Sherriff-Coroner has been informed and has determined that no investigation of the cause of death is required, and
- If the remains are of Native American origin:
    - The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave good as provided in the Public Resources Code, Section 5097.98, or

- The California NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

Energy

No significant impacts have been identified; no mitigation is necessary.

Geology and Soils

No significant impacts have been identified; no mitigation is necessary.

Greenhouse Gas Emissions

No significant impacts have been identified; no mitigation is necessary.

Hazards and Hazardous Materials

Implementation of the following mitigation measure would ensure impacts are less than significant.

Mitigation Measure HAZ-1a: Prior to issuance of grading permits, the project applicant shall collect shallow soil samples in the near surface soil within the proposed project area and test them for organochlorine pesticides and pesticide-based metals such as arsenic and lead to determine if contaminants from previous agricultural operations and aerial deposition occur at concentrations above established construction worker safety and commercial/industrial standard environmental screening levels. The results of soil sampling and testing shall be provided to the Community Development Director or the Director's designee at the City of Watsonville Community Development Department for review. If no contaminants are found above the applicable regulatory environmental screening levels, no further action is required.

Mitigation Measure HAZ-1b: If pesticide or lead contaminated soils are found in concentrations above the appropriate regulatory environmental screening levels for the proposed project, the project applicant shall obtain regulatory oversight from the Santa Cruz County Environmental Health Division. A Site Management Plan (SMP) shall be prepared and implemented to manage the cleanup of potential contamination. The SMP shall be prepared prior to construction to reduce or eliminate exposure risk to human health and the environment, specifically, potential risks associated with the presence of contaminated soils. Contaminated soil removed from the site shall be hauled off-site and disposed at a licensed hazardous materials disposal site in accordance with applicable regulations.

Hydrology and Water Quality

No significant impacts have been identified; no mitigation is necessary.

Land Use and Planning

No significant impacts have been identified; no mitigation is necessary.

Mineral Resources

No significant impacts have been identified; no mitigation is necessary.

Noise

No significant impacts have been identified; no mitigation is necessary.

Population and Housing

No significant impacts have been identified; no mitigation is necessary.

Public Services

No significant impacts have been identified; no mitigation is necessary.

Recreation

No significant impacts have been identified; no mitigation is necessary.

Transportation

Implementation of the following mitigation measure would ensure impacts are less than significant.

Mitigation Measure TRN-1a. Implementation of a TDM Program. Prior to the commencement of any operations on the project site, the project applicant shall develop and implement a TDM Program that includes the following TDM measures to reduce vehicle trips by employees of the project:

1. Rideshare Program
2. Mandatory Travel Behavior Change Program
3. Preferential Carpool Parking Spaces
4. Emergency Ride Home Program
5. Alternative Work Schedule
6. Telecommuting
7. Bicycle Parking per Code and Showers/Changing Rooms

Mitigation Measure TRN-1b. Payment of a VMT Mitigation Banking Program. Prior to the commencement of any operations on the project site, the project applicant shall participate in the Watsonville VMT Mitigation Banking Fee Program by paying the established per vehicle mile traveled by employee fee in effect at the time of participation in the Program.

The combination of the implementation of the proposed Mitigation Measure TRn-1a Implementation of a TDM Program and Mitigation Measure TRN-1b Payment of the VMT Banking Fee Program fee would result in a reduction of VMT generated by the project to a less than significant level, therefore the project would result in a less than significant VMT impact.

Tribal Cultural Resources

Implementation of the following mitigation measures would ensure impacts are less than significant.

Mitigation Measure TRI-1: Consider all Native American Archaeological Discoveries to be Significant Resources. All Native American artifacts (tribal finds) shall be considered as a significant Tribal Cultural Resource, pursuant to PRC 21074 until the lead agency has enough evidence to make a determination of significance. The City shall coordinate with an archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications, as well as an appropriate tribe or tribes, as determined by the NAHC, to develop an appropriate treatment plan for the resources. The plan may include implementation of archaeological data recovery excavations to address treatment of the resource along with subsequent laboratory processing and analysis. An archaeological report will be written detailing all archaeological finds and submitted to the City and the Northwest Information Center.

In addition to Mitigation Measure TRI-1, the implementation of Mitigation Measures CUL-1 through CUL-4 would result in less than significant impacts with respect to tribal cultural resources.

Utilities and Service Systems

No significant impacts have been identified; no mitigation is necessary.

Wildfire

No significant impacts have been identified; no mitigation is necessary.

2.9 DETERMNATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project COULD have a significant effect on the environment, there WILL NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Printed Name	Title

Chapter 3. Environmental Checklist and Responses

1. **Project Title:** 200 Manabe Ow Road Distribution Facility

2. **Lead Agency Name and Address:**

   City of Watsonville
   Community Development Department
   Planning Division
   250 Main Street
   Watsonville, California 95076

3. **Contact Person and Phone Number:**

   Matt Orbach, Principal Planner
   City of Watsonville Community Development Department
   Planning Division
   250 Main Street
   Watsonville, CA 95076
   (831) 768-3050; Direct: (831) 768-3075
   matt.orbach@cityofwatsonville.org

4. **Project Location:** 200 Manabe Ow Road, Watsonville, CA 95076

5. **Project Sponsor's Name and Address:**

   Lone Oak - Watsonville, L.L.C.
   6250 N. River Road, Suite 9000
   Rosemont, IL 60018

6. **General Plan Designation:** Industrial

7. **Zoning:** Industrial Park (IP)

8. **Description of the Project:** The project proposes to construct a rectangular two-story industrial warehouse structure totaling 156,961 square feet, including a two-story office within the building containing approximately 15,900 square feet plus a 555-square foot receiving office for a total of 16,455 square feet of office space. An additional area totaling approximately 17,360 square feet would be available on the south side of the building for a possible future expansion, although no expansion is currently proposed or included in the project. Any future expansion of the building would be subject to a separate review by the City. A new nine-foot tall decorative security fence would be constructed around the perimeter of the site (see Figure 4, Site Plan). The building renderings and 3D modeling are shown on Figures 12 through 14.

   The proposed warehouse would operate as a distribution facility that operates 24 hours per day, Monday through Friday. Proposed operations would include multiple shifts of warehouse, delivery, and office employees. The site would be accessed via two driveways along the northern border of the site.

9. **Surrounding Land Uses and Setting:** The vacant site is located within a planned business park (Manabe Ow Business Park Specific Plan), and bordered on the north by Watsonville Slough. An unpaved pedestrian/bike trail runs along the northern edge of the slough. Beyond the slough to the north is an existing FedEx warehouse facility. An existing single-family residential neighborhood is located adjacent to the east side of the FedEx site. To the east of the project site is additional vacant land within the business park boundaries that extends beyond Ohlone Drive. To the west of the site beyond Highway 1 are existing

industrial and distribution warehouse uses. To the south are various industrial uses, including a lumber store, a scrap metal business, and packaging companies.

10. **Other public agencies whose approval is required:** None.

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?** To date, one California Native American tribe (Amah Mutsun Tribal Band) has requested consultation with the City pursuant to PRC section 21080.3.1.

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in 5. below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. the significance criteria or threshold, if any, used to evaluate each question; and
    b. the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
*Would the project:**				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐
*Except as provided in Public Resources Code Section 21099				

3.1.1 Environmental Setting

The City of Watsonville is located in the Pajaro Valley in the southernmost portion of Santa Cruz County approximately 47 miles south of the City of San José. Neighboring communities within 25 miles of the planning area include the following: the City of Santa Cruz and City of Capitola which are each respectively located 20 miles and 14 miles north of the planning area and the community of Castroville and the City of Salinas which are each respectively located approximately 11 miles to the southwest and 23 miles to the southeast. The City of Scotts Valley is located approximately 21 miles to the northwest.

The City of Watsonville is surrounded by agricultural land and rangeland, which is offset by the ridgeline of the Santa Cruz Mountains to the north and east. The wooded nature of these mountains provides both color and textural contrast to the agricultural land and urban development in the valley below. The agricultural land and undeveloped ridgeline encircling Watsonville lend a distinct rural character to an urban viewshed in the central core.

The City's western edge is defined by Highway 1 and agricultural land that extends to the Monterey Bay. Landscape features within and surrounding the City are diverse, exhibiting substantial visual variety. Representative visual features include the overall urban landscape, major arterial thoroughfares, scenic corridors, agricultural lands, open space, and ridgelines.

The project site was formerly used for agricultural uses until about 2016 when agricultural production stopped and the site was mass graded into a flat pad. Since that time, the site has been left vacant. Prominent features within the viewshed of the site include Highway 1 to the west, the Fedex facility, residential development and Watsonville Slough along the northern property boundary and north of Manabe Ow Road, and other light industrial or warehouse type

development to the south. To the east lies additional undeveloped land that was previously used for agriculture.

Scenic Resources and Roadways

According to the CEQA Guidelines, scenic resources include, but are not limited to, trees, rock outcroppings, and historic buildings within a scenic highway. According to the California Department of Transportation (Caltrans) Scenic Highway Program (CSHP), Highway 1 and Highway 152, which traverse the City of Watsonville, are considered "eligible" for the official State Scenic Highway designation.

The City of Watsonville General Plan (2005) designates Highway 1 and Riverside Drive/Highway 129 from Highway 1 to Salsipuedes Creek as scenic roadways within the project area. Highway 1 has direct views to the project site while the Riverside Drive/Highway 129 overpass over Highway 1 offers very limited views of the project site as the views are interrupted by other intervening development between the viewpoint and project site.

Scenic Vistas and Visual Resources

A scenic vista is a view of natural environmental, historic and/or architectural features possessing visual and aesthetic qualities of value to the community. The term "vista" generally implies an expansive view, usually from an elevated point or open area. There are no designated scenic vistas in the vicinity of the project site (RBF 2010).

3.1.2 Regulatory Setting

Caltrans Scenic Highway System

The California Scenic Highway Program (Streets and Highway Code, Sections 260 through 263) is managed by the California Department of Transportation (Caltrans). The program is intended to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment.

City of Watsonville General Plan

The following policies in the Watsonville 2005 General Plan are applicable to aesthetics and visual character within the planning area.

Goal 5.1, Visual Resources - Preserve and enhance the built and natural visual resources within Watsonville.

Goal 5.2, Community Appearance - Blend new development and recognized values of community appearance and scenic qualities, and ensure that new development enhances, rather than detracts from its surroundings.

Goal 5.5, Viewscape - Preserve scenic rural qualities surrounding the urbanized portions of the planning area.

Goal 5.8, Urban Beautification - Support public and private urban beautification activities and promote pride in community appearance.

Goal 5.9, Scenic Corridors - Protect and enhance views to and from the scenic streets and highways and the planning area.

Goal 5.10, Natural Scenic Resources - Conserve and enhance natural resources that contribute to the visual, recreational, and educational aesthetics of Watsonville. Such resources include wetlands, sloughs, rivers, lakes, hillsides, and stands of vegetation.

Policy 5.A, Project Design Review - The preservation of visual resources shall be accomplished through the design review process.

Policy 5.B, Design Consistency - The City shall review new development proposals to encourage high standards or urban design and to ensure that elements of architectural design and site orientation do not degrade or conflict with the appearance of existing structures.

Policy 5.E, Viewshed Protection - The City shall use the General Plan Land Use chapter and the design review process to ensure that major new development projects do not impact scenic vistas now enjoyed throughout the City.

Policy 5.I, Scenic Streets and Highways - The City shall identify scenic streets and highways in the planning area according to adopted criteria.

Policy 5.J, Scenic Natural Resources - The City shall conserve and enhance natural resources that contribute to visual, recreational, and educational aesthetics of Watsonville. Such resources include: wetlands, sloughs, rivers, lakes, hillsides, and stands of vegetation.

- Implementation Measure 5.J.1, Natural Heritage Preservation. The City should conserve and enhance the natural resource areas of the community that give residents passive recreational and educational opportunities connected with the natural heritage of Watsonville.
- Implementation Measure 5.J.1, Natural Heritage Preservation. The City should conserve and enhance the natural resource areas of the community that give residents passive recreational and educational opportunities connected with the natural heritage of Watsonville.
- Implementation Measure 5.J.2, Compatibility. Whenever a new development is proposed next to a scenic resource, the design review process will be used to maintain or create visual harmony between new and old structures and their natural setting.
- The following policies in the Watsonville 2005 General Plan are applicable to aesthetics and visual character within the planning area.

Policy 5.E, Viewshed Protection - The City shall use the General Plan Land Use chapter and the design review process to ensure that major new development projects do not impact scenic vistas now enjoyed throughout the City.

Policy 5.I, Scenic Streets and Highways - The City shall identify scenic streets and highways in the planning area according to adopted criteria. *Goal 9.8 Wildlife Habitat* - Preserve and protect the remaining areas of wildlife habitat for their scenic and scientific value

Policy 9.A, Open Space Land Use - The City shall designate land as environmental management to protect ecological, scientific, and scenic values.

Policy 9.B, Natural Resource Protection - The City shall designate land necessary for the preservation of natural resources and to avoid conflicts with urban uses.

- Implementation Measure 9.B.1, Resource Zoning. The City shall designate and zone environmentally sensitive areas as EM-OS (Environmental Management – Open Space to prohibit urban development and to preserve natural resources.

<u>Development Standards, Manabe-Ow Business Park Specific Plan</u>

The Manabe-Ow Business Park Specific Plan includes development standards for building setbacks, landscaping, parking, permitted uses, and building height. These development standards supersede the zoning requirements as set forth in the City of Watsonville Municipal Code. Development standards are provided for the “Business Park,” “Retail Overlay,” and “Workforce Residential” land use designations. The design guidelines are intended to provide consistent design guidance for development of the planning area and implement the vision for the planning area as defined by the City of Watsonville General Plan the Specific Plan’s Guiding Principles. Design guidelines are provided for each of the land use districts within the planning

area and for interim uses and address: site design, architectural design, landscape design, signage, and lighting.

Several objectives in the design guidelines within the proposed Specific Plan are applicable to the aesthetic and visual character of future development within the planning area:

Site Design

- Buildings should orient towards Highway 1 where appropriate by providing elements of interest such as signage and architectural features appropriate to project and building type.
- Pay special attention to areas visible to the public by considering views from streets and highways.
- Orient buildings and associated improvements to minimize noise, light, glare, and other visual impacts to adjacent residential neighborhoods of Sea View Ranch and Las Brisas.

Architectural

- Facades that front the street should be articulated and present the building in a quality and attractive manner. These facades should include architectural variation over at least 15 percent of the façade's linear surface, including the use of windows, trellises, towers, building projections, and recessed building entries.
- Building heights, massing, and setbacks should be varied to define functions and uses such as office and warehouses. Office spaces should be located along the front perimeter of the building whenever practical.

Landscape Design

- A minimum of 10 percent of the net parcel area should be landscaped, five percent of which may include hardscape (entries, plazas, and walkways).
- Landscaping should be provided in various locations around the perimeter of the planning area to be used for screening, noise buffering, and to soften edges. Requirements are as follows:
    - A minimum eight-foot strip should be placed along all rear lot lines adjacent to Paseo Drive within the North Business Park Planning Area.
    - Landscaping should include trees for screening and noise buffering from the adjacent residents.
    - Trees should be grouped at various intervals adjacent to Highway 1 to soften the visual appearance of the built form as seen from Highway 1.
    - Landscaping, including trees for visual buffering, should be incorporated as part of the graded slope adjacent to the Southern Pacific Railroad line on the south edge of the project site.
    - A minimum ten-foot landscape strip should be placed along all lot lines fronting Ohlone Parkway. Landscaping should include a variety of trees, shrubs, grasses, etc. to create a visually attractive edge.
- Parking lot treatments should be consistent and contribute to the project landscape unity. Parking lots should be planted with trees in such a manner as to provide shade for vehicles and pedestrians.

Signage

- Signs should advertise a place of business, provide directions, or other information in an attractive manner without detracting from the overall quality of the site.
- Signs should be integrated into the overall site design by considering design, color, materials, size and placement.
- A project defining monument sign should be placed within the North Business Park adjacent to Highway 1 and tall enough to be seen by passing traffic in both directions. The monument should be visually attractive and should only advertise the name of the business park.

Lighting

- Lighting should be sensitive to adjacent uses, development, and natural slough features.
- Lighting should enhance various features within the planning area, such as entries, sidewalks, and public spaces.
- Lighting should consider energy-efficient light sources.
- To provide cohesive and homogenous illumination for the project site, lot lighting should be provided as such:
    - Parking lots: Total pole and fixture type should be a maximum of 20 feet. Lighting should be spaced to meet industry-recommended light levels for safety and uniformity, but avoid glare and overlighting. Illumination should be a maximum of one foot candles, average, measured at ground level. Cut-off type fixtures are encouraged. “Cobra-head” lights are not permitted
    - Public streets: Total pole and fixture type should be a maximum of 35 feet. Lighting should be spaced every 150 of linear footage, and should meet industry recommended light levels for safety and uniformity. Lighting should be designed with cut-off type fixtures that avoid light leakage and overlighting. “Cobra-head” fixtures are not permitted. Illumination should be a maximum of one foot candle average measured at ground level
    - Landscape and buildings: Lighting should be carefully shielded to avoid spill light onto adjacent properties and into the night sky. Lighting should be subtle. Bollard type light fixtures are encouraged
    - Security lighting: Security lighting is exterior lighting installed solely to enhance the security of people and property. Security lighting should meet the above guidelines and should be designed to control glare. Security lighting fixtures should be aimed at a building rather than mounted on the building
    - Solar power lighting: The use of solar powered LED light fixtures are encouraged provided that they meet the recommendations as noted above. Solar lighting supports energy conservation as well as the sustainability of MOBP. Applications of solar powered lighting range from lighting streets to parking lots, pathways, public areas, and landscaping

3.1.3 Impact Discussion

Would the project:

a) Have a substantial adverse effect on a scenic vista?

Less than Significant Impact. The project would not have a substantial adverse effect on a scenic vista, as the site is located within an urbanized area zoned Industrial Park (IP), and is

surrounded by other urban and industrial park-type development immediately to the north, south, and west. The site would not be considered part of a scenic vista. The project proposes construction of a rectangular two-story industrial structure and similar structures abut the site. Development of the site with an additional warehouse facility in an industrially developed area would not have a substantial adverse effect on a scenic vista, and impacts resulting from the project would be less than significant.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The project alignment is not visible from an officially designated state scenic highway. The closest officially designated state scenic highway to project site is State Route (SR) 156, located approximately 10 miles south of the project site in Castroville (Caltrans 2022). Therefore, the project would not damage scenic resources within a state scenic highway. The segment of Highway 1 to the west of the project site is eligible for designation as a state scenic highway however, it does not yet have official designated status and is designated as a scenic route by the 2005 City of Watsonville General Plan. Because the project does not affect scenic resources within a state scenic highway, there would be no impact.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The conversion of the project site from agricultural and rural residential uses to urban uses was addressed in the EIR for the Manabe Ow Specific Plan and found that development standards for building setbacks, landscaping, parking, permitted uses building height and lot coverage as well as the existing light industrial development in the area would result in a less than significant impact related to changes in visual character. The project preserves and enhances Watsonville Slough, an area designated as Environmental Management – Open Space in the General Plan, with riparian landscaping along the northwestern side of the property abutting the Slough, which would maintain and enhance the visual character of the area. In addition, the project includes the planting of 102 24-inch box sized trees around the perimeter of the site as well as within the employee parking areas which will screen views of the proposed development from offsite locations and provide visual enhancement of the site. The project is required to comply with the Design Guidelines in the Specific Plan to ensure quality design and consistency with Policy 5.B, Design Consistency in the City of Watsonville General Plan. Therefore, the project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than Significant Impact. The project is subject to the lighting standards within the Manabe Ow Business Park Specific Plan which states lighting should be sensitive and shielded to adjacent land uses and the night sky, and subtle with security lighting solely to enhance the security of people and property. Project plans call for wall mounted light features on the exterior of the building as well as pole mounted lighting within the parking areas. Pole mounted lighting near Watsonville Slough is outfitted with back light control to prevent light spillage off-site. The site photometric plan shows the majority of the north, west, and southern property boundaries at 0.0 foot-candles of light from proposed lighting. Limited, discrete areas of light between 0.1 and 0.2 foot-candles are present on the western and northern property boundaries. Therefore, the project would have a less than significant impact on light and glare.

3.1.4 References

California Department of Transportation (Caltrans). 2022. California State Scenic Highway System Map. Accessed March 23, 2022at https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa.

City of Watsonville. 1994. Watsonville 2005 General Plan.

City of Watsonville. 2010. Manabe-Ow Business Park Specific Plan.

City of Watsonville. 2010. Manabe-Ow Business Park Specific Plan Master EIR. December 18, 2008.

3.2 AGRICULTURAL AND FOREST RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:*				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
*In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				

3.2.1 Environmental Setting

The project site is located in the City of Watsonville on land that is designated Industrial on the City's Land Use Diagram and zoned Industrial Park (IP) in the Manabe Ow Specific Plan. All proposed project improvements would occur within an existing, urban area. The California Department of Conservation Farmland Mapping and Monitoring Program identifies the site as Prime Farmland (California Department of Conservation 2022).

When the 2005 City of Watsonville General Plan was adopted it was recognized that approximately 580 acres of farmland within the boundaries of the General Plan planning area would be converted to urban land under buildout of the General Plan. A Statement of Overriding Considerations was adopted that recognized that agricultural land conversion was a significant and unavoidable impact. The planning area, including the project site was recognized as part of the future agricultural land conversion under the 2005 General Plan.

3.2.2 Regulatory Setting

Farmland Mapping and Monitoring Program

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) assesses the location, quality, and quantity of agricultural land and conversion of these lands over time. Agricultural land is rated according to soil quality and irrigation status. The best quality land is called Prime Farmland. In CEQA analyses, the FMMP classifications and published county maps are used, in part, to identify whether agricultural resources that could be affected are present on-site or in the project area.

California Land Conservation Act

The California Land Conservation Act (Williamson Act) enables local governments to enter into contracts with private landowners to restrict parcels of land to agricultural or related open space uses. In return, landowners receive lower property tax assessments. In CEQA analyses, identification of properties that are under a Williamson Act contract is used to also identify sites that may contain agricultural resources or are zoned for agricultural uses.

3.2.3 Impact Discussion

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less Than Significant Impact. Following adoption of the 2005 City of Watsonville General Plan by the City in 1994, Measure U was passed by 60 percent of the voters in 2002. Measure U directs new growth to designated areas within and around the City of Watsonville in order to protect agricultural lands and environmentally sensitive areas, while providing the means for the City to address housing and job needs for the next 20 to 25 years. Measure U established an urban limit line (ULL) along the City's northern boundary, which excludes land previously included east and west of East Lake Avenue, and directs growth into several unincorporated areas. The three primary areas of growth include the Atkinson Lane, Buena Vista, and the Manabe-Ow Specific Plan areas. A western boundary west of Highway 1 was defined by Measure U to remain undeveloped.

The 2005 City of Watsonville General Plan evaluated the conversion of up to 580 acres of Important Farmland within the ULL. A Statement of Overriding Considerations was adopted for the conversion of prime farmland in the City of Watsonville 2005 General Plan EIR. The planning area for the Manabe-Ow Business Park Specific Plan was defined as part of the future agricultural land conversion that was found to be a significant and unavoidable impact for which the City of Watsonville adopted a Statement of Overriding Considerations. However, since the conversion of Prime Farmland and Farmland of Statewide Importance cannot be reproduced elsewhere, this was found to be a significant and unavoidable impact of the Specific Plan project for which no feasible mitigation measures were available to reduce this impact.

The proposed project would convert land that is currently designated Prime Farmland on the California Important Farmland Map (California Department of Conservation 2022) into a developed industrial site. However, because the conversion of this land was previously reviewed under CEQA and found to be a significant and unavoidable impact, the implementation of the proposed project, which is consistent with the existing General Plan and zoning designations allowing industrial uses on the site, would result in a less than significant impact.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. The project is consistent with the existing Industrial zoning designation on the site. The site is not under a Williamson Act contract.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The project site is zoned Industrial. There is no forest land or timberland on the project site.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There is no forest land or timberland on the project site.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The project is located within the Manabe-Ow Business Park Specific Plan area, which allows industrial uses on land that is currently designated Prime Farmland (see discussion under Question a, above). The project would have no effect on other properties within the Specific Plan area and would therefore not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

3.2.4 References

California Department of Conservation. 2022. California Important Farmland Finder. Accessed on July 8, 2022 at https://maps.conservation.ca.gov/DLRP/CIFF/.

City of Watsonville. 2019. Land Use Diagram – Watsonville 2005 General Plan. June 19. Accessed on July 8, 2022 at: https://www.cityofwatsonville.org/DocumentCenter/View/106/2005-General-Plan-Land-Use-Diagram-.

City of Watsonville. 2020. Zoning Map – City of Watsonville. July 29. Accessed on July 8, 2022 at: https://www.cityofwatsonville.org/DocumentCenter/View/2561/Zoning-Map.

3.3 AIR QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:*				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐
*Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.				

The following discussion and analyses are based on 200 Manabe Ow Road Distribution Facility Air Quality and Health Risk Assessment Report prepared for the project by MIG. A copy of this report is included in Appendix A to this IS. Refer to this report for more detailed information on the project's environmental and regulatory setting and discussion of the project's potential air quality impacts.

3.3.1 Environmental Setting

Air quality is a function of pollutant emissions and topographic and meteorological influences. Physical atmospheric conditions such as air temperature, wind speed and topography influence air quality. The U.S. Environmental Protection Agency (U.S. EPA) and California Air Resources Board (CARB) are the federal and state agencies charged with maintaining air quality in the nation and state, respectively. The U.S. EPA delegates much of its authority over air quality to CARB. CARB has geographically divided the state into 15 air basins for the purposes of managing air quality on a regional basis. An air basin is a CARB-designated management unit with similar meteorological and geographic conditions. The proposed project is in the northern portion of the North Central Coast Air Basin (NCCAB). Regionally, the Monterey Bay Air Resources District (MBARD) is the agency responsible for managing air quality in the NCCAB.

Regulated Air Pollutants

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six common air pollutants: ozone (O_3), particulate matter (PM), which consists of "inhalable coarse" PM (particles with an aerodynamic diameter between 2.5 and 10 microns in diameter, or PM_{10}) and "fine" PM (particles with an aerodynamic diameter smaller than 2.5 microns, or $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The U.S. EPA refers to these six common pollutants as "criteria" pollutants because the agency regulates the pollutants on the basis of human health and/or environmentally-based criteria. CARB has established California Ambient Air Quality Standards (CAAQS) for the six common air pollutants regulated by the federal Clean Air Act (the CAAQS are more stringent than the NAAQS) plus the following

additional air pollutants: hydrogen sulfide (H_2S), sulfates (SO_X), vinyl chloride, and visibility reducing particles. In addition to these criteria pollutants, the U.S. EPA and CARB have classified certain air pollutants as hazardous air pollutants (HAPs) or toxic air contaminants (TACs), respectively, such as asbestos and diesel particulate matter (DPM).

The U.S. EPA, CARB, and MBARD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

- **Attainment.** A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards.
- **Unclassified.** An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment. Air pollution levels are measured at monitoring stations located throughout the air basin.

The proposed project is in Santa Cruz County, in the northern portion of the NCCAB an area of nonattainment for State PM_{10} standards (CARB, 2020).

North Central Coast Air Basin

The NCCAB encompasses all of Santa Cruz, San Benito, and Monterey Counties. There are several mountain ranges and valleys in the NCCAB that influence atmospheric circulation. In the northern part of the NCCAB, the Santa Cruz Mountains to the northwest and the Diablo Range to the northeastern form the Santa Clara Valley. The climate is dominated by the Pacific high-pressure system, which in the summer causes the prevailing west and northwest winds in the NCCAB and forms an inversion layer over the coastal areas. A temperature inversion is created when a layer of cool air is overlain by a layer of warmer air; this can occur over coastal areas when cool, dense air that originates over the ocean is blown onto land and flows underneath the warmer, drier air that is present over land. In the fall, surface winds are weaker and the Pacific high-pressure system further prevents the movement of air while north or east winds transport pollutants from the San Francisco Bay or Central Valley into the NCCAB, causing high pollutant concentrations. In the winter, the Pacific high-pressure system has less influence on the NCCAB, there is greater air flow to the east, and inversions that prevent the dispersion of pollutants generally do not occur, resulting in a lower concentration of pollutants during winter. Portions of the coastal plains have better air circulation than in the inland valleys, also resulting in lower air pollutant concentrations for some coastal areas (County of Santa Cruz, 2022).

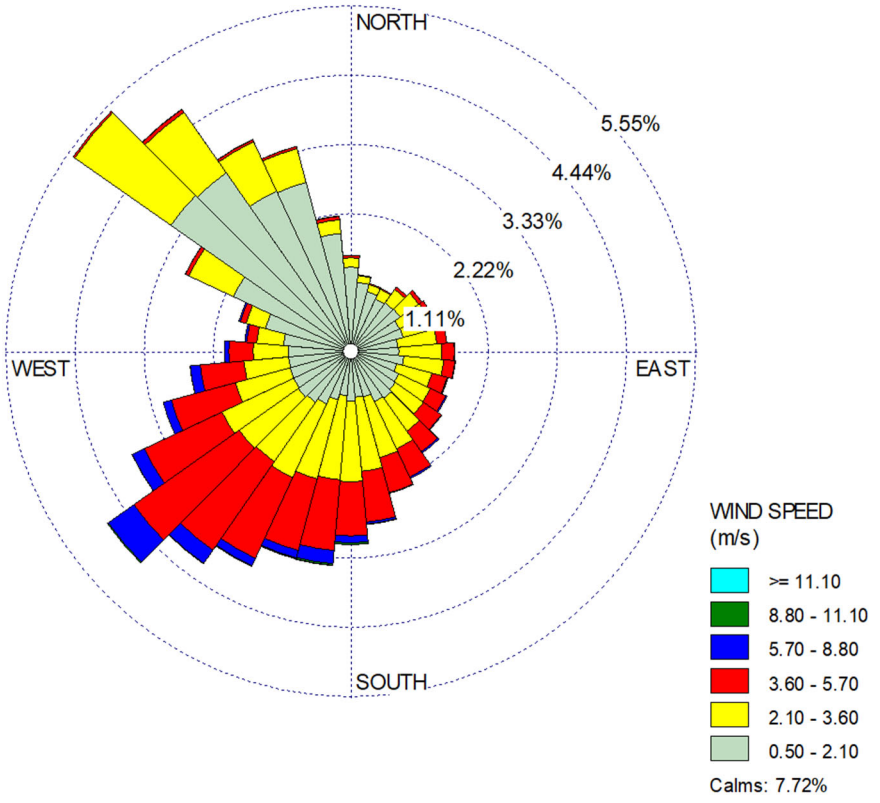
Local Site Conditions

The project is located in the southwestern part of the City of Watsonville, approximately 80 feet east of Highway 1. The project site is currently undeveloped. For the purposes of this IS, it is assumed the site does not involve any activities that generate emissions of regulated air pollutants. Although the site does not generate emissions, existing industrial / warehousing uses near the site, as well as vehicles on the Highway 1 and local roadways all contribute to the local air quality conditions in the vicinity of the project site.

MBARD maintains public meteorological data for use in air quality analyses. The closest meteorological station with data representative of those at the project site is from the Watsonville

Municipal Airport, approximately 2.2 miles north of the project site. The wind rose for the Watsonville Municipal Airport, shown in Figure 13, indicates the prevailing wind near the project site is from the southwest.

Figure 13: 2015 – 2019 Wind Rose for Watsonville Municipal Airport Meteorological Station (Blowing From)



Source: MBARD, 2022

Sensitive Air Quality Receptors

Some people are more affected by air pollution than others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. The Monterey Bay Air Resources District (MBARD) generally defines sensitive air quality receptors to include any residence (e.g., private homes, condominiums, apartments, and other living quarters such as prisons and dormitories), education facilities (e.g., preschool and kindergarten through grade twelve schools), daycare centers, and health care facilities (e.g., hospitals, hospice care, and retirement and nursing homes) (MBARD 2008). The sensitive receptors within 1,000 feet of the project site include:

- The residences/residential area adjacent to Lighthouse Drive, approximately 380 feet north of the project site (at closest).

The nearest school, Landmark Elementary School, is located approximately 3,200 feet (0.6 miles) north of the project site.

Disadvantaged Community Status

CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen was originally developed as part of Senate Bill (SB) 535 and used to identify disadvantaged communities for the purposes of allocating funding from the State's Cap-and-Trade regulation.

The mapping tool uses environmental, health, and socioeconomic information to produce pollution indicator scores for every census tract in the state, and the scores are then mapped so that different communities can be compared. Percentiles are assigned to each census tract based on the census tract's score in relation to the rest of the state. An area with a high percentile is one that experiences a much higher pollution burden than areas with low scores. For example, if a census tract has an indicator in the 40th percentile, it means that indicator's percentile is higher than 40 percent of the census tracts in the state.

According to the Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 4.0 Map, the project is in census tract 6087110400. This tract has an average pollution indicator percentile of 81 percent based and a population of 8,077 people (OEHHA, 2021b). Exposure to DPM and pesticides are two of the highest risk indicators for this census tract.

Since this tract is in the top 25 percent of total CalEnviroScreen percentiles throughout the State, it is substantially burdened by exposure to pollution and socioeconomic factors and considered a disadvantaged community pursuant to SB 535.

3.3.2 Regulatory Setting

CARB In-Use Off-Road Diesel Vehicle Regulation

On July 26, 2007, CARB adopted a regulation to reduce DPM and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. This regulation applies to all off-road diesel vehicles over 25 horsepower (hp) used in California and most two-engine vehicles (except on-road two-engine sweepers), which are subject to the *Regulation for In-Use Off-Road Diesel Fueled Fleets (Off-Road regulation).* Additionally, vehicles that are rented or leased (rental or leased fleets) are included in this regulation. This regulation:

- Imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles;
- Requires all off-road diesel vehicles over 25-horsepower be reported to CARB (using the Diesel Off-Road Online Report System DOORs) and labeled;
- Restricts the adding of older vehicles into fleets; and,
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies, VDECS (i.e., exhaust retrofits).

CARB On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

CARB's On-Road Heavy-Duty Diesel Vehicles (In-Use) regulation (also known as the Truck and Bus Regulation) is intended to reduce emission of NO_X, PM, and other criteria pollutants generated from existing on-road diesel vehicles operating in California. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned, and for privately and publicly owned school

buses. Heavier trucks and buses with a GVWR greater than 26,000 pounds must comply with a schedule by engine model year or owners can show compliance with more flexible options. Fleets complying with the heavier trucks and buses schedule must install the best available PM filter on 1996 model year and newer engines, and replace the vehicle 8 years later. Trucks with 1995 model year and older engines had to be replaced starting in 2015. Replacements with a 2010 model year or newer engine meet the final requirements, but owners can also replace the equipment with used trucks that have a future compliance date (as specified in regulation). By 2023, all trucks and buses must have at least 2010 model year engines with few exceptions.

CARB Stationary Diesel Engines – Emissions Regulations

In 1998, CARB identified DPM as a TAC. To reduce public exposure to DPM, in 2000, the CARB approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Risk Reduction Plan) (CARB 2000). Integral to this plan is the implementation of control measures to reduce DPM such as the control measures for stationary diesel-fueled engines. As such, diesel generators must comply with regulations under CARB's amendments to *Airborne Toxic Control Measure for Stationary Compression Ignition Engines* and be permitted by MBARD.

Monterey Bay Air Resources District

The MBARD is the agency primarily responsible for maintaining air quality and regulating emissions of criteria and toxic air pollutants within the NCCAB. The NCCAB carries out this responsibility by preparing, adopting, and implementing plans, regulations, and rules that are designed to achieve attainment of state and national air quality standards.

MBARD's most recent air quality management plan (AQMP) is the 2012-2015 AQMP, which was approved by MBARD in June 2017. The 2012-2015 AQMP provides an updated air quality trend analysis, emissions inventory, and mobile source programs, as well as an assessment of the progress towards meeting the State 8-hour ozone standard (MBARD 2017). The 2012-2015 AQMP only addresses ozone attainment, for which the Basin is now in compliance (CARB 2020).

The MBARD also adopts rules that establish permissible air pollutant emissions and govern a variety of businesses, processes, operations, and products. MBARD does not adopt rules for mobile sources; those are established by CARB or the U.S. EPA. The MBARD currently has 8 regulations containing more than 110 rules that control and limit emissions from sources of pollutants. In general, the MBARD rules that may apply to the project include:

Rule 200 (Permits) requires any business or person to obtain an Authority to Construct and Permit to Operate before installing or operating new equipment or processes that may release or control air pollutants to ensure that all MBARD rules and regulations are considered.

Rule 400 (Visible Emissions) prohibits discharge into the atmosphere from any emission source whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour.

Rule 402 (Nuisance) prohibits discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 403 (Particulate Matter) regulates the discharge of particulate matter from any source that operates in the MBARD.

Rule 404 (Sulfur Compounds and Nitrogen Oxides) sets limits for the emissions of sulfur compounds, nitrogen oxides, and nitrogen dioxide from sources within the District.

Rule 416 (Solvents) sets limits the emissions of volatile organic compounds (VOCs) that are used as solvents.

Rule 425 (Use of Cutback Asphalt) sets limits on the manufacture, offer for sale or sell a liquid asphalt or emulsified asphalt product.

Rule 426 (Architectural Coatings) prohibits the use of any architectural coating with a VOC content in excess of the limits specified in the rule.

Rule 1010 (Air Toxic Control Measure for Stationary Compression Ignition Engines) reduces emissions from stationary diesel-fueled compression ignition engines, including diesel-fired backup generators. The rule limits DPM emissions to no more than 0.15 grams per brake horsepower hour. Backup generators may not be operated more than 50 hours per year for maintenance and testing purposes.

3.3.3 Impact Discussion

Would the proposed project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. In May 2017, the MBARD adopted the 2012-2015 Air Quality Management Plan (AQMP), which assesses and updates the elements of the 2008 AQMP and the Triennial Plan Revision 2009-2011, including the air quality trends analysis, emission inventory, and mobile source programs (MBARD, 2017).

The MBARD's CEQA Air Quality Guidelines provides a list of actions that are intended to ensure consistency with the AQMP (MBARD, 2008). The most applicable action from the CEQA Air Quality Guidelines is assessing the growth assumptions associated with a proposed project with the population and dwelling unit forecasts adopted by the Association of Monterey Bay Area Governments (AMBAG), since the AMBAG population and dwelling unit forecasts are used to generate emission forecasts upon which the AQMP is based. As such, projects that are consistent with the AMBAG's regional forecasts would be considered consistent with the AQMP. Another criterion for evaluating project consistency with the AQMP is based on the project's potential to increase criteria air pollutant emissions. Projects that result in a significant increase in emissions, defined as in excess of MBARD significance thresholds, would also be considered to potentially conflict with or obstruct implementation of the AQMP.

The project is anticipated to support up to approximately 75 employees, which is within the growth forecasts developed by the AMBAG's 2010 Monterey Bay Area Metropolitan Transportation Plan (MTP), Monterey Bay Area Mobility 2035 (AMBAG, 2010).[1] As such, the project would not conflict with the AQMP with regard to the first criterion. In addition, as described under Section 3.3(b), the proposed project would not exceed the MBARD's construction or operational significance thresholds for criteria air pollutant emissions. Therefore, the project would not conflict with nor obstruct implementation of the AQMP. No impact would occur.

1 Although there is a new MTP for the region, the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy, the AQMP's air quality projections are based on the growth assumptions in the previous MTP. Therefore, consistency with regard to the AQMP is based on the previous iteration of the MTP. Appendix H to Monterey Bay Area Mobility 2035 identifies that Santa Cruz County would have 126,870 employees in 2020 and 133,350 employees in 2025. Current State Employment Development Department (EDD) figures estimate total farm and non-farm employment in Santa Cruz County as of July 2022 to be 111,500.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. The project would generate both short-term construction emissions and long-term operational emissions. The project's potential emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version 2022.0. As described in more detail below, the proposed project would not generate short-term or long-term emissions that exceed MBARD-recommended criteria air pollutant thresholds.

Construction Emissions

The proposed project involves the construction of a new, approximately 155,847- square-foot industrial warehouse and distribution building on approximately 11.5 acres of land. Construction activities would disturb the entire site and include site preparation, grading, building foundation, vertical building construction and mechanical, electrical, and plumbing (MEP) system and finishing, architectural coating, and paving phases. Grading would require the net import of approximately 14,000 cubic yards of soil to the project site. Construction activities are anticipated to begin in early 2023 and last approximately 15 months. The project would require varying types of equipment throughout the different construction phases including, but not limited to: bulldozers, backhoes, loaders, graders, cranes and forklifts. The project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase are summarized in Table 3.3-1.

Table 3.3-1: Construction Activity, Duration, and Typical Equipment

Construction Activity	*Duration (Days)(A)*	*Typical Equipment Used(B)*
Site Preparation	10	Dozer, backhoe
Grading	48	Excavator, loader grader, dozer
Building Foundations	45	Forklift, welder, generator set, backhoe
Building Construction(C)	218	Crane, forklift, welder, backhoe
Architectural Coating(C)	20	Air compressors
Paving(C)	10	Paver, roller

Source: Ryan Companies, 2022 modified by MIG (see Appendix A).

(A) Days refers to total active workdays in the construction phase, not calendar days.

(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

(C) Portions of this building construction phase would overlap with architectural coating and paving phases.

The project's unmitigated maximum daily construction emissions, expressed in pounds per day (lbs/day), are shown in Table 3.3-2. Please refer to Appendix A for CalEEMod output files and detailed construction emissions assumptions.

Table 3.3-2: Unmitigated Maximum Daily Construction Emissions (lbs/day)						
Construction Activity	***ROG***	***NO_X***	***CO***	***SO_2***	***PM_{10}(A)***	***$PM_{2.5}$(A)***
Year 1 (2023)						
Site Preparation	1.9	20.2	14.1	0.0	6.1	3.5
Grading	4.3	48.6	36.0	0.1	1.7	4.8
Building Foundations	1.4	9.5	13.4	0.0	0.9	0.5
Building Construction	2.1	16.8	19.9	0.0	1.3	0.8
Building Construction and Architectural Coating	80.4	21.6	27.0	0.0	1.7	1.0
MBARD Threshold	**--**	**--**	**--**	**--**	**82**	**--**
Threshold Exceeded?	**--**	**--**	**--**	**--**	**No**	**--**
Year 2 (2024)						
Building Construction	2.0	15.9	19.4	0.0	1.2	0.7
Building Construction and Paving	4.6	24.7	33.2	0.1	1.7	1.2
MBARD Threshold	**--**	**--**	**--**	**--**	**82**	**--**
Threshold Exceeded?	**--**	**--**	**--**	**--**	**No**	**--**

Source: MIG, 2022 (See Appendix A).

(A) Total particulate matter includes both exhaust and dust emissions (see Appendix A emissions breakdown by phase).

As shown in Table 3.3-2, the project would not result in construction emissions that exceed the MBARD's only established construction criteria air pollutant emission threshold of 82 lbs/day for PM_{10}. As stated in the MBARD's *CEQA Air Quality Guidelines*, "Construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors, and front-end loaders that temporarily emit precursors of ozone (i.e., volatile organic compounds [VOC] or oxides of nitrogen [NOx]), are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone AAQS" (MBARD, 2008; pg. 5-3). The project would utilize typical construction equipment, and, therefore, emissions of VOC/ROG and NOx would not hinder attainment of ozone standards in the NCCAB. In addition, compliance with existing MBARD rules and regulations, such as Rule 426 (Architectural Coatings) and Rule 425 (Use of Cutback Asphalt) would further minimize potential short-term criteria air pollutant emissions. This impact would be less than significant.

Although the proposed project would not exceed the MBARD's only established construction criteria air pollutant emission threshold, construction activities still have the potential to conflict with MBARD Rule 402 (Nuisances). Accordingly, the City would implement the following air quality Best Management Practices (BMPs) to reduce construction-related fugitive dust and exhaust emissions.

Construction Fugitive Dust and Exhaust Emissions Best Management Practices: The City shall require the applicant to incorporate the following construction air quality best management practices into all applicable project bid, design, and engineering documents:

1) All exposed surfaces (e.g., parking areas, staging area, soil piles, graded areas, and unpaved access roads) shall be watered at once per day, at a minimum.

2) All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3) All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.

4) All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

5) Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

6) All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

7) Stage construction equipment and materials as far away as possible from residential land uses to the extent feasible.

Operational Emissions

Upon completion of construction activities, the project would operate as an industrial warehouse and distribution facility. The operation of this land use would generate emissions of regulated air pollutants from:

- **"Area" Sources.** The proposed land use would generate emissions from small area sources, including landscaping equipment, and the use of consumer products (e.g., paints, cleaners, and fertilizers) that result in the evaporation of chemicals into the atmosphere during product use.
- **Energy Use and Consumption.** The proposed land uses would generate emissions from the combustion of natural gas in water and space heating equipment.
- **Mobile Sources.** The proposed project site would generate emissions from vehicles traveling to and from the project site.
- **Stationary Sources.** The proposed project would include one (1), 450-kW (604 hp) diesel back-up generators to power the project in the event of power loss or public safety power shutoffs.

The project's operational emissions were estimated using CalEEMod. The operational emissions generated in CalEEMod are based on the project's full first year of operation (presumed to be 2024) using default data assumptions provided by CalEEMod, with the following project-specific modifications:

- **Trip Generation Rates.** CalEEMod default trip generation rates were replaced with the project-specific trip generation rates contained in the Transportation Impact Study (TIS) prepared for the project (Kimley Horn, 2022). According to the TIS, the project would generate 283 total daily weekday trips, including 192 passenger car trips and 91 truck trips.
- **Trip Lengths.** CalEEMod default trip lengths were replaced with the project-specific employee trip length contained in the TIS prepared for the project (Kimley Horn, 2022). According to the TIS, the average employee trip length for the project is 15.1 vehicle miles travelled per employee. Truck trips were assumed to travel 40 miles per one-way trip distance, based on warehouse truck travel distances collected by the South

Coast Air Quality Management District (SCAQMD, 2018). A weighted average trip distance was then derived and input into the model.

The project's unmitigated maximum daily operational emissions, expressed in pounds per day (lbs/day), are shown in Table 3.3-3 Please refer to Appendix A for CalEEMod output files and detailed operational emissions assumptions.

Table 3.3-3: Unmitigated Maximum Daily Operational Emissions (lbs/day)

Operational Source	*ROG*	*NO_X*	*CO*	*SO_2*	*$PM_{10}^{(A)}$*	*$PM_{2.5}^{(A)}$*
Summer						
Mobile	1.4	11.1	18.5	0.1	1.7	0.4
Area	4.7	0.1	6.8	0.0	0.0	0.0
Energy	0.0	0.5	0.4	0.0	0.0	0.0
Stationary	1.0	2.8	2.5	0.0	0.2	0.2
Total	7.2	14.4	28.2	0.1	1.9	0.6
MBARD Threshold	**137**	**137**	**500**	**150**	**82**	**--**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**--**
Winter						
Mobile	1.5	11.7	18.5	0.1	1.7	0.4
Area	3.6	0.0	0.0	0.0	0.0	0.0
Energy	0.0	0.5	0.4	0.0	0.0	0.0
Stationary	1.0	2.8	2.5	0.0	0.2	0.2
Total	6.1	15.0	21.5	0.1	1.9	0.6
MBARD Threshold	**137**	**137**	**500**	**150**	**82**	**--**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**--**

Source: MIG, 2022 (See Appendix A).
(A) Total particulate matter includes both exhaust and dust emissions (see Appendix A emissions breakdown by phase).

As shown in Table 3.3-3, the project would not result in operational emissions that exceed the MBARD's operational criteria air pollutant emission thresholds. This impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. As described in Section 3.3.1, sensitive residential receptors are generally located north of the project site, across the Watsonville Slough and Lighthouse Drive. Construction and operational emissions would have the potential to expose sensitive receptors to DPM, a TAC; therefore, construction and operational and health risk assessments (HRAs) were prepared for the project. The analysis below identifies health risk estimates and discusses health risk considerations with regard to the activities proposed by the project. See Appendix A for details on the parameters used in the air dispersion modeling and methodology employed for estimating potential health risks.

Health Risk Assessment

Project-related construction and operational activities would emit PM_{10} from on- and off-site construction equipment exhaust, on-site distribution truck travel and maneuvering, truck idling, and the backup generator (see Figure 14 and Figure 15). Nearly all the project's PM_{10} emissions from equipment exhaust would be DPM, a TAC. Accordingly, an HRA was prepared

to assess potential risks associated with sensitive receptor exposure to DPM during project construction and operational activities. The HRA evaluated DPM emissions associated with on- and off-road diesel fuel trucks and equipment; gasoline-fuel vehicles emit various TACs in much smaller quantities and health toxicity compared to DPM. Thus, gasoline fueled emission sources were not included in the HRA. Refer to Appendix A for detailed emission and modeling assumptions used to conduct the HRA.

The project would involve different construction activities occurring at different intensities over an approximately 15-month period, assumed to start as soon as January 2023. Receptors would be exposed to varying concentrations of pollutants throughout the construction period. Following construction, receptors would be exposed to DPM concentrations associated with regular operations of the industrial distribution and warehouse facility. Health risks were assessed according to the recommendations in the Office of Environmental Health Hazard Assessment's *Air Toxics Hot Spots Program Guidance Manual* (OEHHA, 2015). Ground-level construction DPM concentrations were estimated using AERMOD. These concentrations were then used to derive the individual excess cancer risk and non-carcinogenic health hazard index for sensitive receptors that could be exposed to DPM. Refer to Appendix A for detailed CalEEMod and AERMOD[2] modeling assumptions, output files, and HRA calculations.

Figure 14: Modeled Construction DPM Sources



Source: MIG, 2022 (see Appendix A)

2 The AERMOD dispersion model is an EPA-approved and MBARD-recommended model for simulating the dispersion of pollutant emissions and estimating ground level concentrations of pollutants at specified receptor locations.

Individual Carcinogenic Risk from Exposure to Construction and Operational DPM

The predicted locations of the annual PMI and the MEIR for DPM exposure are summarized in Table 3.3-4 and shown in Figure 16 and Figure 17.

As shown in Figure 16 and Figure 17, for construction (both years), the predicted PMI is located near the center of the concrete roundabout that provides truck access to the project site. For operations, the predicted PMI is located in the undeveloped land near the southwest corner of the project site. Since the PMI for DPM exposure for both the construction and operational scenarios is located on land that is not occupied by a sensitive receptor on a permanent basis, lifetime excess cancer risks and chronic non-cancer health hazards, which are based on exposure to annual average pollutant concentrations, were not estimated at these points. Rather, health risks were assessed at the modeled MEIR location. For construction (both years) and operation, the MEIR for DPM exposure is located adjacent to the single-family residential building at 123 Paseo Drive.

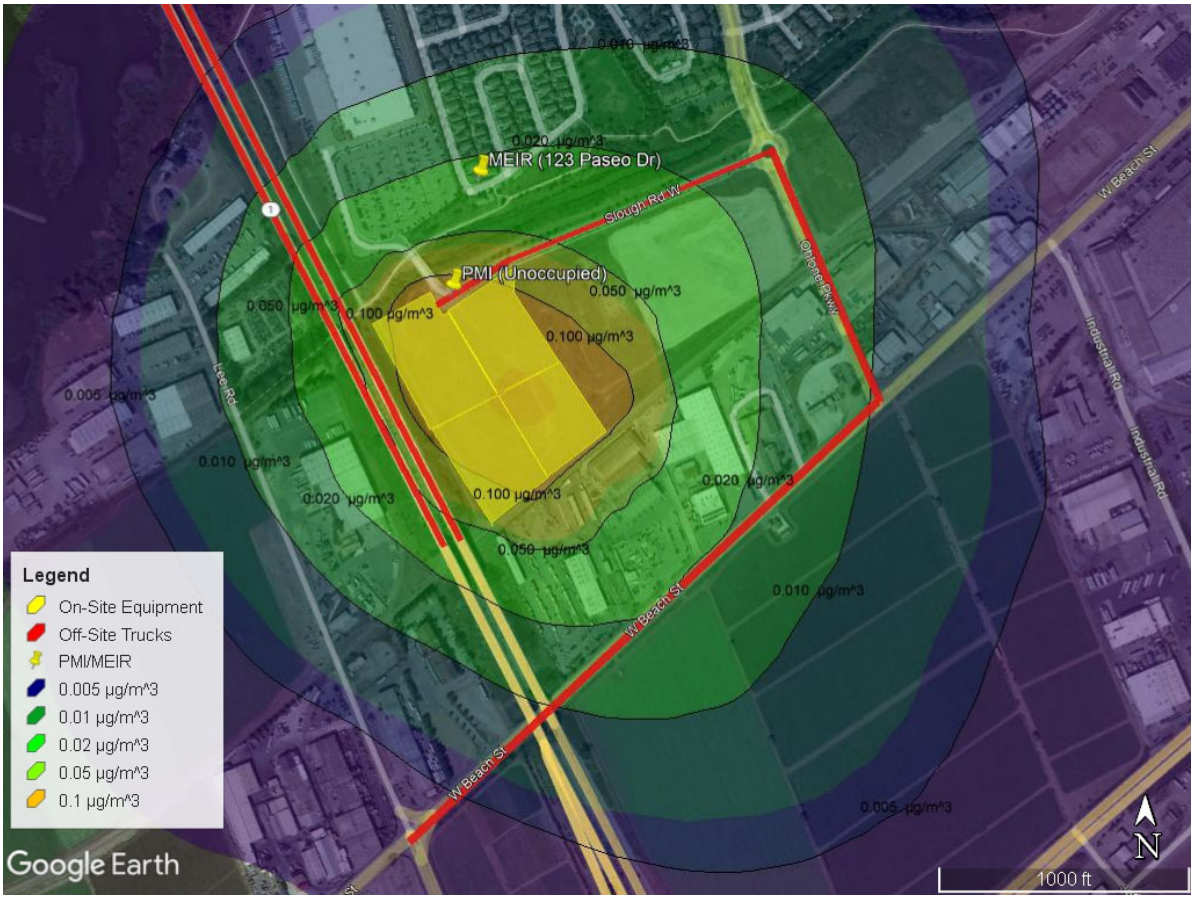
Figure 15: Modeled Operational DPM Sources



Source: MIG, 2022 (see Appendix A)

Table 3.3-4: Summary of Modeled Maximum DPM Exposure (PMI and MEIR)						
Modeled Scenario	***UTM Coordinates and Modeled Annual Average DPM Concentration[(A)]***					
	Point of Maximum Impact (PMI)			***Maximum Exposed Individual Receptor (MEIR)***		
	X (Easting)	***Y (Northing)***	***Concentration (µg/m³)[(B)]***	***X (Easting)***	***Y (Northing)***	***Concentration (µg/m³)[(B)]***
Construction Year 1	608898.95	4084813.89	0.2463	608898.95	4084938.89	0.0452
Construction Year 2	608873.95	4084813.89	0.0465	608898.95	4084938.89	0.0085
Operations (Year 3 – 30)	609072.04	4084683.96	0.0014	608898.95	4084938.89	0.0004
Source: MIG, 2022 (see Appendix A) (A) Universal Transverse Mercator (UTM) coordinates are for Zone 10S, northern hemisphere. (B) Units express in terms of micrograms per cubic meter.						

Figure 16: Modeled Construction DPM Concentrations



Source: MIG, 2022 (see Appendix A)

The HRA evaluated worst-case carcinogenic and non-carcinogenic risks assuming a 30-year exposure duration starting in each child (3rd trimester, 0-2 years, and 2-16 years) and adult (16-30 years and 30-70 years) age group recommended by OEHHA. 5 summarizes the results of the construction and operational HRA.

Figure 17: Modeled Operational DPM Concentrations



Source: MIG, 2022 (see Appendix A)

Table 3.3-5: Summary of MEIR Excess Cancer Risk

Exposure Year	***MEIR Excess Cancer Risk Estimate by Life Stage and Age at Receptor's 1st Year of Exposure***				
	Infant	***Child < 2 Years***	***Child 2-16 Years***	***Adult 16-30 Years***	***Adult 30-70 Years***
Year 1 (Construction)	0.62	0.74	0.12	0.01	0.01
Year 2 (Construction)	0.03	0.03	0.01	0.00	0.00
Year 2 (Operation)	0.01	0.01	0.00	0.00	0.00
Year 3 – 30 (Operation)	0.02	0.02	0.02	0.00	0.00
Total Excess Risk per 100,000 Population	0.68	0.80	0.14	0.02	0.02
MBARD Threshold	**1**	**1**	**1**	**1**	**1**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**

Source: MIG, 2022 (see Appendix A)

As shown in 5, the calculated excess cancer risks are greatest for child receptors; in particular, child receptors that are in the first full year of life at the start of construction activities. The calculated excess individual cancer risk for this subset of the population is 0.80 per 100,000 population (or 8.0 per million population), respectively, which is below the MBARD-recommended significance threshold value of 1 excess cancers per 100,000 population (see Appendix A for all HRA results). At the same DPM concentrations, risks to children ages 2-16 would be approximately one-fifth the MBARD-recommended significance threshold, and risks to adult receptors would be less than one one-tenth of the BAAQMD-recommended threshold. The magnitude of the project's predicted cancer risks at sensitive residential receptors is primarily a function of the magnitude of the project's DPM emissions levels and the distance between modeled DPM emissions sources (e.g., construction equipment, idling trucks, etc.) and the MEIR location, which is approximately 850 feet away from the center of the project site, and at least 330 feet away from the project's closest DPM emissions source (truck travel on Manabe Ow Road). Since the proposed project would not expose any receptors to cancer health risks in excess of the MBARD's recommended threshold, this impact would be less than significant.

Non-Carcinogenic Health Hazard from Exposure to DPM

As shown in Table 3.3-4, the maximum annual average DPM concentration at the MEIR under any modeled scenario would be approximately 0.0452 µg/m^3, which would occur during Year 1 construction activities. Based on the chronic inhalation REL for DPM (5 µg/m^3), the calculated chronic hazard quotient during the maximum exposure to DPM concentration would be 0.009, which is below the MBARD's non-cancer hazard index threshold value of 1.0. The project, therefore, would not result in significant non-carcinogenic health risks to receptors from DPM exposure. This impact would be less than significant.

Criteria Air Pollutant Exposure

As described in Section 3.3.1, both the U.S. EPA and CARB regulate common air pollutants on the basis of human health and/or environmental criteria, with the most commonly regulated air pollutants including NOx, PM, CO, etc., which can cause adverse human health effects. As shown in Table 3.3-2 and Table 3.3-3, the project's potential construction and operational emissions of NOx, CO, and PM associated would not exceed the MBARD-recommended regional thresholds or exacerbate air quality conditions in the region. This impact would be less than significant.

Carbon Monoxide Hotspots

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near high volume intersections (tens of thousands of vehicles per hour). The project would generate a total of 283 total daily trips, including 38 total AM peak hour trips and 29 total PM peak hour trips. This additional project traffic would not generate a CO hotspot, as there no high-volume intersections in the immediate vicinity of the project site. According to the TIS prepared for the project, the addition of project traffic to the local roadway system: 1) Would not cause intersections or road segments that operate at level of service (LOS) LOS D or better to deteriorate to LOS E or F; 2) Would not cause intersections or road segments that operate at LOS E or F to increase volume-to-capacity ratios by 0.5 or more or increase delay by 10 seconds or more; 3) Would not cause unsignalized intersections which operate at LOS E or F to decrease reserve capacity by 50% or more; and 4) Would not generate substantial traffic, including heavy duty truck traffic, along urban street canyons or near a major stationary source of CO. The proposed project, therefore, would not result in significant CO concentrations pursuant to MBARD-recommended methodologies for evaluating CO hotspots (MBARD, 2008, page 5-8).

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. The project would generate typical odors associated with construction activities, such as vehicle exhaust odors. The odors generated by the project would

be intermittent and localized in nature and would disperse quickly. The project would not generate substantial odors from the operation of the proposed industrial distribution and warehouse building. Therefore, the project would not create emissions or odors that adversely affect a substantial number of people. This impact would be less than significant.

3.3.4 References

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3.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

The following discussion and analyses are based in part on a Biological Resources Report prepared for the project by MIG. A copy of the report, dated April 2022, is included in Appendix B.

3.4.1 Environmental Setting

Field surveys of the project area were conducted by MIG senior biologist David Gallagher, M.S. on March 10, 2022. The surveys were conducted to provide an impact assessment for the development of the 200 Manabe Ow Road project site as described in the project description, as well as the adjacent undeveloped property to the east extending to Ohlone Parkway. Surveys were conducted to (1) assess existing biotic habitats and plant and animal communities in the project area, (2) assess the project area for its potential to support special-status species and their habitats, and (3) identify potential jurisdictional habitats (e.g., waters of the U.S./state), and other sensitive biological resources.

General Project Area Description

The project site is adjacent to Manabe Ow Road and Ohlone Parkway in Watsonville, Santa Cruz County, California and is on the Watsonville West USGS quadrangle. The project area is located within an urbanized area Industrial Park and is within the Manabe-Ow Business Park Specific Plan area.

The project is located within an urban area, including residential and commercial development, approximately one mile west of the Watsonville downtown area. Agricultural lands are also nearby to the south and west. The project site is bordered by Highway 1 to the west, railroad tracks to the south, Manabe Ow Road to the north and Ohlone Parkway to the east. Watsonville Slough is located just north of Manabe Ow Road. The project site is mainly flat with elevations ranging from approximately 15 feet to 18 feet North American Vertical Datum of 1988 (NAVD88). As recently as 2015, the project site was used for agriculture (Google Inc. 2022).

The climate is coastal Mediterranean, with most rain falling in the winter and spring. Mild cool temperatures are common in the winter and mild to cool temperatures are common in the summer due to the presence of fog. Climate conditions in the area include a 30-year average of approximately 22 inches of annual precipitation with an average temperature range from 47ºF to 68ºF (PRISM Climate Group 2022).

The National Resource Conservation Service (NRCS) maps two soil types within the project area: (1) Clear Lake clay, drained, 0 to 1 percent slopes, MLRA 14; and (2) Conejo clay loam, 0 to 2 percent slopes, cool, MLRA 14. The Clear Lake clay series is found in alluvial basins. The water table depth for this series is 36 to 72 inches and has slow permeability. The Conejo clay loam series is found in alluvial fans and plains. The water table depth for this series is 60 inches and has moderate permeability. The Clear Lake clay soil type is classified as a hydric soil in Santa Cruz County on the National Hydric Soils List.

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) maps Watsonville Slough as a permanently flooded, perennial riverine feature with a streambed.

Existing Land Uses, Vegetation Communities, and Habitats

The project is located within the Central Coast Subregion of the Central Western Californian Region, both of which are contained within the larger California Floristic Province (Baldwin et al. 2012). Where applicable, vegetation communities were mapped using CDFW's Vegetation Classification and Mapping Program's currently accepted list of vegetation alliances and associations. The reconnaissance-level field survey identified two vegetation communities, habitats, and land cover types in/near the project area: Wild Oats and Annual Brome Grassland (*Avena spp. – Bromus spp. Semi-natural Alliance*), and Cattail Marsh (*Typha spp. Alliance*).

Wild Oats and Annual Brome Grassland (Avena spp. – Bromus spp. Semi-natural Alliance)

Wild Oats and Annual Brome Grassland is an annual grassland dominated by non-native grasses. Both native and non-native herbaceous annuals are also present (see Biological Resources Report Appendix C, Photo 2). Dominant species observed included non-native grasses such as wild oats (*Avena sp*.), ripgut brome (*Bromus diandrus*), and Italian rye grass (*Festuca perennis*). The dominant non-native herbaceous species observed included bristly ox-tongue (*Helminthotheca echioides*), filarees (*Erodium spp*.), wild radish (*Raphanus sativus*), rose clover (*Trifolium hirtum*), English plantain (*Plantago lanceolata*), cutleaf geranium (*Geranium dissectum),* Italian thistle (Carduus pycnocephalus), vetch (Vicia spp.) and bur clover (*Medicago polymorpha*). The native shrub coyote brush (*Baccharis pilularis*) was observed growing near the train tracks along the southern boundary of the site. A few native Arroyo willow (*Salix lasiolepis*) and non-native silver wattle (*Acacia dealbata*) shrubs were scattered throughout the grassland, likely due to a high groundwater table. Common native forbs observed included common yarrow

(*Achillea millefolium*), annual lupine (*Lupinus bicolor*), and Arroyo lupine (*Lupinus succulentus*). The highly invasive non-native species pampass grass (Cortaderia jubata), ice plant (*Carpobrotus sp*.), and French broom (*Genista monspessulana*) were also observed.

The grassland may support ground-nesting birds, such as the western meadowlark (*Sturnella neglecta).* Additional bird species that nest in nearby riparian or developed habitats and forage in grassland areas during the nesting season include western bluebird (*Sialia mexicana*), black phoebe (*Sayornis nigricans*), American kestrel (*Falco sparverius*), and cliff swallow (*Petrochelidon pyrrhonota*). Further, raptors, such as red-tailed hawks (*Buteo jamaicensis*), and white-tailed kites (*Elanus leucurus*) forage for small mammals within grassland habitats. Numerous additional avian species may also forage in the grassland within the project area during summer and fall migration, including Canada goose (*Branta canadensis*). Avian species observed during the field visit included red-tailed hawk, western meadowlark, Canada goose, and Anna's hummingbird.

The grassland habitat within the study area provides abundant refugia for reptiles. Several reptile species may occur in the annual grassland habitats, including the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), and coast garter snake (*Thamnophis elegans terrestris*). Several burrows observed during the site visit, likely made by California ground squirrel (*Otospermophilus beecheyi*), provide refuges for these reptile species, as well as for common amphibians such as the western toad (*Anaxyrus boreas*) and Pacific treefrog (*Pseudacris regilla*).

Cattail Marsh (Typha spp. Alliance)

The Cattail Marsh is perennial freshwater marsh that occurs in a stormwater drainage channel along the western edge of the 200 Manabe Ow Road project area. The channel is confluent with Watsonville Slough (see Biological Resources Report, Appendix C, Photo 3). Based on aerial photography, the drainage was likely constructed between 1963 and 1975. At the time of the site visit, water was present in the ditch and was ponded up to a depth of approximately one foot. The vegetation was dominated by the native common cattail (*Typha latifolia*). Other species observed included the native broadfruit bur reed (*Sparganium eurycarpum*) and Arroyo willow. The non-native curly dock (*Rumex crispus*) was also observed. According to the City of Watsonville, the drainage ditch is mowed quarterly to reduce vegetation build-up. During the site visit, the previous year's growth was present throughout the channel, suggesting the ditch had not been mowed since the previous year. Therefore, vegetation conditions may vary depending on the time of year.

The perennial freshwater marsh may provide habitat for a diverse suite of wetland-associated wildlife species, including common amphibians such as the Pacific chorus frog, western toad. The federally listed (threatened) California red-legged frog (*Rana draytonii*) may breed in the marsh (see Special Status Animals section below), and reptiles such as the coast garter snake and aquatic garter snake (*Thamnophis atratus*) may forage and disperse through the marsh. However, the relatively small size and uncertain ponding depth of the perennial freshwater marsh may preclude the presence of waterbirds such as ducks, gulls, and terns. Similarly, passerine birds associated with more extensive wetlands, such as the marsh wren (*Cistothorus palustris*) and common yellowthroat (*Geothlypis trichas*) are not expected to nest here. Terrestrial bird species that occur in adjacent habitats, such as house finches, black phoebes, and sparrows, will forage occasionally in the freshwater wetland vegetation. Mammals that may use the marsh and adjacent grassland include striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), and racoon (*Procyon lotor*).

Because the perennial freshwater marsh is confluent with Watsonville Slough, native fishes may be present depending on water depth and flow rate, including California roach (*Hesperoleucus symmetricus),* Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento blackfish (*Orthodon microlepidotus*), three-spined stickleback (*Gasterosteus aculeatus*) as well as non-native fishes,

including Western mosquitofish (*Gambusia affinis*), which were observed in the Cattail Marsh in the project area during the site visit.

The Watsonville Slough watershed drains 14 square miles from the hills of southern Santa Cruz County into the Pajaro River and Monterey Bay. One of the last remaining large coastal freshwater ecosystems in California, the Watsonville Slough includes approximately 800 acres of freshwater marsh, seasonal wetland, estuarine, and riparian habitat with six major slough branches, including Watsonville Slough, Harkins Slough, Gallighan Slough, Hanson Slough, the main branch of the Struve Slough, and the western branch of Struve Slough (Hager et al. 2004).

Sensitive Habitats and Aquatic Features

All plant communities observed in the project area were evaluated to determine if they are considered sensitive. Sensitive natural communities are communities that are especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies. Elimination or substantial degradation of these communities would constitute a significant impact under CEQA.

The project area was also inspected for the presence of wetlands, drainages, streams, coastal waterways, and other aquatic features, including those that support stream-dependent (i.e., riparian) plant species that could be subject to jurisdiction by the USACE, Regional Water Quality Control Board (RWQCB), and/or CDFW. Wetlands are defined for regulatory purposes in the 33 CFR 328.3 and 40 CFR 230.3 as “areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” To be considered subject to federal jurisdiction, a wetland must be located within the project area and normally exhibit positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

Special-Status Species Habitat Evaluation

During the field survey, Mr. Gallagher evaluated the suitability of the habitat to support special-status species documented in the project area. For the purposes of this assessment, special-status species include those plants and animals listed, proposed for listing or candidates for listing as threatened or endangered by the USFWS or NOAA Fisheries under FESA, those listed or proposed for listing as rare, threatened or endangered by the CDFW under CESA, animals designated as CFP or CSSC by CDFW, birds protected by USFWS under the MBTA and/or by CDFW under Fish and Game Code Sections 3503 and 3513, and plants listed as Rank 1A, 1B, 2, 3 and 4 in the CNPS Inventory.

The potential occurrence of special-status plant and animal species in the project area was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the vicinity of the project area based on an eight-quad search of current database records (e.g., CNDDB and CNPS Electronic Inventory records) and review of the USFWS list of federal endangered and threatened species (i.e., IPaC). The potential for occurrence of those species included on the eight-quad list was then evaluated based on the habitat requirements of each species relative to the habitat conditions documented in the project area. If there are no documented occurrences within five miles of the project area, if there is clearly no suitable habitat present, and if the project area is clearly outside of the expected range of the species, these species were eliminated from consideration and were not discussed further. All remaining species were then evaluated for the potential to occur on or in the immediate vicinity of the project area according to the following criteria:

> *Not Expected:* CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area within the last 10 years, and/or no components of suitable habitat are present within or adjacent to the project area.

Low Potential: The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.

Moderate Potential. Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

High Potential: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. All or most of the components representing suitable habitat are present within the project area.

Present or Assumed Present. Species was observed on the project area, or recent species records (within five years) from literature or other sources are known within the project area.

Special-Status Plants

The CNPS Inventory (2022) and CNDDB (2022) identify 70 special-status plant species as potentially occurring in the nine 7.5-minute quadrangles containing and/or surrounding the project area. All but one of the 70 potentially occurring special-status plant species were determined to be absent from the project area for at least one of the following reasons: (1) a lack of specific habitat (e.g., estuarine marsh) and/or edaphic requirements (e.g., serpentine soils) for the species in question, (2) the geographic range of the species does not overlap the project area, (3) the species is known to be extirpated from the site vicinity, and/or (4) the habitats within the project area are too degraded to reasonably expect any special-status species to occur due to the long history (at least 75 years based on aerial imagery) of agricultural use of the site (UCSB 2022). Plowing, tilling, and other land disturbance associated with agriculture at the site has likely eliminated most soil seed banks of native plants.

However, based on suitable grassland habitat, hydric clay soils, and documented nearby locations, Santa Cruz tarplant (*Holocarpha macradenia*) has a moderate potential to occur within the 200 Manabe Ow Road project area. There was no suitable habitat for Santa Cruz tarplant in the 100 Manabe Ow Road project area due to the lack of grassland habitat and hydric soils. Santa Cruz tarplant is discussed in detail below and summarized in Table 3.3-1.

Santa Cruz Tarplant. Santa Cruz tarplant is annual herb in the sunflower family (*Asteraceae*) that occurs in coastal prairie grassland, usually on clay soils and is endemic to California. The blooming period for this species extends from June to October. Santa Cruz tarplant is listed as endangered under the California Endangered Species Act, as a threatened species under the federal Endangered Species Act, and has a CRPR rank of 1B.1, which means it is rare throughout its range and populations have declined significantly over the last century, and it is considered severely threatened. This species is seriously threatened by urbanization, agriculture, non-native plants, and lack of appropriate ecological disturbance. There are nine documented occurrences of Santa Cruz tarplant from the last 20 years, mainly from Santa Cruz County and Monterey County.

The closest documented occurrence to the project area is from 2015 on Tarplant Hill off Ohlone Parkway, approximately 0.5 mile from the project area (CNPS 2022). Because of the proximity of this documented occurrence, Santa Cruz tarplant fruits could be dispersed to the project area by common animals that would be expected to use the project area, including striped skunks, opossums, racoons, and other small mammals, including small birds (USFWS 2002). Additionally, the clay soils are mapped as hydric. Such seasonally saturated soils are a characteristic of Santa

Cruz tarplant habitat (USFWS 2002). During the site visit, several areas within the project area exhibited evidence of recent ponding, including water-stained leaves, supporting the hydric soil classification (see Biological Resources Report, Appendix C, Photo 5).

Given that small populations of Santa Cruz tarplant may facilitate greater gene flow, the conservation of existing populations, even small populations, may be essential for preserving its genetic resources and ensuring its persistence in the County. Gene flow often occurs through pollen movement between populations, and likely occurs over short distances. Most native insect pollinators of Santa Cruz tarplant generally travel less than 0.3 mile at one time (USFWS 2002).

Table 3.4-1: Special-Status Species with Potential to Occur in the Project Area

Common Name	***Regulatory Status***	***Likelihood of Occurrence in the 200 Manabe Ow Road Project Area***
Plants		
Santa Cruz Tarplant	FT, SE, CRPR 1B.1	**Moderate Potential**
Fish		
Pacific Lamprey	CSSC	Not Expected
Tidewater Goby	FE	Not Expected
South-central California Coast Steelhead DPS	FT	Not Expected
Amphibians and Reptiles		
California red-legged Frog	FT, CSSC	**High Potential**
Western Pond Turtle	CSSC	**High Potential**
Mammals		
San Francisco dusky-footed woodrat	CSSC	Not Expected
Birds		
American Peregrine Falcon	FP	Not Expected (nesting); may forage in the area
Burrowing Owl	CSSC	**Moderate; (breeding and roosting)**
Northern harrier	CSSC (nesting)	Not Expected (nesting); may forage in the area
Tricolored Blackbird	ST (nesting)	Not Expected (nesting); may forage in the area
White-tailed Kite	FP	Not Expected (nesting); may forage in the area
Yellow Warbler	CSSC (nesting)	Not Expected (nesting); may forage in the area

Key to Status Abbreviations: Federally Listed as Endangered (FE); Federally Listed as Threatened (FT); Federal Candidate for Listing (FC), Federal Species of Concern (FSC), State Listed as Endangered (SE); State Listed as Threatened (ST); State Candidate for Listing (SC); State Fully Protected (FP); California Species of Special Concern (CSSC)

CRPR = California Native Plant Society Rare Plant Rank
- 1B = Plants that are rare, threatened, or endangered in California and elsewhere
- 2B = Plants rare, threatened, or endangered in California but more common elsewhere
- 3 = Plants about which information is needed-a review list
- 4 = A watch list of plants of limited distribution
- 0.1: Seriously endangered in California
- 0.2: Fairly endangered in California
- 0.3: Not very endangered in California

Special-Status Animals

Based on a review of the USFWS and CNDDB databases, the biologist's knowledge of sensitive species, and an assessment of the types of habitats within the project area, it was determined that one wildlife species could potentially occur within or near the project area. This determination was made due to the presence of essential habitat requirements for the species, the presence of known occurrences within five miles of the project area, and/or the project area location within the species' known range of distribution. The legal status and likelihood of occurrence of special-status animal species in the project area is presented in Table 3.4-1 and discussed in greater detail below.

Special-status species that are not expected to occur in the project areas because they lack suitable habitat, are outside the known range of the species, and/or are isolated from the nearest known extant populations by development or otherwise unsuitable habitat were excluded from the analysis.

Animal species not expected to occur in the project area for these reasons include Monterey Hitch (*Lavinia exilicauda harengus*), monarch butterfly (*Danaus plexippus*), California giant salamander (*Dicamptodon ensatus)*, California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (*Rana boylii*), Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), black legless lizard (*Anniella pulchra nigra*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), short-eared owl (*Asio flammeus*), and long-eared owl (*Asio otus*).

Special-Status Fish

Pacific Lamprey (*Entosphenus tridentatus*). Federal Listing Status: None; State Listing Status: California Species of Special Concern. Pacific Lamprey is an anadromous species that, like steelhead, migrates into freshwater to spawn, and juveniles return to the ocean to mature. Pacific lamprey was historically abundant along the West Coast of North America, however, their abundance declined, and distribution contracted throughout Oregon, Washington, Idaho, and California. In California, Pacific lamprey occur from high elevation streams of the Sierras, the Sacramento River, and from coastal salmon and steelhead streams, including the Pajaro River watershed (Goodman and Reid 2012). Spawning habitat is similar to that for steelhead, but adult migration times for lamprey tend to occur somewhat later (March to May) than the peak of the steelhead adult migration (January to March).

Even though the Watsonville Slough watershed does support suitable spawning habitat for Pacific lamprey, only small numbers of Pacific lamprey may find their way into Watsonville Slough from the Pajaro River. This species is not expected to occur in substantial numbers in the section of Watsonville Slough and the Cattail Marsh adjacent to the project area (Goodman and Reid 2012).

South-central California Coast Steelhead (*Oncorhynchus mykiss irideus*). Federal Listing Status: Threatened; State Listing Status: None. The South-Central California Coast (CCC) steelhead Distinct Population Segment (DPS) was listed as threatened on August 18, 1997 (NMFS 1997), and the threatened status was reaffirmed on January 5, 2006 (NMFS 2006). Critical habitat was designated for the CCC steelhead DPS on September 2, 2005 (NMFS 2005), and a final recovery plan was published in October 2013. Critical habitat for the Central California Coast steelhead DPS was designated on September 2, 2005 (NMFS 2006). Like CCC coho salmon, steelhead populations in many areas have declined due to degradation of spawning habitat, introduction of barriers to upstream migration, over-harvesting by recreational fisheries, reduction in winter flows due to damming, and reduction of spring flows due to water diversions (NMFS 1997). In addition, non-native fish species, such as striped bass (*Morone saxatilis*), common carp

(*Cyprinus carpio*), and white catfish (*Ameiurus catus*), may pose risks to native steelhead populations through predation, competition, and habitat modification. Increasing predation pressure at river mouths and in the ocean from the growing California sea lion population is also posing significant risk to CCC steelhead.

Steelhead are found along the entire Pacific Coast of the United States. The CCC steelhead DPS includes all naturally spawned populations of steelhead in coastal streams from the Pajaro River (at the boundary between Santa Cruz and Monterey counties) south to Arroyo Grande Creek (San Luis Obispo County). Steelhead enter the rivers and streams during winter and spring, when storms produce sufficient runoff to breach the sandbars at the rivers' mouths and provide fish passage to upstream spawning and rearing habitats. Steelhead in the CCC DPS are winter-spawning steelhead, maturing in the ocean and spawning shortly after entering freshwater. Winter steelhead enter rivers and streams in the late fall and winter months when higher flows and associated lower water temperatures occur. Adult female steelhead prepare a redd (or nest) in a gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Preferred streams typically support dense canopy cover that provides shade, woody debris, and organic matter, and are usually free of rooted or aquatic vegetation. The length of the incubation period is dependent on water temperature. Fry emerge from the gravel, and rear along the stream margins, moving gradually into pools and riffles as they grow larger. Young juveniles feed primarily on aquatic invertebrate drift.

In California, juveniles usually live in freshwater for one to three years (Shapovalov and Taft 1954; Barnhart 1986; Busby et al. 1996) then smolt and migrate to the sea. Because of this multi-year rearing period, steelhead can only spawn in tributaries that maintain suitable temperature and other water quality parameters year-round. Most downstream smolt migration takes place between February and June, with peak timing of steelhead smolt outmigration in Central California occurring from March to May (Barnhart 1986; Fukushima and Lesh 1998).

The Pajaro River serves as a migration pathway for adult steelhead migrating to spawning and nursery habitat in the upper watershed and for steelhead smolts (1- to 2-year-old juveniles) returning to the ocean. Historically, the Watsonville Slough watershed did not support suitable spawning habitat for steelhead and there are no documented occurrences of steelhead spawning in the Watsonville Slough watershed. While small numbers of steelhead may find their way into Watsonville Slough from the Pajaro River they are not expected to occur in substantial numbers in the section of Watsonville Slough adjacent to the project area and are not expected to occur in the Cattail Marsh in the project area.

Tidewater Goby (*Eucyclogobius newberryi*). Federal Listing Status: Endangered; State Listing Status: None. The tidewater goby was listed as endangered on March 7, 1994 (USFWS 1994) and critical habitat was designated on November 20, 2000 (USFWS 2000). The tidewater goby is endemic to California, where it is found primarily in waters of lagoons, estuaries, and marshes along the coast. Tidewater goby is generally absent from areas where the coastline is steep, and streams do not form lagoons or estuaries. This species generally occur along the bottom of brackish, shallow lagoons and lower stream reaches where the water is still, but not stagnant (USFWS 2005). Tidewater gobies prefer a sandy substrate for breeding, but they can be found on rocky, mud, and silt substrates as well. Favorable habitat includes shallow open water with emergent vegetation. Aquatic vegetation is important for protection and presumably feeding, while open water is important to breeding where spawning may occur year-round, but it is less frequent in December through March. The lagoons in which tidewater gobies are found range in size from a few square yards of surface area to about 2,000 acres. However, most lagoons are much smaller, ranging from approximately 1.25 to 12.5 acres (USFWS 2005). Tidewater gobies often migrate upstream into tributaries, as far as 0.5 mile from the estuary. However, in the Santa

Ynez River, Santa Barbara County, tidewater gobies are often collected three to five miles upstream of tidal lagoons (USFWS 2005).

Tidewater gobies are found in the lower reaches of the Pajaro River and in Watsonville Slough but are not expected to occur in the section of Watsonville Slough adjacent to the project area due to the lack of brackish habitat (USFWS 2005).

Special-Status Amphibians

California Red-legged Frog *(Rana draytonii)*. Federal status: Threatened; State status: Species of Special Concern. The California red-legged frog was federally listed as threatened in June 1996 (USFWS 1996) based largely on a significant range reduction and continued threats to surviving populations. Critical habitat was most recently designated in March 2010 (USFWS 2010). Designated critical habitat is not present in the project area. The historical distribution of the California red-legged frog extended from the city of Redding in the Central Valley and Point Reyes National Seashore along the coast, south to Baja California, Mexico. The species' current distribution includes isolated locations in the Sierra Nevada and the San Francisco Bay Area, and along the central coast (USFWS 2002a).

The California red-legged frog inhabits freshwater pools, streams, and ponds throughout the Central California Coast Range and isolated portions of the western slope of the Sierra Nevada (Fellers 2005). Its preferred breeding habitat consists of deep perennial pools with emergent vegetation for attaching egg clusters (Fellers 2005), as well as shallow benches to act as nurseries for juveniles (Jennings and Hayes 1994). However, red-legged frogs will also breed in small, shallow pools as well as intermittent streams. Non-breeding frogs may be found adjacent to streams and ponds and may travel up to two miles from their breeding locations across a variety of upland habitats to other suitable non-breeding habitats (Bulger et al. 2003; Fellers and Kleeman 2007). However, the distance moved is highly site-dependent and is influenced by the local landscape (Fellers and Kleeman 2007). California red-legged frogs generally disperse during the wet season from mid-October to mid-April.

The Manabe-Ow Business Park Specific Plan Draft Master Environmental Impact Report (MEIR) identified the 200 Manabe Ow Road project area as an active agricultural field with no habitat value for red-legged frog, and the drainage channel was not identified as an aquatic feature (RBF Consulting 2010). Site conditions have changed significantly since the preparation of the MEIR in 2010 and there is currently suitable habitat for California red-legged frog in the 200 Manabe Ow Road project area. Additionally, California red-legged frog is well documented from the marsh complex formed by the confluence of Watsonville, Struve, and Hanson Sloughs (CNDDB 2022), approximately 0.3 mile downstream of the project area.

The section of Watsonville Slough adjacent to the project area and the Cattail Marsh provide suitable foraging and dispersal habitat. At the time of the site visit, the Cattail Marsh does not provide high quality breeding habitat due to low water levels. However, the Cattail Marsh may provide potential breeding habitat for red-legged frog (i.e., a slow-moving stream with emergent vegetation for egg mass attachment) in years with higher water levels (red-legged frogs are known to breed in one foot of water with dense vegetation cover). Additionally, the grassland habitat in the 200 Manabe Ow Road project area provides upland dispersal and refugia habitat (i.e., low density of small mammal burrows). However, the developed land cover in the 100 Manabe Ow Road project area does not provide suitable upland dispersal and foraging habitat. According to the City, the Cattail Marsh and adjacent upland areas are regularly mowed. Regular mowing of the Cattail Marsh may substantially reduce the habitat value for California red-legged frog, but they still could potentially make use of the marsh habitat. At the time of the site visit, the Cattail Marsh provides suitable foraging, dispersal, and potential breeding habitat for California red-

legged frog. Therefore, due the presence of suitable habitat in the 200 Manabe Ow Road project area, as observed during the site visit, there is a high potential for California red-legged frog to be present in the Cattail Marsh and the adjacent upland areas.

Special-Status Reptiles

Western Pond Turtle (*Actinemys marmorata*). Federal status: None; State status: Species of Special Concern. The western pond turtle occurs in ponds, streams, and other wetland habitats in the Pacific slope drainages of California (Bury and Germano 2008). Ponds or slack-water pools with suitable basking sites (such as logs) are an important habitat component for this species, and western pond turtles do not occur commonly along high-gradient streams. Females lay eggs in upland habitats, in clay or silty soils in unshaded areas. Juveniles occur in shallow aquatic habitats with emergent vegetation and ample invertebrate prey. Nesting habitat is typically found within 600 feet of aquatic habitat (Jennings and Hayes 1994), but if no suitable nesting habitat can be found close by, adults may travel overland considerable distances to nest.

The Manabe-Ow Business Park Specific Plan MEIR identified the 200 Manabe Ow Road project area has an active agricultural field with no habitat value for western pond turtle, and the drainage channel was not identified as an aquatic feature (RBF Consulting 2010). Site conditions have changed significantly since the preparation of the MEIR in 2010 and there is currently suitable habitat for western pond turtle in the project area.

There are documented occurrences for western pond turtle from the Pajaro River, Struve Slough, and the lower reach of Watsonville Slough with the most recent occurrences from 2007 (CNDDB 2022). The Watsonville Slough adjacent to the project area as well as the Cattail Marsh within the project area provide suitable aquatic habitat for western pond turtle (i.e., perennial slow-moving stream with substantial emergent vegetation and basking sites). The grassland habitat in the 200 Manabe Ow Road project area provides potential upland breeding habitat (i.e., presence of silty clay soils). Therefore, due the presence of suitable habitat in the project area, as observed during the site visit, there is a high potential for western pond turtle to be present in the Cattail Marsh and the adjacent upland areas.

Special Status Mammals

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*). Federal status: None; State status: Species of Special Concern. The San Francisco dusky-footed woodrat occurs in a variety of woodland and scrub habitats throughout San Mateo County and the adjacent Central Coast Range, south to the Pajaro River in Monterey County (Hall 1981, Zeiner et al. 1990). San Francisco dusky-footed woodrats prefer riparian and oak woodland forests with dense understory cover, or thick chaparral habitat, and build large, complex houses of sticks and other woody debris, which may be maintained by a series of occupants for several generations (Carraway and Verts 1991; Lee and Tietje 2005). Also, they will often build these stick houses in the canopy of trees. Woodrats also use human-made structures, and can nest in electrical boxes, sheds, pipes, abandoned vehicles, wooden pallets, and portable storage containers. The breeding season for dusky-footed woodrat begins in February and sometimes continues through September, with females bearing a single brood of one to four young per year (Carraway and Verts 1991).

There is no suitable habitat for dusky-footed woodrat within the project area, including along the Cattail Marsh, and no woodrat houses were observed during the field survey. However, San Francisco dusky-footed woodrat could occur in the riparian habitat along the section of Watsonville Slough adjacent to the project area. Since the riparian habitat along the Watsonville

Slough is at least 80 feet away from the project area, project activities are not expected to impact San Francisco dusky-footed woodrat.

Bat Colonies

Bats tend to forage and roost near freshwater sources. Both the Watsonville Slough and the Cattail Marsh provide a seasonal source of freshwater within and adjacent to the project area. Cavities within trees, culverts, buildings, and other structures may provide suitable day and maternity roost habitat for many species of bats.

Roost sites play a critical role in mating, hibernation, rearing young, conserving energy, and protection from adverse weather and predators. Selection of roost sites is influenced by distribution and abundance of food resources, risks of predation, as well as the physical attributes of the roost itself. Roost selection is paramount to the success of a species and the removal of roost habitat could adversely impact the survivorship of a species (Kunz 1982).

Depending upon species, maternity roosts can host from a few to thousands of reproductive female bats that congregate during spring and summer months to give birth and nurse their young. In California, maternity roosts may remain active from April through August. As a potentially uncommon and limited resource, maternity roosts may be the limiting resource for a local population of bats, and thus may be essential to the survival of a local bat population. Maternity roosts tend to have sensitivity to disturbance, with documented instances of abandonment even during the presence of flightless young. As bats have a low reproductive rate of typically one pup per year, negative impacts to maternity roosts can have profound impacts on a local population of bats (Szewczak 2013).

Disturbance of roosting habitat of any bat species would be considered significant under CEQA guidelines. No suitable tree cavities or other roosting habitat was observed within the project area or 50 feet of the project area. However, roosting bats could be present in the riparian habitat along the section of Watsonville Slough adjacent to the project area. Since the riparian habitat along the Watsonville Slough is at least 80 feet away from the project area, project activities are not expected to impact roosting bats.

Special-status Birds

American Peregrine Falcon (*Falco peregrinus anatum*). Federal Listing Status: None; State Listing Status: Fully Protected. The American peregrine falcon occurs throughout much of the world and is known as one of the fastest flying birds of prey. Peregrine falcons prey almost entirely on birds, which they kill while in flight. These falcons nest on ledges and caves on steep cliffs, as well as on human-made structures such as buildings, bridges, and electrical transmission towers. In California, they are known to nest along the entire California coastline, and the Cascade Ranges and Sierra Nevada.

A severe decline in populations of the widespread North American subspecies *anatum* began in the late 1940s. This decline was attributed to the accumulation of DDE, a metabolite of the organochlorine pesticide DDT, in aquatic food chains. When concentrated in the bodies of predatory birds such as the peregrine falcon, this contaminant led to reproductive effects, such as the thinning of eggshells. The American peregrine falcon was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. Recovery efforts included the banning of DDT in North America, and captive breeding programs to help bolster populations. The USFWS removed the American peregrine falcon from the endangered species list in 1999 (USFWS 1999), and it was removed from the state endangered species list in 2009.

There is no suitable nesting habitat within or adjacent to the project area. However, peregrines nesting elsewhere in the project region, as well as migrants and wintering birds, may occasionally forage in the project area. Peregrine falcons have been observed along the Watsonville Slough near the project area (Cornell Lab of Ornithology 2022).

Burrowing Owl (*Athene cunicularia*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Burrowing owls occur year-round in Santa Cruz County, using open, agricultural or grassland areas with active small mammal burrows, which they use for nesting and roosting. Typical burrowing owl habitat is treeless with minimal shrub cover, woody plant encroachment, and low density and foliage height diversity. In the San Francisco Bay Area, burrowing owls are chiefly associated with burrows of California ground squirrels, whose burrows provide nesting and roosting cavities. In the absence of ground squirrel populations, habitats soon become unsuitable for occupancy by owls (Plumpton and Lutz 1993).

The burrowing owl nesting season as recognized by the CDFW runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate and over-winter elsewhere (Gorman et al. 2003). Young birds disperse across the landscape from 0.1 mile to 35 miles from their natal burrows (Rosier et al. 2006). Philopatry (the tendency for individuals to breed at or near their place of birth), site tenacity (the tendency for individuals to breed at or near their prior nest location), and nest burrow reuse have been well documented for burrowing owls (Plumpton and Lutz 1993a), and burrowing owls may return to a nesting site and attempt to nest even after the site has been developed.

There are several documented occurrences within one mile of the project area (Cornell Lab of Ornithology 2022). There is potential breeding habitat within the project site due to the presence of small mammal burrows and the grassland habitat within the project area, and adjacent areas provide suitable foraging habitat for burrowing owl. Due to nearby documented occurrences and the presence of small mammal burrows, there is a moderate potential for borrowing owl to be present in project site.

Northern Harrier (*Circus cyaneus*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting). The northern harrier nests in marshes and grasslands with tall vegetation and sufficient moisture to inhibit accessibility of nest sites to predators. This species forages primarily on small mammals and birds in a variety of open grassland, ruderal, and agricultural habitats. Northern harriers forage in a variety of open habitats, especially during the nonbreeding season. The species is widespread as a forager in grasslands, extensive wetlands, and agricultural areas in the project region during migration and winter. Northern harriers are not expected to nest on the project area due to a lack of suitable habitat. However, harriers may nest in nearby marsh habitats along the Watsonville Slough downstream of the project area and forage in the project area.

Tricolored Blackbird (*Agelaius tricolor*). Federal Listing Status: None; State Listing Status: Threatened (Nesting Colony). Tricolored blackbird was listed as a threatened species by the California Fish and Game Commission on April 19, 2018. Tricolored blackbirds are found primarily in the Central Valley and in the central and southern coastal areas of California. The tricolored blackbird is highly colonial in its nesting habits, and forms dense nesting colonies that, in some parts of the Central Valley, may consist of up to tens of thousands of pairs. Suitable tricolored blackbird nesting habitat includes flooded stands of tall and dense, thorny, or spiny vegetation dominated by cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.), and willows (*Salix* spp.), but also will nest in dense stands of blackberry bushes (*Rubus* spp.) and wild rose (*Rosa* spp.) bushes, as well as thistles (*Cirsium* and *Centaurea* spp.) and nettles (*Urtica* spp.), usually near extensive open areas such as marshes, grassland, or agricultural land that provide foraging habitat. Nesting colonies are usually located near fresh water. Tricolored blackbirds form large,

often multi-species flocks during the nonbreeding period and range more widely than during the nesting season. Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields (e.g., oats, wheat, silage), as well as annual grasslands, cattle feedlots, and dairies (Shuford and Gardali 2008). These blackbirds also forage in remnant native habitats, including wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders.

Even though the Cattail Marsh in the project area consists of dense stands of cattails, the small size of the marsh likely precludes nesting tri-colored blackbirds. Tricolored blackbirds are well documented from the marsh complex formed by the confluence of Watsonville, Struve, and Hanson Sloughs, approximately 0.3 mile from the project area (CNDDB 2022, Cornell Lab of Ornithology 2022). Therefore, tricolored blackbirds may forage in the grassland and *Cattail Marsh* in the project area and/or migrate through the project area but are not expected to nest in the project area.

White-tailed Kite (*Elanus leucurus*). Federal Listing Status: None; State Listing Status: Fully Protected. In California, white-tailed kites can be found in the Central Valley and along the coast in grasslands, agricultural fields, cismontane woodlands, and other open habitats (Zeiner et al. 1990a, Dunk 1995, Erichsen et al. 1996). White-tailed kites are year-round residents of the state, establishing nesting territories that encompass open areas with healthy prey populations and snags, shrubs, trees, or other substrates for nesting (Dunk 1995). Nonbreeding birds typically remain in the same area over the winter, although some movements do occur (Polite 1990). The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites (Dunk and Cooper 1994, Skonieczny and Dunk 1997). Although the species recovered after population declines during the early 20th century, its populations may be exhibiting new declines because of recent increases in habitat loss and disturbance (Dunk 1995, Erichsen et al. 1996).

White-tailed kites are common residents in the vicinity of the project area where open grassland and agricultural habitats are present (Cornell Lab of Ornithology 2022). There is no suitable nesting habitat within the project area, but there may be suitable nesting habitat in the riparian corridor along Watsonville Slough adjacent to the project area. Since the riparian habitat along the Watsonville Slough is at least 80 feet away from the project area, project activities are not expected to impact nesting kites. However, the grassland habitat within the 200 Manabe Ow Road project area provides potential foraging opportunities for this species and two individuals were observed in the 200 Manabe Ow Road project area in 2019 (Cornell Lab of Ornithology 2022).

Yellow Warbler (*Setophaga petechia*). Federal Listing Status: None; State Listing Status: Species of Special Concern. In California, the yellow warbler occupies wooded riparian habitats (Heath 2008). This species prefers riparian corridors with an overstory of mature cottonwoods and sycamores, a midstory of box elder and willow, and a substantial shrub understory (Bousman 2007), particularly in areas with more open space adjacent to the riparian habitat. Yellow warblers construct open-cup nests in upright forks of shrubs or trees in dense willow thickets or other dense vegetation (Lowther et al. 1999).

The yellow warbler is an uncommon to rare breeder in wooded riparian habitats, occurring primarily in association with alders and willows, in Santa Cruz County. Riparian woodlands in the County provide suitable nesting and foraging habitat for this species, but the species is scarce and local, being particularly scarce as a breeder on the immediate coast (Shuford and Gardali 2008). Nevertheless, it is possible that yellow warblers may breed in the riparian habitat along Watsonville Slough adjacent to the project area, but they are not expected to nest in the project area. Otherwise, this species is a commonly observed migrant along the Watsonville Slough near the project area (Cornell Lab of Ornithology 2022).

Nesting Birds

Nesting birds may occur in trees, shrubs, understory vegetation, and shallow scrapes on bare ground in and around the project area. All migratory bird species are protected under California Fish and Game Code.

Natural Communities of Special Concern

There is one CDFW classified sensitive natural community, the Cattail Marsh, within the project area. The Cattail Marsh is classified as Coastal and Valley Freshwater Marsh.

- **Coastal and Valley Freshwater Marsh**. Coastal and Valley Freshwater Marsh is a wetland plant community found in seasonally or permanently flooded areas along streams, lakes, ponds, and springs. If the marsh is within a riverine system that drains into estuarine habitats, the marsh may be brackish at the end closest to the estuary end and entirely freshwater farther up the channel. Typical species include cattails (*Typha* spp.), bulrush (*Scirpus* spp.), and sedges (*Cyperus* spp., *Carex* spp., and *Eleocharis* spp.).

Sensitive Vegetation Alliances

There are no CDFW classified sensitive plant communities within the project area.

CDFW Stream/Riparian Habitat

As described above under Regulatory Setting, the California Fish and Game Code includes regulations governing the use of, or impacts to, many of the state's fish, wildlife, and sensitive habitats, including the bed and banks of rivers, lakes, and streams. The Cattail Marsh in the 200 Manabe Ow Road project area and its associated riparian habitat up to the top of bank is subject to CDFW jurisdiction under Section 1600 et seq. of State Fish and Game Code (Biological Resources Report, Appendix A, Figure 4).

Critical Habitat/EFH

There is no designated critical habitat or EFH within the project area. However, critical habitat for several species and EFH is located within five miles of the project area (Biological Resources Report, Appendix A, Figure 5).

- **Santa Cruz Tarplant**. Critical habitat for Santa Cruz tarplant is located approximately 150 feet north of the project area on the north side of Watsonville Slough (Unit I) and approximately 2.3 miles northeast of the project area along Elkhorn Road (Unit K).
- **California Red-legged Frog**. Critical habitat for California red-legged frog is located approximately 0.23 miles northwest of the project area, including Watsonville Slough, Harkins Slough, and Struve Slough (Unit SCZ-2).
- **South-Central California Coast Steelhead DPS.** Critical habitat for steelhead includes the Pajaro River and Lagoon, but does not include Watsonville, Harkins, or Struve Sloughs. The confluence of the Pajaro River and Watsonville Slough is approximately five miles downstream of the project area.
- **Tidewater Goby**. Critical habitat for tidewater goby includes the lower reach of the Pajaro River and lagoon, as well as the lowermost 1.2 miles of Watsonville Slough south of West Beach Road (Unit SC-8), approximately four miles from the project area. Watsonville

Slough north of West Beach Road, including the Harkins and Struve Sloughs are not designated as critical habitat.

- **EFH**. All tidally influenced areas of the Pajaro River, and Watsonville Slough are designated as EFH for species federally managed under fisheries management plans (FMPs) (Pacific Fisheries Management Council 1998, 2011, 2012). Only the lowermost portion of Watsonville Slough is tidally influenced, approximately four miles downstream of the project area.

Waters of the U.S./State

The Cattail Marsh meets the definition of waters of the U.S./state and any impacts to verified waters of the U.S./state within the project area would be subject to jurisdiction by the USACE and RWQCB. Waters of the state generally extend to the top of the bank (see Biological Resources Report, Appendix A, Figure 4).

Wildlife Corridors

Wildlife corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: first, as habitat patches become smaller, they are unable to support as many individuals (patch size); and second, the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity).

Due to habitat fragmentation in the project region, the vegetation communities along streams and other aquatic features often function as environmental corridors that allow animals to move among habitat patches. Since the drainage channel within the project site is confluent with Watsonville Slough, the channel, and adjacent upland areas likely function as a wildlife movement corridor that provides movement and refugia for wildlife found in the Watsonville Slough corridor. Since the developed and grassland areas of the project site are in an urban setting and are not adjacent to or connect open space areas, these areas likely function as an isolated wildlife corridor that provides movement and refugia for wildlife that are commonly found in developed areas.

3.4.2 Regulatory Setting

Federal Regulations

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended, provides the regulatory framework for the protection of plant and animal species (and their associated critical habitats), which are formally listed, proposed for listing, or candidates for listing as endangered or threatened under FESA. FESA has the following four primary components: (1) provisions for listing species, (2) requirements for consultation with the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), (3) prohibitions against "taking" (i.e., harassing, harming, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species, and (4) provisions for permits that allow incidental "take". FESA also discusses recovery plans and the designation of critical habitat for listed species.

Both the USFWS and NOAA Fisheries share the responsibility for administration of FESA. Section 7 requires federal agencies, in consultation with, and with the assistance of the USFWS or NOAA Fisheries, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to

jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Non-federal agencies and private entities can seek authorization for take of federally listed species under Section 10 of FESA, which requires the preparation of a Habitat Conservation Plan.

U.S. Migratory Bird Treaty Act

The U.S. Migratory Bird Treaty Act (MBTA; 16 USC §§ 703 et seq., Title 50 Code of Federal Regulations [CFR] Part 10) states it is "unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill; attempt to take, capture or kill; possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest or egg thereof…" In short, under MBTA it is illegal to disturb a nest that is in active use, since this could result in killing a bird, destroying a nest, or destroying an egg. The USFWS enforces MBTA. The MBTA does not protect some birds that are non-native or human-introduced or that belong to families that are not covered by any of the conventions implemented by MBTA.

Clean Water Act

The Clean Water Act (CWA) is the primary federal law regulating water quality. The implementation of the CWA is the responsibility of the U.S. Environmental Protection Agency (EPA). However, the EPA depends on other agencies, such as the individual states and the U.S. Army Corps of Engineers (USACE), to assist in implementing the CWA. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 and 401 of the CWA apply to activities that would impact waters of the U.S. The USACE enforces Section 404 of the CWA, and the California State Water Resources Control Board enforces Section 401.

Section 404

As part of its mandate under Section 404 of the CWA, the EPA regulates the discharge of dredged or fill material into "waters of the United States" (U.S.). "Waters of the U.S." include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high-water marks. Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(b)). The discharge of dredged or fill material into waters of the U.S. is prohibited under the CWA except when it is in compliance with Section 404 of the CWA. Enforcement authority for Section 404 was given to the USACE, which it accomplishes under its regulatory branch. The EPA has veto authority over the USACE's administration of the Section 404 program and may override a USACE decision with respect to permitting.

Substantial impacts to waters of the U.S. may require an Individual Permit. Projects that only minimally affect waters of the U.S. may meet the conditions of one of the existing Nationwide Permits, provided that such permits' other respective conditions are satisfied. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions (see below).

Section 401

Any applicant for a federal permit to impact waters of the U.S. under Section 404 of the CWA, including Nationwide Permits where pre-construction notification is required, must also provide to the USACE a certification or waiver from the State of California. The "401 Certification" is provided by the State Water Resources Control Board through the local RWQCB.

The RWQCB issues and enforces permits for discharge of treated water, landfills, stormwater runoff, filling of any surface waters or wetlands, dredging, agricultural activities and wastewater recycling. The RWQCB recommends the "401 Certification" application be made at the same time that any applications are provided to other agencies, such as the USACE, USFWS, or NOAA Fisheries. The application is not final until completion of environmental review under CEQA. The application to the RWQCB is similar to the pre-construction notification that is required by the USACE. It must include a description of the habitat that is being impacted, a description of how the impact is proposed to be minimized and proposed mitigation measures with goals, schedules, and performance standards. Mitigation must include a replacement of functions and values, and replacement of wetland at a minimum ratio of 2:1, or twice as many acres of wetlands provided as are removed. The RWQCB looks for mitigation that is on site and in-kind, with functions and values as good as or better than the water-based habitat that is being removed.

State Regulations

California Environmental Quality Act (CEQA)

CEQA (Public Resources Code Sections 21000 et. seq.) requires public agencies to review activities which may affect the quality of the environment so that consideration is given to preventing damage to the environment. When a lead agency issues a permit for development that could affect the environment, it must disclose the potential environmental effects of the project. This is done with an "Initial Study and Negative Declaration" (or Mitigated Negative Declaration) or with an "Environmental Impact Report." Certain classes of projects are exempt from detailed analysis under CEQA if they meet specific criteria and are eligible for a Categorical Exemption.

CEQA Guidelines Section 15380 defines endangered, threatened, and rare species for purposes of CEQA and clarifies that CEQA review extends to other species that are not formally listed under the state or federal Endangered Species acts but that meet specified criteria. The state maintains a list of sensitive, or "special-status," biological resources, including those listed by the state or federal government or the California Native Plant Society (CNPS) as endangered, threatened, rare or of special concern due to declining populations. During CEQA analysis for a proposed project, the California Natural Diversity Data Base (CNDDB) is usually consulted. CNDDB relies on information provided by the California Department of Fish and Wildlife (CDFW), USFWS, and CNPS, among others. Under CEQA, the lists kept by these, and any other widely recognized organizations are considered when determining the impact of a project.

California Endangered Species Act

The California Endangered Species Act (CESA; Fish and Game Code 2050 et seq.) generally parallels FESA. It establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Section 2080 of the California Fish and Game Code prohibits the take, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or by the regulations. "Take" is defined in Section 86 of the California Fish and Game Code as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." This definition differs from the definition of "take" under FESA. CESA is administered by CDFW. CESA allows for take incidental

to otherwise lawful projects but mandates that State lead agencies consult with the CDFW to ensure that a project would not jeopardize the continued existence of threatened or endangered species.

California Fish and Game Code Sections 1600-1607

Sections 1600-1607 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration application be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions in the application and, if necessary, prepares a Lake or Streambed Alteration Agreement (LSAA or SAA), that includes measures to protect affected fish and wildlife resources.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) was created in 1977 with the intent to preserve, protect, and enhance rare and endangered plants in California (California Fish and Game Code sections 1900 to 1913). The NPPA is administered by CDFW, which has the authority to designate native plants as endangered or rare and to protect them from "take." CDFW maintains a list of plant species that have been officially classified as endangered, threatened, or rare. These special-status plants have special protection under California law and projects that directly impact them may not qualify for a categorical exemption under CEQA guidelines.

Fully Protected Species and Species of Special Concern

The classification of California fully protected (CFP) species was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (§5515 for fish, §5050 for amphibian and reptiles, §3511 for birds, §4700 for mammals) deal with CFP species and state that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species" (CDFW Fish and Game Commission 1998). "Take" of these species may be authorized for necessary scientific research. This language makes the CFP designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with CFP species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

California species of special concern (CSSC) are broadly defined as animals not listed under FESA or CESA, but which are nonetheless of concern to CDFW because they are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA, and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

California Migratory Bird Protection Act

Fish & Game Code section 3513 states that federal authorization of take or possession is no longer lawful under the state Fish & Game Code if the federal rules or regulations are inconsistent with state law. The California Migratory Bird Protection Act (MBPA) was passed in September 2019 to provide a level of protection to migratory birds in California consistent with the U.S. MBTA.

Nesting Birds

Nesting birds, including raptors, are protected under California Fish and Game Code Section 3503, which reads, "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." In addition, under California Fish and Game Code Section 3503.5, "it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Passerines and non-passerine land birds are further protected under California Fish and Game Code 3513. As such, CDFW typically recommends surveys for nesting birds that could potentially be directly (e.g., actual removal of trees/vegetation) or indirectly (e.g., noise disturbance) impacted by project-related activities. Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by CDFW.

Non-Game Mammals

Sections 4150-4155 of the California Fish and Game Code protects non-game mammals, including bats. Section 4150 states "A mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a nongame mammal. A non-game mammal may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission." The non-game mammals that may be taken or possessed are primarily those that cause crop or property damage. Bats are classified as a non-game mammal and are protected under California Fish and Game Code, in addition to being protected if they are a listed species (e.g., CSSC, CFP, state or federal threatened, or state or federal endangered).

Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities and habitats that are either unique in constituent components, of relatively limited distribution in the region, or are of particularly high wildlife value. These communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies, or regulations, or by the CDFW (i.e., CNDDB) or the USFWS. The CNDDB identifies a number of natural communities as rare, which are given the highest inventory priority (Holland 1986; CDFW 2016). Impacts to sensitive natural communities and habitats must be considered and evaluated under CEQA (CCR: Title 14, Div. 6, Chap. 3, Appendix G).

Porter-Cologne Water Quality Control Act

The intent of the Porter-Cologne Water Quality Control Act (Porter-Cologne) is to protect water quality and the beneficial uses of water, and it applies to both surface and ground water. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans, which identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions

of both statewide and basin plans. Waters regulated under Porter-Cologne, referred to as "waters of the State," include isolated waters that are not regulated by the USACE. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, any person discharging, or proposing to discharge, waste (e.g., soil) to waters of the State must file a Notice of Intent (NOI) or a Report of Waste Discharge and receive either waste discharge requirements (WDRs) or a waiver to WDRs before beginning the discharge.

State and Local Requirements to Control Construction-Phase and Post-Construction Water Quality Impacts

The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972. In 1987, amendments to the CWA added Section 402(p), which established a framework for regulating nonpoint source storm water discharges under the National Pollutant Discharge Elimination System (NPDES). The NPDES is a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the U.S. In California, this permit program is administered by the RWQCBs. The NPDES General Construction Permit requirements apply to clearing, grading, and disturbances to the ground such as excavation. Construction activities on one or more acres are subject to a series of permitting requirements contained in the NPDES General Construction Permit. This permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to be implemented during project construction. The project sponsor is also required to submit a Notice of Intent (NOI) with the State Water Resources Control Board Division of Water Quality. The NOI includes general information on the types of construction activities that would occur on the site.

In Watsonville, development projects that create and/or replace more than 2,500 square feet of impervious surface must also comply with the California Regional Water Quality Control Board, Central Coast Region, Central Coast Post-Construction Stormwater Requirements (PCRs) (Resolution R3-2013-0032). This resolution requires that all projects implement BMPs and incorporate Low Impact Development practices into the design that prevents stormwater runoff pollution, promotes infiltration, and holds/slows down the volume of water coming from a site. To meet these permit and policy requirements, projects must incorporate the use of green roofs, pervious surfaces, tree planters, bioretention and/or detention basins, among other methods.

Local Regulations

Watsonville Municipal Code

The following provisions of the Watsonville Municipal Code help to minimize adverse effects to biological resources as a result of development in Watsonville:

> *Chapter 7-11, Street Trees* - it is unlawful to plant, trim, or remove any street tree without procuring a permit from the Director of Public Works.
>
> *Chapter 7-13, Preservation of Historical Trees* - The City's Recreation Department and the Recreation and Parks Commission are authorized to recommend to the City Council that certain trees be "designated" in order to preserve the tree(s) for their special character, historical value, or aesthetic interest. The Recreation Department maintains a record of designated trees. Any permit application for work that would impact a designated tree is forwarded to the Recreation Department and the Recreation and Parks Commission for review.

Watsonville 2005 General Plan

The Watsonville 2005 General Plan includes policies that are relevant to the protection of biological resources and applicable to the proposed projects. The policies are identified in Chapter 9, Environmental Resource Management, of the General Plan and are listed below (Accessed March 2002 at https://www.cityofwatsonville.org/160/2005-General-Plan).

Policy 9.B Natural Resource Protection. The City shall designate land necessary for the preservation of natural resources and to avoid conflicts with urban land uses.

9.B.6 Environmental Review – The City shall conduct an appropriate environmental review process and require that proposed projects adjacent to surrounding, or containing, wetlands be subject to a site-specific analysis which will determine the appropriate size and configuration of areas to buffer wetlands from urban development.

Policy 9.D Water Quality - The City shall provide for the protection of water quality to meet all beneficial uses, including domestic, agricultural, industrial, recreational, and ecological uses.

9.D.5 Wetland Protection – Where drainage from developments involves discharge into sloughs or wetlands, grease, sediment traps, or other protection measures shall be required. Mitigation monitoring shall be required and enforced by the City to ensure performance as appropriate.

Policy 9.E Soil Conservation - The City shall prevent degradation of local soil resources through erosion control improvement and grading guidelines.

9.E.1 Vegetation – The City shall require that removal of vegetation from a site be limited to the area required for building, and that all exposed soils be provided with new vegetation prior to project completion.

9.E.3 Wetland Protection – The City shall require that new construction on slopes leading toward sloughs and wetlands, maintain an undisturbed protective buffer between all cut and fill slopes and the riparian zone.

9.E.4 Sediment Containment – The City shall require that all topsoil stored on-site during construction be contained to prevent escape of sediment from the site.

Policy 9.F Wildlife Habitat Protection - The City shall designate for open space and environmental management those areas rich in wildlife species and fragile in ecological makeup. These habitat zones shall be made part of the greenbelt where appropriate.

9.F.1 Habitat Protection – Impacts to important wildlife habitat areas shall be identified as part of the City's development review and environmental review processes, and appropriate mitigations shall be considered. Mitigation measures to be considered include designation of sensitive areas as open space, restriction of new development on lands that provide important wildlife habitat, setback requirements, habitat conservation plans, and habitat mitigation banking. Lands within the urban limit line that provide important wildlife habitat include, but are not limited to the following:

a. Riparian Corridors

b. Freshwater Marshes and Sloughs

c. Woodlands and Steep Slopes

9.F.4 Fish and Game Consultation – The City shall refer development proposals to the California Department of Fish and Game for its recommendations on conservation measures for native plant communities, riparian vegetation, wildlife habitat, and wetland preservation.

3.4.3 Impact Discussion

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Special-Status Plant Species

Less than Significant Impact with Mitigation Incorporated. Santa Cruz tarplant has the potential to occur within the Wild Oats and Annual Brome Grassland in the 200 Manabe Ow Road project area. If present, project development may affect special-status plants due to disturbance or destruction of individuals or suitable habitat. Direct impacts could include grading or filling areas supporting these species, trampling, or crushing of plants, and soil compaction. Indirect impacts could include increased mobilization of dust onto plants, which can affect their photosynthesis and respiration, or changes to hydrology supporting these plants due to grading or construction in nearby habitats.

Conservation of a state and federally listed species is important because even the smallest of populations contribute to preserving the genetic resources for the species and ensuring its persistence in the County and state. For Santa Cruz tarplant, extirpation of any individuals located within the project area could negatively impact the species' genetic resources and would be considered significant under CEQA. Implementation of the following mitigation measures will reduce impacts on special-status plants to a less than significant level.

Impact BIO-1: The project could result in potentially significant impacts to the Santa Cruz Tarplant.

Mitigation Measure BIO-1a. Pre-Activity Focused Survey for Santa Cruz Tarplant. Prior to initial ground disturbance in grassland and wetland habitats, and during the appropriate blooming period (June to October), a focused survey for Santa Cruz tarplant shall be conducted by a qualified plant ecologist within suitable habitat in the project footprint and a 50-foot buffer around the project footprint, where feasible. The purpose of the survey will be to assess the presence or absence of Santa Cruz tarplant. If Santa Cruz tarplant is not found in the impact area or the identified buffer, then no further mitigation will be warranted. If Santa Cruz tarplant is found in the impact area, then Mitigation Measures BIO-1b shall be implemented. The results of the survey shall be documented.

A qualified plant ecologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for special-status plant species that may be present within the project area. During or following academic training, the qualified plant ecologist will

have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-1b. Avoidance Buffers. To the extent feasible, and in consultation with a qualified plant ecologist, the project proponent shall construct the project to avoid impacts on all populations of special-status plant species within the project site or within the identified buffer of the impact area, to the extent feasible. Avoided special-status plant populations shall be protected by establishing and observing the identified buffer between plant populations and the impact area. All such populations located in the impact area or the identified buffer, and their associated designated avoidance areas, shall be clearly depicted on any construction plans. In addition, prior to initial ground disturbance or vegetation removal, the limits of the identified buffer around special-status plants to be avoided shall be flagged or fenced. The flagging will be maintained intact and in good condition throughout project-related construction activities.

If avoidance is not feasible, then CDFW shall be consulted to determine the appropriate mitigation measures, which may include salvage and relocation of individual plants and/or off-site preservation, enhancement, and management of occupied habitat for the species.

Red-legged Frog and Western Pond Turtle

Less than Significant with Mitigation Incorporated. California red-legged frog and western pond turtle may be present in the Cattail Marsh and adjacent upland areas within the Wild Oats and Annual Brome Grassland in the 200 Manabe Ow Road project area. The Cattail Marsh is outside of the project footprint and will not be directly impacted by the proposed project. However, project activities would result in the permanent loss of potential California red-legged frog and western pond turtle upland refugia and breeding habitat, respectively, due to the conversion of the grassland to developed land cover. Project activities could also potentially result in the loss of individuals (e.g., during construction activities) if they were present in the Wild Oats and Annual Brome Grassland or if they moved into the project area from the Cattail Marsh during construction activities. Due to the rarity of both species, project-related impacts on individual California red-legged frogs and western pond turtle would be significant under CEQA. For example,

- Project activities may result in the injury or mortality of individuals as a result of worker foot traffic or equipment use.
- Disturbance from project activities may disrupt foraging and dispersal behavior of both species.
- Seasonal movements may be temporarily affected during project activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation.
- Petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals, although BMPs to control releases of such chemicals make this unlikely.
- Increases in human concentration and activity in the vicinity of suitable habitat may result in an increase in native and non-native predators that would be attracted to trash left at the work site and that would prey opportunistically on California red-legged frog and western pond turtle.
- Movement of project personnel within the site, and between on-site and off-site areas, could also spread pathogens such as chytrid fungus, which can impair the health of amphibians.

The proposed project will result in the loss of approximately 11.4 acres of potential California red-legged frog and western pond turtle upland refugia and breeding habitat, respectively. However, the impact of the loss of habitat is not significant in the project region due to the presence of nearby higher quality habitat in the Watsonville Slough corridor, including the 25-acre Manabe Restoration Project site and other nearby open space areas, including the 589-acre Watsonville Slough Ecological Reserve and 4,000 acres of designated Critical Habitat for red-legged frog. Furthermore, the long history of agricultural use within the 200 Manabe Ow Road project area, low density of small mammal burrows, regular mowing of the Cattail Marsh and adjacent areas, and other human disturbance (e.g., homeless encampments) reduces the habitat value for California red-legged frog and western pond turtle.

Consistent with the current impact analysis, the 2010 MEIR did not identify loss of habitat as a significant impact to California red-legged frog and western pond turtle within the planning area The MEIR also concluded that the Manabe-Ow Business Park Specific Plan would not result in cumulative impacts to California red-legged frog or western pond turtle (RBF Consulting 2010).

Furthermore, habitat restoration for California-red-legged frog and other wildlife is included in the Manabe-Ow Business Park Specific Plan, which includes the restoration of 25 acres of the Watsonville Slough known as the Manabe Restoration Project. The restoration project was completed in 2012 with support from the Resource Conservation District of Santa Cruz County (RCD) and created/restored high quality aquatic and upland habitat for California red-legged frog and western pond turtle, approximately 0.37 miles northeast from the 200 Manabe Ow Road project area.

Since site conditions have changed since the preparation of the MEIR in 2010 and there is currently potential for impacts to red-legged frog and western pond turtle during construction, implementation of Mitigation Measures BIO-2a through BIO-2j will reduce project impacts and avoid take of California red-legged frog and western pond turtle that may be present within the 200 Manabe Ow Road project area. With the implementation of these measures the impacts to these species would be less than significant.

A qualified biologist is an individual who shall have a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for each special-status species that may be present within the project area. During or following academic training, the qualified biologist shall have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements. Additionally, the qualified biologist must be permitted or authorized to handle and relocate California red-legged frog and western pond turtle.

> **Impact BIO-2:** The project could result in potentially significant impacts to California red-legged frog and/or western pond turtle.
>
> **Mitigation Measure BIO-2a. Conduct Preconstruction Survey**. No more than 24 hours prior to the date of initial ground disturbance, a pre-construction survey for California red-legged frog and western pond turtle shall be conducted within the impact area by a qualified biologist. The survey will consist of walking the limits of impact to ascertain the possible presence of the species. The qualified biologist shall investigate all potential areas that could be used by California red-legged frog and western pond turtle for feeding, sheltering, movement, and other essential behaviors.
>
> A qualified biologist is an individual who shall have a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for each amphibian and reptile special-status species that

may be present within the project area. During or following academic training, the qualified biologist shall have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements. Additionally, the qualified biologist must be permitted or authorized to handle and relocate California red-legged frog and western pond turtle.

Mitigation Measure BIO-2b. Worker Environmental Awareness Program. All construction personnel shall participate in a worker environmental awareness program. These personnel shall be informed about the possible presence of all special-status species and habitats associated with the species identified here to be potentially present in the parcel and that unlawful take of the animal or destruction of its habitat is a violation of law. Prior to construction activities, a qualified biologist shall instruct all construction personnel about (1) the description and status of the species; (2) the importance of their associated habitats; (3) a list of measures being taken to reduce impacts on these species during project construction and implementation; and (4) measures to be followed if special-status species are encountered during construction activities. A fact sheet conveying this information shall be prepared for distribution to the construction crew and anyone else who enters the project site.

Mitigation Measure BIO-2c. Install Wildlife Exclusion Barrier. Prior to any ground disturbance in the work area, a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist shall inspect the area prior to installation of the barrier. The barrier will be designed to allow the California red-legged frog and western pond turtle to leave the work area and prevent them from entering the work area. The fence shall remain in place until all development activities have been completed. This barrier shall be inspected daily and maintained and repaired as necessary to ensure that it is functional and is not a hazard to California red-legged frogs on the outer side of the barrier.

Mitigation Measure BIO-2d. Vegetation Removal. All vegetation within the work area shall be cut to four inches in height by a high-wheel mower or weed-whip just prior to the initiation of grading to remove cover that might be used by California red-legged frogs and/or western pond turtles. A qualified biologist authorized to handle California red-legged frogs and/or western pond turtles shall walk with the mower/whip to monitor for species during the vegetation removal.

Mitigation Measure BIO-2e. Construction Monitoring. A qualified biologist or biological monitor shall be onsite during all project activities that may result in take of any special-status species. The qualified biologist shall be given the authority to freely communicate verbally, by telephone, electronic mail, or in writing at any time with construction personnel, any other person(s) at the project site, otherwise associated with the project, and regulatory agencies (e.g., USFWS or CDFW). The qualified biologist or biological monitor shall have oversight over implementation of all the mitigation measures and shall have the authority and responsibility to stop project activities if they determine any of the measures are not being fulfilled.

A biological monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project, experience with construction-level biological monitoring, be able to recognize species that may be present within the project area and be familiar with the habits and behavior of those species.

Mitigation Measure BIO-2f. Relocation of California Red-legged Frog and Western Pond Turtle. If a red-legged frog or western pond turtle is found during project activities, work shall stop until a qualified biologist that is permitted to handle California red-legged frog or authorized to handle western pond turtle relocates the animal from the impact area before groundwork starts again. Only a qualified biologist shall capture, handle, and move California red-legged frog and western pond turtle. The qualified biologist shall monitor any relocated frog or turtle until it is determined that it is not imperiled by predators or other dangers. See Mitigation Measure BIO-2a for the definition of a qualified biologist.

Mitigation Measure BIO-2g. Daytime Restriction. No work shall be performed during nighttime hours. If construction is necessary at dawn or dusk, lights shall be directed away from Watsonville Slough and the Cattail Marsh habitats.

Mitigation Measure BIO-2h. Food and Trash. To eliminate an attraction for the predators of the California red-legged frog and western pond turtle, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in solid, closed containers (trash cans) and removed at the end of each working day from the entire construction site. Dogs or other pets shall not be allowed on site during construction.

Mitigation Measure BIO-2i. Steep-walled Holes and Trenches. To prevent inadvertent entrapment of the California red-legged frog or western pond turtle, a qualified biologist, biological monitor, and/or construction foreman/manager shall ensure that all excavated, steep-walled holes or trenches more than one foot deep are completely covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks and inspected by a qualified biologist. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals by a qualified biologist and/or construction foreman/manager. If at any time a trapped California red-legged frog or western pond turtle is discovered by a qualified biologist or anyone else, the steps in Mitigation Measure BIO-6 Relocation of California red-legged frog and Western Pond Turtle shall be followed.

Mitigation Measure BIO-2j. Prohibition of Plastic Mono-filament Netting. To prevent trapping California red-legged frogs or other species at the project site, erosion control materials containing plastic mono-filament netting or similar material shall not be used, even if it is labeled as biodegradable. Acceptable substitutes include coconut coir matting, straw/coconut finer erosion blanket, straw wattles wrapped in burlap, coir logs, and/or tackifier.

Burrowing Owl

Less than Significant with Mitigation Incorporated. The Wild Oats and Annual Brome Grassland in the 200 Manabe Ow Road project area contains small mammal burrows that provide potential nesting, wintering, and foraging habitat for burrowing owls. If active burrowing owl nests are present in the project area at the time of construction, construction-related disturbance could result in injury or mortality of an owl. In addition, construction-related disturbance could lead to the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Even if burrowing owls are not breeding on the site, construction could result in injury or mortality of an owl if an occupied burrow is filled or compacted during construction.

The proposed project will result in the loss of approximately 11.4 acres of potential burrowing owl habitat. However, the impact of the loss of habitat is not significant in the project region due to the presence of permanently protected higher quality habitat in nearby open space areas, including the 589-acre Watsonville Slough Ecological Reserve. Furthermore, the low density of small

mammal burrows, regular mowing of the Cattail Marsh and adjacent areas, and other human disturbance (e.g., homeless encampments) reduces the habitat value for burrowing owl.

Impact BIO-3: The project could result in a potentially significant impact to burrowing owl during construction activities.

Mitigation Measure BIO-3a: Conduct Pre-construction Surveys for Burrowing Owls. Pre-construction surveys for burrowing owls shall be conducted prior to the initiation of all project activities within suitable burrowing owl nesting and roosting habitat (i.e., Wild Oats and Annual Brome Grassland in the 200 Manabe Ow Road project area). Pre-construction surveys shall be completed in conformance with the CDFW's 2012 guidelines (CDFG 2012), which include the following:

- At least 2 weeks prior to the onset of vegetation mowing/removal or ground disturbing activities, an initial habitat assessment shall be conducted by a qualified biologist to determine if suitable burrowing owl habitat is present. During the habitat assessment, the biologist shall survey the entire activity area for burrows that could be used by burrowing owls for nesting and roosting, and signs of use (e.g., feathers, pellets, whitewash).
- The survey shall also include all areas within 250 feet of the site, as access allows.
- If no suitable burrowing owl habitat is present, no additional surveys shall be required.
- If suitable burrows and signs of activity are found, an additional survey shall be conducted within the 24-hour period prior to the initiation of project activities in any given area.
- The results of the surveys shall be documented.

If burrowing owls are observed during the surveys, then Mitigation Measure BIO-3b shall be implemented.

A qualified biologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for burrowing owl. During or following academic training, the qualified biologist will have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-3b: Implement Buffer Zones for Burrowing Owls. If burrowing owls are present during the nonbreeding season (September 1 to January 31), a 150-foot buffer zone shall be maintained around the occupied burrow(s), if feasible relative to property lines. If maintaining such a buffer is not feasible, then the buffer must be great enough to avoid injury or mortality of individual owls. During the breeding season (February 1 to August 31), a 250-foot buffer, within which no newly initiated project-related activities will be permissible, shall be maintained between project activities and occupied burrows. Owls present between February 1 and August 31 shall be assumed to be nesting, and the 250-foot protected area shall remain in effect until August 31. If monitoring indicates that the owls are no longer nesting or the young owls are foraging independently, the buffer may be reduced, or the owls may be relocated prior to August 31, as determined by a qualified biologist. Relocation of owls shall be completed by a qualified biologist using

one-way doors, which should be installed in all burrows within the impact area and left in-place for at least two nights. These one-way doors should then be removed and the burrows back-filled immediately prior to vegetation mowing/removal or grading.

The implementation of Mitigation Measures BIO-1a and BIO-1b, to BIO-2a through BIO-2j, and BIO-3a and BIO-3b would reduce impacts to Santa Cruz tarplant, California red-legged frog, western pond turtle and burrowing owls to a less than significant level.

American Peregrine Falcon, Northern Harrier, Tricolored Blackbird, White-tailed Kite, and Yellow Warbler

Less than Significant Impact. American peregrine falcon, northern harrier, tricolored blackbird, white-tailed kite, and yellow warbler are seen regularly in the project region and may fly through or forage in the project site. However, these species are unlikely to nest in the project area or adjacent areas because of the lack of suitable nesting habitat. All five species will only be temporarily displaced by construction noise and can forage in areas surrounding the project. Therefore, impacts to American peregrine falcon, northern harrier, tricolored blackbird, white-tailed Kite, and yellow warbler will be less than significant. In the unlikely event that any of these species nest in the project area, compliance with Mitigation Measure BIO-4 (see below) would reduce project impacts on these species to less than significant.

Nesting Birds

All migratory bird species and their nests are protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. Project activities must comply with the provisions of the MBTA and California Fish and Game Code (i.e., avoid take of protected nesting birds). Project-related impacts to nesting birds would be considered significant under CEQA.

Construction disturbance during the avian breeding season (February 1 through September 15, for most species) could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests. In addition, noise and increased construction activity could temporarily alter foraging behavior, potentially resulting in the abandonment of nest sites. However, with the implementation of Mitigation Measure BIO-4 below, impacts to nesting birds will be less than significant.

Impact BIO-4: Construction disturbance during the avian breeding season could cause the incidental loss of eggs or nestlings, or cause the abandonment of nests, resulting in the incidental take of protected nesting birds.

Mitigation Measure BIO-4: Pre-Construction/Pre-Disturbance Survey for Nesting Birds.

Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts to nesting birds protected under the MBTA and California Fish and Game Code would be avoided. The nesting season for most birds in Santa Cruz County extends from February 1 through September 15.

Pre-Construction Surveys. To avoid impacts to nesting birds and violation of state and federal laws pertaining to birds, all construction-related activities (including but not limited to mobilization and staging, clearing, grubbing, vegetation removal, fence installation, demolition, and grading) should occur outside the avian nesting season (that is, prior to February 1 or after September 15). If construction and construction noise occurs within

the avian nesting season (from February 1 to September 15), all suitable habitats located within the project's area of disturbance, including staging and storage areas plus a 250-foot (passerines) and 1,000-foot (raptor nests) buffer around these areas shall be thoroughly surveyed, as feasible, for the presence of active nests. The surveys shall be conducted by a qualified biologist no more than five (5) days before commencement of any vegetation trimming, site disturbance activities and equipment mobilization. If project activities are delayed by more than 5 days, an additional nesting bird survey shall be performed. Active nesting is present if a bird is building a nest, sitting in a nest, a nest has eggs or chicks in it, or adults are observed carrying food to the nest. The results of the surveys shall be documented.

If pre-construction nesting bird surveys result in the location of active nests, no site disturbance and mobilization of heavy equipment (including but not limited to equipment staging, fence installation, clearing, grubbing, vegetation removal, fence installation, demolition, and grading), shall take place within 250 feet of non-raptor nests and 1,000 feet of raptor nests, unless smaller buffers are determined by a qualified biologist. The buffer shall remain in place until the chicks have fledged. Monitoring will ensure compliance with MBTA and relevant California Fish and Game Code requirements. Monitoring dates and findings shall be documented.

Impacts from Bird Collisions

The project proposes the construction of a two-story building with a partial glass façade on one side of the building. Glass windows and facades have the potential to cause injury or mortality to birds when birds collide with these surfaces. Birds do not perceive glass as an obstruction in the same way that humans do. As a result, they may collide with glass walls or windows if the glass reflects the sky or nearby vegetation and is not perceived as an obstruction, when transparent glass appears to be a clear pathway, or when vegetation behind transparent glass (such as behind glass railings) appears unobstructed.

The Cattail Marsh attracts a variety of urban-adapted and riparian bird species. Additionally, the Watsonville Slough riparian corridor provides high quality habitat for a variety of bird species, which could travel through the project area en route to the riparian corridor. Based on a review of the building renderings in the site plans, at least half of one side of the proposed buildings would be composed of glass and the project would incorporate landscaping with trees, grasses, and shrubs around the buildings. While this landscaping is minimal and would not have a high habitat value to birds, it would attract birds in the area and increase bird activity around the buildings. Therefore, following construction of the project, birds using the on-site landscaping and flying between landscaped areas on the site and the Cattail Marsh and the Watsonville Slough riparian corridor may collide with the buildings, resulting in the death of migratory species. Special-status bird species are not expected to make use of the landscaping in the project area.

The most common bird strike zone is from the ground to 60 feet, and then again at 500 feet for skyscrapers (SF Planning Department 2011). The proposed buildings would be glazed from grade level or just above grade level to approximately 25 feet above grade. Glazing starts to be a hazard to birds at about 24 square feet in size, and both buildings have expanses of glass that exceed that size. The site plans do not detail the type of glass that is proposed for the buildings, so it is unknown if the glass is made with patterns or has light reflectance values that may be more visible to birds and thereby reduce the likelihood of collision with the glass. There are no adopted City of Watsonville bird-safe standards.

Since the buildings are surrounding by landscaping and are adjacent to habitats that attract a variety of birds there could be a cumulatively significant loss of birds over time and in addition to

bird loss from other similar buildings planned in the project area. The cumulative impact is potentially significant under CEQA. However, with the implementation of Mitigation Measure BIO-5 would minimize the loss of birds by window strike to a less than significant level.

Impact BIO-5: The project has the potential to result in potentially significant impacts due to bird collisions.

Mitigation Measure BIO-5: Standards for Bird Safe Buildings. The project shall implement the following bird-safe design considerations:

- Use glazing or window coatings/markings that reduce bird strike hazard caused by transparency, reflectance, black hole, or passage effect, etc., such as Guardian Bird1st etch glass or similar. See recommendations by the American Bird Conservatory at https://abcbirds.org/.
- Minimize plants or landscaped areas behind glass.
- Minimize concentrations of plantings adjacent to glass facades.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?

Sensitive Communities

No Impact. Sensitive vegetation communities include riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and CDFW. The *Cattail Marsh* (Coastal and Valley Freshwater Marsh) within the 200 Manabe Ow Road project area is classified as a sensitive community. Since the Cattail Marsh is subject to regulatory jurisdiction of the USACE, RWQCB, and CDFW, potential impacts to the marsh are discussed below in Response c).

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant Impact. The Cattail Marsh is subject to the regulatory jurisdiction of the USACE, RWQCB and CDFW, and will require CWA 401/404 and LSAA permits, if impacted. The proposed project does not directly impact the Cattail Marsh. However, the proposed projects include the creation of impervious surfaces due to the construction of buildings and paved roads and parking areas, which will result in an increase in stormwater runoff into stream habitat, including the Cattail Marsh and Watsonville Slough. Runoff may contain harmful pollutants like trash, chemicals, and dirt/sediment which may adversely affect water quality and wildlife. Construction activities could cause the degradation of surface or groundwater quality in the Cattail Marsh and Watsonville Slough due to erosion and transport of fine sediments or unintentional release of contaminants. Therefore, project-related impacts to stream habitat would be considered significant under CEQA.

Construction projects in California causing land disturbances that are equal to 1.0 acre or greater must comply with State requirements to control the discharge of stormwater pollutants under National Pollutant Discharge Elimination System (NPDES)/Construction General Permit. Prior to the start of construction/demolition, a Notice of Intent must be filed with the State Water Board describing the project. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and maintained during the project, and it must include the use of BMPs to protect water quality

until the site is stabilized. Standard permit conditions under the Construction General Permit require that the applicant use various measures including, among other measures, on-site sediment control best management practices, damp street sweeping, temporary cover of disturbed land surfaces to control erosion during construction, and utilization of stabilized construction entrances and/or wash racks.

Section 6-3.532 of the City's Municipal Code requires an Erosion and Sediment Control Plan (ESCP) for all projects, regardless of size, when applying for a grading or building permit. The intent of this requirement is to ensure that, during rain events, construction activities do not increase the levels of erosion and sedimentation. This plan will include the use of erosion-control materials (e.g., baffles, fiber rolls, or hay bales; temporary containment berms) and erosion-control measures such as straw application or hydroseeding with native grasses on disturbed slopes; and floating sediment booms and/or curtains to minimize any impacts that may occur due to increased mobilization of sediments. Suitable erosion control, sediment control, source control, treatment control, material management, and non-stormwater management best management practices will be implemented.

The following list of BMPs will protect biological resources:

- Work areas that are temporarily impacted will be restored with respect to pre-existing contours and conditions, to the extent feasible, upon completion of work. Restoration work including re-vegetation and soil stabilization will be evaluated upon completion of work and performed, as needed.
- Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with stormwater.
- Control and prevent the discharge of all potential pollutants, including solid wastes, paints, concrete, petroleum products, chemicals, wash water or sediment and non-stormwater discharges to storm drains and water courses.
- Avoid cleaning, fueling, or maintaining vehicles on site, except in a designated area in which run-off is contained and treated.
- Perform clearing and earth moving activities during dry weather to the maximum extent practical.
- Remove spoils promptly and avoid stockpiling of fill materials when rain is forecast. Cover soil stockpiles and other materials with a tarp or other waterproof material during qualifying rain events.
- Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination and dispersal by wind.
- In the event of rain, all grading work is to cease immediately.
- Implement an erosion control plan during the wet season (October 15 through April 15), including, at a minimum, the following:
    - All paved areas will be kept clear of earth material and debris
    - Inlet protection will be installed at open inlets to prevent sediment from entering the storm drain system.
    - Straw rolls will be placed at the toe of slopes, and along the down slope perimeter of the project area.

  - To prevent trapping of animals, plastic mono-filament netting (erosion control matting), rolled erosion control products or similar material will not be used at the project site.

- Implement an approved accidental spill plan to describe what actions will be taken in the event of a spill. The plan will incorporate preventative measures to be implemented, such as vehicle and equipment staging, cleaning, maintenance, and refueling; and contaminant (including fuel) management and storage. In the event of a contaminant spill, work at the site will immediately cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination and notify appropriate authorities (such as the City or other permitting agencies) and mitigate damage. Adequate spill containment materials, such as oil diapers and hydrocarbon cleanup kits, shall always be available on site. Containers for storage, transportation, and disposal of contaminated absorbent materials will be provided in the project site.

In addition to construction-phase requirements, new and redevelopment projects in many California counties, including Santa Cruz County, that create and/or replace more than 2,500 square feet of impervious surface must also comply with the California Regional Water Quality Control Board, Central Coast Region, Central Coast Post-Construction Stormwater Requirements (PCRs) (Resolution R3-2013-0032). The resolution requires that projects implement BMPs and incorporate Low Impact Development practices into the design that prevent stormwater runoff pollution, promote infiltration, and hold/slow down the volume of stormwater runoff from a site. To meet these permit and policy requirements, projects must incorporate the use of green roofs, impervious surfaces, bioretention and/or detention basins, among other on-site treatment controls.

During the construction phase, compliance with the requirements to control the discharge of stormwater pollutants under the Construction General Permit and PCRs, as well as under the ESCP will reduce impacts to stream habitat to a less than significant level. Compliance with the Construction General Permit, PCRs and ESCP is considered part of the project, therefore no mitigation is required. The project also incorporates stormwater detention basins to manage stormwater from post-project conditions. The impact is considered less than significant.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Less than Significant Impact. Construction activities could temporarily restrict some wildlife species from moving between suitable habitat patches. Noise and disturbance associated with construction activities could cause a temporary reduction in habitat connectivity through the site for species that commonly use habitats in the project area. Furthermore, construction fencing and/or wildlife exclusion fencing could substantially reduce habitat connectivity through the site. However, wildlife would still be able to move through the Watsonville Slough and the Cattail Marsh habitats adjacent to the site. Because project construction will not occur at night when many mammals, reptiles, and amphibians are active, use of these habitats by dispersing nocturnal animals would not be diminished during construction. Therefore, impacts to wildlife movement from construction activities are expected to be less than significant

Once construction activities are complete, the developed land cover (e.g., parking areas and buildings) would restrict wildlife movement through the sites compared to existing conditions. However, wildlife would still be able to move through the project area by using the riparian corridor

of Watsonville Slough. Wildlife movement in the Cattail Marsh would be similar to pre-project conditions. Numerous animals likely breed within and around the project areas, but no particularly important wildlife nursery areas are present in the project area or would be impacted by the projects. Therefore, wildlife dispersal through the project area after construction is a less than significant impact.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (including the County Heritage and Significant Tree Ordinances)? fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Impact. The proposed projects due not conflict with local policies, including the Watsonville Municipal Code and the Watsonville 2005 General Plan.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The proposed project does not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan, as they are not located in a conservation plan area. The project area is not included in the Coastal Zone and are not subject to Coastal Land Use Plan and policies.

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3.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

Ethnography

Watsonville is located in the center of the Pajaro Valley, approximately five miles inland from the shore of the Monterey Bay, and midway between the bay's northern and southern points. The known history of the area spans a great length of time, and evidence exists of human habitation for more than 10,000 years (Borg & Schoellhmer, 2012). The Native American people living in the project area called themselves the Ohlone. After the invasion by the Spanish in 1769, they were named Costanoans by the Spanish. Costanoan-speaking tribal groups occupied the area from the Pacific Coast to the Diablo Range and from San Francisco to Point Sur. The Ohlones were hunters and gatherers, living in "tribelets" – small independent groups of usually related families occupying a specific territory and speaking the same language or dialect. At the time of initial contact with European explorers, the project area is in the boundary area between the Mutsun-speaking Ohlone group: and the Awaswas-speaking Ohlone group (Kroeber 1970).

The Ohlone subdivided themselves into smaller village complexes or tribal groups. These groups were independent political entities, each occupying specific territories defined by physiographic features. Each group controlled access to the natural resources of the territories. Although each tribal group had one or more permanent villages, their territory contained numerous smaller campsites used as needed during a seasonal round of resource exploitation. Extended families lived in domed structures thatched with tule, grass, wild alfalfa, ferns or carrizo (Levy 1978).

The Ohlone settled along the Pajaro Dunes since the land was fertile and useful for the cultivation of their plants and animals. The tribe would have gathered the abundant plant and sea life and hunted animals such as birds, rabbits and tule elk. Remnants of their campsites have been discovered around the bay and by coastal streambeds (Borg & Schoellhmer, 2012).

European Exploration

The first European exploration by land was by Spain and led by Gaspar de Portola in 1769. Members of the party included Europeans as well as natives of Mexico. Their mission was to discover desirable sites for the extension of the Baja California chain of Missions into what is today the state of California.

On October 10th 1769, Fray Crespi and Miguel Costanso, a member of Portola's expedition, described crossing a river that the soldiers named "Rio del Pajaro" because they had seen a large grass or straw stuffed bird. As the party passed through the valley, they recorded seeing very tall trees, palos colorados (or red trees), known today as coast redwoods. They decided to name the river Rio del Pajaro, or River of the Bird. Following the river crossing, the Portolá expedition continued through the area on its way north, camping at one of the lakes north of town for five nights. Many of the expedition soldiers were suffering from scurvy, so progress was slow. While the sick recuperated, scouts led by Sergeant Ortega went ahead to find the best way forward. On the fifth day, Franciscan missionary Juan Crespi, traveling with the expedition, noted in his diary that, "This afternoon the explorers returned. The sergeant reported that he had gone ahead twelve leagues without getting any information of the harbor that we are looking for, and that he went to the foot of a high, white mountain range. It was during this march, the explorers first saw the Coast redwood tree (Bolton, 1927). A bronze plaque at Pinto Lake (now a city park) commemorates the event.

19th and Early 20th Centuries

The area became part of the Spanish colonial province of Las Californias, and in 1804 the northern part was split off to form Alta California. The area's pasture lands were assigned to the Spanish mission to the south, in Carmel. In this historic period, the Ohlone people were subjugated and absorbed into the mission system for compulsory baptism and conversion to Christianity that resulted in the loss of their freedom of movement, their culture, and customs.

When Mexico gained independence, it took possession of Alta California, and former Mission-held lands were granted to Mexican citizens. Seven ranchos were in the immediate vicinity of present Watsonville— San Andres, Los Corralitos, Bolsa de Pajaro, Bolsa de San Cayetano, Salsipuedes, Laguna de Calabasas, and Vega del Rio del Pajaro. The future Watsonville area became Rancho Bolsa del Pajaro, a land grant made to Sebastian Rodríguez in 1837. Under Mexico's more liberal land-ownership laws, immigration to the area from Europe and the United States increased.

In 1846–48, the Mexican-American War resulted in the cession of California from Mexico to the United States. In 1848, the California Gold Rush greatly accelerated immigration to California, and many new settlers arrived in the valley to obtain land. The land was fertile, and a booming agricultural economy was created to raise crops for California’s exploding population. Even after the Gold Rush was over, immigrants from many foreign countries and the other States continued to arrive to participate in growing and harvesting the increasingly diverse crops.

In 1851, Judge John H. Watson arrived in the Pajaro Valley because he claimed to own some of Sebastian Rodriguez' property. Judge H. Watson laid out a township near the Pajaro River. Watson filed a claim in 1851 against Sebastian Rodriguez, proprietor of Rancho Bolsa de Pajaro for the land. Watson ultimately lost his claim against the Rodriguez family, and sometime in 1862, Watson left Watsonville and moved to Nevada. Watson never returned to the township. However, a Santa Cruz County under-sheriff referred to the area where Watson lived as Watson-ville and the name remained. The township incorporated March 30, 1868 to become the Town of Watsonville (Borg & Schoellhmer, 2012) (City of Watsonville, 2022).

In 1871, the Southern Pacific Railroad linked the area to the Santa Clara Valley and the area flourished and began to grow. Churches, schools, newspapers, libraries, and major business appeared as electricity and telegraph lines worked their way into the lives of its residents.

It wasn’t until about 1889, that the town would incorporate again; this time as City of Watsonville. More than a decade later, in 1903, the voters adopted a City charter (Overmeyer, 2015).

Soon after, the Watsonville Railway and Navigation Company operated an interurban railway to Port Watsonville on Monterey Bay where it connected with an overnight produce packet boat to San Francisco from 1904 to 1913 (Fabing 1966).

Modern

Today, the valley's population reflects the historical diversity from Native tribes, the European settlers, and other immigrants following the agricultural boom. The valley's descendants include: Ohlones, Californios, Northern and Southern Europeans, Chinese, Japanese, Filipinos, African Americans, and others.

Agriculture and food processing remain the mainstay of the Pajaro Valley economic structure. Although other economies exist, including light industry, manufacturing, tourism, and service-oriented businesses.

3.5.2 Regulatory Setting

Federal

National Historic Preservation Act

Federal protection is legislated by the National Historic Preservation Act of 1966 (NHPA) and the Archaeological Resource Protection Act of 1979. These laws maintain processes for determination of the effects on historical properties eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA and related regulations (36 Code of Federal Regulations [CFR] Part 800) constitute the primary federal regulatory framework guiding cultural resources investigations and require consideration of effects on properties that are listed or eligible for listing in the NRHP. Impacts to properties listed in the NRHP must be evaluated under CEQA.

State

California Environmental Quality Act

Pursuant to CEQA, a historical resource is a resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR). In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historic resources under CEQA, unless a preponderance of the facts demonstrates otherwise. Per CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude a Lead Agency from determining that the resource may be a historic resource as defined in California Public Resources Code (PRC) Section 5024.1. CEQA applies to archaeological resources when (1) the archaeological resource satisfies the definition of a historical resource or (2) the archaeological resource satisfies the definition of a "unique archaeological resource." A unique archaeological resource is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:

1. The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

2. The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Register of Historical Resources

The California Register of Historical Resources (CRHR) is administered by the State Office of Historic Preservation and encourages protection of resources of architectural, historical, archeological, and cultural significance. The CRHR identifies historic resources for state and local planning purposes and affords protections under CEQA. Under Public Resources Code Section 5024.1(c), a resource may be eligible for listing in the CRHR if it meets any of the NRHP criteria.12

Historical resources eligible for listing in the CRHR must meet the significance criteria described previously and retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if it maintains the potential to yield significant scientific or historical information or specific data.

The concept of integrity is essential to identifying the important physical characteristics of historical resources and, therefore, in evaluating adverse changes to them. Integrity is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." The processes of determining integrity are similar for both the CRHR and NRHP and use the same seven variables or aspects to define integrity that are used to evaluate a resource's eligibility for listing. These seven characteristics include 1) location, 2) design, 3) setting, 4) materials, 5) workmanship, 6) feeling, and 7) association.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act applies to both state and private lands. The act requires that upon discovery of human remains, construction or excavation activity must cease and the county coroner be notified.

Public Resources Code Sections 5097 and 5097.98

Section 15064.5 of the CEQA Guidelines specifies procedures to be used in the event of an unexpected discovery of Native American human remains on non-federal land. These procedures are outlined in Public Resources Code Sections 5097 and 5097.98. These codes protect such remains from disturbance, vandalism, and inadvertent destruction, establish procedures to be implemented if Native American skeletal remains are discovered during construction of a project, and establish the Native American Heritage Commission (NAHC) as the authority to resolve disputes regarding disposition of such remains.

Pursuant to Public Resources Code Section 5097.98, in the event of human remains discovery, no further disturbance is allowed until the county coroner has made the necessary findings regarding the origin and disposition of the remains. If the remains are of a Native American, the county coroner must notify the NAHC. The NAHC then notifies those persons most likely to be related to the Native American remains. The code section also stipulates the procedures that the descendants may follow for treating or disposing of the remains and associated grave goods.

Health and Safety Code, Sections 7050 and 7052

Health and Safety Code Section 7050.5 declares that, in the event of the discovery of human remains outside a dedicated cemetery, all ground disturbances must cease, and the county

coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

California Penal Code Section 622.5

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

Government Code Section 6254(r)

Government Code explicitly authorizes public agencies to withhold information from the public relating to Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.

Government Code Section 6250 et. seq.

Records housed in the Information Centers of the California Historical Resources Information System (CHRIS) are exempt from the California Public Records Act.

3.5.3 Impact Discussion

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No Impact. The cultural resources records search results from the CHRIS search at the Northwest Information Center (NWIC) indicate there are six historic buildings/structures located within a 0.5-mile radius of the project site, and one historic district containing multiple buildings and structure. These resources are summarized in Table 3.5-1 below:

Table 3.5-1: Historic Resources within 0.5 Miles of the Project Area

Resource Number	***Resource Name***	***Resource Type***	***Age***
P-44-000377	Southern Pacific Railroad	Structure	Historic
P-44-000404	OC-129, MC-129	Structure	Historic
P-44-000406	Highway 1 (Santa Cruz County)	Structure	Historic
P-44-000582	Redman-Hirahara Farmstead	Structure, District	Historic
P-44-000820	Otto Stoesser Farm (BLE-15-01)	Building	Historic
P-44-000904	Central California Berry Growers Association	Building	Historic
P-44-001157	ESA-Built-005	Structure	Historic

The City of Watsonville keeps its own historic register which contains 14 structures, six of which are on the NRHP. These are shown in Table 3.5-2, below:

Table 3.5-2: City of Watsonville Historic Register Entries

Address	***Resource Name***	***National Register Eligible***
261–261A East Beach Street	Richard Pearson Home	No
332 East Beach Street	Bockius-Orr House	Yes
128 East Beach Street	Julius Lee Home	Yes
12 Brennan Street	Watsonville Women's Club	No
225 East Lake Ave	N/A	No
305 East Lake Ave	Mitchell Resetar Home	No
335 East Lake Ave	Madison House	Yes
280 Main Street	Porter Building	No
406 Main Street	Lettunich Building	Yes
418–428 Main Street	Mansion House	Yes
426–434 Main Street	Kalich Building	No
Main/Beach/Peck/Union	Watsonville City Plaza	Yes
139 Maple Street	Horgan House	No
37 Sudden Street	Pajaro Valley Arts Council	No

The seven historic built environment resources identified by the NWIC, as well as the 14 buildings on the City's register are both outside of the project's boundary and would not be physically affected by the proposed project. Furthermore, development within the project site would be consistent with the surrounding environment and would not impact the historic character of historic resources in the vicinity of the proposed project. According to historic maps and aerial photographs from 1914 to the present day there has never been a structure built within the project site. As there are no identified historical resources, or buildings, or structures that could have potential to be considered historical resources within the project site, and the project has no potential to impact the historic character of nearby resources, the proposed project would have no impact to historical resources.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less Than Significant with Mitigation Incorporated. The cultural resources records search results conducted by the NWIC indicate there are no archaeological resources (prehistoric or historic) located within the project's boundaries. However, there are four prehistoric archaeological sites within 0.5 miles of the project site, including a known prehistoric site approximately 250 feet from the project site. There are no known historic archaeological resources. These resources are summarized in Table 3.5-3 below:

Table 3.5-3: Archaeological Resources within 0.5 Miles of the Project Area				
CHRIS Resource Number	***Ascension Number***	***Resource Type***	***Age***	***Approx. Distance from Project Site***
P-44-000111	CA-SCR-000107	Site	Prehistoric	250 feet (approx. 0.05 miles)
P-44-000151	CA-SCR-000148	Site	Prehistoric, Protohistoric	2560 feet (approx. 0.5 miles)
P-44-000159	CA-SCR-000156	Site	Prehistoric	2600 (approx. 0.5 miles)
P-44-000311	CA-SCR-000286	Site	Prehistoric	2150 feet (approx. 0.4 miles)

The cultural resources records search results conducted by the NWIC returned 59 reports within 0.5 miles of the project site, and two partially within the site boundary. None of the reports gave any additional information regarding additional archaeological resources in the project area or study area. The archaeological sites are described in more detail below.

P-44-000111/ CA-SCR-000107. This site is a multipurpose site, primarily characterized as a cemetery/burial site. The site also contains midden remains, and there is evidence of both short-term settlement, and the presence of a longer occupied village site. The remains found in this location date approximately to 500 B.C. (1500 BP/BCE). Dating information comes particularly from shell beads and their typology. The site therefore seems to date from Intermediate Horizon period. The site was situated on a knoll, rising above the surrounding environment. Artifacts found include stone pestles; chert and obsidian tools (including scrapers, knifes, projectile points, flakes, and cores); shell beads; a large stone mortar, fragmentary hand mortars, a bone awl; animal bone; and fire cracked rock. This is in addition to the burials found. The site records show 45 burials found at the site. Many of the artifacts found were in association with the burials. The site is an important site in terms of religious and cultural significance in the early history of California and may represent both a linguistic and cultural boundary set along the channel which is now called Watsonville Slough.

P-44-000151/CA-SCR-000148. This site has had no finds associated with it, although was reported in 1976 by Frank Marcus of the Northwest Indian Cemetery Protective Association as being an area where Native Americans gathered medicinal plants. Three plants used by Native Americans for medicinal purposes were reportedly recorded here by Frank Marcus. Although not considered an archaeological resource, as such, this would meet the category of a Tribal Cultural Resource (TCR), which are described in more detail in Section 3.17, Tribal Cultural Resources. It is included in this section for completeness, as it is recorded on the NWIC CHRIS system. It is assumed that this site was used by Native Americans prior to or during the Spanish colonization of California, although no dating information is available. The resource boundary is approximate, and as the resource is not a site, is only loosely confined to the general area.

P-44-000159/CA-SCR-000156. This site was recorded in 1954 and contained darkened soil and small quantities of mollusk remains. Thought to be a potential midden, only surface evidence was observed and may be more extensive than observed from a pedestrian survey. The site boundary is assumed from the dark earth.

P-44-000311/CA-SCR-000286. This is a sparsely scattered midden site containing Monterey Chert stone flakes, shell remains, fire cracked stone, and unidentified animal bone. The presumed site boundary was determined by observing the shell remains on the surface which were scattered throughout the site.

A Sacred Lands File (SLF) search was conducted through the NAHC, which was returned with a positive result on March 24, 2022, indicating that the *Costanoan Ohlone Rumsen-Mutsen Tribe* had more information on potential resources in the project vicinity. It was also recommended that the *Amah Mutsun Tribal Band*, *Amah Mutsun Tribal Band of Mission San Juan Bautista*, *Indian Canyon Mutsun Band of Costanoan*, and the *Wuksache Indian Tribe/Eshom Valley Band* be contacted as an extension of the SLF. Emails were sent to the tribes, which included a topographic map of the project area and details of the proposed project undertaking. All of the tribes who did not respond were then contacted by follow-up phone calls.

The representatives of the *Amah Mutsun Tribal Band* and *Costanoan Ohlone Rumsen-Mutsen* responded and requested Native American monitors be present at the site during ground disturbing activities due to known resources in close proximity to the area. Members of the *Amah Mutsun Tribal Band of Mission San Juan Bautista*, *Indian Canyon Mutsun Band of Costanoan*, requested archaeological and Native American monitoring as well as archaeological sensitivity training for construction personnel. The *Costanoan Ohlone Rumsen-Mutsen, Amah Mutsun Tribal Band, and Indian Canyon Mutsun Band of Costanoan* all referenced the Native American burial site across Watsonville Slough and therefore noted the project site's sensitivity for additional resources.

One tribe that did not provide a response were the *Wuksache Indian Tribe/Eshom Valley Band*, who received two emails and a voicemail.

A pedestrian survey was conducted by MIG archaeologist Robert Templar on the proposed project site on February 24, 2022. No evidence of prehistoric or other archaeological resources were noted during the survey. A slight raised area in the northwest corner of the site was noted for its lusher vegetation, although studying recent aerial photography shows that this was the result of earth moving activity associated with the construction of Slough Road West in 2016.

The four archaeological sites are highly indicative of widespread Native American habituation in the project vicinity. With the presence of site P-44-000111/CA-SCR-000107, it is known that long term settlement occurred north of Watsonville Slough, almost adjacent to the project site, and the area had enough religious significance to be used as a burial site. Further evidence of habitation and potential religious significance is in site P-44-000151/CA-SCR-000148, which is stated as being a place where Native Americans gather medicinal plants. However, as suggested in the site report for site P-44-000111/CA-SCR-000107, the current route of Watsonville Slough may represent a cultural divide between the Mutsun and Awaswas speaking Ohlone language group. This is likely not due to the slough itself, but the topography of the area. As shown on the USGS topographic map of Watsonville West, areas north of the slough are situated on slopes, whereas in contrast, south of the slough is completely flat, and would have been marshland at the time of Native settlement. Although the current route of the slough is in a partially engineered channel, it is known that this area was marshy in the prehistoric period, with many channels draining to the ocean, and would have been a less desirable location for settlement.

This theory appears to be supported by a lack of archaeological sites immediately south of Watsonville Slough. No archaeological sites have been recorded in the 0.5-mile study area

situated south of the Watsonville Slough. Additionally, based on maps gathered from the report for the site P-44-000159/CA-SCR-000156, no known archaeological sites are within at least a 0.25 miles strip, running south of Watsonville Slough from the proposed project site to the Pacific Ocean. In contrast, many sites are situated along the north bank, or further north of Watsonville Slough in this area. Although not conclusive, this is suggestive that the project site, being just outside a presumed tribal boundary, is more unlikely to contain prehistoric sites, than the surrounding sites suggest. This corresponds to the natural topography of the area. The topography showing south of the slough as marshland is suggestive that cultural remains are more unlikely to be present, than north of the slough. However, there still exists the potential for archaeological resources to be present. Based on aerial photography from the recent past showing surface level ground disturbance, and on the site visit, it is considered unlikely that surface level resources, if ever present, would remain.

However, based on the above research, buried cultural resources could be present and project excavation could result in the discovery of prehistoric archaeological resources. If archaeological resources connected to site P-44-000111/CA-SCR-000107, or other similar site were present, they would very likely be considered a significant historic resource, eligible for both the CRHR and the NRHP, due to the potential to yield information important to the prehistory of the region.

In the event that project ground-disturbing activities disturb, damage, or destroy previously unknown buried prehistoric features, sites or artifacts, a significant impact could occur. Implementation of Mitigation Measures CUL-1 through CUL-3, below, would reduce potential impacts to undiscovered archeological resources to a less than significant level.

> **Impact CUL-1:** Construction of the project could potentially result in disturbance to unknown archaeological resources.
>
> **Mitigation Measure CUL-1: Conduct Archaeological Sensitivity Training for Construction Personnel.** The project applicant shall retain a qualified professional archaeologist who meets U.S. Secretary of the Interior's Professional Qualifications and Standards to conduct an archaeological sensitivity training for construction personnel prior to commencement of excavation activities. The training session shall be carried out by a cultural resource professional with expertise in archaeology, who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. The Applicant and/or qualified professional archaeologist shall propose a date for scheduling the training at the pre-construction meeting with City staff. The Applicant shall notify the City at least 48 hours before holding the training and keep a log of all attendees. The training session shall include a handout and shall focus on how to identify archaeological resources that may be encountered during earthmoving activities and the procedures to be followed in such an event, the duties of archaeological monitors, and the general steps a qualified professional archaeologist would follow in conducting a salvage investigation, if one is necessary.
>
> **Mitigation Measure CUL-2: Conduct Archaeological Monitoring During Ground Disturbing Phases of Construction.** Ground-disturbing activities beyond surface level soils shall be observed by a qualified archaeological monitor either meeting the Secretary of the Interior's Professional Qualifications Standards, or under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards. Monitoring activities shall be coordinated with a Native American monitor if required under Mitigation Measure CUL-3. If archaeological resources are encountered Mitigation Measure CUL-3 will apply. Archaeological monitoring may be reduced or halted

at the discretion of the monitor as warranted by conditions such as encountering bedrock, ground disturbance is occurring in fill, or other indications that discovery is extremely unlikely. If monitoring is reduced to spot-checking, spot-checking shall occur when ground-disturbance moves to a new location within the project site and when ground disturbance will extend to depths not previously reached, unless those depths are within bedrock.

Mitigation Measure CUL-3: Discovery of cultural, historic, or archaeological resources During Construction. The project applicant shall ensure that if any previously undisturbed cultural, historic, or archaeological resources are uncovered in the course of site preparation, clearing or grading activities that the City of Watsonville Community Development Director is notified and operations within 25 feet of the discovery are halted until such time as a qualified professional archaeologist can be consulted to evaluate the find and recommend appropriate action for collection, recordation, analysis, and reporting. If the find is determined to be significant, appropriate mitigation measures shall be formulated and implemented subject to review and approval by the City of Watsonville Community Development Department.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant Impact with Mitigation Incorporated. As shown above, in question b.), the project is situated within 250 feet of a known Native American prehistoric burial site. Although there is a possibility for the project site to be south of a cultural border and, due to this geography, contain no burials, the evidence for this is not conclusive, and there is the potential for burials connected to site P-44-000111/CA-SCR-000107 to be present within the proposed project. Implementation of Mitigation Measure CUL-4 would reduce potential impacts to undiscovered human remains to a less than significant level.

Impact CUL-4: Project excavation could disturb previously unknown buried archaeological resources and/or human remains.

Mitigation Measure CUL-4: Inadvertent Discovery of Human Remains If human remains of Native American origin are discovered during ground disturbing activities, the project applicant shall comply with state laws relating to the dispositions of Native American burials, which falls within the jurisdiction of the California Native American Heritage Commission (NAHC) (Public Resources Code, Section 5097.98). If human remains are discovered or recognized in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the planning area or any nearby area reasonably suspected to overlie adjacent human remains until:

- The Santa Cruz County Sherriff-Coroner has been informed and has determined that no investigation of the cause of death is required, and
- If the remains are of Native American origin:
    - The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave good as provided in the Public Resources Code, Section 5097.98, or

- The California NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

Implementation of mitigation measures Mitigation Measures CUL-1 through CUL-4 would ensure that the project would not have a significant impact on buried archaeological resources.

3.5.4 References

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3.6 ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

3.6.1 Environmental Setting

Energy consumption is closely tied to the issues of air quality and greenhouse gas (GHG) emissions, as the burning of fossil fuels and natural gas for energy has a negative impact on both, and petroleum and natural gas currently supply most of the energy consumed in California. In general, California's per capita energy consumption is relatively low, in part due to mild weather that reduces energy demand for heating and cooling, and in part due to the government's proactive energy-efficiency programs and standards. According to the California Energy Commission, Californians consumed about 279,510 gigawatt hours (GWh) of electricity and 12,331 million therms of natural gas in 2020 (CEC 2021a and CEC 2021b). The CEC estimates that by 2030, California's electricity consumption will reach between 326,026 GWh and 354,209 GWh with an annual growth rate of 0.99 to 1.59 percent (CEC 2017), and natural gas consumption is expected to reach between 13,207 million and 14,190 million BTU with an annual growth rate of 0.25 to 0.77 percent (CEC 2017).

In 2020, total electricity use in Santa Clara County was 1,180 million kilowatt hours (kWh), including 610 million kWh of consumption for non-residential land uses (CEC 2022a). Natural gas consumption was 52 million therms in 2020, including 19 million therms from non-residential uses (CEC 2022b).

Energy conservation refers to efforts made to reduce energy consumption to preserve resources for the future and reduce pollution. It may involve diversifying energy sources to include renewable energy, such as solar power, wind power, wave power, geothermal power, and tidal power, as well as the adoption of technologies that improve energy efficiency and adoption of green building practices. Energy conservation can be achieved through increases in efficiency in conjunction with decreased energy consumption and/or reduced consumption from conventional energy sources.

3.6.2 Regulatory Setting

Since increased energy efficiency is so closely tied to the State's efforts to reduce GHG emissions and address global climate change, the regulations, policies, and action plans aimed at reducing GHG emissions also promote increased energy efficiency and the transition to renewable energy sources. The U.S. EPA and the State address climate change through numerous pieces of legislation, regulations, planning, policy-making, education, and implementation programs aimed at reducing energy consumption and the production of GHG.

CARB Low Carbon Fuel Standard Regulation

CARB initially approved the LCFS regulation in 2009, identifying it as one of the nine discrete early action measures in the *2008 Scoping Plan* to reduce California's GHG emissions. The LCFS regulation defines a Carbon Intensity, or "CI," reduction target (or standard) for each year, which the rule refers to as the "compliance schedule." The LCFS regulation requires a reduction of at least 10 percent in the CI of California's transportation fuels by 2020 and maintains that target for all subsequent years.

In 2018, CARB approved amendments to the LCFS regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in line with California's 2030 GHG emission reduction target enacted through Senate Bill 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Under the 2018 amendment, the LCFS regulation now requires a reduction of at least 20 percent in CI by 2030 and beyond.

Renewable Portfolio Standard Program

In 2002, California established its Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2017. The *2003 Integrated Energy Policy Report* recommended accelerating that goal to 20 percent by 2010, and the *2004 Energy Report Update* further recommended increasing the target to 33 percent by 2020. The state's *Energy Action Plan* also supported this goal. In 2006 under Senate Bill 107, California's 20 percent by 2010 RPS goal was codified. The legislation required retail sellers of electricity to increase renewable energy purchases by at least one percent each year with a target of 20 percent renewables by 2010. Publicly owned utilities set their own RPS goals, recognizing the intent of the legislature to attain the 20 percent by 2010 target.

On November 17, 2008, Governor Schwarzenegger signed Executive Order S-14-08 requiring "[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed the California Air Resources Board, under its AB 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In October 2015, Governor Brown signed Senate Bill 350 to codify ambitious climate and clean energy goals. One key provision of SB 350 is for retail sellers and publicly owned utilities to procure "half of the state's electricity from renewable sources by 2030."

The State's RPS program was further strengthened by the passage of SB 100 in 2018. SB 100 revised the State's RPS Program to require retail sellers of electricity to serve 50% and 60% of the total kilowatt-hours sold to retail end-use customers be served by renewable energy sources by 2026 and 2030, respectively, and requires 100% of all electricity supplied come from renewable sources by 2045.

Title 24 Building Code Energy Standards

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The CALGreen Code contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to, exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning of projects over 10,000 square feet.

City of Watsonville Climate Action and Adaptation Plan

The City of Watsonville City Council adopted the Climate Action and Adaptation Plan (CAAP) in October 2021. The CAAP identifies 19 strategies, 33 implementation measures, and 61 supporting efforts to help the City achieve its aggressive target of reducing GHG emissions by 80 percent below 1990 levels, by 2030, and to also have net-negative emissions by 2030, as well. As discussed earlier in this section, energy efficiency and GHG emissions are closely related. The CAAP includes measures that affect energy consumption from transportation sources and building energy systems. Specifically, CAAP Measures T5-A, E1-A, and E3-A identify requirements for new discretionary projects that have a quantifiable reduction in energy consumption. See Section 3.7.3 for a full description of CAAP Measures that are potentially applicable to discretionary projects being proposed in the city.

3.6.3 Impact Discussion

Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact. Construction activities associated with the proposed project would require the use of heavy-duty, off-road equipment and construction-related vehicle trips that would combust fuel, primarily diesel and gasoline. Heavy-duty construction equipment would be required to comply with CARB's airborne toxic control measures, which restrict heavy-duty diesel vehicle idling to five minutes. It is estimated that construction activities would consume approximately 62,627 gallons of diesel fuel to power on-site, off-road heavy-duty construction equipment. Worker, vendor, and haul truck trips during construction activities are anticipated to consume 41,726 gallons of gasoline, 29,566 gallons of diesel, and 11,934 kWh of electricity. See Appendix C for fuel consumption calculations, which are based on a fuel consumption factor contained in the CARB Carl Moyer Program Guidelines (2017 Revisions) and fuel consumption rates for on-road vehicles derived from EMFAC2021 V1.0.2 data. Petroleum and electricity use during construction would be temporary and needed to conduct development activities; therefore, it would not be wasteful or inefficient.

Once operational, the project would consume energy in the form of electricity, which would be used to power building systems, appliances, and lighting throughout the site, and in the form of petroleum (gasoline and diesel), which would be used to power trucks used for warehousing purposes. Employee and visitor trips to the site would also consume gasoline and diesel, and some of those trips could consume electricity (if the vehicle in question is electric or a plug-in electric hybrid). As estimated in CalEEMod, the proposed warehouse in anticipated to consume approximately 1,028,598 kWh per year for onsite building operation and lighting. Operational vehicle trips are anticipated to consume approximately 16,264 gallons of gasoline, 259,058 gallons of diesel, and 52,606 kWh of electricity. As described below, operation of the proposed project would not use energy in a wasteful, inefficient, or unnecessary manner.

The proposed project has been designed to minimize the consumption of fossil fuels that would have otherwise been used to power building systems and site lighting. The proposed project would not be connected to natural gas; rather, the building systems and lighting would be entirely powered by electricity. The project would source its electricity from Central Coast Community Energy, and would enroll in the 3C Prime option, meaning that the project site's electricity would be supplied from 100% renewable sources. Further, the project would include a 600-kW solar array on top of the building, which would help reduce demand from off-site sources during base

and peak demand periods. Thus, the project would reduce its reliance on fossil fuels beyond that which is required by the Title 24 Energy Code, and operational mobile sources (e.g., truck and passenger vehicles) would improve from an efficiency standpoint as regulations are implemented and enforced by CARB (i.e., thereby benefiting from actions that would decrease fossil fuel consumption). Further, electrification of the building would serve to reduce fossil fuel consumption from non-Title 24 sources, such as appliances used within the warehouse.

The project would not use energy in a wasteful, inefficient, or unnecessary manner during construction or operation. This impact would be less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The proposed project would not conflict with nor obstruct a state or local plan adopted for the purposes of increasing the amount of renewable energy or energy efficiency. As discussed under response a), the proposed project would be constructed such that it would exceed the latest CALGreen Code (i.e., by not utilizing natural gas in building systems or appliances), and the project would also be consistent with the City's CAAP. Further, relying on electricity (as opposed to natural gas) to power building systems would reduce long-term reliance on non-renewable resources, meaning that the energy sources that project would consume resources from could be regenerated. In doing so, the project is supporting the state's goal of reducing reliance on fossil fuels and achieving its 2045 carbon neutrality goal. No impact would occur.

3.6.4 References

California Energy Commission (CEC) 2017. 2017 Integrated Energy Policy Report. 2017 IEPR Workshops, Notices and Documents. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2017-integrated-energy-policy-report/2017-iepr

2022a. "Electricity Consumption by County." *Electricity Consumption by County.* CEC, Energy Consumption Database. n.d. Accessed February 24, 2022 at http://ecdms.energy.ca.gov/elecbycounty.aspx.

2022b. "Gas Consumption by County." *Gas Consumption by County.* CEC, Energy Consumption Database. n.d. Accessed June 7, 2022 at http://ecdms.energy.ca.gov/gasbycounty.aspx.

3.7 GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? *Note: Refer to Division of Mines and Geology Special Publication 42.*	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

The following discussion is based in part on a Preliminary Geotechnical Engineering Report for the site prepared by Professional Service Industries, Inc. (PSI) dated March 23, 2021. Subsequent memos were prepared to further evaluate foundation recommendations and permeability in proposed detention basin areas.

3.7.1 Environmental Setting

Site Geology

The subject site is located within a large geologic region known as the Coast Ranges geomorphic province, characterized by extensively folded, faulted, and fractured earth materials. These structural features trend in a northwesterly direction and make up the prominent system of northwest-trending mountain ranges separated by straight-sided sediment-filled valleys.

The subject site is situated on the north side of the Pajaro Valley, just south of Watsonville Slough and about 0.8 mile north of the Pajaro River. The subject site is underlain by Holocene-aged (Quaternary) basin deposits (Qb). The site is underlain by approximately 170 feet of alluvium (Qa) with roughly 320 feet of Aromas Red Sands of Allan (Qal) below. Underlying these sands is the Purisima Formation (Tpa).

Subsurface Conditions

Based on a review of the available site topographic maps since 2006, and the subsurface soils encountered in the soil sampling conducted as part of the report, the project site is currently underlain by approximately six to eight feet of imported controlled fill underlain by alluvial deposits. The fills generally consist of stiff to very stiff, moist, lean clays and sandy lean clays. Alluvial deposits generally consist of medium stiff to stiff, moist to saturated, highly plastic clays underlain by very soft to soft highly plastic clays and sandy lean clays to a depth ranging from approximately 70 to 75 feet below the ground surface (bgs). The very soft to soft deposits are generally underlain by dense sands to the maximum depth explored, approximately 111 feet bgs.

Groundwater

Groundwater was initially encountered in several borings at depths ranging from approximately 20 to 30 feet bgs, though it was noted that groundwater levels are difficult to discern due to the mud-rotary drilling method used. Pore pressure dissipation tests, which are considered more reliable, were performed at two locations and localized groundwater was estimated to be at approximately 13.8 and 7.7 feet bgs, respectively at the time of our investigation.

Groundwater was previously reported as shallow as about three to five feet bgs along the south perimeter of the site and seven to nine feet bgs in the northern parts of the site adjacent to the Watsonville Slough which corresponds to elevation 12 feet. Groundwater may be expected to affect the proposed construction for excavations below elevation 12 feet. It is possible that transient, saturated ground conditions at shallower depths could develop due to seasonal precipitations, landscape watering, leaking water lines, or other unforeseen causes. Variations in groundwater levels should be expected seasonally, annually, and from location to location.

Regional Seismicity

Generally, seismicity within California can be attributed to faulting due to regional tectonic movement. This includes the Zayante-Vergeles fault zone, the San Andreas fault, and most parallel and subparallel faulting within the State. The portion of California which includes the subject site is considered seismically active. Seismic hazards on the site can be attributed to potential ground shaking resulting from earthquake events along nearby or more distant faults.

According to regional geologic literature, the closest known late Quaternary faults are the Zayante-Vergeles fault zone and the San Andreas fault, located approximately 3.5 and 6.2 miles east of the site, respectively. The USGS Quaternary Fault Database indicates that the closest

mapped traces of the Zayante-Vergeles fault zone and San Andreas fault are located about 2.8 and 5.6 miles east of the subject site, respectively. Several potentially active and pre-Quaternary faults also occur within the regional vicinity. The site is subject to a Maximum Magnitude Event of 7.9 magnitude along the San Andras fault.

Tsunamis and Seiches

Potential for inundation by tsunamis (seismic or "tidal waves") or seiches (waves in confined bodies of water) are considered low based on a review of the most current Tsunami hazard maps.

3.7.2 Regulatory Setting

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act regulates development in California near known active faults due to hazards associated with surface fault ruptures. There are no Alquist-Priolo earthquake fault zones on the project site (California Geological Survey, 1974).

Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act was passed in 1990 following the Loma Prieta earthquake to reduce threats to public health and safety and to minimize property damage caused by earthquakes. The act directs the U.S. Department of Conservation to identify and map areas prone to the earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The act requires site-specific geotechnical investigations to identify potential seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

California Building Code

The 2019 California Building Codes (CBC) covers grading and other geotechnical issues, building specifications, and non-building structures.

California Public Resources Code - Paleontology

Section 5097 of the Public Resources Code specifies the procedures to be followed in the event of the unexpected discovery of historic, archaeological, and paleontological resources, including human remains, historic or prehistoric resources, paleontological resources on nonfederal land. The disposition of disposition of paleontological discoveries falls within the jurisdiction of the California Native American Heritage Commission (NAHC). Section 5097.5 of the Code states the following:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

City of Watsonville General Plan

The following are relevant policies within the City's Public Safety Element of the 2005 General Plan:

Policy 12.B.1 Geologic Review – The City may require a geo-technical report prepared by a registered professional prior to the issuance of a building permit. 12.B.2 Structural Design – The City shall place structural design conditions on new development to ensure that recommendations of the geo-technical evaluation are implemented.

Policy 12.B.2 Structural Design – The City shall place structural design conditions on new development to ensure that recommendations of the geo-technical evaluation are implemented.

Policy 12.C.1 Risk Mitigation – The City shall identify and mitigate to an acceptable level of risk new development proposed in areas with geologic, seismic, flood, or other environmental constraints

Policy 12.C.2 Soils Investigation – The City shall require a soils investigation report prior to new development on sites deemed to have a high potential for soil erosion, landslide, or other soil-related constraints.

Policy 12.C.3 Foundation Design – The City shall require that new development provide for appropriate foundation design to comply with city building standards and recommendations of the soils investigation

Policy 12.C.5 Final Soil Grade – The City shall require that soil grading blend with natural topography and that final cut slopes shall be no steeper than three horizontal to one vertical (33 percent).

3.7.3 Impact Discussion

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other significant evidence of a known fault?

No Impact. According to the Alquist-Priolo Special Studies Zones Act of 1972 (revised 1994), active faults are those that have been shown to display surface rupture during the last 11,000 years (i.e., Holocene time). The project site is not currently situated within a mapped Earthquake Fault Zone there are no mapped faults crossing the site on readily available resources.

ii) Strong seismic ground shaking?

Less than Significant Impact. The site will be affected by seismic shaking as a result of earthquakes on major active faults located throughout the northern California area. As part of the current, 2019 California Building Code (CBC), the design of structures must consider dynamic forces resulting from seismic events. These forces are dependent upon the magnitude of the earthquake event as well as the properties of the soils that underlie the site. As part of the procedure to evaluate seismic forces, the code requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface. The Preliminary Geotechnical Investigation report determined subsurface conditions within the site are consistent within the characteristics of Site Class D (stiff soil). A peak ground acceleration is reported at 1. 08g based on U.S. Seismic Design Maps. The project is required to adhere to the recommendations contained in the Preliminary Geotechnical Investigation report and all subsequent Geotechnical memos affecting project

design and construction. Adherence to the recommendations of the site-specific report would result in a less than significant impact due to strong seismic groundshaking.

iii) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. Liquefaction occurs when loose, saturated sandy soils lose strength and flow like a liquid during earthquake shaking. Ground settlement often accompanies liquefaction. Soils most susceptible to liquefaction are saturated, loose, silty sands, and uniformly graded sands. The proposed project is located in an identified liquefaction zone (Watsonville 2012). The Preliminary Geotechnical Investigation included an analysis of the liquefaction potential. The evaluation found the interbedded layers of silt and clay, having relatively thin layers of sand generally between approximately 18 to 48 feet bgs, show minimal liquefaction during a maximum considered earthquake event. The analysis determined a low potential for impacts to near surface facilities as a result of sand boils or ratcheting of shallow foundations constructed in the proposed compacted fill. Total liquefaction-induced settlement was found to be approximately ½ inch at the proposed building. Estimated differential settlement is approximately half of the total settlement which may occur within the footprint of structures supported on shallow foundations in lieu of ground improvement.

iv) Landslides?

No Impact. Earthquake-induced landslides and slope stability risks are low because the site is relatively flat. Areas surrounding the site are also flat.

b) Result in significant soil erosion or the loss of topsoil?

Less Than Significant Impact. Construction of the project would disturb the ground and expose soils, thereby increasing the potential for wind- and water-related erosion and sedimentation at the site until the completion of construction and ground disturbance is stabilized. As discussed in Section 3.10 Hydrology and Water Quality, the proposed project would implement erosion control measures during and after construction consistent with the Construction General Permit and ESCP requirements. Compliance with these requirements would ensure the project would not result in substantial soil erosion or the loss of topsoil.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact. Lateral spreading involves the horizontal displacement of large volumes of soil toward a slope or free face as the result of ground movement within due to inertial and gravitational forces during the design earthquake. Differential internal movement within the spreading mass usually creates surface features such as ground cracks or fissures, scarps, and grabens in the overlying unsaturated or non-liquefied soils.

Lateral displacement may range from a few inches to many feet depending on soil conditions, the steepness of the slope or height of the free face, and the magnitude, duration, and epicentral distance of the earthquake. Associated differential vertical movements, or ground surface subsidence, may range up to about half of the total horizontal movement.

Estimated lateral spread towards Watsonville Slough is generally on the order of 5 to 28 inches. Larger lateral movements were also estimated; however, the Preliminary Geotechnical Investigation report determined ground improvements performed to construct the embankment

for Manabe Ow Road between the project site and the Watsonville Slough will tend to limit deformations to the north. Additionally, the project includes a surcharge fill program to reduce lateral spread potential at the site. Therefore, the impact is considered less than significant.

d) Be located on expansive soil, as noted in the 2010 California Building Code, creating substantial direct or indirect risks to life or property?

Less Than Significant Impact. Many of the previous geotechnical studies of the project site noted expansive soils at the site. By adhering to the recommendations included in the Preliminary Geotechnical Investigation and constructing the building in accordance with standard engineering practices and with the applicable chapters of the California Building Code, the proposed project would not result in a significant impact as a result of the soils underlying the site.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The project proposes construction of a warehouse distribution facility. No septic systems or alternative wastewater disposal system would be constructed or used; therefore, no impacts related to septic systems would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant Impact. Paleontological resources, or fossils, are any evidence of past life, including remains, traces, and imprints of once-living organisms preserved in rocks and sediments and provide information about the history of life on earth dating back billions of years ago. According to the Society of Vertebrate Paleontology, significant paleontological resources include fossils of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils. Fossils are nonrenewable paleontological resources that are afforded protection by federal, State, and local environmental laws and regulations (Paleontological Resources Preservation Act). Accordingly, the potential of a particular area to produce a valuable paleontological resource is largely dependent on the geologic age and origin of the underlying rocks.

The Preliminary Geotechnical Report notes that the project site is currently underlain by approximately six to eight feet of imported controlled fill underlain by Holocene era alluvial deposits. These deposits, due to their age (within the last 12,000 years) are unlikely to yield significant paleontological resources. Implementation of the Standard Design and Construction measure would ensure that the proposed project would not significantly impact paleontological resources.

3.7.4 References

Professional Service Industries, Inc. 2021. Preliminary Geotechnical Engineering Report for the Proposed Industrial Park Development (West Parcel) SWC Ohlone Parkway and Manabe Ow Road, Watsonville, CA. March 23.

City of Watsonville. Liquefaction Potential Map. Watsonville GIS Center. February 5. Accessed August 4, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/2564/Liquefaction-Potential-Map?bidId=

3.8 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.8.1 Environmental Setting

Gases that trap heat in the atmosphere and affect regulation of the Earth's temperature are known as greenhouse gases (GHGs). Many chemical compounds found in the earth's atmosphere exhibit the GHG property. GHGs allow sunlight to enter the atmosphere freely. When sunlight strikes the earth's surface, it is either absorbed or reflected back toward space. Earth that has absorbed sunlight warms up and emits infrared radiation toward space. GHGs absorb this infrared radiation and "trap" the energy in the earth's atmosphere. Entrapment of too much infrared radiation produces an effect commonly referred to as "Global Warming," although the term "Global Climate Change" is preferred because effects are not just limited to higher global temperatures.

GHGs that contribute to climate regulation are a different type of pollutant than criteria or hazardous air pollutants because climate regulation is global in scale, both in terms of causes and effects. Some GHGs are emitted to the atmosphere naturally by biological and geological processes such as evaporation (water vapor), aerobic respiration (carbon dioxide), and off-gassing from low oxygen environments such as swamps or exposed permafrost (methane); however, GHG emissions from human activities such as fuel combustion (e.g., carbon dioxide) and refrigerants use (e.g., hydrofluorocarbons) significantly contribute to overall GHG concentrations in the atmosphere, climate regulation, and global climate change.

Human production of GHG has increased steadily since pre-industrial times (approximately pre-1880) and atmospheric carbon dioxide concentrations have increased from a pre-industrial value of 280 parts per million (ppm) in the early 1800's to 420 ppm in May 2022 (NOAA, 2022). The effects of increased GHG concentrations in the atmosphere include increasing temperature, shifts in precipitation patterns and amounts, reduced ice and snow cover, sea level rise, and acidification of oceans. These effects in turn will impact food and water supplies, infrastructure, ecosystems, and overall public health and welfare.

The 1997 United Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific GHGs – carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride – and two groups of gases – hydrofluorocarbons and perfluorocarbons. These GHGs are the primary GHGs emitted into the atmosphere by human activities. The six common GHGs are described below.

- *Carbon Dioxide (CO_2)* is released to the atmosphere when fossil fuels (oil, gasoline, diesel, natural gas, and coal), solid waste, and wood or wood products are burned.
- *Methane (CH_4)* is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic waste in municipal solid waste landfills and the raising of livestock.

- *Nitrous oxide (N_2O)* is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.
- *Sulfur hexafluoride (SF_6)* is commonly used as an electrical insulator in high voltage electrical transmission and distribution equipment such as circuit breakers, substations, and transmission switchgear. Releases of SF_6 occur during maintenance and servicing as well as from leaks of electrical equipment.
- *Hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs)* are generated in a variety of industrial processes.

GHG emissions from human activities contribute to overall GHG concentrations in the atmosphere and the corresponding effects of global climate change (e.g., rising temperatures, increased severe weather events such as drought and flooding). GHGs can remain in the atmosphere long after they are emitted. The potential for a GHG to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO_2, which has a GWP of one. By comparison, CH_4 has a GWP of 25, which means that one molecule of CH_4 has 25 times the effect on global warming as one molecule of CO_2. Multiplying the estimated emissions for non-CO_2 GHGs by their GWP determines their carbon dioxide equivalent (CO_2e), which enables a project's combined global warming potential to be expressed in terms of mass CO_2 emissions. GHG emissions are often discussed in terms of Metric Tons of CO_2e, or $MTCO_2e$.

3.8.2 Regulatory Setting

California Air Resources Board (CARB) is the lead agency for implementing Assembly Bill (AB) 32, the California Global Warming Solutions Act adopted by the Legislature in 2006. AB 32 requires the CARB to prepare a Scoping Plan containing the main strategies that will be used to achieve reductions in GHG emissions in California.

Executive Order B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, sets a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. By directing state agencies to take measures consistent with their existing authority to reduce GHG emissions, this order establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius.

To reinforce the goals established through Executive Order (EO) B-30-15, Governor Brown went on to sign SB 32 and AB 197 on September 8, 2016. Senate Bill 32 made the GHG reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 a requirement as opposed to a goal. Assembly Bill 197 gives the Legislature additional authority over CARB to ensure the most successful strategies for lowering emissions are implemented, and requires CARB to, "protect the state's most impacted and disadvantaged communities …[and] consider the social costs of the emissions of greenhouse gases."

Governor Brown issued EO B-15-18 on September 10, 2018, which directs the State to achieve carbon neutrality as soon as possible, no later than 2045, and achieve and maintain net negative emissions thereafter.

CARB 2017 Scoping Plan

On December 14, 2017 CARB adopted the second update to the Scoping Plan, the *2017 Climate Change Scoping Plan Update* (*2017 Scoping Plan Update*; CARB 2017). The primary objective of the *2017 Scoping Plan Update* is to identify the measures needed to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030), as established under Executive Order B-30-15 and SB 32. The *2017 Scoping Plan Update* identifies an increasing need for coordination among state, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and

decisions. It notes emission reduction targets set by more than one hundred local jurisdictions in the state could result in emissions reductions of up to 45 $MMTCO_2E$ and 83 $MMTCO_2E$ by 2020 and 2050, respectively. To achieve these goals, the *2017 Scoping Plan Update* includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050.

2040 Metropolitan Transportation Planning/Sustainable Communities Strategy

AMBAG is the Metropolitan Planning Organization responsible for preparing the region's Sustainable Communities Strategy (SCS), in compliance with SB 375. The SCS is developed as part of regional transportation planning and is incorporated in the Metropolitan Transportation Plan prepared for the AMBAG region. The most recent plan adopted by AMBAG is the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (AMBAG, 2018). The 2040 MTP/SCS sets forth a forecasted development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, is intended to reduce GHG emissions from passenger vehicles and light duty trucks to achieve the regional GHG reduction targets set by CARB.

CARB set targets for the AMBAG region as "not to exceed 2005 per capita levels of GHGs" by 2020 and a five percent reduction from 2005 levels by 2035. These targets applied to the AMBAG region as a whole for all on-road light duty trucks and passenger vehicles emissions, and not to individual cities or sub-regions. Therefore, AMBAG, through the 2040 MTP/SCS, must maintain or reduce these levels to meet the 2020 target and reduce these levels to meet the 2035 targets.

Monterey Bay Air Resources District

The Monterey Bay Air Resources District (MBARD), as the regional air agency for the Basin, has air-permitting authority in Santa Cruz County. As of June 2022, MBARD has not adopted recommended GHG significance thresholds applicable to development projects, and instead recommends the use of GHG thresholds adopted by other air districts in California, such as the Sacramento Metropolitan Air Quality Management District and the Bay Area Air Quality Management District (BAAQMD).

On April 20, 2022, the BAAQMD adopted new thresholds of significance for GHG emissions that address emissions through the Year 2030. For project-level assessments, the BAAQMD's updated GHG thresholds provide two options for assessing the significance of a project's GHG emissions, as presented below.

A. Projects must include, at a minimum, the following project design elements:
    1. Buildings
        a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
        b. The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.
    2. Transportation
        a. Achieve compliance with electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.
        b. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan
        c. (currently 15 percent) or meet a locally adopted Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:

i. Residential projects: 15 percent below the existing VMT per capita
ii. Office projects: 15 percent below the existing VMT per employee
iii. Retail projects: no net increase in existing VMT

B. Be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

City of Watsonville Climate Action and Adaptation Plan

The City of Watsonville City Council adopted the Climate Action and Adaptation Plan (CAAP) in October 2021. The CAAP identifies 19 strategies, 33 implementation measures, and 61 supporting efforts to help the City achieve its aggressive target of reducing GHG emissions by 80 percent below 1990 levels, by 2030, and to also have net-negative emissions by 2030, as well. The CAAP Measures primarily focus on the transportation, energy, wastewater, solid waste sectors, with additional, minor reductions coming from new green space. While many of the CAAP Measures focus on actions the City would undertake, a total of 11 measures are relevant and potentially applicable to discretionary projects that are being proposed within the city. These potentially applicable CAAP Measures include the following:

- **Measure T2-A: New Pedestrian Improvements.** Require new development projects, residential and non-residential, to provide pedestrian improvements along street frontages; and strongly encourage connection to the nearest existing pedestrian facilities, such as sidewalks or trails. Developments shall also include internal pedestrian connections between all uses.
- **Measure T2-B: Pedestrian and Cyclist Multimodal Enhancements.** Improve roadway segments, intersections, and bikeways to implement multimodal enhancements for pedestrian and cyclist comfort and safety along City-maintained public roads by improving five centerline miles of roadway segments and 100 intersections by 2030.

  Projects may include but not be limited to the following projects identified for Watsonville in the AMBAG 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS):

  - Traffic calming and greenway features on 2nd Street/Maple Avenue and 5th Street from Lincoln Street to Walker Street
  - Bike lane improvements to Rodriguez Street (Main Street to Riverside Drive)
  - Addition of sharrows to Union/Brennan (Freedom Boulevard to Riverside Drive)
  - Improvement to the crosswalks on Union Street/Brennan Street
  - Pedestrian and bicycle enhancements on Main Street (Freedom Boulevard to Riverside Drive) and Freedom Boulevard (Green Valley Road to Davis Avenue)
  - Exploration of implementing universal streets in the Downtown Area
  - Complete streets improvements to Main Street (East Beach Street to Freedom Boulevard)
  - Construction of pedestrian/bicycle bridge over Highway 1
  - Installation of a roundabout to replace the currently signalized intersection at Main Street (Highway 152)/Freedom Boulevard with safety considerations for bike/pedestrian improvements
  - Freedom Boulevard reconstruction (Alta Vista Avenue to Green Valley Road) for pedestrian improvements
- **Measure T2-C: Trails and Bicycle Master Plan.** New pedestrian and bicycle infrastructure may include, but not be limited to: Coastal Rail Trail Segments 17 and 18, Lee Road Trail, Pajaro Valley High School Connector Trail, Pajaro River Levee Trail, and projects identified in the AMBAG 2040 MTP/SCS. Additionally, there may be bicycle improvements for Harkins Slough Road, Green Valley Road, State Route 129, and State

Route 152. Pedestrian improvements may include sidewalk infill on Harkins Slough Road and Main Street, pedestrian bridge over Highway 1 to Pajaro Valley High School, and various intersection improvements.

- **Measure T5-A: Commute Trip Reduction Programs.** Update the City's Green Business Program to include commute trip reduction programs. Provide incentives and education to existing and future employers to participate in the program, particularly to implement commute trip reduction programs. The City shall track participating businesses to achieve a 20 percent participation City-wide. Commute trip reduction programs may include but not be limited to ride-sharing programs, subsidized transit, vanpool/shuttles, and alternative work schedules.
- **Measure T5-B: End-of-Trip Facilities.** Update Watsonville Municipal Code, Section 14-17.113, to require new non-residential development to provide end-of-trip facilities for employee use in addition to bicycle parking. End-of-trip facilities will include bike parking, bike lockers, showers, and personal lockers to the extent feasible.
- **Measure T5-F: Active Transportation Routes to School.** Continue to implement the Complete Streets to Schools Plan to improve active transportation routes to schools to increase use of active transportation for school commutes by 5 percent by 2030. Proposed improvements include but are not limited to new sidewalks, improved signage and street markers, sidewalk improvements, lighting improvements, and crosswalk improvements.
- **Measure E1-A: Natural Gas Reduction in New Development.** Require a 50 percent reduction in natural gas consumption compared to business- as-usual (BAU) in all new development through electric-only development and installation of electric or more efficient natural gas home heating and cooling systems, appliances, or water heaters. Explore implementation of an all-electric ordinance to achieve all-electric new development by 2030.
- **Measure E3-A: 3CE Customer Participation.** Increase participation in 3CE Prime, with the goal of 50 percent of all residential and non-residential customers choosing 3CE Prime by 2030.

  3CE is a Community Choice Energy agency established by local communities to source clean and renewable electricity while retaining the utility provider's traditional role delivering power and maintaining electric infrastructure. 3CE's objective is to reduce GHG emissions through local control of utility scale renewable electricity generation provided at competitive rates. The 3CE Prime option provides carbon-free electricity.
- **Measure E4-A: Cool Roofs for New Development.** Require installation of cool roof technology for new commercial, municipal, and multi-family residential projects to achieve at least 50 percent cool roofs in new development. A cool roof treatment, green space, or photovoltaic panels would qualify for compliance with this measure.
- **Measure SW1-A: Organic Waste Diversion.** Continue to expand and promote local composting and food waste diversion programs in accordance with SB [Senate Bill] 1383 to achieve 75 percent diversion of all organic waste by 2030.
- **Measure NW1-B: Tree Planting.** Continue to implement the Watsonville Urban Greening Plan, with the goal of planting 300 trees per year.

The CAAP is a "qualified" GHG emissions reduction plan pursuant to CEQA Guidelines Section 15183.5 and, thusly, projects that demonstrate consistency with the CAAP can streamline their analysis of GHG emissions under CEQA. The City utilizes consistency with the CAAP as CEQA threshold of significance; projects that demonstrate consistency with the CAAP are not considered to have a cumulatively considerable impact related to GHG emissions, and additional project-specific GHG analysis is not required.

3.8.3 Impact Discussion

Global climate change is the result of GHG emissions worldwide; individual projects do not generate enough GHG emissions to influence global climate change. Thus, the analysis of GHG emissions is by nature a cumulative analysis focused on whether an individual project's contribution to global climate change is cumulatively considerable.

a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

b) **Conflict with an applicable, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

Less Than Significant Impact. The proposed project would generate GHG emissions from both short-term construction and long-term operational activities. Construction activities would generate GHG emissions primarily from equipment fuel combustion as well as worker, vendor, and haul trips to and from heavy-duty off-road equipment operating within the project site during site preparation, grading, building construction, paving, and architectural coating activities. Construction activities would cease to emit GHGs upon completion, unlike operational emissions that continue year after year until the commercial building constructed as part of project closes or ceases operation. Once operational, the proposed project would generate GHG emissions from the area, energy, and mobile sources described in Section 3.3.3, as well as electricity consumption, water use and wastewater generation, and solid waste generation.

As described under Section 3.8.3, MBARD does not have adopted GHG significance thresholds but rather recommends utilizing the significance thresholds of other air districts, such as the BAAQMD. Accordingly, this analysis utilizes a project-consistency analysis with the City's CAAP as the basis for assessing the significance of the proposed project's GHG emissions. This approach is consistent with Option B of the BAAQMD's GHG emissions significance thresholds, which were adopted in April 2022 and address GHG emission through Year 2030, and with Guidelines Section 15183.5(b). **Error! Reference source not found.** below presents the project's consistency analysis with the CAAP; see also Appendix D for the project's CAAP Consistency Checklist, which is used by the City to track project compliance with CAAP Measures.

Table 3.8-1 Project Consistency Analysis with CAAP

CAAP Measure	Consistency Analysis
Measure T2-1: New Pedestrian Improvements & Measure T2-B: Pedestrian and Cyclist Multimodal Enhancements	*Consistent.* The project would be located at the junction of Slough Road West and Manabe Ow Road. Pedestrian walkways exist along the portions of the project site that would be adjacent to Slough Road West / Manabe Ow Road. These existing pedestrian facilities would remain under implementation of the project, and the project site would connect to them via driveways running in a west-east orientation on the northwest side of the project site, and in a north-south orientation on the eastern side of the project site. The project site would also provide decorative entry signs at these entry sites, and short- and long-term bike parking to the northeast of the building and eastern side of the building, respectively.
Measure T2-C: Trails and Bicycle Master Plan	*Consistent.* The project would not conflict with the future implementation of identified enhancements in the AMBAG 2040 MTP/SCS. No new roadway improvements near the project site are needed, in that (a) the existing intersection at Slough Road

Table 3.8-1 Project Consistency Analysis with CAAP	
CAAP Measure	**Consistency Analysis**
	West / Manabe Ow Road has ADA compliant ramps and (b) the portions of Slough Road West and Manabe Ow Road along the project frontage have a bike lane.
Measure T5-A: Commute Trip Reduction Programs	*Consistent.* The proposed warehouse would implement a TDM program, which would reduce VMT by approximately 15 percent, and address an additional approximately 6.9 percent of its VMT via a VMT Banking Fee. Cumulatively, the project would address approximately 21.9 percent of its VMT through TDM Measures and VMT Banking Fees. The TDM Measures proposed for the project include a rideshare program, mandatory travel behavior change program, preferential carpool parking spaces, emergency ride home program, alternative work schedule, telecommuting, and bicycle parking per code and showers / changing rooms.
Measure T5-B: End-of-Trip Facilities	*Consistent*. The project plans include the installation of a 10 short-term bike stalls to the northeast of the building and 10 long-term bike lockers on the eastern side of the building. Further, shower facilities and an employee gym would be provided near the northeast corner of the building's first floor.
Measure T5-F: Active Transportation Routes to School	*Not Applicable*. The project involves the development of a warehouse. As such, the project would provide neither dwelling units nor school-age children.
Measure E1-A: Natural Gas Reduction in New Development	*Consistent*. Natural gas will not be brought into the site from the street. No gas fired equipment nor gas appliances in the project. In addition, unit space heating would be powered by electricity.
Measure E3-A: 3CE Customer Participation	*Consistent.* The Project would utilize 3CE Prime, and provide a 600-kW solar system on the roof of the warehouse.
Measure E4-A: Cool Roofs for New Development	*Consistent*. As shown on the project plans, the building would be constructed of single ply roof with reflective membrane and provide up to 35,000 square feet of space for solar panels.
Measure SW1-A: Organic Waste Diversion	*Consistent*. The project would implement an organic waste diversion program as part of its solid waste service. The project's organic waste diversion program would be dependent on the volume of solid and organic waste generated by the facility and the facility's eligibility for participation in City and/or waste hauler organic waste programs. The final program would consist of either: 1) Participation in the City's food scraps collection program; or 2) Development of an on-site composting program.
Measure NW1-B: Tree Planting	*Consistent*. The project's planting plan identifies 103,974 square feet of landscaped areas. The site is generally void of trees; thus, the project would increase the amount of greenspace at the site.

As shown in Table 3.8-1, the project would be consistent with applicable CAAP Measures, and therefore would not conflict with it. Accordingly, the project meets the significance criteria maintained by the BAAQMD and the project is eligible for GHG emission streamlined review under Guidelines Section 15183.5(b). It should further be highlighted that the project would not construct natural gas infrastructure to the project site, and therefore would not use natural gas for building

systems or appliance use, would enroll in the 3CE prime electricity options, which provides electricity generated from 100% renewable sources, and would install a 600-kW solar array on the top of the building. Effectively, these measures would reduce the building's GHG emissions to zero, and possibly net negative, due to the solar array providing electricity back to the grid. Foregoing the construction of natural gas infrastructure to new development has been identified as a critical element to achieving the State's carbon neutrality goal by 2045 (CEC 2021). As described below, the Project would also be consistent with the CARB 2017 Scoping Plan and AMBAG 2040 MTP/SCS.

The 2017 Scoping Plan is CARB's primary document used to ensure State GHG reduction goals are met. The plan identifies an increasing need for coordination among State, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and decisions. The major elements of the 2017 Climate Change Scoping Plan, which is designed to achieve the State's 2030 GHG reduction goal include:

- Continued implementation of SB 375.
- Implementing and/or increase the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Nearly all of the specific measures identified in the 2017 Climate Change Scoping Plan would be implemented at the state level, with CARB and/or another state or regional agency having the primary responsibility for achieving required GHG reductions. The proposed project, therefore, would not directly conflict with any of the specific measures identified in the 2017 Climate Change Scoping Plan. The project is consistent with vehicle miles traveled (VMT) guidelines outlined in Senate Bill (SB) 743 and discussed in Section 3.17, Transportation.

Regarding consistency with the AMBAG 2040 MTP/SCS, as described under Section 3.14, Population and Housing, the proposed project is within the growth forecasts of the 2040 MTP/SCS. Therefore, the growth (and associated traffic) facilitated under implementation of the proposed project has been accounted for in the 2040 MTP/SCS's growth projections, and the project would be consistent with the 2040 MTP/SCS. Further, as described earlier, the project is consistent with VMT guidelines outlined in SB 743. The project would not impede any regional or local transportation projects identified in the 2040 MTP/SCS (see Table 3.8-1, Measure T2-C), would implement a TDM Program to address approximately 21.9 percent of the Project's VMT (see Table 3.8-1, Measure T5-A), and would include facilities that would encourage non-vehicular modes of transportation (see Table 3.8-1, Measure T5-B). The project would be consistent with the AMBAG 2040 MTP/SCS.

As described above, the project would be consistent with the City's CAAP, the CARB 2017 Scoping Plan, and AMBAG 2040 MTP/SCS. The project would generate GHG emissions but not in a manner that they would have a significant effect on the environment, because it is consistent with plans adopted at the local-, regional-, and state-level for the purposes of reducing GHG emissions. This impact would be less than significant.

3.8.4 References

Association of Monterey Bay Area Governments (AMBAG), 2018. 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy.

Bay Area Air Quality Management District (BAAQMD) 2022. *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*. San Francisco, CA. April 2022.

California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Available at: https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed March 8, 2022).

California Energy Commission. 2021. *Final Commission Report: California Building Decarbonization Assessment*. August 2021 Publication Number CEC-400-2021-006-CMF.

City of Watsonville, 2021. City of Watsonville 2030 Climate Action and Adaptation Plan (CAAP). October 2021.

National Oceanic and Atmospheric Administration (NOAA). 2022. "Mauna Loa CO_2 Monthly Mean Data." *Trends in Atmospheric Carbon Dioxide*. NOAA, Earth System Research Laboratory, Global Monitoring Division. June 6, 2022. Web. Accessed June 8, 2022. http://www.esrl.noaa.gov/gmd/ccgg/trends/.

3.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

3.9.1 Environmental Setting

The project site is located adjacent on land that was previously used for agriculture. Commercial and industrial uses are located to the south and east of the site off of West Beach Street and Ohlone Parkway. To the north, is Watsonville Slough and residential uses beyond. To the west is Highway 1 and commercial and industrial uses

A review of readily available regulatory databases did not reveal active hazardous materials or waste cleanup cases within the proposed project footprint. The State Water Resources Control Board's GeoTracker database identifies 10 sites within 1,000 feet of the project site as former leaking underground storage tank (LUST) cleanup sites with a "Completed – Case Closed" status. These include:

- Big Creek Lumber Co., 1400 Beach Street W. Regional Board Case # 2496
- Little Lake Industries, 1340 Beach Street W. Regional Board Case # 640
- Tom Rosewall & Sons, 1300 Beach Street W. Regional Board Case # 488
- A. L. Lease Company, 1220 Beach Street W. Regional Board Case #602
- Duc Housing Partners, Inc., 425 Errington Road, Regional Board Case #3303

- Statewide Properties, 120 Lee Road. Regional Board #481
- Unocal Bulk Plant #846 Regional Board 3042
- SC Fuels 103 Lee Road. Loc Case #: RO0000352
- Former Chevron Bulk Plant #100, RB Case # 924

The Department of Toxic Substances Control EnviroStor database noted one closed Hazardous Waste - Resource Conservation and Recovery Act site:

- West Coast Circuits, 1080 West Beach Street. Closed in 1994. The site used to manufacture printed circuit boards. One authorized storage unit was clean closed in 1994. Subsequent sampling in 2002 revealed contaminants associated with previous plating operations did not impact soil underneath the plating area. It was determined no further action was needed.

One active (Open – Site Assessment) site is present within 1,000 feet of the site:

- Sturdy Oil Card Lock, 1110 West Beach Street. Case # Ro0000354. A release of diesel to soil was noted in 2015 and a corrective action work plan for soil excavation and soil and groundwater characterization was prepared and approved by the Santa Cruz County Environmental Health. Santa Cruz County Environmental Health issued a letter dated August 16, 2019 recommended the site be considered for case closure pending four subsequent quarters of groundwater monitoring to further assess the site for closure. Quarterly monitoring reports were submitted as requested, however no further correspondence is noted in the file.

3.9.2 Regulatory Setting

Federal

United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) was created in 1970 to serve as a single source collection of all federal research, monitoring, standard-setting, and enforcement activities to make sure there is appropriate protection of the environment. The EPA's duty is to create and enforce regulations that protect the natural environment and apply the laws passed by Congress. The EPA is also accountable for establishing national criteria for various environmental programs and enforcing compliance.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) enacted in 1976 governs the disposal of solid waste and hazardous materials. The Resource Conservation and Recovery Act gives the EPA the power to control the generation, transportation, treatment, storage, and disposal of hazardous substances that cannot be disposed of in ordinary landfills. It also allows for each state to apply their own hazardous waste programs instead of implementing the federal program on the

condition that the state's program is just as strict in its requirements. This state program must be permitted by the EPA in order to be used.

State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) was established in 1991 and is comprised of: the California Air Resources Board, the State Water Resources Control Board, the Regional Water Quality Control Board, CalRecycle, the Department of Toxic Substances Control, the Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation. This integrated group amalgamates all of California's environmental authority agencies into one and has led the state of California in developing and applying numerous progressive environmental policies in America. The primary goal of the Cal/EPA is to restore, protect, and enhance the environment.

Regional Water Quality Control Board

The RWQCB oversees cases involving groundwater contamination within the San Francisco Bay Area from Spills, Leaks, Incidents and Clean-up (SLIC) cases while the County of Santa Clara's Department of Environmental Health would oversee most leaking underground storage tank (LUST) cases. In the incidence of a spill at a project site, the applicant would notify the County of Santa Clara and a lead regulator (County, RWQCB or DTSC) would be determined.

Cortese List

The Cortese list was authorized by the state legislature in 1985. A list of several types of hazardous materials is gathered by a few agencies as directed by the statute.

Government Code Section 65962.5. (a) The Department of Toxic Substances Control shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following:

1. All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.

2. All land designated as hazardous waste property or border zone property pursuant to Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code.

3. All information received by the Department of Toxic Substances Control pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land.

4. All sites listed pursuant to Section 25356 of the Health and Safety Code.

All sites included in the Abandoned Site Assessment Program. Government Code Section 65962.5. (c) The State Water Resources Control Board shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection, a list of all of the following:

1. All underground storage tanks for which an unauthorized release report is filed pursuant to Section 25295 of the Health and Safety Code.

2. All solid waste disposal facilities from which there is a migration of hazardous waste and for which a California regional water quality control board has notified the Department of Toxic Substances Control pursuant to subdivision (e) of Section 13273 of the Water Code.

3. All cease and desist orders issued after January 1, 1986, pursuant to Section 13301 of the Water Code, and all cleanup or abatement orders issued after January 1, 1986, pursuant to Section 13304 of the Water Code, that concern the discharge of wastes that are hazardous materials.

The proposed project site is not on the Hazardous Waste and Substances Sites (Cortese) List.[3]

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC), a department of the Cal/EPA, is the primary agency in California for regulating hazardous waste, cleaning up existing contamination, and finding ways to reduce the amount of hazardous waste produced. The DTSC regulates hazardous waste primarily under the authority of the Federal Resource Conservation and Recovery Act and the California Health and Safety Code (primarily Division 20, Chapters 6.5 through 10.6, and Title 22, Division 4.5). Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

Local

Local Hazard Mitigation Plan

A Local Hazard Mitigation Plan (LHMP) identifies potential local natural hazards and then identifies and prioritizes vulnerable areas in the local community. The purpose of an LHMP is to help communities be prepared in case of natural disasters and other hazards, as well as to prepare for recovery after such events. An LHMP can help protect the public and City infrastructures and it allows cities to apply for the California Office of Emergency Services and Federal Emergency Management grants. The City of Watsonville LHMP was approved by FEMA on January 28, 2021, and is effective for five years.

Santa Cruz County Environmental Health Division

In 1996 the California Environmental Protection Agency designated the Santa Cruz County Environmental Health Division as the "Certified Unified Program Agency" (CUPA) within the geographic boundaries of the County (including all four Cities). As the CUPA, Environmental Health is responsible for enforcing State statutes and regulations as well as the local ordinance (Chapter 7.100) pertaining to the storage, use and disposal of hazardous materials and hazardous waste.

City of Watsonville General Plan

The following policies are included in the 2005 General Plan Public Safety Chapter 12:

[3] California Environmental Protection Agency. “Cortese List Data Resources.” Accessed February 28, 2022. https://calepa.ca.gov/sitecleanup/corteselist.

Policy 12.A.1 Airport Compatibility – The City shall use its development review process to ensure that proposals within the Airport Operations Impact Area are carefully analyzed to prevent and minimize potential hazards. Projects shall be consistent with the city and state's guidelines for buildings and land uses compatible with airports.

Policy 12.A.2 Airport Operation Buffer – Those areas within the safety sensitive airport operations buffer area shall be maintained in open space, which serves agricultural, recreational, alternative transportation, and/or environmental protection needs.

Policy 12.A.3 Industrial Buffer Zones – The City shall require new industrial projects to provide a clear zone between industrial structures and adjacent residential land use.

Policy 12.A.5 Risk Reduction – The City shall identify, avoid, and/or minimize natural and human-caused hazards in the development of property and the regulation of land use.

Policy 12.E.1 Inspections – The City shall conduct periodic safety inspections of industrial and commercial facilities that use and store hazardous materials and dangerous chemicals.

Policy 12.F.1 Access – The City shall require that new driveways and roadways meet minimum standards of the Uniform Fire Code or subsequent standards established by city ordinances. 12.F.2 Cul-de-Sacs – New cul-de-sac streets shall have a minimum 32-foot turning radius.

Policy 12.E.6 Identification of Potentially Hazardous New Businesses – The City shall use the development processing and business license process to identify potential hazardous uses and to require preventative programs including, but not limited to, the development of neighborhood, area evacuation plans, and hazardous material handling and disposal plans.

Policy 12.H.1 Level of Service – The City shall strive to provide properly staffed and equipped fire stations to provide a response time of four minutes from the nearest fire station to all portions of the city as measured by the Fire Chief, except for the following: residential neighborhoods having no special fire hazard or special populations having a medical related problem, i.e. convalescent homes and senior housing, which may install an approved fire sprinkler system to substitute for the fire station location in the area between four and seven minute response time.

3.9.3 Impact Discussion

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact. The proposed project is the construction of a warehouse distribution facility. The project would not involve the routine transport, use or disposal of hazardous materials. Use of hazardous materials would be limited to small quantities of construction fuels and fluids during the short-term construction period as well as small quantities of chemicals for landscaping and maintenance. These materials would be stored and used in accordance with the manufacturer's specifications. The compliance with existing hazardous materials regulations would reduce any chance of upset conditions to less than significant levels.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact with Mitigation Incorporated. The proposed project is the construction of a new warehouse distribution facility that would not include the use of hazardous materials after project completion except for small amounts landscaping and cleaning supplies. Such use as part of project operation would not cause a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Small quantities of hazardous materials, including fuels, oils, solvents, paints, and other building materials could be accidentally released into the environment during construction. Waste management and materials pollution control BMPs include designated areas for material delivery and storage, stockpile management, spill prevention and control procedures, solid and hazardous waste management, and contaminated soil, concrete waste, and liquid waste management. With the compliance of applicable regulations and the implementation of standard construction hazardous materials BMPs, the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving hazardous materials.

Pesticides

The project vicinity was previously used for agricultural purposes prior to development of the existing uses. Because of the past agricultural uses, it is reasonable to assume that pesticides and other agricultural chemicals were used as part of the normal agricultural operations. It is common to find arsenic, lead, and dichlorodiphenyltrichloroethane (DDT) residue in the soils in Santa Cruz County from historic farming operations.

Construction of the proposed project would require soil grading and excavation. If pesticides and chemicals from historic agricultural operations have persisted on-site, soil disturbing activities during construction could expose workers and the environment to these hazardous materials.

Lead

The project site is adjacent to State Route 1. As such, the site has the potential to contain aerially deposited lead as a result of the former use of leaded gasoline in automobiles. Additionally, the site's location adjacent to known hazardous materials or waste contamination sites could potentially place construction workers at risk of exposure during construction.

Because of the potential for soils contaminated with agricultural chemicals and/or lead to be present on the site, the following mitigation measures are proposed:

> **Impact HAZ-1:** Construction of the project has the potential to expose construction workers to legacy agricultural chemicals and/or aerially deposited lead due to past agricultural uses in the vicinity and the site's proximity to Highway 1.
>
> **Mitigation Measure HAZ-1a**: Prior to issuance of grading permits, the project applicant shall collect shallow soil samples in the near surface soil within the proposed project area and test them for organochlorine pesticides and pesticide-based metals such as arsenic and lead to determine if contaminants from previous agricultural operations and aerial deposition occur at concentrations above established construction worker safety and commercial/industrial standard environmental screening levels. The results of soil

sampling and testing shall be provided to the Community Development Director or the Director's designee at the City of Watsonville Community Development Department for review. If no contaminants are found above the applicable regulatory environmental screening levels, no further action is required.

Mitigation Measure HAZ-1b: If pesticide or lead contaminated soils are found in concentrations above the appropriate regulatory environmental screening levels for the proposed project, the project applicant shall obtain regulatory oversight from the Santa Cruz County Environmental Health Division. A Site Management Plan (SMP) shall be prepared and implemented to manage the cleanup of potential contamination. The SMP shall be prepared prior to construction to reduce or eliminate exposure risk to human health and the environment, specifically, potential risks associated with the presence of contaminated soils. Contaminated soil removed from the site shall be hauled off-site and disposed at a licensed hazardous materials disposal site in accordance with applicable regulations.

With implementation of mitigation measure HAZ-1a and HAZ-1b, the proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The impact is considered less than significant with mitigation.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or hazardous waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. There are no existing or proposed schools located within 0.25 mile of the project site. The closest school to the project site is Landmark Elementary School, located 0.6 mile north of the project site. Therefore, the proposed project would not create a significant hazard to schools in the vicinity.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less than Significant Impact. The project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (otherwise known as the Cortese List)(CalEPA 2022, DTSC 2022, SWRCB 2022). As a result, it would not create a significant hazard to the public or the environment. Mitigation Measures HAZ-1a and HAZ-1b, in response to Question a) above address potential exposure hazards to construction workers from soil contamination.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Less than Significant Impact. The project is approximately two miles south of the Watsonville Municipal Airport and located within the Airport's Influence Area. It is not located within one of the airport's Safety Compatibility Zones (Watsonville 2013). The height of the proposed facility is consistent with allowable heights in the 2005 General Plan and the Manabe Business Park Specific Plan, as well as similar industrial developments in the area. The project therefore does not pose a safety hazard for people working or residing in the area. Noise associated with operation of the project is primarily traffic related and addressed in Section 3.13 Noise.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. Roadways adjacent to the project would be utilized during construction for the delivery of materials to the construction site. Road and lane closures are not anticipated to be required during construction. However, should the need arise, the contractor would be required to maintain access for emergency vehicles for the duration of construction and therefore would not significantly impair or physically interfere with an adopted emergency evacuation plan. Fire access plans have been reviewed and approved by local authorities. After project construction is completed, there would be no impediment to vehicular or emergency vehicle access. Thus, the proposed project would have a less-than-significant impact to emergency plans.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

No Impact. The project site is not located in a Very High Fire, High Fire, or Moderate Fire Hazard Severity Zone (Watsonville 2020). The nearest Very High Fire Hazard Severity Zones are located six miles to the south and east of the project site (CAL FIRE 2022).

3.9.4 References

California Department of Forestry and Fire Protection (CAL FIRE). 2022. Fire Hazard Severity Zone Viewer. Accessed July 19, 2022 at https://egis.fire.ca.gov/FHSZ/

California Department of Toxic Substance Control (DTSC). 2022. EnviroStor Database. Accessed August 3, 2022 at https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=200+Manabe+Ow+Road%2C+watsonville.

California Environmental Protection Agency (CalEPA). 2022. Cortese List Data Resources. Accessed August 4, 2022 at https://calepa.ca.gov/sitecleanup/corteselist/.

City of Watsonville. 2013. Watsonville Airport Safety Compatibility Zones. Accessed August 4, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/1009/Safety-Compatibility-Zones-2013-PDF

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City of Watsonville. 2020. Watsonville Local Hazard Mitigation Plan. July. Accessed August 4, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/15463/City-of-Watsonville-Local-Hazard-Mitigation-Plan

State Water Resources Control Board (SWRCB). 2022. GeoTracker Database. Accessed August 3, 2022 at https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=200+Manabe+Ow+Road%2C+watsonville and https://geotracker.waterboards.ca.gov/profile_report?global_id=T10000006620

3.10 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) Impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

3.10.1 Environmental Setting

The project site is a vacant parcel adjacent to Manabe Ow Road, Highway 1, a vacant disturbed parcel to the east, and railroad tracks and other industrial/commercial development to the south. Watsonville Slough is also located along the north side of the project site. The project site generally slopes from east to west and northwest, draining into a slough along the western perimeter of the site which discharges into Watsonville Slough. Site elevations range from 25 feet in elevation on the east side of the site to 15 feet at the northwest corner of the parcel.

Groundwater

As described in the geotechnical report prepared for the project site, groundwater was initially encountered in several borings at depths ranging from approximately 20 to 30 feet bgs, though it was noted that groundwater levels are difficult to discern due to the mud-rotary drilling method used. Pore pressure dissipation tests, which are considered more reliable, were performed at two locations and localized groundwater was estimated to be at approximately 13.8 and 7.7 feet bgs, respectively at the time of the investigation.

Groundwater was previously reported as shallow as about three to five feet bgs along the south perimeter of the site and seven to nine feet bgs in the northern parts of the site adjacent to the Watsonville Slough which corresponds to elevation 12 feet. Groundwater may be expected to affect the proposed construction for excavations below elevation 12 feet. It is possible that transient, saturated ground conditions at shallower depths could develop due to seasonal precipitations, landscape watering, leaking water lines, or other unforeseen causes. Variations in groundwater levels should be expected seasonally, annually, and from location to location.

Water Quality

Surface water quality is affected by point source and non-point source (NPS) pollutants. Point source pollutants are emitted at a specific point, such as a pipe, while NPS pollutants are generated by surface runoff from diffuse sources such as streets, paved areas, and landscape areas. Point source pollutants are mainly controlled with pollutant discharge regulations established by the RWQCB through NPDES, or waste discharge requirements (see Regulatory section, below).

NPS pollutants are more difficult to monitor and control and are important contributors to reductions in surface water quality in urban areas. Typical stormwater runoff pollutants include oil, grease, and metals accumulated in streets, driveways, parking lots, and rooftops, as well as pesticides, herbicides, particulate matter, nutrients, animal waste, and other substances from landscaped areas. In general, pollutant concentrations in stormwater runoff do not vary significantly within an urbanized watershed. However, pollutant concentrations do increase when impervious cover is more than 40 to 50 percent of the drainage area. Runoff volume is the most important variable in predicting pollutant loads. Surface runoff from the project site and surrounding area drains to Watsonville Slough along the north side of the project site.

Flooding

According to flood mapping prepared by the Federal Emergency Management Agency (FEMA), the project located within the limits of the 100-year flood plain (Zone AE). The mapping shows a base flood elevation of 23 feet and therefore the proposed project is being designed with a finished floor elevation of 25 feet.

3.10.2 Regulatory Setting

Federal Regulations

Clean Water Act

Under the Clean Water Act (CWA) of 1977, the United States Environmental Protection Agency (USEPA) seeks to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. The statute employs a variety of regulatory and non-regulatory tools to reduce

direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA authorizes the USEPA to implement water quality regulations. The NPDES permit program under Section 402(p) of the CWA controls water pollution by regulating stormwater discharges into the waters of the United States (US). California has an approved state NPDES program. The USEPA has delegated authority for water permitting to the State Water Resources Control Board (SWRCB), which has divided the state into nine regional basins, each under the jurisdiction of a RWQCB.

Section 401 requires an applicant for any Federal permit that proposes an activity that may result in a discharge to "waters of the U.S." to obtain certification from the State that the discharge will comply with other provisions of the CWA. In California, a Water Quality Certification is provided by the State Water Resources Control Board and/or RWQCB.

Section 404 authorizes the USACE to regulate the discharge of dredged or fill material to waters of the U. S., including wetlands. The USACE issues individual site-specific or general (Nationwide) permits for such discharges.

Federal Emergency Management Agency (FEMA)

FEMA administers the National Flood Insurance Program (NFIP), which provides subsidized flood insurance to communities that comply with FEMA regulations, which limit development in flood plains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development set as the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year.

National Pollutant Discharge Elimination System

As previously discussed, the NPDES permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the U.S. from their municipal separate storm sewer systems (MS4s). Under the NPDES Program, all facilities which discharge pollutants from any point source into waters of the U.S. are required to obtain an NPDES permit. Point source discharges include discharges from publicly owned treatment works (POTWs), discharges from industrial facilities, and discharges associated with urban runoff, such as stormwater. The NPDES permit programs in California are administered by the SWRCB and the nine RWQCBs.

In 1990, the U.S. Environmental Protection Agency (U.S. EPA) promulgated regulations for permitting stormwater discharges from MS4s serving a population of 100,000 people or more. These regulations, known as the Phase I regulations, require operators of medium and large MS4s to obtain NPDES stormwater permits. On December 8, 1999, U.S. EPA promulgated regulations, known as Phase II regulations, requiring permits for stormwater discharges from Small MS4s. On February 5, 2013, the proposed final draft of the Phase II Small MS4 General Permit was adopted and became effective on July 1, 2013. The City of Watsonville and Santa Cruz County are regulated under the Phase II Small MS4 General Permit. (SWRCB 2022)

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Act (Water Code Sections 1300 et seq.) is the basic water quality control law in California. The Act established the SWRCB, (see also below) and divided the state into nine regional basins, each under the jurisdiction of a RWQCB. The Act authorizes

the SWRCB and RWQCBs to issue and enforce Waste Discharge Requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

State Water Resources Control Board

The SWRCB is the primary State agency responsible for the protection of the state's water quality and groundwater supplies. Construction activities that disturb one or more acres of land must comply with the requirements of the Construction General Permit. Under the terms of the permit, applicants must file permit registration documents with the SWRCB prior to the start of construction. The registration documents include a Notice of Intent (NOI), risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement.

Central Coast Regional Water Quality Control Board

The Central Coast RWQCB is the regional authority responsible for planning, permitting and enforcement of the CWA in Watsonville. The Central Coast RWQCB addresses region-wide water quality issues through the Water Quality Control Plan for the Central Coastal Basin (Basin Plan). The Basin Pan is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives.

California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) protects streams, water bodies, and riparian corridors through the streambed alteration agreement process under Section 1600 to 1616 of the California Fish and Game Code. The California Fish and Game Code establishes that "an entity may not divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river stream, or lake (Fish and Game Code Section 1602(a)) without notifying the CDFW, incorporating necessary mitigation and obtaining a streambed alteration agreement. The CDFW's jurisdiction extends from the top of banks and often includes the outer edge of riparian vegetation canopy cover.

Emergency Services Act

The Emergency Services Act, under California Government Code Section 8589.5(b), calls for public safety agencies whose jurisdiction contains populated areas below dams, to adopt emergency procedures for the evacuation and control of these areas in the event of a partial or total failure of the dam. The Governor's Office of Emergency Services (OES) is responsible for the coordination of overall state agency response to major disasters and assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts. In addition, the Cal OES Dam Safety Program provides assistance and guidance to local jurisdictions on emergency planning for dam failure events and is also the designated repository of dam failure inundation maps.

Local Regulations

Pajaro Valley Water Management Agency (PVWMA)

PVWMA is a state-chartered special purpose district formed under State Law pursuant to the Pajaro Valley Water Management Agency Act. PVWMA was formed to efficiently and

economically manage existing and supplemental water supplies in order to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft and to provide and ensure sufficient water supplies for present and anticipated needs within its boundaries. PVWMA has the authority to adopt ordinances for the purpose of conserving local groundwater supplies that all public and private water purveyors within the Agency's boundaries must adhere to. The PVWMA service area is comprised of portions of three counties, which are Santa Cruz, Monterey, and San Benito Counties. The PVWMA is responsible for the preparation and implementation of the Basin Management Plan (BMP), the principal document that guides all of the major projects and programs pursued by the PVWMA. The "revised" version of the BMP was adopted by the Agency's Board of Directors in February 2002. The Agency's first BMP was previously adopted in 1994. A redraft of the BMP was prepared in 2000 but was delayed so that more analysis of local water supply options could be evaluated and incorporated into this plan. The Basin Management Plan was then in 2014[1]

General Plan

The following are relevant policies from the General Plan that are related to hydrology and water quality.

> *Policy 9.D, Water Quality* - The City shall provide for the protection of water quality to meet all beneficial uses, including domestic, agricultural, industrial, recreational, and ecological uses.
>
> *Implementation Measure 9.D.1, Recharge Protection* - The City shall direct urban development away from the groundwater recharge zones and surface water bodies. Projects with potential to jeopardize water quality shall be required to include mitigation measures prior to project approval.
>
> *Implementation Measure 9.D.2, Erosion Control* - The City shall continue to enforce regulations over grading activities and other land use practices that expose bare soil and accelerate soil erosion and sediment.
>
> *Implementation Measure 9.D.5, Wetland Protection* - Where drainage from developments involves discharge into sloughs or wetlands, grease, sediment traps, or other protection measures shall be required. Mitigation monitoring shall be required and enforced by the City to ensure performance as appropriate.
>
> *Policy 12.D, Flood Hazard Reduction* - The City shall pursue the protection of new and existing development from the impacts of flooding up to the 100-year event.
>
> > *Policy 12.D.1 Flood Protection* – The City shall require new development to conform to the Flood Damage Prevention Ordinance and the guidelines of the National Flood Insurance Program.
> >
> > Policy *12.D.2 Storm Water Retention* – The City shall condition new development to provide for onsite retention and percolation of storm water run-off.
>
> *12.D.3 Storm Drains* – New development shall be required to pay for or extend all necessary storm drains to serve the project site.
>
> *12.D.4 Storm Water Collection* – The City shall require street design to include curbs and gutters that collect and direct storm water run-off to drainage facilities.

12.D.5 Flood Mitigation – The City shall pursue planning and financial support for the improvement of flood conditions along Corralitos and Salsipuedes Creeks, the Pajaro River, and other areas of the drainage basin impacting Watsonville as recommended by the Santa Cruz County Flood Control and Water Conservation District Zone 7.

City of Watsonville Floodplain Management Ordinance

The City of Watsonville maintains the Watsonville Floodplain Management Ordinance. The purpose of the Ordinance is to minimize public and private losses due to flooding in specific areas of the City through the implementation of various provisions. The Ordinance requires a permit to be issued before any construction or other development begins within a flood hazard area. The Ordinance also sets construction standards for buildings within flood-prone areas, including standards to ensure that buildings are properly anchored, have first floors that are elevated above the base flood elevation, constructed with flood-resistant materials, and have openings that permit the entry and exit of floodwaters underneath the structure.

City of Watsonville Stormwater Post-Construction Standards

The Phase II Small MS4 General Permit requires the City to oversee a variety of activities within the City; including public education about pollution prevention, good housekeeping for municipal projects and implementation of best management practices throughout the City.

In January 2014 the City of Watsonville adopted Post-Construction Stormwater Management Requirements. The primary objective of these requirements is to ensure the reduction of pollutant discharges to the Maximum Extent Practicable and preventing stormwater discharges from causing or contributing to a violation of receiving water quality standards in all applicable development projects that require approvals and/or permits issued by the City.

Pajaro River Watershed Flood Prevention Authority

The Pajaro River Watershed Flood Prevention Authority was established in July 2000 by State Assembly Bill 807 in order to "identify, evaluate, fund, and implement flood prevention and control strategies in the Pajaro River Watershed, on an intergovernmental basis." The Pajaro River Watershed Flood Prevention Authority acts as a governing body through which each member organization can participate and contribute to finding a method to provide flood protection in the watershed and promote general watershed interests.

3.10.3 Impact Discussion

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact.

Construction-Related Water Quality Impacts

Construction activities, such as grading and excavation, have the potential to result in temporary impacts to surface water quality in local waterways. When disturbance to the soil occurs, sediments may be dislodged and discharged to the storm drainage system, carried by surface runoff flows across the site. The proposed project would result in the disturbance of approximately 11.4 acres of soil, which is greater than the one-acre threshold required for conformance with the Construction General Permit. In addition to the Construction General Permit (which requires the

preparation and implementation of a SWPPP), the project is required to comply with the City's adopted erosion control requirements to provide temporary measures to prevent erosion during construction.

Post-Construction Water Quality Impacts

Development of the project site as proposed would result in the creation of more than 2,500 square feet of impervious surface area, making it subject to the City's Post-Construction Stormwater Management Requirements. These regulations require the incorporation of site design measures, source controls, and runoff treatment controls into the design of new or redevelopment projects in order to minimize pollutant loads and reduce velocities of off-site stormwater discharges to local receiving waters. To comply with these regulations, the project includes six bioretention basins which are appropriately sized to treat expected levels of runoff from the building roof, driveways, walkways and parking lot surfaces. The largest retention basin is located along the south lot line, with the largest portion of that basin located at the southwest corner of the parcel. There are also five smaller retention basins in and around the parking areas at the north end of the site. (see Figure 11 Conceptual Landscape Plan and Figure 12 Preliminary Grading Plan)

Conformance with the Construction General Permit and City of Watsonville erosion control requirements would reduce construction-related water quality impacts to a less than significant level. In addition, the project's proposed onsite runoff treatment facilities (bioretention basins) are consistent with the City's Post-Construction Stormwater Management Requirements, and would reduce post-construction water quality impacts to a less than significant level.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less than Significant Impact. The project would rely on existing sources of water and the City's existing water delivery system. The proposed project would increase the demand for water in the City (refer to Section 3.19 Utilities and Service Systems); however, this increase would be marginal in relation to projected build out of the City under the General Plan and would not result in the overdraft of any groundwater basins. Native and drought resistant species are planned to minimize operational water use for irrigation, and the project includes the incorporation of bioretention basins and the use of permeable pavement, which would provide opportunities for infiltration of stormwater into the ground.

According to the geotechnical report, highest expected groundwater levels on-site would be approximately 20 to 30 feet bgs. Project construction would not require substantial excavation, primarily limited to minor trenching to establish utility connections. Based on the preliminary utility plan prepared for the project, the maximum depth of utility line trenching is expected to be approximately 6.5 feet, which would not be likely to intercept groundwater. Nonetheless, groundwater levels may fluctuate seasonally, and it is possible that groundwater could be encountered during project construction. If groundwater is encountered during excavation, any necessary construction dewatering would follow local and regional requirements for safe transport and disposal of dewatered groundwater. If construction dewatering occurs, it would be temporary in nature and would not substantially reduce groundwater supplies or affect groundwater quality in the area.

For the reasons described above, the project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in substantial erosion or siltation on- or off-site;

Less than Significant Impact. The project is located on relatively flat terrain, thus a significant increasein erosion or siltation due to runoff from the site is not expected. The proposed project would not substantially alter the drainage pattern of the site and surrounding areas. Runoff from the site would be treated in bioretention basins prior to release into the City's drainage system, thereby ensuring the project does not result in a substantial additional source of polluted runoff. Additionally, the project includes an erosion control plan with BMPs that would be implemented throughout the construction phases of the project to prevent off-site erosion or siltation resulting from onsite construction activities. The impact is considered less than significant.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

Less than Significant Impact. The project would increase the overall imperviousness of the site with the addition of approximately 356,675 square feet of impervious surfaces. The bioretention basins were sized to detain water and release pre-development flow rates for the 2- and 10-year storm events in conformance with the design standards for bioretention of the City's Post-Construction Stormwater Management Requirements. Therefore, the proposed project would not substantially increase the rate or amount of surface water runoff in a manner which would result in flooding on- or off-site.

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

Less than Significant Impact. As previously stated, the project includes permeable pavement and bioretention basins onsite to reduce pollutant loads as well as runoff rates and volumes before being discharged to the City storm drain system. The proposed operation of a warehouse distribution facility does not include outdoor uses that would provide substantial additional sources of polluted runoff. Therefore, the project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. The impact is considered less than significant.

iv) Impede or redirect flood flows?

Less than Significant Impact. The site is within the 100-year FEMA flood plain (FEMA 2022). However, the proposed warehouse distribution facility is designed to have a finished floor elevation of 25 feet which is two feet above the base flood elevation of 23 feet. The project would not be expected to impede or redirect flood flows, as the proposed building footprint occupies less than 30 percent of the total site area.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The terms tsunami or seiche are described as ocean waves or similar waves in large water bodies, usually created by undersea fault movement or by a coastal or submerged landslide. The project site is approximately two miles east of the Pacific Ocean tsunami zone. Therefore, the project is not at risk to release pollutants in the event of a seiche or tsunami since there is no nearby waterbody. Additionally, the project does not propose work, storage areas or other areas that are potential sources for polluted water that could be released in the event of a flood.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant Impact. As noted above, while the project increases impermeable surfaces over existing conditions, the project includes appropriately sized bioretention areas and permeable pavement in conformance with the City's Post-Construction Stormwater Management Requirements. The impact is considered less than significant.

3.10.4 References

California Department of Water Resources. 2022. Division of Safety of Dams, California Dam Breach Inundation Maps. Accessed August 5, 2022 at: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

FEMA 2022. FEMA Flood Map Service Center. FIRM panel 06087C0394E, effective 5/16/2012. Accessed August 5, 2022 at: https://msc.fema.gov/portal/search?AddressQuery=200%20manabe%20ow%20road#searchresultsanchor

3.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

3.11.1 Environmental Setting

The project site is located in the southwestern portion of Watsonville. The project site was formerly used for agricultural uses until about 2016 when agricultural production stopped and the site was mass graded into a flat pad. Since that time, the site has been left vacant. Prominent features within the viewshed of the site include Highway 1 to the west, the existing Fedex facility, residential development and Watsonville Slough to the north, light industrial or warehouse type development to the south, and other undeveloped land that was previously in agriculture to the east. Hotel and light industrial uses are located to the west of Highway 1 from the project site.

3.11.2 Regulatory Setting

Local

General Plan

The Watsonville 2005 General Plan was adopted by the City Council in 1994. The Draft Watsonville Vista 2030 General Plan is the subject of ongoing litigation and has not replaced this document to date. Therefore, the 2005 General Plan currently remains in effect. California state law requires each city and county to adopt a general plan "for the physical development of the county or city, and any land outside its boundaries which in the planning agency's judgment bears relation to its planning" (Gov. Code § 65300). The general plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private. As a comprehensive, long-range statement of a city's development policies, the general plan sums up the City's philosophy of growth and preservation, highlights what is important to the community, and prescribes where different kinds of development should go. Required elements include land use, circulation, housing, conservation, open space, noise, and safety (Gov. Code § 65302). In 2021, the safety element was amended by incorporating by reference the 2020 Local Hazard Mitigation Plan. The City's general plan also includes elements on urban design, children, recreation and public facilities.

The following are relevant policies within the Land Use Element of the General Plan:

> *Policy 4.D.1 Modernization* - The City shall encourage existing industrial plants to maintain high standards for public safety and environmental quality consistent with economic feasibility. These standards include emission reduction, noise reduction, built-in fire protection, water conservation, and the safe use, storage, and disposal of hazardous materials.

Policy 4.D.2 Design and Open Space - The City shall require that new industrial development be designed to blend with the natural environment and incorporate adequate open space and landscaping to provide an aesthetically pleasing buffer from residential land use. Additionally, on-site recreational space for employees and resource protection for environmentally sensitive habitats shall be required, where appropriate.

Manabe Ow Business Park Specific Plan

The project site is located within the West Business Park of the Business Park District of the Specific Plan. The development standards of this Specific Plan supersede the zoning requirements as set forth in the Watsonville Municipal Code. The following design standards apply to the project:

- Development within the BP District will share common driveways, parking areas, public space, and landscaping. Driveways extending from public roadways shall be generally spaced at a minimum of 100 feet. On-street parking will be allowed on designated internal public streets as described in Chapter 4 - Circulation Plan.

- Lot sizes shall be a minimum of 20,000 square feet for interior lots, and 26,000 square feet for corner lots. In most cases, buildings shall be setback at least 10 feet from internal public streets (front yard).

- Landscaping shall make up no less than 10 percent of the total parcel area. Parking lots adjoining public streets shall be separated with a minimum 5 foot landscape strip. Buildings fronting public streets shall be separated with a minimum 10 foot landscape strip.

- To minimize the adverse visual impact of large, expansive parking lots, a majority of the parking should be located behind or to the sides of buildings. Additionally, loading docks should also be located at the rear or side of buildings and screened.

- Parking spaces shall be provided for each lot as defined in the Watsonville Municipal Code Section 14.17. Parking lots should include both compact and standard size spaces at 40 percent and 60 percent, respectively, of the total amount (see Figure: Parking Lot Design Standards). Under building parking is encouraged in the flood zone to maximize parking opportunities.

Other design standards for minimum lot area, dimension, minimum yard setbacks, landscaping, and other requirements are found in Table 3-2 of the Specific Plan.

Design guidelines are also presented for the Business Park District and address the following objectives:

- Maximize the development potential for each project through efficient site design by including the use of shared facilities (on lots smaller than one acre) such as common driveways, parking lots, aisleways, landscape screening, trash enclosures, etc.

- Pay special attention to areas visible to the public by considering views from streets and highways

- Maximize opportunities to relate to sloughs and highway visibility and minimize “backside” exposure where feasible Consider impacts to existing built features such as the industrial development and railway, and Sea View Ranch residential development

- Avoid overly large expanses of parking adjacent to public streets

3.11.3 Impact Discussion

Would the project:

a) Physically divide an established community?

No Impact. The project site is located within the Manabe-Ow Road Business Park Specific Plan and is adjacent to a vacant parcel of land, also within the Specific Plan Area. The Fedex facility to the north of the site was developed within the Specific Plan area as well. The proposed construction of a warehouse distribution facility on the project site, which is consistent with the land uses designated in the Specific Plan and with the existing zoning of the property would not be considered to divide an established community. There is an established residential community located to the north of the site outside of the Specific Plan area, but it is physically separated from the project site by Watsonville Slough.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact. The proposed project is within the Manabe-Ow Business Park Specific Plan area. The project is a warehouse distribution facility which is a permitted use, but requires approval of a Special Use Permit by the Planning Commission. The Specific Plan provides flexibility with respect to strict conformance with design standards, allowing the Planning Commission to use their discretion when considering permitted uses such the facility proposed by the project.

The project's consistency with other plans and policies adopted for the purpose of avoiding or mitigating environmental effects are discussed throughout this Initial Study. This Initial Study incorporates best management practices, conditions of approval, and mitigation measures that would reduce the project's potentially significant impacts to less than significant. Therefore, the proposed warehouse facility would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.11.4 References

City of Watsonville. 1994. Watsonville 2005 General Plan.

City of Watsonville. 2010. Manabe-Ow Business Park Specific Plan.

3.12 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local -general plan, specific plan or other land use plan?	☐	☐	☐	☒

3.12.1 Environmental Setting

According to Santa Cruz County Graphic Information Systems information, the project site is located within mineral class zone MRZ-1, meaning that it is in an area where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone is applied where well developed lines of reasoning, based on economic-geologic principles and adequate data, indicate that the likelihood for occurrence of significant mineral deposits is nil or slight.

3.12.2 Regulatory Setting

State

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act (SMARA) was enacted by the California legislature in 1975 to address the need for a continuing supply of mineral resources, and to prevent or minimize the negative impacts of surface mining to public health, property, and the environment. As mandated under SMARA, the State Geologist has designated mineral land classifications in order to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance.

3.12.3 Impact Discussion

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact (Responses a – b). There are no known mineral resources of regional value or local importance on or adjacent to the project site. Therefore, the project would not result in the loss of availability of known mineral resources.

3.12.4 References

County of Santa Cruz. 2022. GIS Mapping Application. Hazards and Geophysical data. Accessed August 4, 2022 at https://gis.santacruzcounty.us/gisweb/

3.13 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

The evaluation of the proposed project's potential noise and vibration impacts is based in part on the information and findings of a peer-reviewed Environmental Noise Assessment prepared for the project by Charles M. Salter Associates, Inc. Refer to Appendix E for this study as well as the peer review conducted by MIG.

3.13.1 Environmental Setting

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area. The frequency (pitch), amplitude (intensity or loudness), and duration of noise all contribute to the effect on a listener, or receptor, and whether the receptor perceives the noise as objectionable, disturbing, or annoying.

<u>The Decibel Scale (dB)</u>

The decibel scale (dB) is a unit of measurement that indicates the relative amplitude of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a tenfold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 more intense, and so on. In general, there is a relationship between the subjective noisiness, or loudness of a sound, and its amplitude, or intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness.

<u>Sound Characterization</u>

There are several methods of characterizing sound. The most common method is the "A-weighted sound level," or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is typically most sensitive. Thus, most environmental measurements are reported in

dBA, meaning decibels on the A-scale. Human hearing matches the logarithmic A-weighted scale, so that a sound of 60 dBA is perceived as twice as loud as a sound of 50 dBA. In a quiet environment, an increase of three dB is usually perceptible, however, in a complex noise environment such as along a busy street, a noise increase of less than three dB is usually not perceptible, and an increase of five dB is usually perceptible. Normal human speech is in the range from 50 to 65 dBA. Generally, as environmental noise exceeds 50 dBA, it becomes intrusive and above 65 dBA noise becomes excessive. Nighttime activities, including sleep, are more sensitive to noise and are considered affected over a range of 40 to 55 dBA. Table 3.13-1 lists typical outdoor and indoor noise levels in terms of dBA.

Table 3.13-1: Typical Outdoor and Indoor Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	-110-	Rock Band
Jet flyover at 1,000 feet		
	-100-	
Gas lawn mower at 3 feet		
	-90-	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	-80-	Garbage disposal at 3 feet
Noise urban area, daytime		
Gas lawnmower, 100 feet	-70-	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	-60-	
		Large business office
Quiet urban daytime	-50	Dishwasher next room
Quite urban nighttime	-40-	Theater, large conference room (background)
Quiet suburban nighttime		
	-30-	Library
Quite rural nighttime		Bedroom at night
	-20-	
		Broadcast/recording studio
	-10-	
Lowest threshold of human hearing	-0-	Lowest threshold of human hearing

Source: Caltrans 2013

Sound levels are typically not steady and can vary over a short time period. The equivalent noise level (Leq) is used to represent the average character of the sound over a period of time. The Leq represents the level of steady noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. Leq is useful for evaluating shorter

time periods over the course of a day. The most common Leq averaging period is hourly, but Leq can describe any series of noise events over a given time period.

Variable noise levels are values that are exceeded for a portion of the measured time period. Thus, L01 is the level exceeded one percent of the time and L90 is the level exceeded 90 percent of the time. The L90 value usually corresponds to the background sound level at the measurement location.

Noise exposure over the course of an entire day is described by the day/night average sound level, or Ldn, and the community noise equivalent level, or CNEL. Both descriptors represent the 24-hour noise impact on a community. For Ldn, the 24-hour day is divided into a 15-hour daytime period (7:00 AM to 10:00 PM) and a nine-hour nighttime period (10:00 PM to 7:00 AM) and a 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45 dBA nighttime sound level would contribute as much to the overall day-night average as a 55 dBA daytime sound level. The CNEL descriptor is similar to Ldn, except that it includes an additional five dBA penalty beyond the 10 dBA for sound events that occur during the evening time period (7:00 PM to 10:00 PM). The artificial penalties imposed during Ldn and CNEL calculations are intended to account for a receptor's increased sensitivity to sound levels during quieter nighttime periods.

Sound Propagation

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. Theoretically, the sound level of a point source attenuates, or decreases, by six dB with each doubling of distance from a point source. Sound levels are also affected by certain environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and attenuation by barriers. Outdoor noise is also attenuated by the building envelope so that sound levels inside a residence are from 10 to 20 dB less than outside, depending mainly on whether windows are open for ventilation or not.

When more than one point source contributes to the sound pressure level at a receiver point, the overall sound level is determined by combining the contributions of each source. Decibels, however, are logarithmic units and cannot be directly added or subtracted together. Under the dB scale, a doubling of sound energy corresponds to a three dB increase in noise levels. For example, if one noise source produces a sound power level of 70 dB, two of the same sources would not produce 140 dB – rather, they would combine to produce 73 dB.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern one-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of one to two dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of three dB in typical noisy environments. Further, a five-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness.

Noise Effects

Noise effects on human beings are generally categorized as:

- Subjective effects of annoyance, nuisance, and/or dissatisfaction
- Interference with activities such as speech, sleep, learning, or relaxing
- Physiological effects such as startling and hearing loss

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports. Such physiological effects occur when the human ear is subjected to extremely high short-term noise levels (i.e., 140 dBA from an explosion) or from a prolonged exposure to high noise environments. For example, to protect workers from noise-induced hearing loss, the U.S. Occupational Safety and Health Administration (OSHA) limits worker noise exposure to 90 dBA as averaged over an 8-hour period (29 CFR 1910.95).

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it to the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern one-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of one to two dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of three dB in typical noisy environments. Further, a five dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

Groundborne Vibration

Vibration is the movement of particles within a medium or object such as the ground or a building. As is the case with airborne sound, groundborne vibrations may be described by amplitude and frequency. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared, in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Human response to groundborne vibration is subjective and varies from person to person.

Existing Noise Environment

The Environmental Noise Assessment prepared for the project included the results of ambient noise measurements conducted near the project site between Thursday, October 14 and Monday, October 18, 2021 (Charles M. Salter Associates, Inc. 2022, pg. 5). Specifically, one short-term (ST-1) and one long-term measurement (LT-1) were made adjacent to the residential area generally located north of the Project site. Measurements were made on Lighthouse Drive, approximately 365 feet (ST-1) and 540 feet (ST-1) from the Project's northeastern corner. The results of the ambient noise monitoring are summarized in Table 3.13-2.

Table 3.13-2: Measured Typical Ambient Noise Levels Near the Project Site			
Measurement(A)	**Range of Hourly Ambient Noise Data (Hourly L_{eq}, dBA)(B)**		**Range in CNEL (dBA)**
	Daytime (7 AM to 10 PM)	**Nighttime (10 PM to 7 AM)**	
LT-1 (Lighthouse Drive, approximately 365 feet from Project Boundary)	52 to 64(B)	45 to 55	58 to 61
ST-1 (Lighthouse Drive, approximately 540 feet from Project Boundary)	48 to 60**(B)**	41 to 51	53 to 56**(B)**

Source: Charles M. Salter Associates, Inc. 2022 (see Appendix E, Table 1 and Table 2), modified by MIG

(A) Measurements were made 12 feet above grade. Long-term measurements occurred from noon on October 14, 2021 to 11 AM on October 18, 2021.

(B) In addition to hourly average L_{eq} data, maximum measured noise levels (L_{max}) ranged from 70 dBA to 86 dBA during daytime hours.

(C) Data are estimated based on a comparison between short-term measurements at this location and long-term measurements at LT-1.

Sensitive Receptors

Noise sensitive receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. Hospitals, residential areas, schools, and parks are examples of noise sensitive receptors that could be sensitive to changes in existing environmental noise levels. The noise sensitive receptors in proximity (within 1,000 feet) of the proposed project site include:

- An unpaved pedestrian/bike trail located at closest approximately 240 feet north of the Project site, across the Watsonville Slough;
- Single-family residences along Lighthouse Drive, which are located at closest approximately 325 feet north of the Project site;[4] and
- Seaview Ranch Park located approximately 615 feet northeast of the Project site.

3.13.2 Regulatory Setting

Local Regulations

Watsonville General Plan

Chapter 12, Public Safety*,* of the Watsonville General Plan includes the following goals and policies relevant to the proposed project:

> *Goal 12.8 Noise Hazard Control* **-** Evaluate new and existing land uses in the city for compatibility related to noise effects and require, as appropriate, mitigation where harmful effects can be identified, and measurable improvement will result.

4 The closest residence is addressed at 92 Visa Verde Circle

> *Policy 12.M Noise* - The City shall utilize land use regulations and enforcement to ensure that noise levels in developed areas are kept at acceptable levels, and that future noise-sensitive land uses are protected from noise that is harmful.

The Public Safety Element also identifies the City's noise compatibility guidelines for different land uses. According to Figure 12-6 of the General Plan, the normally acceptable noise limit for single-family residential land uses is 60 CNEL and the conditionally acceptable noise limit is 75 CNEL. For multi-family residential land uses, the General Plan sets 65 CNEL as the normally acceptable noise limit and 75 CNEL as the conditionally acceptable noise limit. The normally and conditionally acceptable noise limits for an industrial land use is 80 CNEL and 85 CNEL, respectively (City of Watsonville, 2005; Figure 12-6).

Manabe-Ow Business Park Specific Plan

The proposed project is located within the Manabe-Ow Business Park Specific Plan area and subject to the plans and policies contained within the Specific Plan. A Special Use Permit is required for construction of the project.

Section 1.3 of the Plan (Guiding Principles) sets forth buildings and associated improvements should be oriented on the site to minimize noise light and glare, and visual impacts to adjacent residential neighborhoods.

Section 3.2.1 of the Plan (Business Park District Development Standards) specifies that any type of land use within the Plan's North Business Park Overlay District that could potentially create excessive noise (including warehouse/distribution uses) shall be required to submit a noise study demonstrating that exterior noises do not exceed 65 dB (CNEL); however, the proposed Project site is not located within Plan's North Business Park Overlay District.

Section 3.8 of the Plan (Site Plan Components Design Guidelines) specifies that landscaping should be provided in various locations around the perimeter of a project site for screening and noise buffering purposes.

Municipal Code

The Watsonville Municipal Code (WMC), Title 5, Public Welfare, Morals, and Conduct, Chapter 8, Noise, implements the City's noise policies, in part. Municipal Code Section 5-8 prohibits specific types of noises, such as continuous or unusually loud noise which disturbs residential property or public ways within the City. Specifically, it is unlawful for any person to generate noise which either annoys, disturbs, injures, or endangers the comfort, repose, health, peace, or safety of others on residential property or public ways within the City, including, but not limited to:

- The use of radios, music instruments, stereos, televisions, or other similar devices that disturb the peace and quiet of neighboring residential inhabitants, including the use of such devices between the hours of 7:00 PM and 7:00 AM that are plainly audible at a distance of 50 feet from the structure in which the device is located (WMC Section 5-8.02(a)).
- Yelling, shouting, hooting, whistling, or singing originating from any residential property or upon any public way at any time so as to annoy or disturb the quiet comfort and repose of nearby persons (WMC Section 5-8.02(c)).

The City has not adopted an ordinance regulating construction noise levels.

3.13.3 Impact Discussion

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

Less Than Significant Impact. As described in more detail below, the proposed project would not result in a substantial temporary or permanent increase in noise levels in the vicinity of the project from construction or operational activities. This impact would be less than significant.

In addition, the proposed project would not be exposed to ambient noise levels that are incompatible with the industrial nature of the project.

Construction Noise

As described in Section 3.3, Air Quality, the proposed project involves the construction of an industrial warehouse distribution center on vacant land over an approximately 15-month period. Construction activities would disturb approximately 11.5 acres, and would include site preparation, grading, building construction, paving, and architectural coating work. The proposed project would generate construction noise from the following sources:

- Heavy equipment operations throughout the project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc. that would move around work areas; other equipment would consist of stationary equipment (e.g., air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produce higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.

- Vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the project site, primarily Manabe Ow Road, Ohlone Parkway, and West Beach Street.

Table 3.13-3 presents estimated noise levels for the types of equipment that would be used to construct the proposed Project. Potential construction noise levels are estimated for worst-case equipment operations at a distance of 50 feet (reference noise level) and at specific distances to sensitive receptors in proximity of the Project's construction work areas (e.g., 240 feet to the dirt trail, 325 feet to closest residence, etc.). The equipment assumptions used in this analysis are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (see Section 3.3 and Appendix E).

Table 3.13-3: Project Construction Equipment Noise Levels (dBA)								
Equipment	**Reference Noise Level at 50 Feet (L_{max})(A)**	**Percent Usage Factor(B)**	**Predicted Noise Levels (L_{eq}) at Distance(C)**					
			50 Feet	**100 Feet**	**240 Feet**	**325 Feet**	**615 Feet**	**750 Feet**
Backhoe	80	0.4	76	70	62	60	54	52
Bulldozer	85	0.4	81	75	67	65	59	57
Compressor	80	0.4	76	70	62	60	54	52
Concrete Mixer	85	0.4	81	75	67	65	59	57
Crane	85	0.16	77	71	63	61	55	54
Delivery Truck	84	0.4	80	74	66	64	58	56
Excavator	85	0.4	81	75	67	65	59	57
Front End Loader	80	0.4	76	70	62	60	54	52
Generator	82	0.5	79	73	65	63	57	55
Grader	85	0.4	81	75	67	65	59	57
Man Lift	85	0.2	78	72	64	62	56	54
Paver	85	0.5	82	76	68	66	60	58
Pneumatic Tools	85	0.5	82	76	68	66	60	58
Roller	85	0.2	78	72	64	62	56	54
Scraper	85	0.4	81	75	67	65	59	57
Tractor	84	0.4	80	74	66	64	58	56
Vacuum Truck	85	0.4	81	75	67	65	59	57
Welder	74	0.4	70	64	56	54	48	46

Sources: Caltrans 2013, FHWA, 2010, and MIG (see Appendix E).

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans 2013: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

As shown in Table 3.13-3, the worst-case L_{eq} noise levels associated with the operation of the typical heavy equipment that would be used at the site (e.g., bulldozer, scraper, paver) would be approximately 82 dBA at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate at the same time and in close proximity. If two pieces of equipment were to operate concurrently, the noise level would increase to 85 dBA L_{eq}, and when three identical sound levels are combined, the noise level would to 87 dBA L_{eq}. At a distance 240 feet (sensitive noise receptor on the dirt bicycle/pedestrian trail north of Watsonville Slough), noise levels would reduce to 68 dBA L_{eq} for single piece of equipment, 71 dBA L_{eq} for two pieces of equipment, and 73 dBA L_{eq} for three pieces of equipment. At a distance of 325 feet (the distance to the closest residential land use), construction noise levels would attenuate to 66 dBA L_{eq} for single piece of equipment, 69 dBA L_{eq} for two pieces of equipment, and 71 dBA L_{eq} for three pieces of equipment. These estimates

assume construction equipment is operating at the Project property line, and that no shielding or other noise control measures are in place at or near the work areas. These maximum noise levels would occur for a short period time, while site preparation, grading, and paving activities is completed. The majority of activities at the site would occur away from the project property line, resulting in noise levels lower than the estimated discussed above. In addition, as building construction proceed, the project would require heavy-duty off-road equipment use and the building itself may serve to shield sensitive receptors from on-site construction noise-generating activities.

The estimated worst-case construction noise levels at the residential area to the north of the Project site (66 dBA L_{eq} to 71 dBA L_{eq}) would be approximately 2 dBA L_{eq} to 17 dBA L_{eq} above measured daytime noise levels at site LT-1 (see Table 3.13-2). The noise generated from project construction would be temporary and would not produce the same sound levels every day. In addition, the City does not maintain numeric thresholds for the purposes of evaluating construction noise levels. Neither the General Plan nor the Watsonville Municipal Code specify a noise level for construction activities. Project construction noise, therefore, would not exceed an applicable standard. Furthermore, the proposed Project's potential temporary increase in hourly ambient noise levels of 2 dBA 17 dBA L_{eq} would not result in noise levels at residential areas (66 dBA L_{eq} to 71 dBA L_{eq}) that would interfere with indoor activities or be considered physically harmful. Finally, as required by the WMC, the proposed project's construction activities would be required to occur from 7:00 AM to 7:00 PM on weekdays and 8:00 AM to 5:00 PM on Saturday. These restrictions ensure construction noise levels are highest during daytime hours only when people are generally least sensitive to temporary increase in noise levels.

As described above, the proposed project's construction noise levels would not exceed or conflict with an applicable standard or result in a substantial temporary increase in noise levels that could interfere with indoor activities or result in physical harm at sensitive receptor locations. For these reasons, the proposed Project's temporary construction noise levels would be a less than significant impact.

Although construction noise levels would be less than significant, MIG recommends the proposed Project implement the following BMPs to further reduce noise levels at sensitive receptor locations in proximity of the project site:

Construction Noise Control BMPs. To reduce potential construction noise levels from project construction activities, the City shall require the applicant:

- Restrict Work Hours: All construction-related work activities, including deliveries, shall follow more restrictive noise measures than those required in Watsonville Municipal Code.
- Construction activities shall not take place between the hours of 7:00 PM and 7:00 AM on weekdays, nor prior to 8:00 AM or after 5:00 PM on Saturday. No work shall occur on Sundays or holidays.
- A sign shall be posted at a conspicuous location near the main entry to the site, prominently displaying these hour restrictions and identifying the phone number of the job superintendent.
- Control Construction Traffic and Site Access. Construction traffic, including soil and debris hauling, shall follow City-designated truck routes and shall avoid routes that contain residential dwelling units to the maximum extent feasible given specific project location and access needs.
- Construction Equipment Selection, Use, and Noise Control Measures. The following measures shall apply to project construction equipment:

- Contractors shall use the smallest size equipment capable of safely completing necessary work activities.
- Construction staging shall occur as far away from residential and other noise-sensitive land uses as possible.
- All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be shielded and located as far from noise-sensitive land uses as practical. Shielding may consist of structures or three- or four-sided enclosures provided the structure/enclosure breaks the line of sight between the equipment and the noise-sensitive land use and provides for proper ventilation and equipment operation.
- Heavy equipment engines shall be equipped with standard noise suppression devices such as mufflers, engine covers, and engine/mechanical isolators, mounts, etc. Equipment shall be maintained in accordance with manufacturer's recommendations during active construction activities.
- Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
- The project shall connect to existing electrical service at the site to avoid the use of stationary power generators (if technically, logistically, and economically feasible and approved by the electric service provider).
- No radios or other amplified sound devices shall be audible beyond the project property line.
- Prepare a Construction Noise Complaint Plan. The Construction Noise Complaint Plan shall:
    a. Identify the name and/or title and contact information (including phone number and email) for a designated project and City representative responsible for addressing construction-related noise issues. The project representative shall be the property owner or construction job superintendent. The City representative shall be the City Engineer or designee.
    b. Include procedures describing how the designated Project representative will receive, respond, and resolve construction noise complaints. At a minimum, upon receipt of a noise complaint, the project representative shall notify the City contact, identify the noise source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint.

<u>On-Site Operational Noise</u>

The Environmental Noise Assessment prepared for the project included the evaluation of potential noise levels associated with the operation of the proposed warehouse distribution center (Charles M. Salter Associates, Inc. 2022, pp. 6 to 8). The operational analysis assumed:

- The facility would be staffed 24 hours a day.
- The maximum number of deliveries would not exceed 24 trucks (equal to 48 one-way truck trips).
- Truck deliveries would only occur during the daytime.
- Nighttime work will be contained within the warehouse and loading dock doors would be closed during times when a truck is not present.
- Rooftop mechanical equipment would be controlled to meet all City requirements.

This analysis estimated daily noise exposure (CNEL), hourly average nighttime noise exposure (L_{eq}), and maximum noise levels (L_{max}) at the closest sensitive residential receptor location to the north of the site.

Daily Noise Exposure (CNEL). The daily noise exposure analysis evaluated noise from on-site vehicle traffic (car and truck trips, shipping activities) and rooftop heating, ventilation, and air conditioning equipment. Vehicle and truck traffic was assumed to occur approximately 350 feet from the nearest sensitive residential receptor, while the HVAC equipment was assumed to be located 700 feet from the same residential receptor. The generator was not considered the daily noise exposure analysis because it would not operate under typical daily conditions; rather, it would only operate under testing and emergency conditions. The results of the analysis indicate the proposed project would generate a noise exposure level of 41 CNEL at the nearest sensitive residential receptor. This project noise level is approximately 17 dBA to 20 dBA below the measured ambient noise level on Lighthouse Drive (58 CNEL to 61 CNEL, see Table 3.13-2). The proposed project, therefore, would not generate a daily noise exposure level that exceeds the City's acceptable noise exposure level for single-family (60 CNEL) or multi-family (65 CNEL) residential land uses or otherwise result in a substantial permanent increase in noise levels in the vicinity of the project.

As noted above, the Environmental Noise Assessment prepared for the project assumed the facility could generate 48 one-way truck trips; however, the Transportation Impact Study prepared for the project assumed the proposed warehouse distribute center would generate 91 daily one-way truck trips. The increase in truck trips from 48 to 91 would result in an approximately 2.8 dBA change in vehicle trip noise levels.[5] This difference would not alter the daily noise exposure conclusions discussed above.

Nighttime Noise Levels. The nighttime noise level analysis evaluated noise from rooftop HVAC equipment. Although the facility could be staffed 24 hours, deliveries would not occur during the nighttime hours. The nighttime noise level analysis, therefore, evaluated noise levels from rooftop HVAC equipment only. The analysis assumed each HVAC unit would produce a sound level of 80 dBA at a distance of three feet, there would be four units in operation concurrently, and the units would be located 700 feet from the nearest residential receptor. At this distance, the rooftop HVAC units would generate an exterior noise level of 42 dBA L_{eq}. This project noise level is approximately 3 dBA to 13 dBA below the measured nighttime noise levels on Lighthouse Drive (45 dBA L_{eq} to 55 dBA L_{eq}, see Appendix E). The proposed project, therefore, would not generate substantial nighttime noise levels.

Maximum Noise Level. The maximum noise level analysis evaluated noise from single-events such as truck movements, backup alarms, air brakes, HVAC operation, and back-up generator operation. The analysis indicates the highest noise level would be associated with a backup alarm (59 dBA L_{eq}). This maximum noise level is below the measured maximum noise levels on Lighthouse Drive (70 dBA L_{max} to 86 dBA L_{max}, see Table 3.13-2), indicating that noise from the distribution facility would be lower than typical single event noise levels on Lighthouse Drive.

5 The total combined sound pressure level from multiple, identical sources of noise at a receiver location can be calculated according to the equation $SPL_{Total} = SPL_1 + 10 * Log (N)$, where SPL_1 = Sound pressure level of one source and N = Number of identical sources to be added.

As described above, the proposed project would not generate operational noise levels that exceed City standards or otherwise result in a substantial permanent increase in noise levels. This impact would be less than significant.

Off-Site Traffic Noise

The proposed Project would generate traffic that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three dBA increase in traffic-related noise levels (Caltrans, 2013a). If the proposed project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels.

The Transportation Impact Study prepared for the proposed project (Appendix F of this Initial Study) indicates that the project would result in 283 weekday trips per day (465 total passenger car equivalent trips), including 38 AM peak hour trips and 29 PM peak hour trips. All these trips would be added to Manabe Ow Road before dispersing to their final destinations. Existing peak hour traffic data presented in the Transportation Impact Study indicates traffic volumes on Manabe Ow Road at proposed driveway locations are equal to 45 AM peak hour trips and 55 PM peak hour trips. Assuming peak hour traffic volumes are approximately 10% of total traffic volumes, the average daily traffic volume on Manabe Ow Road adjacent to the Project site would be between 450 and 550 vehicles. The proposed project would not result in a doubling of peak hour or daily traffic volumes on Manabe Ow Road and, therefore, would not result in a substantial, permanent increase in noise levels along the roadways used to access the project.

Other Planning Disclosures – Noise and Land Use Compatibility

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA.

As shown in Table 3.13-2, the measured ambient noise levels at the project site ranged from 58 CNEL to 61 CNEL. The City's General Plan establishes 80 CNEL as the normally acceptable noise exposure limit for industrial land uses. Therefore, the proposed Project would not be exposed to unacceptable exterior noise levels that exceed City General Plan standards.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. The potential for groundborne vibration is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation in close proximity to occupied buildings. For the proposed project, the largest earthmoving equipment is anticipated to operate primarily during the site preparation, grading, and paving phases. This equipment would operate at least 300 feet from any sensitive, occupied building. At this distance, groundborne vibration from typical construction equipment would not be detectable. This impact would be less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The proposed project site is located approximately two miles south of the Watsonville Municipal Airport. Based on an Aircraft Noise Monitoring Report prepared by WJV Acoustics in 2018, the project site is located outside of the airport's 65 CNEL noise contour zone under both existing (2016) and future (2036) conditions. The proposed project, therefore, would not expose people working at the project site to excessive aircraft noise levels. No impact would occur.

3.13.4 References

California Department of Transportation (Caltrans) 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol.* Sacramento, California. September 2013.

Charles M. Salter Associates, Inc. 2022. *Watsonville Beverage Distribution (GBxMB), Watsonville, CA Environmental Noise Assessment.* July 22, 2022.

City of Watsonville, 2005. General Plan. Available at: https://www.cityofwatsonville.org/160/2005-General-Plan.

City of Watsonville, 2010. *Manabe Ow Business Park Specific Plan.* December 2010..

U.S. Federal Highway Administration (FHWA) 2010. "Construction Noise Handbook, Chapter 9 Construction Equipment Noise Levels and Ranges: <https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00.cfm>

WJV Acoustics, August 29, 2018. Aircraft Noise Monitoring Report Watsonville Municipal Airport. https://www.cityofwatsonville.org/DocumentCenter/View/12654/Watsonville-Airport-Noise-Report-8-29-18 (accessed February 4, 2022)

3.14 POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce a substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

Based on information from the U.S. Census Bureau, the City of Watsonville population was estimated to be approximately 52,067 in 2021 (U.S. Census Bureau 2022). The average number of persons per household in Watsonville in 2021 was 3.63. Approximately 28,514 jobs were provided within the City of Watsonville in 2020, that number is projected to increase to 30,303 jobs by the year 2045 (AMBAG 2022).

3.14.2 Regulatory Setting

Regional

Moving Forward Monterey Bay 2045

The Association of Monterey Bay Area Governments (AMBAG) Metropolitan Transportation Plan/ Sustainable Communities Strategy, Moving Forward Monterey Bay 2045 explores how the region will meet its transportation needs for the period through 2045, considering existing and future land use patterns, and population and job growth. It identifies and prioritizes expenditures of this anticipated funding for transportation projects of all transportation modes: highways, streets and roads, transit, rail, bicycle and pedestrian, aviation, as well as transportation demand management (TDM) measures and transportation systems management (TSM).

3.14.3 Impact Discussion

Would the project:

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. (Responses a – b). The project would construct a warehouse that would support approximately 75 jobs. The project is consistent with the land use and zoning designations for the site. Therefore, the project would not result in unplanned growth either directly or indirectly. No housing or existing people would be displaced as a result of the project, therefore the project would not result in the need for the construction of replacement housing elsewhere. There would be no impact to population or housing.

3.14.4 References

Association of Monterey Bay Area Governments (AMBAG). 2022. Monterey Bay 2045 Moving Forward. June 2022.

U.S. Census Bureau. 2020. QuickFacts. Watsonville city, California. Accessed July 29, 2022 at https://www.census.gov/quickfacts/watsonvillecitycalifornia

3.15 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

3.15.1 Environmental Setting

Fire Protection

The City of Watsonville is served by the Watsonville Fire Department. The Department includes Fire Suppression, Emergency Medical Services, Fire Training, and Fire Prevention Divisions. The Department provides services related to fire prevention, training and safety, which include public education and inspection services, and standard fire department operations, which include emergency response and development of hazard pre-incident plans. The Department serves the 6.6 square miles of Watsonville and its 54,142 residents. In addition, the Department provides service to unincorporated areas near Watsonville, which increases the service area to approximately 14 square miles and a population of 60,000.

The Watsonville Fire Department currently operates two fire stations, Station 1 and Station 2. Station 1 is staffed with six to seven rotating fire fighters with one engine. Station 2 is staffed with three to four rotating fire fighters and one engine. Both stations have paramedics on call. Fire Station 1 would likely be the first to respond to calls from the project site, as it one mile to the east at 115 Second Street.

The project could increase demand for fire services. The project's close proximity to Station 1, compliance with the California Fire Code, and additional project review by the Fire Department would result in a less than significant impact on fire protection.

Police Protection

Police protection services for the project area are provided by the City of Watsonville Police Department (WPD), located at 215 Union Street, approximately two miles east of the proposed project and roughly six to eight minutes driving time form the site.

Schools

The Pajaro Valley Unified School District (PVUSD) provides public education in the City of Watsonville and the surrounding area. PVUSD delivers educational programs to over 19,000 students at 16 elementary schools, six middle schools, and three high schools. Additionally, the PVUSD offers five charter schools, 17 children's centers, a continuation high school, Adult Education School, and two alternative schools. Out of that group, seven of the elementary schools, two of the middle schools and two of the high schools are located in the Watsonville-Freedom area. The balance is located in the Aptos area and rural areas beyond the City Limits, including northern Monterey County.

Parks

The City of Watsonville contains 26 parks totaling 143 acres of parkland. The nearest trail facilities to the project site are the Watsonville Slough trail located along the northern bank of Watsonville Slough in the project area. The trail extends north along Highway 1 near the northwest corner of the project site. East of Ohlone Parkway, the Watsonville Slough trail extends along the north, east and southern banks of the Slough. A future trail is also denoted along the project site's southern property boundary along the railroad corridor on the Watsonville Slough Trails map (Watsonville 2018).

The nearest parks to the project site are Seaview Ranch Park and Las Brisas Park located in the residential neighborhoods north of the project site. Seaview Ranch Park is approximately 0.15 mile northeast of the project site on Lighthouse Drive and Las Brisas Park is located at the corner of Lighthouse Drive and Nueva Vista Avenue approximately 0.35 northeast of the project site.

3.15.2 Regulatory Setting

Local

Watsonville 2005 General Plan

The Watsonville General Plan contains the following policy fire protection policy and Implementation Measures that would be applicable to the project:

> *Policy 12.F Fire Safety Standards* - The City shall use development approval authority, code enforcement, and periodic inspections to ensure that fire prevention standards are maintained.
>
> *Implementation Measure 12.F.1* - Access – The City shall require that new driveways and roadways meet minimum standards of the Uniform Fire Code or subsequent standards established by city ordinances.
>
> *Implementation Measure 12.F.8* - Fire Flow – New development shall be conditioned to provide adequate water for fire suppression in accordance with city standards for minimum volume and duration of flow.

Implementation Measure 12.F.9 - Open Area – Property owners shall be responsible for maintaining vacant sites free of trash, weeds, or other fire safety hazards.

Implementation Measure 12.F.10 - Building Safety – Property owners shall be responsible for maintaining their structures at a reasonable degree of fire and life safety as identified by the uniform fire, building, mechanical, electrical and other such adopted codes and city ordinances.

Implementation Measure12.F.11 - Built-in Fire Protection – The City shall continue to promote the installation of built-in fire extinguishing systems and early warning fire alarm systems. The City acknowledges that fact that built-in fire protection is a better substitute than expanding public fire protection services.

Municipal Code

The City has also adopted the California Fire Code (Chapter 9 of Title 8 of the municipal code) with modifications for local conditions. Applicable policies from the code include:

8-9.304 - Combustible waste material: Including weeds, grass, vines or other growth capable of being ignited and endangering property, will be removed by the owner or occupant.

8.9-903 - Automatic sprinkler systems: All buildings will be required to have approved automatic sprinkler systems in new buildings and structures.

3.15.3 Impact Discussion

Would the project:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

i) Fire protection?

Less than Significant Impact. The proposed project is anticipated to marginally increase demand for fire protection services, but it is not expected to compromise response times, exceed planned staffing levels or equipment, nor require the construction of additional fire facilities. Additionally, the Watsonville Fire Department and Fire Inspector would review the design of project plans prior to the issuance of a building permit to ensure incorporation of adequate fire and life safety features in the project. The project site is within four minutes driving distance from the nearest fire station at 115 2nd Street and therefore meets the targeted response time, consistent with Public Safety Policy 12.H.1. The applicant is required to pay applicable fire impact fees at the time of issuance of the building permits, currently $0.45 per square foot of commercial and industrial uses. Payment of applicable fire impact fees and compliance with the Watsonville Fire Code would ensure that the proposed project does not significantly increase the need for fire protection services and result in the need for the construction of new or physically altered facilities in order to meet the City's response times. Therefore, the proposed project would have a less than significant impact on fire protection services.

ii) Police?

Less than Significant Impact. The proposed project is anticipated to marginally increase demand for law enforcement services, but it is not expected to compromise response times, exceed planned staffing levels or equipment, nor require the construction of additional fire facilities. The proposed project would be served by the Watsonville Police Department, which is located at 215 Union Street, and is located less than two miles away and within six minutes driving distance of the project site. The City of Watsonville General Plan requires a police officer to population ratio of one officer to 600 people in order to maintain acceptable service levels and police response time. In addition, one civilian staff is required per three officers. Based on those requirements, the proposed project would require less than an officer to serve the proposed project. However, the proposed project is not anticipated to result in an impact to law enforcement services that would result in the need for the construction of new or physically altered facilities in order to meet the City's response times. Therefore, the proposed project would have a less than significant impact on law enforcement services.

iii) Schools?

No Impact. The project does not include housing and would not induce population growth; therefore, the project would not increase the demand for school services.

iv) Parks?

Less than Significant Impact. The project may increase the use of local parks and amenities in the area due to additional employees at the site. However, the project would not increase recreational use to the extent that new facilities would be needed. Therefore, the project's impact on parks would be less than significant.

v) Other public facilities?

Less than Significant Impact. The project may increase the use of public facilities in the vicinity. It is not anticipated that the project would increase use of public facilities to the extent that new facilities would be needed. Therefore, the project's impact on other public facilities would be less than significant.

3.15.4 References

City of Watsonville. 2005. General Plan Public Safety Element. Accessed August 4, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/188/12-Public-Safety-PDF.

City of Watsonville. 2020. Watsonville Local Hazard Mitigation Plan. July. Accessed August 4, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/15463/City-of-Watsonville-Local-Hazard-Mitigation-Plan

3.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

3.16.1 Environmental Setting

There are 26 parks in the City of Watsonville totaling 143 acres of park land. The nearest trail facilities are the Watsonville Slough trail located along the northern bank of Watsonville Slough in the project area. The trail extends north along Highway 1 near the northwest corner of the project site. East of Ohlone Parkway, the Watsonville Slough trail extends along the north, east and southern banks of the Slough. A future trail is also denoted along the project site's southern property boundary along the railroad corridor on the Watsonville Slough Trails map (Watsonville 2018).

The nearest parks are Seaview Ranch Park and Las Brisas Park located in the residential neighborhoods north of the project site. Seaview Ranch Park is approximately 0.15 mile northeast of the project site on Lighthouse Drive and Las Brisas Park is located at the corner of Lighthouse Drive and Nueva Vista Avenue approximately 0.35 northeast of the project site.

3.16.2 Regulatory Setting

State

Government Code Section 66477

The Quimby Act (included within Government Code Section 66477) requires local governments to set aside parkland and open space for recreational purposes. It provides provisions for the dedication of parkland and/or payment of fees in lieu of parkland dedication to help mitigate the impacts from new residential developments. The Quimby Act authorizes local governments to establish ordinances requiring developers of new residential subdivisions to dedicate parks, pay a fee in lieu of parkland dedication, or perform a combination of the two.

Local

Watsonville General Plan

The Watsonville General Plan contains the following parks and recreation goal, implementation measure and policy that would be applicable to the project.

Goal 8.2, Facilities - Provide a full range of park and recreation facilities including active recreation areas, passive natural open spaces, and a bicycle/pedestrian trail system. Policy 8.A, Recreation and Parks Planning. The City shall plan for park and recreation needs in coordination with the Pajaro Valley Unified School District, Santa Cruz County, and other groups to meet the demand of the growing population.

Implementation Measure 8.A.4, Passive Open Space - The Recreation and Parks Commission shall use the adopted policies for Environmental Resource Management to protect the passive open space provided by the riparian corridors along Corralitos Creek, Salsipuedes Creek, the Pajaro River, and the wetland areas to Watsonville, Struve, and West Branch Struve Sloughs.

Policy 8.B, Park Acquisition and Development - The City shall designate sites for future parks and recreation facilities and shall continue to finance, acquire, and develop park facilities consistent with the Watsonville Park standards and in proportion to population growth in Watsonville.

Implementation Measure 8.B.4, Park In-Lieu Fees - All residential, commercial, and industrial projects shall be subject to park in-lieu fees established by City Council resolution.

City of Watsonville Parks and Recreation Facilities Master Plan

The September 2009 Parks and Recreation Facilities Master Plan is an overarching plan for the development and implementation of future parks and recreational opportunities. The main goals of the plan are to provide a safe and well-maintained parks and facilities that meet the diverse needs of the growing community, to expand and improve trail connections to parks, open spaces and community destinations, celebrate Watsonville's cultural heritage and encourage community building, and to develop and provide recreational facilities that support the health and wellness of the community.

Watsonville Trails and Bicycle Master Plan for the Watsonville Scenic Trails Network

In November 2012, the City prepared the Watsonville Trails and Bicycle Master Plan for the Watsonville Scenic Trails Network which is a component of the Watsonville Urban Greening Plan. The purpose of the Master Plan was to develop a framework for building an integrated system of trails and bikeways that will link residents to the outdoors. The future network will provide residents pedestrian and bicycle trails that connect to the city's parks, schools, transit facilities, commercial centers, and various public facilities. The future network will also serve transportation and recreation needs and help to encourage personal fitness and an improved quality of life. Building upon past planning efforts and existing facilities, this Master Plan contains detailed trail and bikeway recommendations and guidelines, which together form a comprehensive non-vehicular circulation network.

3.16.3 Impact Discussion

Would the project:

a) Increase the use of existing neighborhood or regional parks or other recreational facilities such that significant physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact. The project consists of a warehouse development with a limited number of employees. No new housing is proposed as part of the project, nor required to support future operations. Employees are anticipated to be local and not result in an influx of new workers to the area. Significant physical deterioration of recreational facilities are not anticipated as a result of the proposed development, as it would not be expected to generate a substantial demand for recreational facilities . As noted above, the project is subject to in-lieu fees to fund recreational needs and improvements. The impact is considered less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Less than Significant Impact. The project is the construction of a warehouse facility and does not require the construction of recreational facilities or the expansion of existing facilities. As stated above, the project does not include new housing and employees are anticipated to be local. As such, the project would not have an adverse physical effect on the environment associated with the provision of recreational facilities.

3.16.4 References

City of Watsonville. 2018. Watsonville Slough Trails. Accessed on July 19, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/2912/Watsonville-Slough-Trails-Map-PDF?bidId=.

3.17 TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3(b), which pertains to vehicle miles travelled?	☐	☒	☐	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

A Transportation Impact Study was prepared for the project by Kimley-Horn, dated July 2022. Prior draft versions of the study were peer reviewed by Hexagon Transportation Consultants, Inc., and the July 2022 final version incorporates revisions made in response to the peer review comments.

The study addresses the project's Vehicle Miles Traveled (VMT) and level of Service (LOS) effects in order to assist the City of Watsonville with planning and the identification of conditions of approval, and to mitigate the Project's VMT impacts or improve identified LOS deficiencies, if necessary. The following discussion and analyses are based on the findings and conclusions of the study, and a copy of the study and the peer review comments are included in this Initial Study as Appendix F.

3.17.1 Environmental Setting

Roadways

The City of Watsonville 2005 General Plan designates roadways within the study area as freeway, major arterial, minor arterial, collector, industrial street, parkway, or local road. Descriptions of the specific roadways included in this study are provided below.

Freeways

Highway 1 - is a north-south freeway spanning from Orange County to Mendocino County. Within the study area, Highway 1 is a four-lane freeway divided with a median. The posted speed limit is 65 miles per hour (mph).

Arterials

Harkins Slough Road - is a four-lane roadway from Green Valley Road to Bayview Drive and a two-lane roadway from Bayview Drive to the Watsonville Slough. It becomes Walker Street from the Watsonville Slough to Front Street. The roadway provides access to the commercial and residential areas near Highway 1. The posted speed limit is 30 mph.

South Green Valley Road - is a four-lane north-south major arterial between Harkins Slough Road and City Limits. The roadway serves commercial land uses and is divided by a median between Harkins Slough Road and Main Street. The posted speed limit is 45 mph north of Main Street and 30 mph south of Main Street.

Riverside Drive - is an east-west major arterial providing access to industrial, commercial, and residential uses within the study area. Riverside Drive spans from Lee Road to the west and Highway 101 to the east. Riverside Drive is a four-lane roadway east of the Highway 1 northbound ramp intersection and two-lane roadway west of the Highway 1 southbound ramp intersection. Between Lee Road and Sakata Lane, the posted speed limit of 45 mph. Between Sakata Lane and Blackburn Street, the posted speed limit is 25 mph. Between Blackburn Street and Highway 101, the posted speed limit is 45 mph.

West Beach Street - is an east-west major arterial providing access to industrial and residential uses within the study area. The roadway connects to Palm Beach State Park to the west and Hushbeck Avenue to the east. West Beach Street has four lanes west of Harvest Drive and two lanes east of Harvest Drive. The posted speed limit for West Beach Street from west of Lee Road to Industrial Road is 45 mph. The posted speed limit for Beach Street from Industrial Road to Walker Street is 30 mph. The posted speed limit on East Beach Street from Walker Street to Hushbeck Avenue is 25 mph.

Walker Street - is a two-lane north-south minor arterial spanning from Harkins Slough Road to the Pajaro River. The street provides access to industrial and residential uses within the study area. The posted speed limit of 30 mph.

Collectors

Ohlone Parkway - is a four-lane, north-south minor arterial from Main Street to Harkins Slough Road and a two-lane, north-south minor arterial from Main Street to West Beach Street. Ohlone Parkway provides access to industrial, commercial, and residential land uses. Within the study area, the posted speed limit along is 35 mph.

Local Streets

Loma Vista Drive - is a two-lane east-west local street. Loma Vista Drive connects to Paseo Drive to the west and Paradiso Court to the east. The roadway serves residential land uses. The posted speed limit is 25 mph.

Lighthouse Drive - is a two-lane east-west local street. Lighthouse Drive connects to Paseo Drive to the west and Santa Victoria Avenue to the east. The roadway serves residential land uses. The posted speed limit is 25 mph.

Manabe Ow Road - is a two-lane east-west local street. The roadway serves industrial land uses. There is no posted speed limit; therefore, the speed limit is assumed to be 25 mph.

Truck Routes

The following roadway segments are designated truck routes as stated in Section 4-10 of the City's Municipal Code:

- Riverside Drive along State Route 129 in its entirety

- West Beach Street between Walker Street to Lee Road
- Industrial Road in its entirety
- Walker Street between Riverside Drive (Highway 129) to Ford Street
- Kearney Street from Walker Street east to Gardner Court and west on Kearney Extension from Walker Street in its entirety
- Ford Street from Walker Street westerly in its entirety
- West Lake Avenue from Walker Street east to Gardner Court
- Harvest Drive in its entirety
- Lee Road between the northern City limit boundary and the southern City limit boundary
- Ohlone Parkway (between West Beach Street and Manabe Ow Road)
- Manabe Ow Road from Ohlone Parkway to its western limit and portion of Business Park Road North that is north of Manabe Ow Road and within Assessor Parcel Numbers 018-711-24 and 018-711-28.

A map showing the locations of the designated truck routes in relation to the project site is shown on Figure 13 .

Bicycle and Pedestrian Facilities

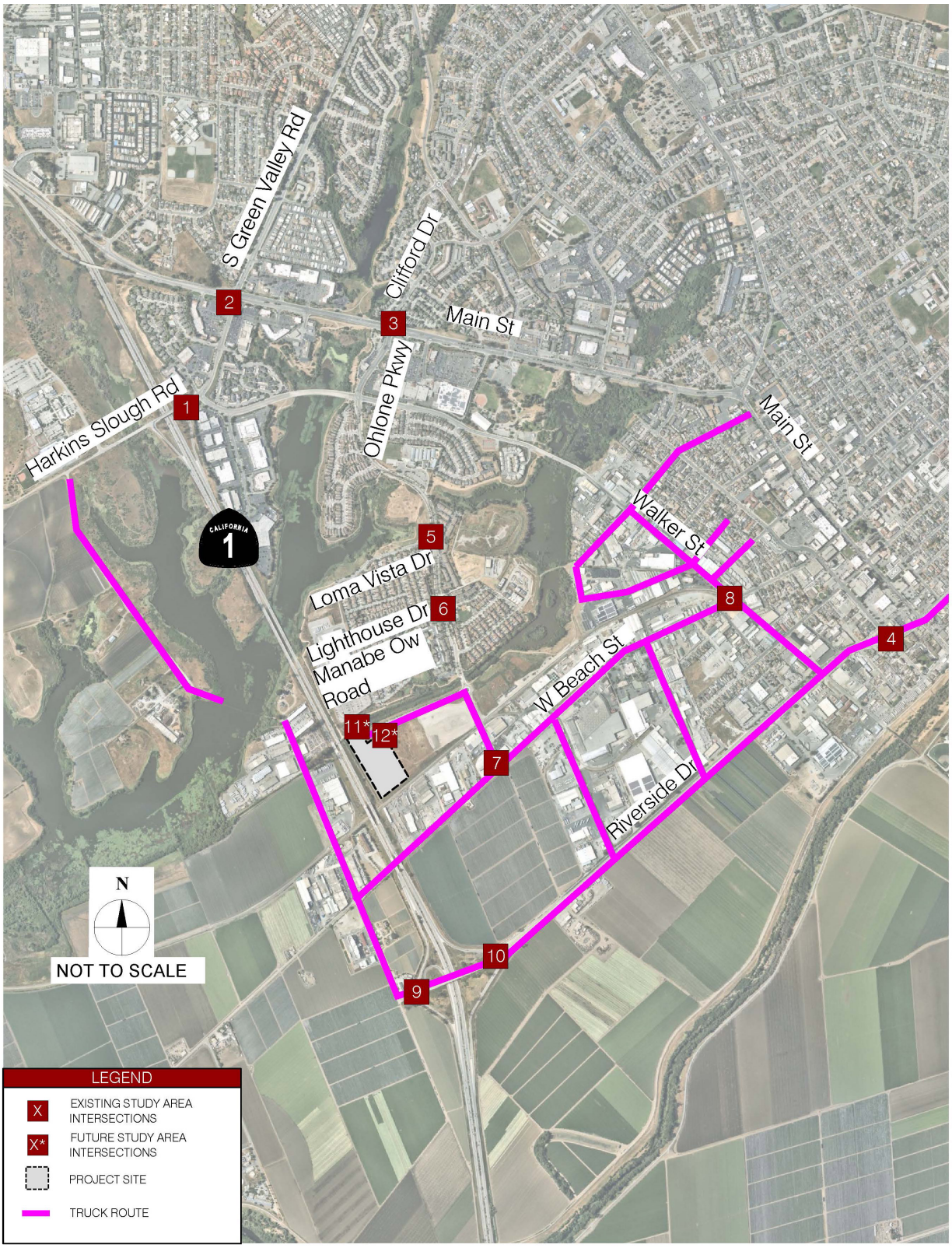
There are several existing and proposed bicycle facilities within the study area. Class I bicycle facilities are bike paths/trails having a separate right-of-way and designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. Class II bicycle facilities are on-street lanes for bicyclists adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Class III bicycle facilities are shared on-street lanes designated by signs or pavement markings for shared use with pedestrians or motor vehicles, but have no separated bike right-of-way or lane striping. Within the project study area, there are Class I, II, and III bicycle facilities along the following corridors:

Class I Bike Paths

- Ohlone Parkway from Harkins Slough Road to Manabe Ow Road
- Pennsylvania Drive from South Green Valley Road and Clifford Avenue
- Main Street from Pennsylvania Drive and Freedom Boulevard

Class II Bike Lanes

- West Beach Street from Highway 1 to Walker Street
- Walker Street from Harkins Slough Road to Riverside Drive
- Rodriguez Street from Main Street to Riverside Drive
- Freedom Boulevard from Main Street to Sudden Street
- South Green Valley Road from Harkins Slough Road to Holohan Road
- Airport Boulevard from Highway 1 to Green Valley Road



Source: Kimley Horn July 2022

Figure 13 Truck Routes

Watsonville Manabe Ow West Distribution Facility Project

Class III Bike Routes

- Main Street from Holm Road to Pennsylvania Drive
- West Beach Street from San Andreas Road to Highway 1
- Auto Center Drive from Main Street to Freedom Boulevard
- Freedom Boulevard from Sudden Street to Airport Boulevard
- Riverside Drive from Walker Street to Bronte

In addition to existing facilities, there are future proposed bike facilities in the City's Trails & Bicycle Master Plan on Ohlone Parkway from Manabe Ow Road to West Beach Street and on Riverside Drive from Lee Road to Walker Street. The Monterey Bay Sanctuary Scenic Trail is proposed to run along West Beach Street, the Santa Cruz County Coastal Rail, and Walker Street, south and east of the project site. (Santa Cruz County Regional Transportation Commission)

Pedestrian Facilities

Pedestrian facilities in the project area consist primarily of sidewalks along streets. There are existing sidewalks along the project frontages on Manabe Ow Road.

Transit Facilities

Santa Cruz Metro provides transit services in the study area, as described below.

Route 69W (Capitola/Cabrillo) - operates between the Santa Cruz Metro Center to the Watsonville Transit Center. Route 69W operates on weekdays between 6:37 AM and 10:35 PM on 60-minute headways and on weekends between 7:50 AM and 7:45 PM on 20- to 30- minute headways. The route runs along Airport Boulevard, Freedom Boulevard, and East Beach Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 69A (Capitola/Airport) - operates between the Santa Cruz Metro Center to the Watsonville Transit Center. Route 69A operates on weekdays between 6:20 AM and 7:05 PM on 60-minute headways and on weekends between 7:50 AM and 7:45 PM on 20- to 30- minute headways. The route runs along Main Street and Rodriguez Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 71 (Soquel/Freedom) - operates between Santa Cruz Metro Center to the Watsonville Transit Center. Route 71 operates on weekdays between 5:40 AM and 12:45 AM of the next day on 30-minutes headways, and on weekends between 5:58 AM and 12:45 AM of the next day on 40- to 65-minute headways. The route runs along Freedom Boulevard, Main Street, and Clifford Avenue in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 91X (Cabrillo Express) - operates between Santa Cruz Metro Center to the Watsonville Transit Center. On weekdays, Route 91X operates between 5:55 AM and 5:17 PM on 30-to 60-minute headways. There is no weekend service. The route runs along Main Street and Rodriguez Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 72 (Green Valley - Hospital) - operates on a loop to and from the Watsonville Transit Center. This route services the Watsonville Community Hospital. The route runs along Main

Street, Green Valley Road, Airport Boulevard, Amesti Road, and Pioneer Road. On weekdays, Route 72 operates between 6:45 AM and 6:45 PM on 60-minute headways. There is no weekend service. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 72W (Green Valley- Corralitos) - operates between Browns Valley and Corralitos to the Watsonville Transit Center. There is no weekday service. On weekends, Route 72W operates between 9:25 AM and 6:27 PM on 70-minute headways. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 74S (PVHS/Hospital) - operates on a loop to and from the Watsonville Transit Center. This route services Pajaro High School and the Watsonville Community Hospital. On weekdays, Route 74S operates twice, one loop from 7:00 AM to 8:02 AM and one loop from 3:05 PM to 3:00 PM. The nearest bus stop to the project site is at the intersection of Ohlone Parkway and Bree Lane.

Route 75 (Green Valley - Wheelock) - operates between the Watsonville Transit Center and Wheelock and Monte Vista Schools. On weekdays, Route 75 operates between 5:15 AM and 7:15 PM on 60-minute headways. On weekends, the route operates between 6:05 AM to 6:45 PM on 70-minute headways. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Route 79 (East Lake/Crestview) - operates on a loop to and from the Watsonville Transit Center. This route services Watsonville High School, East Lake Shopping Center, and Crestview Center. On weekdays, Route 79 operates between 7:25 AM and 6:00 PM on 60-minute headways. On weekends, the route operates between 8:30 AM and 5:06 PM. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and West Lake Avenue.

Vehicle Miles Traveled (VMT)

With the passage of SB 743, VMT has become an important indicator for determining if a new development will result in a “significant transportation impact” under the California Environmental Quality Act (CEQA). The study prepared by Kimley-Horn summarizes the VMT analysis and resultant findings for the proposed development.

The City of Watsonville has prepared Draft VMT analysis guidelines for determining VMT impacts. While the City of Watsonville has a VMT tool that can generally be used to determine the impact of a project, this requires a similar land use to be already constructed in the same TAZ of the project. However, because there are no industrial uses within the project’s TAZ, the Santa Cruz County Travel Demand Model (SCCTDM) was used for this analysis.[6] For employment-based uses, the SCCTDM is used as the principal tool to determine VMT while the City of Watsonville’s draft VMT guidelines were used as the basis for the analysis methodology. The SCCTDM’s base year was used for this analysis and is representative of 2019 conditions.

Per the City of Watsonville Draft VMT analysis guidelines, the threshold for employment-based VMT uses is set at 15 percent below the regional average. Note that for the purposes of this analysis, the region is defined as Santa Cruz County. Therefore, if the project VMT were to exceed

[6] The currently existing Fedex warehouse facility located north of the project site was not included in the last update of the travel demand model based on land use data and building permits provided by the City of Watsonville. (Ben Hui, Kimley-Horn. Personal communication, October 3, 2022.)

the 15 percent below the regional average VMT, this would be considered a significant transportation impact.

3.17.2 Regulatory Setting

State

Senate Bill 743

Senate Bill 743 (SB 743) establishes criteria for determining the significance of transportation impacts using a vehicle miles traveled (VMT) metric intended to promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses. Specifically, SB 743 requires analysis of VMT in determining the significance of transportation impacts. Local jurisdictions are required by Governor's Office of Planning and Research (OPR) to implement a VMT policy by July 1, 2020.

SB 743 did not authorize OPR to set specific VMT impact thresholds, but it did direct OPR to develop guidelines for jurisdictions to utilize. CEQA Guidelines Section 15064.3(b)(1) describes factors that could indicate whether a development project's VMT may be significant.

Regional and Local

Santa Cruz County Regional Transportation Commission

The Santa Cruz County Regional Transportation Commission (SCCRTC) is the Regional Transportation Planning Agency for Santa Cruz County. Created by the State of California in 1972 to carry out transportation responsibilities that cross city-county boundaries in Santa Cruz County, the SCCRTC sets priorities for major improvements to the transportation infrastructure and network of services, including highways, major roads, bus transit, paratransit, rail and alternative transportation facilities. In addition, the SCCRTC pursues and allocates funding for all elements of the transportation system, adopts policies to improve mobility, access and air quality, plans for future projects and programs to improve the regional transportation system while improving the region's quality of life, informs businesses and the public about the need to better manage the existing transportation system, and conducts programs to encourage the use of alternative transportation modes.

Santa Cruz County Measure D

In November 2016, Santa Cruz County voters approved the Measure D transportation sales tax, which went into effect in April 2017. The ½-cent local sales tax will fund projects and improvements over the next 30 years. The measure is projected to generate $17 million per year and projects include road improvements, bicycle and pedestrian projects, safe routes to school projects, increased transit and paratransit services, and construction and maintenance of the Coastal Rail Trail. These projects are intended to ease congestion and result in reduced greenhouse gas emissions.

Neighborhood Traffic Plan

The City of Watsonville's Neighborhood Traffic Plan was developed to address concerns expressed by residents regarding speeding and other traffic complaints within their neighborhoods. The Neighborhood Traffic Plan seeks to improve neighborhoods by addressing safety and quality-of-life issues by providing residents the opportunity to become actively involved in the improvement of their neighborhoods. Residents are more familiar with traffic concerns

within their neighborhoods, which is why community involvement in this effort is crucial. The Neighborhood Traffic Plan is designed to bring neighborhoods together, provide residents an understanding of what traffic calming is and to identify appropriate measures, which can alter travel behavior to the betterment of the impacted neighborhoods. The intent is to improve safety and to positively impact resident's quality of life.

Monterey Bay Sanctuary Scenic Trail Network/Rail Trail

The Monterey Bay Sanctuary Scenic Trail Network/Rail Trail is a 50 mile bicycle and pedestrian pathway along Santa Cruz County that runs adjacent to train tracks, coexisting with existing and potential future train service. The pathway provides a non-motorized coastal path for walkers, joggers, cyclists, people with mobility impairments, locals, and visitors and the adjacent rail provides access to 44 schools and 92 parks. The final master plan was adopted in 2013.

Watsonville VMT Mitigation Banking Program

The Watsonville VMT Mitigation Banking Fee Program is a programmatic approach to respond to the need for feasible VMT mitigation programs. Programmatic approaches that rely on collectively funding larger projects allow a project to obtain an amount of mitigation commensurate with their impact, include only a single payment without the complexity of ongoing management, and do not require on-going mitigation monitoring. Programmatic approaches can also provide a public benefit in terms of funding transportation improvements that would not otherwise be constructed, resulting in improvements to congestion, GHG emissions, increased transportation choices, and additional opportunities for active transportation. The VMT Mitigation Banking Fee Program currently calculates the cost per VMT reduction as $1,524.21.

Watsonville 2005 General Plan

The Watsonville 2005 General Plan was adopted in 1994 and remains in effect. The following policies from the General Plan are applicable to the transportation impacts of the proposed project.

- Policy 1O.A Street and Highway Improvements. The City shall pursue a program of regularly scheduled maintenance and street improvements, accompanied by the planned extension of roadways to serve new development.

- Implementation Measure 10.A.2 Costs of Improvements – The City shall use the development review process to ensure that new development projects creating a need for additional roadway improvements pay an appropriate share of the costs, based on traffic impact fees and assessment districts.

- Policy 1O.C Level Of Service - The City shall maintain a minimum Level of Service D (LOS D) on all arterial and collector streets serving the City except for those accepted to operate at less than an LOS D in the 1988-2005 Major Streets Master Plan as updated in 1992.

- Implementation Measure 10.C.2 Project Funding – The City shall require as a condition of approval that all development or rezoning which would contribute to a deterioration of existing level of service below level LOS D, provide the necessary improvements, contribute to their provision through the payment of traffic fees, or otherwise mitigate impacts to maintain at least an LOS D. Where existing conditions are already below LOS D, any new development must mitigate traffic conditions to the extent of preventing further deterioration in level of service or, if possible, improving level of service.

- Policy 10.G Transit Promotion - In order to encourage use of transit by all age groups and for all purposes, the City shall ensure that transit centers and stops are safe, attractive and do not deter transit use.

- Policy 10.K Bicycle Facilities Development - The City shall plan for, and implement a comprehensive network of bicycle facilities in order to promote the bicycle as an alternative to the private automobile.

- Policy 10.M Bicycle Support Facilities - The City shall encourage bicycle facilities in new developments, as a commute alternative.

- Policy 10.P Pedestrian Access - Access for pedestrian travel shall be maintained where it already exists and provided where it does not, in order to prevent or eliminate barriers to pedestrian travel.

- Policy 10.T Landscaping - The City shall encourage the use of vegetation to create or enhance scenic vistas and to serve as buffers for transportation facilities.

- Policy 10.U Truck Facilities And Routing - Commodity movement utilizing trucks shall be encouraged and facilitated while related impacts on City streets are minimized to the extent possible.

- Policy 10.V Commercial Truck Routes - The City shall take all reasonable actions to prevent heavy truck traffic from using neighborhood collector streets.

- Policy 10.Y Emergency Access - The City shall ensure that emergency or secondary access is provided for all new development in the city's service area.

3.17.3 Impact Discussion

Would the project:

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less Than Significant Impact. The proposed project would result in an increase in vehicle trips on the surrounding roadways. However, the project's effect on vehicle delay on nearby roadways would not be considered a significant transportation impact under CEQA, as VMT, not LOS, is the City's adopted standard for assessing transportation impacts. For a discussion of the project's VMT impacts, refer to checklist Impact Question b), below.

The project would not conflict with any General Plan policies related to bicycle, pedestrian or transit facilities. There are existing Class II bike lanes on Manabe Ow Road and Slough Road West, adjacent to the project site, and a fully developed sidewalk extends along the length of the street across the project frontage and extending to Ohlone Parkway to the east. These facilities are available to serve the project. There are also existing bicycle and pedestrian facilities along Ohlone Parkway, approximately 1,000 feet east of the project site. Santa Cruz Metro bus line 74S runs along Ohlone Parkway and would also be available to serve the project site.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3(b), which pertains to vehicle miles travelled?

Less Than Significant with Mitigation Incorporated. As previously mentioned, Kimley-Horn conducted a VMT analysis to determine the proposed project's impacts under CEQA. The Kimley-Horn study states that while the City of Watsonville has a VMT tool that can generally be used to determine the impact of a project, this requires a similar land use to be already constructed in the same Traffic Analysis Zone (TAZ) of the project. However, because there are no industrial uses within the project's TAZ, the Santa Cruz County Travel Demand Model (SCC TDM) was used for this analysis. For employment-based uses, the SCC TDM is used as the principal tool to determine VMT while the City of Watsonville's VMT Policy was used as the basis for the analysis methodology. The SCC TDM's base year was used for this analysis and is representative of 2019 conditions.

Per the City of Watsonville VMT Policy, the threshold for employment-based VMT uses is set at 15 percent below the regional average. Therefore, if the project VMT were to exceed 15 percent below the regional average VMT, this would be considered a significant transportation impact. For the purposes of this analysis, the region is defined as Santa Cruz County.

In order to calculate the VMT per Employee produced by the project, only home-based work trips attracted to the project's TAZ were multiplied by each individual trip length to obtain the total home-based work VMT. The external VMT for the non-residential land uses was determined by multiplying the calibrated external trip distance by TAZ determined using big data by the total external-internal home-based work trips for that TAZ. The share of industrial employee VMT was then calculated by dividing the trips generated by industrial employees by the total trips generated by employees in the Project's TAZ. Thus, the total industrial home-base work VMT was calculated.

The objective of the VMT analysis is to reduce VMT for commuting to work, returning home or using retail services within the neighborhood by encouraging alternative modes of travel such as walking, bicycling, transit or carpool. VMT analysis is not intended to evaluate how goods and products are shipped and moved in the marketplace. Even though one particular project may generate a significant amount of truck trips, the number of truck trips and resulting VMT for an individual project is incidental when compared to the total VMT generated by residential and office uses. Therefore, the VMT analysis did not account for truck trips.

The results of the VMT analysis showed that the project generated 1,133 daily VMT. When combined with the number of jobs expected to be produced by the project (75 jobs), the project is estimated to produce 15.1 daily VMT per employee. Based on the regional threshold of 11.8 VMT per employee, the project is expected to exceed the regional threshold. The project therefore exceeds the threshold of significance for VMT/employee and as a result the project would potentially have a significant transportation impact.

<u>TDM Program</u>

To mitigate the effects of the VMT impact, the project has prepared a transportation demand management (TDM) program to reduce the project's VMT. In addition, the project would pay into the City's VMT Bank Program to further reduce the project's VMT impact to less than significant.

The VMT Bank Program recommends TDM measures that would individually reduce the project's VMT and trips, with the goal of obtaining a 21.9 percent VMT reduction to make the Project's VMT significant impact less than significant. It should be noted, however, that a maximum 15 percent VMT reduction can be achieved by the TDM program per the County's VMT guidelines. Therefore,

this TDM program aims to achieve the maximum 15 percent VMT reduction, with the remaining 6.9 percent VMT reduction coming from the VMT Bank Program. For the TDM program, the following TDM measures are being proposed:

1. Rideshare Program
2. Mandatory Travel Behavior Change Program
3. Preferential Carpool Parking Spaces
4. Emergency Ride Home Program
5. Alternative Work Schedule
6. Telecommuting
7. Bicycle Parking per Code and Showers/Changing Rooms

Based on the proposed TDM measures, the project would be able to achieve the maximum 15 percent VMT reduction allowed per the County's VMT guidelines.

VMT Mitigation Banking Fee Program

The Watsonville VMT Mitigation Banking Fee Program is a programmatic approach to respond to the need for feasible VMT mitigation programs. The Program currently calculates the cost per VMT reduction as $1,524.21. Therefore, to achieve the 6.9 percent VMT reduction needed after implementation of the TDM program, the project would be responsible to pay $114,315.42, based on the current fee structure (VMT Banking Fee = 75 employees x 1.0 VMT per employee x $1,524.21 per VMT). This is calculated as 6.9 percent being equivalent to a 1.0 VMT per employee reduction.

Impact TRN-1: The project could result in a potentially significant VMT impact.

Mitigation Measure TRN-1a. Implementation of a TDM Program. Prior to the commencement of any operations on the project site, the project applicant shall develop and implement a TDM Program that includes the following TDM measures to reduce vehicle trips by employees of the project:

8. Rideshare Program
9. Mandatory Travel Behavior Change Program
10. Preferential Carpool Parking Spaces
11. Emergency Ride Home Program
12. Alternative Work Schedule
13. Telecommuting
14. Bicycle Parking per Code and Showers/Changing Rooms

Mitigation Measure TRN-1b. Payment of a VMT Mitigation Banking Program. Prior to the commencement of any operations on the project site, the project applicant shall participate in the Watsonville VMT Mitigation Banking Fee Program by paying the established per vehicle mile traveled by employee fee in effect at the time of participation in the Program.

The combination of the implementation of the proposed Mitigation Measure TRn-1a Implementation of a TDM Program and Mitigation Measure TRN-1b Payment of the VMT Banking

Fee Program fee would result in a reduction of VMT generated by the project to a less than significant level, therefore the project would result in a less than significant VMT impact.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. The project proposes two unsignalized access driveways on Manabe Ow Road, on the west and east sides of the proposed building. The westerly driveway is a full access driveway for primarily heavy vehicles, and the easterly driveway is a full access driveway primarily for passenger vehicles and delivery vans. A queuing analysis included in the traffic study concluded that the proposed driveway throats are a sufficient length to accommodate the project queues during the site's peak hours, and that inbound vehicles for the westerly driveway would not be blocked from making westbound left turns into the internal drive aisle and potentially resulting in inbound vehicles extending onto Manabe Ow Road. For the east project driveway, it is not anticipated that any parked vehicles along the eastern side of the project site would be blocked by the outbound vehicles.

A sight distance analysis for each project driveway was conducted to determine if vehicles, vans, and trucks exiting each driveway would have adequate sight distance to observe conflicting traffic along the major roadways adjacent to the project site. The results of the analysis showed that the westerly driveway would be clear of obstructions for a truck exiting the driveway to observe oncoming eastbound vehicles along Manabe Ow Road. For the easterly driveway, the line of sight should be clear of obstructions for a passenger vehicle/van exiting the driveway to observe oncoming westbound vehicles along Manabe Ow Road. To achieve this, the analysis recommended that the shrubbery on the south side of Manabe Ow Road be kept to an appropriate height at which drivers will be able to see over them. The project will include a condition of approval that requires that on-site landscaping along the Manabe Road frontage be maintained at such a height.

d) Result in inadequate emergency access?

Less than Significant Impact. The proposed project would not result in operations that would interfere with emergency response access in the project area. During construction of the proposed facility, access may temporarily be restricted on Manabe Ow Road. However, construction of the project would not prevent emergency vehicles from accessing the project area. The construction contractor would be required to prepare a Traffic Control Plan to manage traffic during construction, including pedestrian and bicyclists, and maintain access to emergency vehicles during construction. The impact is considered less than significant.

3.17.4 Non-CEQA Transportation Related Issues

The Transportation Impact Study included a supplemental traffic operational analysis to determine the effects of the proposed project on the transportation system, including LOS analysis for use by the City Council in determining General Plan consistency. These issues are not addressed in the CEQA Initial Study checklist, however, they are discussed in the following subsections for the purpose of identifying operational deficiencies and recommended improvements.

<u>Intersection Level of Service</u>

The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for the Kimley-

Horn study were determined using methods defined in the Highway Capacity Manual, 6th Edition (HCM 6) within the Synchro 10 traffic analysis software, and described in the table below.

Table 3.17-1: Intersection Level of Service Definitions			
Level of Service	***Description***	***Signalized (Ave. Control Delay per Vehicle - sec./veh.)***	***Unsignalized (Ave. Control Delay per Vehicle - sec./veh.)***
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream.	≤ 10	≤ 10
B	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 10 - 20	> 10 - 15
C	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 20 - 35	> 15 - 25
D	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 35 - 55	> 25 - 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 55 - 80	> 35 - 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50
Sources: Transportation Research Board, Highway Capacity Manual 2016, National Research Council, 2016.			

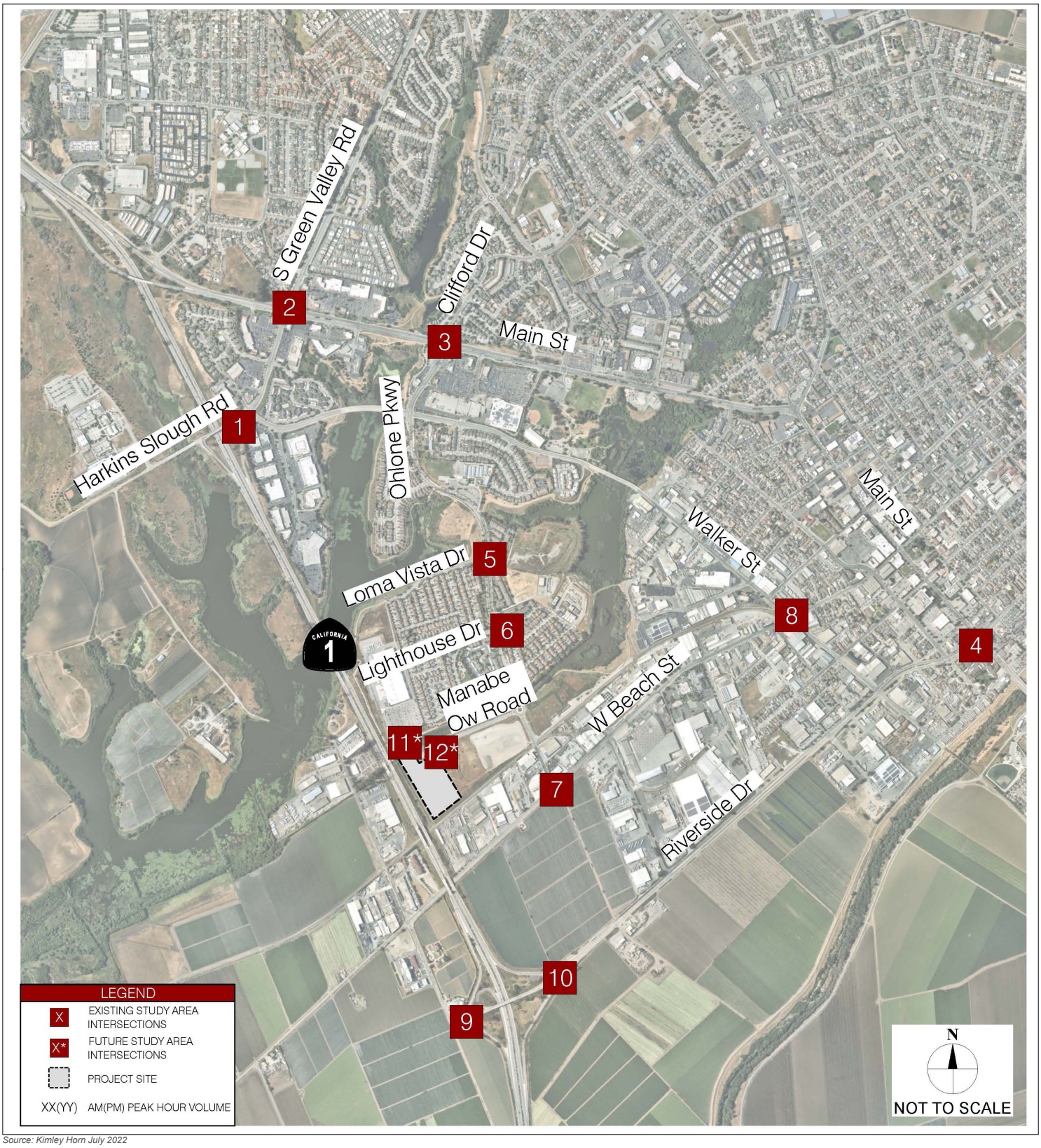
The City of Watsonville does not specify intersection project impact criteria; therefore, impacts were considered project deficiencies if the addition of project traffic causes an intersection to:

- Operate at LOS E or F overall for a signalized or all-way stop-controlled intersection or the worst-case movement for a side-street stop-controlled intersection, or
- Adds five seconds of delay to an intersection already operating at LOS E or F under the comparable No Project scenario.

Existing Conditions

The existing conditions analysis performed by Kimley-Horn is based on traffic counts (including a COVID-adjustment factor) as well as existing roadway geometry and traffic controls as of October 2021. under Existing (2021) Conditions. The study analyzed a total of 12 intersections in the vicinity of the project site, including the two project driveways, listed below and shown on Figure 14.

1. Harkins Slough Road/NB Hwy 1 off-ramp
2. Main Street/S Green Valley Road
3. Main Street/Ohlone Parkway
4. Main Street/E Riverside Drive
5. Ohlone Parkway/Loma Vista Way
6. Ohlone Parkway/Lighthouse Drive
7. Ohlone Parkway/W Beach Street
8. Walker Street/W Beach Street
9. SB Hwy 1 ramps/W Riverside Drive
10. NB Hwy1 ramps/W Riverside Drive
11. Manabe Ow Road/West Project Driveway
12. Manabe Ow Road/East Project Driveway



Source: Kimley Horn July 2022

Figure 14 Project Study Intersection Locations

Watsonville Manabe Ow West Distribution Facility Project

All of the study intersections function within acceptable LOS standards under the Existing (2021) Conditions scenario, except for the following intersections:

#3 – Main Street/Ohlone Parkway (PM peak hour)

#8 – Walker Street/W Beach Street (PM peak hour)

#10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Traffic Volumes

The project is estimated to generate 465 daily Passenger Car Equivalent (PCE) trips, a total of 66 AM peak hour PCE trips (45 inbound and 21 outbound), and 47 PM peak hour PCE trips (27 inbound and 20 outbound). Existing (2021) Plus Project volumes were determined by adding the total project traffic to the Existing (2021) Conditions volume.

Traffic operations were evaluated at the study intersections under existing conditions plus traffic generated by the project (Existing [2021] Plus Project). Intersections that operate unacceptably are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five (5) seconds. The following intersections operate unacceptably, but each are not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

#3 – Main Street/Ohlone Parkway (PM peak hour)

#8 – Walker Street/W Beach Street (PM peak hour)

#10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Background Conditions

Background Conditions analysis is based on traffic volumes from approved projects or projects currently under construction and added to existing volumes. The traffic volumes from pending and approved projects were based on the traffic studies if available. If unavailable, ITE trip generation and trip distribution from studies with similar land uses were used to estimate traffic volumes. Trip estimates and assignments were completed by Kimley-Horn. The adjacent warehousing distribution center at 100 Manabe Ow Road is one of the pending projects included in this scenario. The intersection LOS analysis results under Background Conditions showed that all study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

#1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)

#3 – Main Street/Ohlone Parkway (PM peak hour)

#8 – Walker Street/W Beach Street (PM peak hour)

#10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Background Plus Project Conditions

Background Plus Project volumes were determined by adding the total project traffic to the Background Conditions volume. Traffic operations were evaluated at the study intersections under Background conditions plus traffic generated by the project. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five seconds. The following

intersections operate unacceptably, but each is not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

#1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)

#3 – Main Street/Ohlone Parkway (PM peak hour)

#8 – Walker Street/W Beach Street (PM peak hour)

#10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Cumulative (2040) Conditions

The Cumulative scenario represents the study area in the year 2040. Cumulative (2040) conditions are assumed to be the same as Existing (2021) conditions since no roadway improvements were identified by the City. To account for future development and growth within the County, the Cumulative (2040) traffic volumes were developed by determining a growth rate from the SCCTDM. Existing and future year model outputs were generated for the roadway links in the study area. These link volumes were then used to determine an annual growth rate that was applied to the Existing (2021) volumes. The volumes were reviewed to ensure that there would be no decrease in volumes from Existing to the Cumulative year. For locations where the volumes would decrease, they were conservatively assumed to equal the Existing volume and rounded up to the nearest 10 vehicles. In addition, the pending adjacent warehousing distribution center project at 100 Manabe Ow Road was manually added to the Cumulative scenario. The intersection LOS analysis results under Cumulative (2040) Conditions showed that all study intersections except intersection #7 are expected to operate at unacceptable levels.

Under the Cumulative (2040) Conditions scenario, Intersections #5 and #6 would be below LOS D, which would be inconsistent with General Plan Policy 10.C (Level of Service) that requires that the City maintain a minimum LOS D on all arterial and collector streets. In addition, Intersections #5 and #6 dropping below LOS D would trigger Implementation Measure 10.C.2 (Project Funding), which would require, as a condition of approval, that the project provide the necessary improvements, contribute to their provision through the payment of traffic fees, or otherwise mitigate impacts to maintain at least an LOS D at these intersections.

Cumulative (2040) Plus Project Conditions

Cumulative Plus Project volumes were determined by adding the total project traffic to the Cumulative Conditions volume. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five (5) seconds The intersection LOS analysis results under Cumulative (2040) Plus Project Conditions showed that the following intersections operate unacceptably, but each are not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

#1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)

#2 – Main Street/S. Green Valley Road (PM peak hour)

#3 – Main Street/Ohlone Parkway (AM and PM peak hours)

#4 – Main Street/E Riverside Drive (PM peak hour)

#5 – Ohlone Parkway/Loma Vista Way (AM and PM peak hours)

#6 – Ohlone Parkway/Lighthouse Drive (PM peak hour)

#8 – Walker Street/W Beach Street (AM and PM peak hours)

#9 – SB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

The following intersection operates unacceptably without the project and the increase in delay is more than five (5) seconds. Therefore, it is considered a project deficiency:

#10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours).

Under the Cumulative (2040) Plus Project Conditions scenario, Intersections #5 and #6 would be below LOS D, which would be inconsistent with General Plan Policy 10.C (Level of Service) that requires that the City maintain a minimum LOS D on all arterial and collector streets. In addition, Intersections #5 and #6 dropping below LOS D would trigger Implementation Measure 10.C.2 (Project Funding), which would require, as a condition of approval, that the project provide the necessary improvements, contribute to their provision through the payment of traffic fees, or otherwise mitigate impacts to maintain at least an LOS D at these intersections.

Intersection Improvements

As described above, the intersections of Ohlone Parkway and Loma Vista Way (#5) and Ohlone Parkway and Lighthouse Drive (#6) will operate unacceptably under Cumulative and Cumulative Plus Project conditions. The Kimley-Horn report recommended that roundabouts be installed at each of these intersections in order to improve them to acceptable levels of service. Consistent with Implementation Measures 10.A.2 and 10.C.2 of the General Plan, which were also referenced in the Manabe-Ow Business Park Specific Plan Master EIR, the project will be required to design the two roundabouts and pay a fair share contribution towards their construction.

3.17.5 References

Kimley-Horn. 2022. Transportation Impact Study – Manabe Ow Road Distribution Center. July.

Santa Cruz County Regional Transportation Committee. Monterey Bay Sanctuary Scenic Trail Network (Coastal Rail Trail). Accessed on July 27, 2022 at: https://sccrtc.org/projects/multi-modal/monterey-bay-sanctuary-scenic-trail/

3.18 TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	☒	☐	☐

3.18.1 Environmental Setting

A complete history and ethnography of the project site and surrounding area is included in Section 3.5, Cultural Resources.

3.18.1 Regulatory Setting

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 sets provisions for the intentional removal and inadvertent discovery of human remains and other cultural items from federal and tribal lands. It clarifies the ownership of human remains and sets forth a process for repatriation of human remains and associated funerary objects and sacred religious objects to the Native American groups claiming to be lineal descendants or culturally affiliated with the remains or objects. It requires any federally funded institution housing Native American remains or artifacts to compile an inventory of all cultural items within the museum or with its agency and to provide a summary to any Native American tribe claiming affiliation.

Native American Heritage Commission, Public Resources Code Sections 5097.9 – 5097.991

Section 5097.91 of the Public Resources Code (PRC) established the Native American Heritage Commission (NAHC), whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9 of the PRC, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American sanctified cemeteries, places of worship, religious or ceremonial sites or sacred shrines located on public property. Section 5097.98 of the PRC specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

California Native American Graves Protection and Repatriation Act of 2001

Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection Act (NAGPRA) is consistent with the federal NAGPRA. Intended to "provide a seamless and consistent state policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect," the California NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this process. The act also provides a process for non–federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

Assembly Bill 52

Assembly Bill (AB) 52 specifies that a project that may cause a substantial adverse change in the significance of a tribal cultural resource, as defined, is a project that may have a significant effect on the environment. AB 52 requires a lead agency to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project, if the tribe requests in writing to the lead agency, to be informed by the lead agency of proposed projects in that geographic area and the tribe requests consultation, prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

3.18.3 Impact Discussion

Would the project:

a) Cause a substantial adverse change in the significance of a tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the

lead agency shall consider the significance of the resource to a California Native American Tribe?

a.i) Less Than Significant with Mitigation Incorporated. As detailed in Section 3.5, Cultural Resources, the California Historical Resources Information System (CHRIS) search at the Northwest Information Center (NWIC) showed that there are four known prehistoric archaeological sites within 0.5 miles of the project site, including a known prehistoric site containing multiple burials approximately 250 feet from the project site. While the boundary of the archaeological site is estimated to be well constrained by Watsonville Slough, and not extend into the project site, that is not a certainty, and resources, including human remains could exist within the project site.

As discussed in Section 3.5, a Sacred Lands File (SLF) search was conducted through the NAHC, which was returned with a positive result on March 24, 2022. In conformance with AB52, the tribes were contacted and requested archaeological sensitivity training for construction contractors, and archaeological and/ or Native American monitoring during construction.

Based on the research detailed in Section 3.5, including the pedestrian survey, historic research, and results of the record searches, buried cultural resources could be present and project excavation could result in the discovery of Tribal Cultural Resources (TCRs) archaeological resources. In the event that project ground-disturbing activities disturb, damage, or destroy previously unknown buried prehistoric features, sites or artifacts, a significant impact could occur. Implementation of Mitigation Measure CUL-3, described in Section 3.5, would reduce potential impacts to undiscovered TCRs to a less than significant level.

a.ii. Less Than Significant with Mitigation Incorporated. Some Native American artifacts may not be considered unique archaeological resources under the CEQA guidelines (i.e., if there is not a demonstrable public interest in that information, it does not possess a special and particular quality such as being the oldest of its type or the best available example of its type, and it is not directly associated with a scientifically recognized important prehistoric event or person). However, it is possible for a lead agency to determine that an artifact is considered significant to a local tribe, and therefore be considered a significant resource under CEQA. To prevent otherwise non-significant resources which are significant to a local tribe from getting destroyed or damaged, the implementation of Mitigation Measure TRI-1 would reduce impacts to TCRs to less than significant. This mitigation is detailed below.

> **Mitigation Measure TRI-1: Consider all Native American Archaeological Discoveries to be Significant Resources.** All Native American artifacts (tribal finds) shall be considered as a significant Tribal Cultural Resource, pursuant to PRC 21074 until the lead agency has enough evidence to make a determination of significance. The City shall coordinate with an archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications, as well as an appropriate tribe or tribes, as determined by the NAHC, to develop an appropriate treatment plan for the resources. The plan may include implementation of archaeological data recovery excavations to address treatment of the resource along with subsequent laboratory processing and analysis. An archaeological report will be written detailing all archaeological finds and submitted to the City and the Northwest Information Center.

The implementation of Mitigation Measures CUL-3 and TRI-1 would reduce potential impacts to TCRs to a less than significant level.

3.18.3 References

Lopez, V., 2022. Personal Communication, Amah Mutsun Tribal Band, 3/30/2022, 4/6/2022, 4/9/2022, 4/11/2022. Email and telephone communications. Unpublished record on conversation kept on file by MIG.

Native American Heritage Commission, 2022. Scared Lands File Search Prepared in Support of the Manabe-Ow Business Park Project, Santa Cruz County. March 24, 2020. Unpublished document kept on file with the NAHC and MIG, Inc.

Orozco, Patrick. 2022. Personal Communication, Costanoan Ohlone Rumsen-Mutsun Tribe, 3/30/22, 7/27/2022. Email and telephone communication. Unpublished record on conversation kept on file by MIG.

Overmeyer, Kurt, 2015. Watsonville Growing Opportunities. Available at: www.growinwatsonville.com (accessed on February 4, 2022).

Sayers, Ann Marie. 2022. Personal Communication, Indian Canyon Mutsun Band of Costanoan, 3/30/22, 7/27/2022. Email communication. Unpublished record on conversation kept on file by MIG.

Sayers-Roods, Kanyon. 2022. Personal Communications, Indian Canyon Mutsun Band of Costanoan, 3/30/22, 7/27/2022. Email and telephone communications. Unpublished record on conversation kept on file by MIG.

Zwierlein, Irene. 2022. Personal Communication, Amah Mutsun Tribal Band of Mission San Juan Bautista, 3/30/22, 7/27/2022. Email and telephone communication. Unpublished record on conversation kept on file by MIG.

3.19 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

3.19.1 Environmental Setting

Water Service

According to the Watsonville 2020 Urban Water Management Plan (UWMP), the City owns, operates, and maintains 190 miles of water supply pipelines and, as of 2020, has 65,231 customers including many outside the City limits. The site is currently vacant, therefore, there is no existing water use on site. The site is served by an existing 10-inch and a 6-inch water main at Manabe Ow Road.

Storm Drainage

Since the site is currently undeveloped, there are no existing stormwater drainage facilities on site and stormwater sheet flows in a northwesterly direction toward an existing ditch located adjacent to the westerly boundary of the site. The ditch discharges to Watsonville Slough to the north of the site. There are City storm drain facilities within surrounding roadways including a 30-inch and an 18-inch storm drain at Manabe Ow Road.

Wastewater/Sanitary Sewer Service

Wastewater services are also provided by the City. The City owns, operates, and maintains a sanitary sewer system of approximately 170 miles of pipelines that collect and transfer wastewater to the City's Wastewater Treatment Facility (WWTF). According to the 2020 UWMP, the WWTF is permitted to treat a maximum of 12 million gallons per day. In 2020 the plant treated a total of 1,795 million gallons, or 5,510 acre-feet (AF) from the Watsonville, Pajaro, Freedom, and Salsipuedes Sanitary Districts. The project site is served by an existing 6-inch sewer line that connects to an existing 10-inch sewer main at Manabe Ow Road.

Solid Waste

The City of Watsonville's Municipal Service Center provides a full range of integrated solid waste management services from source reduction to recycling and disposal. The City collects garbage and recyclables from over 11,000 homes and businesses each week. The City's Solid Waste Division maintains the City-owned landfill, however, the landfill (Watsonvillle Landfill) is currently closed, and the City is transporting the refuse to the Monterey Regional Waste Management District's (ReGen Monterey) Monterey Peninsula Landfill in unincorporated Salinas, approximately 12 miles south of the City of Watsonville.[7]

3.19.2 Regulatory Setting

State

State Water Code

Pursuant to the State Water Code, water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (approximately 980 million gallons) of water annually must prepare and adopt an urban water management plan (UWMP) and update it every five years. As part of a UWMP, water agencies are required to evaluate and describe their water resource supplies and projected needs over a 20-year planning horizon, water conservation, water service reliability, water recycling, opportunities for water transfers, and contingency plans for drought events.

Assembly Bill 939

The California Integrated Waste Management Act of 1989, or AB 939, established the Integrated Waste Management Board, required the implementation of integrated waste management plans, and mandated that local jurisdictions divert at least 50 percent of solid waste generated (from 1990 levels), beginning January 1, 2000, and divert at least 75 percent by 2010. Projects that would have an adverse effect on waste diversion goals are required to include waste diversion mitigation measures.

Assembly Bill 341

AB 341 sets forth the requirements of the statewide mandatory commercial recycling program Businesses that generate four or more cubic yards of garbage per week and multi-family dwellings

[7] Kasey Kolassa, Santa Cruz County Recycling and Solid Waste Manager. Personal communication, October 4, 2022.

with five or more units in California are required to recycle. AB 341 sets a statewide goal for 75 percent disposal reduction by the year 2020.

Senate Bill 1383

SB 1383 establishes targets to achieve a 50 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025. The bill grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that at least 20 percent of currently disposed edible food is recovered for human consumption by 2025.

3.19.3 Impact Discussion

Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?

Less than Significant Impact. Construction of water supply infrastructure is required for new development, and the project would connect to the existing water main stub that is present on site near northwest driveway entrance. As a standard requirement, prior to issuance of building permits, the developer would be required to provide the City with a detailed study indicating specifications of the new water infrastructure and any minor modifications needed to the existing municipal conveyance system to accommodate project needs. Construction of new water supply infrastructure would be conducted in compliance with the City's Public Improvement Standards and City-approved utilities construction Best Management Practices (BMPs); therefore, project construction would not cause significant environmental impacts. Also, no new public water supply facilities would be needed to serve the proposed project. Impacts would be less than significant.

The project would connect to an existing public sewer main stub that is present on site near northwest driveway entrance. As a standard requirement, prior to issuance of building permits, the applicant would be required to provide the City with a detailed study indicating specifications of the new wastewater infrastructure and any minor modifications needed to the existing municipal conveyance system to accommodate project-generated wastewater.

Anticipated project wastewater generation was calculated using a conservative industry standard in which wastewater generated equals 95 percent of water use (see section 6.19.b below for projected project water demand). The applicant estimates water use at 173,000 gallons per year. As a result, the project would produce approximately 164,350 gallons of wastewater per year or approximately 450 gallons per day. The WWTF's daily wastewater has a permitted intake of 12 million gallons per day. The WWTF would have adequate capacity to treat project wastewater in addition to its existing commitments. No new public wastewater conveyance or treatment facilities would be needed to serve the proposed project. Similar to water infrastructure (see above) construction impacts for wastewater infrastructure would be less than significant.

The project site would generate stormwater from new impermeable surfaces proposed by the project including parking areas, roof, and walkways. A Storm Water Control Plan and Drainage Report was prepared for the project (Bowman & Williams 2022). The current site plans show bioretention basins along the norther, southern, and western edges of the site. The proposed onsite drainage system incorporates low impact design strategies including optimizing site layout, preserving natural drainage, minimize impervious surfaces and dispersing runoff to the

bioretention areas. The low impact design features also include permeable pavement, which will further reduce stormwater runoff. The drainage system was designed to covey the 10-year storm event, and the bioretention basins will detain water and release pre-development flow rates for the 2-year and 10-year storm events. These design features ensure that project impacts to stormwater drainage facilities are less than significant.

Offsite improvements for electric power, or telecommunication facilities outside of the existing Manabe Ow Road right-of-way are not anticipated and off-site improvements, construction, or relocation are also not required for the project. Natural gas will not be used on the project site therefore no connection to the natural gas utility is required. Therefore, the impact is considered less than significant.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less than Significant Impact. As discussed under Question a), the project would use water temporarily for construction and irrigation purposes. Long term water use is estimated at 173,000 gallons per year. Water demand for the Manabe Ow Business Park Specific Plan was analyzed in the Manabe Ow Specific Plan EIR which found that the conversion of agricultural land to other uses would significantly reduce water demand in the plan area and found the impact to be less than significant. The proposed project is consistent with the Specific Plan land use and zoning designations for the project. Therefore, the impact is considered less than significant.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less than Significant Impact. The Watsonville WWTP has the capacity to treat 10.3 million gallons per day. However, the WWTP treats an average of 5.3 million gallons per day from residential, commercial, and industrial uses. The project's proposed generation of 164,350 gallons per year would not adversely impact the facility from meeting the proposed project needs and existing commitments. The impact is considered less than significant.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less than Significant Impact. The project would generate construction debris during the construction period as well as during operation of the facility. Solid waste generated by the project during the construction period and operations would be disposed of in accordance with City requirements. The Monterey Peninsula Landfill, which is currently receiving solid waste from the City of Watsonville has been operating since 1965 and is estimated by its engineers to have space for more than 100 years of waste disposal.[8] The project would therefore not generate solid waste in excess of local infrastructure nor would it impair attainment of solid waste reduction goals.

[8] ReGen Monterey. Monterey Peninsula Landfill. Accessed October 4, 2022 at: https://regenmonterey.org/monterey-peninsula-landfill/

e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?

No Impact. The project would not conflict with any federal, state, or local statutes and regulations related to solid waste.

3.19.4 References

City of Watsonville and Carollo Engineers. 2020. City of Watsonville Wastewater Master Plan Study Session presentation. March 10. Accessed August 5, 2022 at https://www.cityofwatsonville.org/DocumentCenter/View/15867/Wastewater-Master-Plan-Council-Study-Session-2020-1.

RBF Consulting. 2010. Draft Master Environmental Impact Report. Manabe-Ow Business Park Specific Plan. SCH# 2008122060. Prepared for the City of Watsonville.

3.20 WILDFIRE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Is the project located near state responsibility areas or lands classified as very high fire hazard severity zones?	☐ Yes		☒ No	
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

3.20.1 Environmental Setting

The project site is located in the City of Watsonville in an urbanized area. The site is not located in an area designated as a Very High Fire Hazard Severity Zone (CAL FIRE 2022). The nearest areas with a Very High Fire Hazard Severity Zone designation is located south of the site near Strawberry Road, approximately six miles south of the project site and areas six miles to the east of the site near Aromas and along the border of Santa Cruz and Santa Clara Counties, also approximately six miles to the east of the site.

3.20.2 Impact Discussion

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact (a through d). As discussed in the Environmental Setting section provided above, the project site is not located in a Very High Fire Hazard Severity Zone. The nearest such zones are located six miles to the south and east of the project site.

3.20.3 References

California Department of Forestry and Fire Protection (CAL FIRE). 2022. Fire Hazard Severity Zone Viewer. Accessed July 19, 2022 at https://egis.fire.ca.gov/FHSZ/.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the efforts of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.21.1 Discussion

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant with Mitigation Incorporated. As discussed in the previous sections of this Initial Study, the proposed project would not degrade the quality of the environment with the implementation of the identified mitigation measures. As discussed in Section 3.4 Biological Resources, with implementation of the identified mitigation measures (BIO-1a, -1b - 2a through -2j, -3a, -3b, -4 and -5), the project would not significantly impact sensitive habitats or species. As discussed in Section 3.5 Cultural Resources and Section 3.18 Tribal Cultural Resources, with implementation of the identified mitigation measures (CUL-1, -2, -3 and -4, and TRI-1), the project would result in a less than significant impact on archaeological, historic, and tribal cultural resources.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means the incremental effects of a project are considerable when viewed in connection with the efforts of past projects, the effects of other current projects, and the effects of probable future projects)?

Less Than Significant Impact. Under Section 15065(a)(3) of the CEQA Guidelines, a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has potential environmental effects "that are individually limited, but cumulatively considerable." As defined in Section 15065(a)(3) of the CEQA Guidelines, cumulatively considerable means "that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." Using this definition, a project that has no impact in a given impact category cannot have a cumulatively considerable contribution because its contribution is zero.

The project evaluated in this Initial Study is limited to the construction of a warehouse facility. Due to the nature of this proposed project, many types of impacts that are frequently associated with other types of development projects (e.g., housing, offices, commercial uses, etc.) would not occur. For example, as described in Section 3 of this Initial Study, construction of the proposed warehouse facility would have no adverse impacts on forestry resources, land use, mineral resources, population and housing, and wildfire.

There is currently one other warehouse facility project on file with the City's Community Development Department, Planning Division. It is an approximately 175,760-square foot industrial warehouse facility on the 13.4-acre property directly adjacent to the subject project on the east. The anticipated construction schedule for this new project would not coincide precisely with the subject project (anticipated to be complete by the end of 2023), but there could potentially be some overlap.[9] The most intensive construction impacts of the proposed project (grading, trenching and other ground disturbing activities) would likely be completed before the start of construction of the new project, therefore, the identified short-term construction related impacts of the project (e.g., dust, potential soil contamination, noise and vibration, nesting bird disturbance, and water quality) would not combine with the impacts of the other project and would not be cumulatively considerable. Furthermore, the mitigation measures and/or Standard Permit Conditions included in the subject project to reduce construction-related impacts to a less than significant level would also be required of the future project. The traffic operational analysis conducted for the subject project included the future project in its Cumulative Plus Project scenario analysis, and concluded that the intersection of the northbound Highway 1 ramps at West Riverside Drive would have a LOS deficiency during the peak hours as a result. As discussed in detail in Section 3.17 Transportation, the analysis recommended that the project make a fair share contribution to improvements at this intersection (signalization or construction of a roundabout) in coordination with Caltrans and the City of Watsonville, which would reduce the LOS to an acceptable level. The analysis also concluded that the intersections of Ohlone Parkway/Loma Vista Drive and Ohlone Parkway/Lighthouse Drive would have a LOS deficiency during the peak hours as a result of the project, and recommended that roundabouts be installed at each of these intersections in order to improve them to acceptable levels of service. The project will be required to design the two roundabouts and pay a fair share contribution towards their construction.

[9] Matt Orbach, City of Watsonville. Personal communication. August 8, 2022.

As described in Section 3.4 Biological Resources, the project could affect sensitive biological resources in both the short- and long-term. These impacts, however, would not result in a cumulatively significant loss of such resources, as the Biological Resources Report prepared for the project also included the adjacent property on which the future warehouse project is proposed. The project would implement a number of mitigation measures to reduce impacts on common and special-status species on both project sites, as described in Section 3.4. Therefore, the project would not contribute to cumulative impacts on biological resources.

Other than the future warehouse project on the adjacent property, there are no planned or proposed developments in the project area that could contribute to cumulative aesthetic, air quality, biological resources, hydrology and water quality, public services, or utilities and service systems impacts. The project's archaeological and biological resources impacts are applicable to the proposed project site as well as to the adjacent project site and would not contribute to cumulative impacts elsewhere. Cumulative impacts to aesthetics, hydrology and water quality, public services, or utilities and service systems would not be expected to be significant, as the proposed project and future adjacent project are located within the Manabe-Ow Business Park Specific Plan Area and would be in conformance with development and performance standards of the Specific Plan.

The project's impacts to GHG emissions are discussed in Section 3.8, and it was concluded that the project would have a less than significant impact on GHG emissions.

Based on the discussion above, the project would not result in cumulatively considerable impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant with Mitigation Incorporated. Consistent with Section 15065(a)(4) of the CEQA Guidelines, a lead agency shall find that a project may have a significant effect on the environment where there is substantial evidence that the project has the potential to cause substantial adverse effects on human beings, either directly or indirectly. Under this standard, a change to the physical environment that might otherwise be minor must be treated as significant if people would be significantly affected. This factor relates to adverse changes to the environment of human beings generally, and not to effects on particular individuals. While changes to the environment that could indirectly affect human beings would be represented by all of the designated CEQA issue areas, those that could directly affect human beings include construction-related air quality, hazardous materials, and noise. Implementation of mitigation measures identified in Section 3, however, would reduce these impacts to a less than significant level. No other direct or indirect adverse effects on human beings have been identified.

Chapter 4. List of Preparers

MIG, Inc. (Environmental Analysis and Document Preparation)

Mike Campbell, AICP – Director of Environmental Analysis, Senior Project Manager
Chris Dugan, Director of Air Quality, Greenhouse Gas, and Noise Services
Christina Lau, Project Manager
David Gallagher, Senior Biologist
Kasey Kitowski, Air Quality & Noise Analyst
Alex Broskoff – Biologist/GIS Analyst

Hexagon Transportation Consultants, Inc. (Transportation Analysis Peer Review)

Robert Del Rio, T.E. – Vice President, Principal
Trish Dudala, P.E – Senior Associate

Appendix A: CalEEMod Results

Manabe Ow West - Santa Cruz County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Manabe Ow West

Santa Cruz County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	15.90	1000sqft	0.18	15,900.00	0
Refrigerated Warehouse-No Rail	15.38	1000sqft	0.35	15,384.00	0
Unrefrigerated Warehouse-No Rail	125.68	1000sqft	3.24	125,677.00	0
Other Asphalt Surfaces	336.72	1000sqft	7.73	336,718.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	1.8	**Precipitation Freq (Days)**	61
Climate Zone	5			**Operational Year**	2024
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler KK. Utility information adjusted based on 3CE Prime 2030.

Land Use - Parking lot land use type includes 103,974 sqft of landscaped area.

Construction Phase - Construction schedule from applicant

Off-road Equipment - Equipment information from applicant

Off-road Equipment - Equipment information from applicant

Off-road Equipment - Equipment information from applicant

Off-road Equipment - Equipment information from applicant

Off-road Equipment - Equipment information from applicant

Trips and VMT - Number of workers, vendor trip length, hauling trip length, truck capacity information from applicant.

Manabe Ow West - Santa Cruz County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading - Material import/export information from project applicant. Remaining values are caleemod defaults.

Vehicle Trips - Trip rate from traffic report

Vehicle Emission Factors - EMFAC 2021. Santa Cruz County 2024.

Vehicle Emission Factors - EMFAC 2021. Santa Cruz County 2024.

Vehicle Emission Factors - EMFAC 2021. Santa Cruz County 2024.

Energy Use - Natural gas phaseout information from applicant

Water And Wastewater - Water use information from applicant

Construction Off-road Equipment Mitigation -

Energy Mitigation -

Fleet Mix - Defaults adjusted to reflect project specific conditions.

Stationary Sources - Emergency Generators and Fire Pumps - 450kW diesel generator. Testing one time per month, run time 20 minutes.

Land Use Change -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	30.00	48.00
tblConstructionPhase	NumDays	300.00	266.00
tblConstructionPhase	NumDays	20.00	10.00
tblEnergyUse	NT24NG	1.01	0.00
tblEnergyUse	NT24NG	12.77	0.00
tblEnergyUse	NT24NG	0.21	0.00
tblEnergyUse	T24NG	18.14	0.00
tblEnergyUse	T24NG	1.17	0.00
tblFleetMix	HHD	3.9320e-003	0.16
tblFleetMix	LDA	0.51	0.47
tblFleetMix	LDT1	0.06	0.05
tblFleetMix	LDT2	0.21	0.19
tblFleetMix	LHD1	0.03	0.00
tblFleetMix	LHD2	6.3540e-003	0.00
tblFleetMix	MCY	0.03	0.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblFleetMix	MDV	0.13	0.12
tblFleetMix	MH	4.5980e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.2900e-004	0.00
tblFleetMix	SBUS	1.1170e-003	0.00
tblFleetMix	UBUS	8.4500e-004	0.00
tblGrading	AcresOfGrading	168.00	90.00
tblGrading	AcresOfGrading	10.00	15.00
tblGrading	MaterialImported	0.00	14,000.00
tblLandUse	LandUseSquareFeet	15,380.00	15,384.00
tblLandUse	LandUseSquareFeet	125,680.00	125,677.00
tblLandUse	LandUseSquareFeet	336,720.00	336,718.80
tblLandUse	LotAcreage	0.37	0.18
tblLandUse	LotAcreage	2.89	3.24
tblOffRoadEquipment	HorsePower	80.00	81.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblProjectCharacteristics	CH4IntensityFactor	0.033	0
tblProjectCharacteristics	CO2IntensityFactor	203.98	0
tblProjectCharacteristics	N2OIntensityFactor	0.004	0
tblTripsAndVMT	VendorTripLength	7.30	7.00
tblTripsAndVMT	VendorTripLength	7.30	7.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblTripsAndVMT	VendorTripLength	7.30	7.00
tblTripsAndVMT	VendorTripLength	7.30	7.00
tblTripsAndVMT	VendorTripLength	7.30	7.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	23.00	20.00
tblTripsAndVMT	WorkerTripNumber	206.00	362.00
tblTripsAndVMT	WorkerTripNumber	41.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	40.00
tblVehicleEF	HHD	0.02	0.15
tblVehicleEF	HHD	0.05	0.17
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	5.59	4.48
tblVehicleEF	HHD	0.46	1.03
tblVehicleEF	HHD	8.1490e-003	0.02
tblVehicleEF	HHD	1,000.85	757.78
tblVehicleEF	HHD	1,604.24	1,852.25
tblVehicleEF	HHD	0.06	0.13
tblVehicleEF	HHD	0.16	0.12
tblVehicleEF	HHD	0.25	0.29
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	5.97	4.27
tblVehicleEF	HHD	4.26	2.88
tblVehicleEF	HHD	2.69	2.87
tblVehicleEF	HHD	5.6960e-003	4.6250e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	5.4490e-003	4.4230e-003
tblVehicleEF	HHD	0.03	0.03

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	HHD	8.5930e-003	8.4730e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	3.0000e-006	5.6500e-004
tblVehicleEF	HHD	1.7200e-004	1.6900e-004
tblVehicleEF	HHD	0.40	0.30
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.05	0.03
tblVehicleEF	HHD	1.0800e-004	1.7000e-004
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	9.3280e-003	6.7540e-003
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	3.0000e-006	5.6500e-004
tblVehicleEF	HHD	1.7200e-004	1.6900e-004
tblVehicleEF	HHD	0.45	0.48
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.0800e-004	1.7000e-004
tblVehicleEF	HHD	4.0000e-006	1.0000e-006
tblVehicleEF	HHD	0.02	0.15
tblVehicleEF	HHD	0.05	0.17
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	5.48	4.41
tblVehicleEF	HHD	0.46	1.03
tblVehicleEF	HHD	7.4040e-003	0.01
tblVehicleEF	HHD	995.51	753.68
tblVehicleEF	HHD	1,604.24	1,852.25
tblVehicleEF	HHD	0.06	0.13
tblVehicleEF	HHD	0.16	0.12
tblVehicleEF	HHD	0.25	0.29

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	5.81	4.15
tblVehicleEF	HHD	4.12	2.79
tblVehicleEF	HHD	2.69	2.87
tblVehicleEF	HHD	4.8750e-003	3.9610e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	4.6640e-003	3.7880e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.5930e-003	8.4730e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.0000e-006	7.5700e-004
tblVehicleEF	HHD	1.7800e-004	1.8200e-004
tblVehicleEF	HHD	0.42	0.31
tblVehicleEF	HHD	4.0000e-006	0.00
tblVehicleEF	HHD	0.05	0.03
tblVehicleEF	HHD	1.0500e-004	1.6900e-004
tblVehicleEF	HHD	3.0000e-006	1.0000e-006
tblVehicleEF	HHD	9.2790e-003	6.7150e-003
tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	8.0000e-006	7.5700e-004
tblVehicleEF	HHD	1.7800e-004	1.8200e-004
tblVehicleEF	HHD	0.48	0.50
tblVehicleEF	HHD	4.0000e-006	0.00
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.0500e-004	1.6900e-004
tblVehicleEF	HHD	4.0000e-006	1.0000e-006
tblVehicleEF	HHD	0.02	0.15

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	HHD	0.05	0.17
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	5.73	4.59
tblVehicleEF	HHD	0.46	1.03
tblVehicleEF	HHD	8.8410e-003	0.02
tblVehicleEF	HHD	1,008.23	763.44
tblVehicleEF	HHD	1,604.24	1,852.25
tblVehicleEF	HHD	0.07	0.13
tblVehicleEF	HHD	0.16	0.12
tblVehicleEF	HHD	0.25	0.29
tblVehicleEF	HHD	1.0000e-006	0.00
tblVehicleEF	HHD	6.19	4.44
tblVehicleEF	HHD	4.31	2.92
tblVehicleEF	HHD	2.69	2.87
tblVehicleEF	HHD	6.8290e-003	5.5410e-003
tblVehicleEF	HHD	0.06	0.09
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	6.5340e-003	5.2990e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.5930e-003	8.4730e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	1.0000e-006	5.2900e-004
tblVehicleEF	HHD	2.0500e-004	1.5100e-004
tblVehicleEF	HHD	0.37	0.28
tblVehicleEF	HHD	0.05	0.03
tblVehicleEF	HHD	1.1600e-004	1.7700e-004
tblVehicleEF	HHD	4.0000e-006	1.0000e-006
tblVehicleEF	HHD	9.3960e-003	6.8070e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	HHD	0.01	0.02
tblVehicleEF	HHD	1.0000e-006	5.2900e-004
tblVehicleEF	HHD	2.0500e-004	1.5100e-004
tblVehicleEF	HHD	0.42	0.46
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	1.1600e-004	1.7700e-004
tblVehicleEF	HHD	4.0000e-006	1.0000e-006
tblVehicleEF	LDA	2.8260e-003	3.3030e-003
tblVehicleEF	LDA	0.05	0.08
tblVehicleEF	LDA	0.68	0.86
tblVehicleEF	LDA	2.30	3.63
tblVehicleEF	LDA	248.77	262.48
tblVehicleEF	LDA	51.54	68.00
tblVehicleEF	LDA	5.1680e-003	5.7880e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.05	0.06
tblVehicleEF	LDA	0.19	0.28
tblVehicleEF	LDA	0.04	9.0030e-003
tblVehicleEF	LDA	1.8040e-003	1.6110e-003
tblVehicleEF	LDA	1.7970e-003	2.0630e-003
tblVehicleEF	LDA	0.02	3.1510e-003
tblVehicleEF	LDA	1.6660e-003	1.4890e-003
tblVehicleEF	LDA	1.6530e-003	1.8970e-003
tblVehicleEF	LDA	0.04	0.35
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.24	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDA	2.4600e-003	2.5940e-003
tblVehicleEF	LDA	5.1000e-004	6.7200e-004
tblVehicleEF	LDA	0.04	0.35
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.00
tblVehicleEF	LDA	0.02	0.40
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.26	0.41
tblVehicleEF	LDA	3.0760e-003	3.4720e-003
tblVehicleEF	LDA	0.04	0.07
tblVehicleEF	LDA	0.75	1.04
tblVehicleEF	LDA	1.80	2.83
tblVehicleEF	LDA	261.05	275.98
tblVehicleEF	LDA	50.61	66.51
tblVehicleEF	LDA	4.7680e-003	5.1740e-003
tblVehicleEF	LDA	0.02	0.03
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.17	0.24
tblVehicleEF	LDA	0.04	9.0030e-003
tblVehicleEF	LDA	1.8040e-003	1.6110e-003
tblVehicleEF	LDA	1.7970e-003	2.0630e-003
tblVehicleEF	LDA	0.02	3.1510e-003
tblVehicleEF	LDA	1.6660e-003	1.4890e-003
tblVehicleEF	LDA	1.6530e-003	1.8970e-003
tblVehicleEF	LDA	0.08	0.42
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.06	0.00
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.04

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDA	0.20	0.31
tblVehicleEF	LDA	2.5820e-003	2.7280e-003
tblVehicleEF	LDA	5.0100e-004	6.5800e-004
tblVehicleEF	LDA	0.08	0.42
tblVehicleEF	LDA	0.11	0.11
tblVehicleEF	LDA	0.06	0.00
tblVehicleEF	LDA	0.02	0.34
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.22	0.34
tblVehicleEF	LDA	2.7480e-003	3.2110e-003
tblVehicleEF	LDA	0.06	0.09
tblVehicleEF	LDA	0.68	0.87
tblVehicleEF	LDA	2.70	4.27
tblVehicleEF	LDA	248.57	262.26
tblVehicleEF	LDA	52.28	69.18
tblVehicleEF	LDA	5.4690e-003	6.1510e-003
tblVehicleEF	LDA	0.03	0.03
tblVehicleEF	LDA	0.05	0.07
tblVehicleEF	LDA	0.21	0.30
tblVehicleEF	LDA	0.04	9.0030e-003
tblVehicleEF	LDA	1.8040e-003	1.6110e-003
tblVehicleEF	LDA	1.7970e-003	2.0630e-003
tblVehicleEF	LDA	0.02	3.1510e-003
tblVehicleEF	LDA	1.6660e-003	1.4890e-003
tblVehicleEF	LDA	1.6530e-003	1.8970e-003
tblVehicleEF	LDA	0.02	0.33
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.01	0.00
tblVehicleEF	LDA	0.01	0.01

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.27	0.43
tblVehicleEF	LDA	2.4580e-003	2.5920e-003
tblVehicleEF	LDA	5.1700e-004	6.8400e-004
tblVehicleEF	LDA	0.02	0.33
tblVehicleEF	LDA	0.11	0.09
tblVehicleEF	LDA	0.01	0.00
tblVehicleEF	LDA	0.02	0.46
tblVehicleEF	LDA	0.04	0.04
tblVehicleEF	LDA	0.30	0.47
tblVehicleEF	LDT1	4.4560e-003	0.01
tblVehicleEF	LDT1	0.07	0.16
tblVehicleEF	LDT1	0.97	2.30
tblVehicleEF	LDT1	2.58	8.82
tblVehicleEF	LDT1	301.69	345.66
tblVehicleEF	LDT1	63.73	96.67
tblVehicleEF	LDT1	6.6920e-003	0.02
tblVehicleEF	LDT1	0.03	0.05
tblVehicleEF	LDT1	0.08	0.24
tblVehicleEF	LDT1	0.26	0.57
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	2.0560e-003	2.9670e-003
tblVehicleEF	LDT1	2.2100e-003	3.9890e-003
tblVehicleEF	LDT1	0.02	4.2150e-003
tblVehicleEF	LDT1	1.8950e-003	2.7320e-003
tblVehicleEF	LDT1	2.0320e-003	3.6680e-003
tblVehicleEF	LDT1	0.07	0.97
tblVehicleEF	LDT1	0.18	0.27
tblVehicleEF	LDT1	0.06	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT1	0.02	0.05
tblVehicleEF	LDT1	0.09	0.12
tblVehicleEF	LDT1	0.34	0.89
tblVehicleEF	LDT1	2.9850e-003	3.4170e-003
tblVehicleEF	LDT1	6.3100e-004	9.5600e-004
tblVehicleEF	LDT1	0.07	0.97
tblVehicleEF	LDT1	0.18	0.27
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.03	0.98
tblVehicleEF	LDT1	0.09	0.12
tblVehicleEF	LDT1	0.37	0.98
tblVehicleEF	LDT1	4.8210e-003	0.01
tblVehicleEF	LDT1	0.06	0.13
tblVehicleEF	LDT1	1.06	2.74
tblVehicleEF	LDT1	2.01	6.78
tblVehicleEF	LDT1	314.55	361.97
tblVehicleEF	LDT1	62.62	92.91
tblVehicleEF	LDT1	6.1020e-003	0.01
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.07	0.20
tblVehicleEF	LDT1	0.23	0.50
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	2.0560e-003	2.9670e-003
tblVehicleEF	LDT1	2.2100e-003	3.9890e-003
tblVehicleEF	LDT1	0.02	4.2150e-003
tblVehicleEF	LDT1	1.8950e-003	2.7320e-003
tblVehicleEF	LDT1	2.0320e-003	3.6680e-003
tblVehicleEF	LDT1	0.15	1.21
tblVehicleEF	LDT1	0.19	0.29

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT1	0.11	0.00
tblVehicleEF	LDT1	0.02	0.06
tblVehicleEF	LDT1	0.08	0.12
tblVehicleEF	LDT1	0.28	0.74
tblVehicleEF	LDT1	3.1130e-003	3.5780e-003
tblVehicleEF	LDT1	6.2000e-004	9.1900e-004
tblVehicleEF	LDT1	0.15	1.21
tblVehicleEF	LDT1	0.19	0.29
tblVehicleEF	LDT1	0.11	0.00
tblVehicleEF	LDT1	0.03	0.81
tblVehicleEF	LDT1	0.08	0.12
tblVehicleEF	LDT1	0.31	0.81
tblVehicleEF	LDT1	4.3460e-003	0.01
tblVehicleEF	LDT1	0.08	0.18
tblVehicleEF	LDT1	0.98	2.32
tblVehicleEF	LDT1	3.03	10.40
tblVehicleEF	LDT1	301.49	345.42
tblVehicleEF	LDT1	64.60	99.62
tblVehicleEF	LDT1	7.1250e-003	0.02
tblVehicleEF	LDT1	0.03	0.05
tblVehicleEF	LDT1	0.09	0.26
tblVehicleEF	LDT1	0.28	0.62
tblVehicleEF	LDT1	0.04	0.01
tblVehicleEF	LDT1	2.0560e-003	2.9670e-003
tblVehicleEF	LDT1	2.2100e-003	3.9890e-003
tblVehicleEF	LDT1	0.02	4.2150e-003
tblVehicleEF	LDT1	1.8950e-003	2.7320e-003
tblVehicleEF	LDT1	2.0320e-003	3.6680e-003
tblVehicleEF	LDT1	0.03	0.91

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT1	0.19	0.24
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.02	0.05
tblVehicleEF	LDT1	0.11	0.12
tblVehicleEF	LDT1	0.38	1.02
tblVehicleEF	LDT1	2.9830e-003	3.4150e-003
tblVehicleEF	LDT1	6.3900e-004	9.8500e-004
tblVehicleEF	LDT1	0.03	0.91
tblVehicleEF	LDT1	0.19	0.24
tblVehicleEF	LDT1	0.02	0.00
tblVehicleEF	LDT1	0.03	1.12
tblVehicleEF	LDT1	0.11	0.12
tblVehicleEF	LDT1	0.42	1.12
tblVehicleEF	LDT2	5.9870e-003	4.0660e-003
tblVehicleEF	LDT2	0.09	0.10
tblVehicleEF	LDT2	1.18	1.05
tblVehicleEF	LDT2	3.16	4.62
tblVehicleEF	LDT2	331.08	355.51
tblVehicleEF	LDT2	71.35	91.83
tblVehicleEF	LDT2	9.1400e-003	8.0060e-003
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.13	0.10
tblVehicleEF	LDT2	0.38	0.43
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9040e-003	1.6050e-003
tblVehicleEF	LDT2	2.0990e-003	2.2520e-003
tblVehicleEF	LDT2	0.02	3.9900e-003
tblVehicleEF	LDT2	1.7530e-003	1.4760e-003
tblVehicleEF	LDT2	1.9300e-003	2.0710e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT2	0.08	0.38
tblVehicleEF	LDT2	0.21	0.10
tblVehicleEF	LDT2	0.07	0.00
tblVehicleEF	LDT2	0.03	0.02
tblVehicleEF	LDT2	0.10	0.04
tblVehicleEF	LDT2	0.46	0.49
tblVehicleEF	LDT2	3.2750e-003	3.5140e-003
tblVehicleEF	LDT2	7.0600e-004	9.0800e-004
tblVehicleEF	LDT2	0.08	0.38
tblVehicleEF	LDT2	0.21	0.10
tblVehicleEF	LDT2	0.07	0.00
tblVehicleEF	LDT2	0.04	0.54
tblVehicleEF	LDT2	0.10	0.04
tblVehicleEF	LDT2	0.50	0.54
tblVehicleEF	LDT2	6.4860e-003	4.2770e-003
tblVehicleEF	LDT2	0.08	0.09
tblVehicleEF	LDT2	1.29	1.26
tblVehicleEF	LDT2	2.46	3.59
tblVehicleEF	LDT2	344.06	370.41
tblVehicleEF	LDT2	69.97	89.91
tblVehicleEF	LDT2	8.3600e-003	7.1450e-003
tblVehicleEF	LDT2	0.03	0.04
tblVehicleEF	LDT2	0.11	0.09
tblVehicleEF	LDT2	0.34	0.38
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9040e-003	1.6050e-003
tblVehicleEF	LDT2	2.0990e-003	2.2520e-003
tblVehicleEF	LDT2	0.02	3.9900e-003
tblVehicleEF	LDT2	1.7530e-003	1.4760e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT2	1.9300e-003	2.0710e-003
tblVehicleEF	LDT2	0.18	0.46
tblVehicleEF	LDT2	0.22	0.11
tblVehicleEF	LDT2	0.14	0.00
tblVehicleEF	LDT2	0.03	0.02
tblVehicleEF	LDT2	0.09	0.04
tblVehicleEF	LDT2	0.38	0.41
tblVehicleEF	LDT2	3.4040e-003	3.6610e-003
tblVehicleEF	LDT2	6.9200e-004	8.8900e-004
tblVehicleEF	LDT2	0.18	0.46
tblVehicleEF	LDT2	0.22	0.11
tblVehicleEF	LDT2	0.14	0.00
tblVehicleEF	LDT2	0.04	0.45
tblVehicleEF	LDT2	0.09	0.04
tblVehicleEF	LDT2	0.42	0.45
tblVehicleEF	LDT2	5.8330e-003	3.9530e-003
tblVehicleEF	LDT2	0.10	0.11
tblVehicleEF	LDT2	1.19	1.06
tblVehicleEF	LDT2	3.71	5.43
tblVehicleEF	LDT2	330.87	355.27
tblVehicleEF	LDT2	72.44	93.34
tblVehicleEF	LDT2	9.7120e-003	8.5160e-003
tblVehicleEF	LDT2	0.04	0.04
tblVehicleEF	LDT2	0.14	0.11
tblVehicleEF	LDT2	0.41	0.46
tblVehicleEF	LDT2	0.04	0.01
tblVehicleEF	LDT2	1.9040e-003	1.6050e-003
tblVehicleEF	LDT2	2.0990e-003	2.2520e-003
tblVehicleEF	LDT2	0.02	3.9900e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LDT2	1.7530e-003	1.4760e-003
tblVehicleEF	LDT2	1.9300e-003	2.0710e-003
tblVehicleEF	LDT2	0.03	0.37
tblVehicleEF	LDT2	0.22	0.09
tblVehicleEF	LDT2	0.02	0.00
tblVehicleEF	LDT2	0.03	0.02
tblVehicleEF	LDT2	0.12	0.04
tblVehicleEF	LDT2	0.52	0.56
tblVehicleEF	LDT2	3.2730e-003	3.5120e-003
tblVehicleEF	LDT2	7.1700e-004	9.2300e-004
tblVehicleEF	LDT2	0.03	0.37
tblVehicleEF	LDT2	0.22	0.09
tblVehicleEF	LDT2	0.02	0.00
tblVehicleEF	LDT2	0.04	0.61
tblVehicleEF	LDT2	0.12	0.04
tblVehicleEF	LDT2	0.57	0.61
tblVehicleEF	LHD1	4.8180e-003	5.0990e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	1.10	1.17
tblVehicleEF	LHD1	1.12	1.94
tblVehicleEF	LHD1	9.28	9.15
tblVehicleEF	LHD1	795.11	797.72
tblVehicleEF	LHD1	11.22	16.11
tblVehicleEF	LHD1	8.2400e-004	7.5700e-004
tblVehicleEF	LHD1	0.05	0.05
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.08	0.07

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD1	1.43	1.28
tblVehicleEF	LHD1	0.34	0.45
tblVehicleEF	LHD1	9.4100e-004	8.4300e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.8770e-003	9.6480e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.7100e-004	2.6600e-004
tblVehicleEF	LHD1	9.0100e-004	8.0600e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4690e-003	2.4120e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.5000e-004	2.4500e-004
tblVehicleEF	LHD1	1.9790e-003	0.15
tblVehicleEF	LHD1	0.10	0.04
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.0340e-003	0.00
tblVehicleEF	LHD1	0.13	0.13
tblVehicleEF	LHD1	0.32	0.09
tblVehicleEF	LHD1	0.09	0.12
tblVehicleEF	LHD1	9.0000e-005	8.9000e-005
tblVehicleEF	LHD1	7.7530e-003	7.7790e-003
tblVehicleEF	LHD1	1.1100e-004	1.5900e-004
tblVehicleEF	LHD1	1.9790e-003	0.15
tblVehicleEF	LHD1	0.10	0.04
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	1.0340e-003	0.00
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.32	0.09
tblVehicleEF	LHD1	0.10	0.13

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD1	4.8350e-003	5.1240e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	1.13	1.20
tblVehicleEF	LHD1	1.02	1.77
tblVehicleEF	LHD1	9.28	9.15
tblVehicleEF	LHD1	795.16	797.78
tblVehicleEF	LHD1	11.05	15.83
tblVehicleEF	LHD1	8.2700e-004	7.6000e-004
tblVehicleEF	LHD1	0.05	0.05
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	1.37	1.23
tblVehicleEF	LHD1	0.31	0.41
tblVehicleEF	LHD1	9.4100e-004	8.4300e-004
tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.8770e-003	9.6480e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.7100e-004	2.6600e-004
tblVehicleEF	LHD1	9.0100e-004	8.0600e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4690e-003	2.4120e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.5000e-004	2.4500e-004
tblVehicleEF	LHD1	4.0890e-003	0.18
tblVehicleEF	LHD1	0.10	0.04
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.1010e-003	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD1	0.13	0.14
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	0.08	0.11
tblVehicleEF	LHD1	9.0000e-005	8.9000e-005
tblVehicleEF	LHD1	7.7540e-003	7.7800e-003
tblVehicleEF	LHD1	1.0900e-004	1.5600e-004
tblVehicleEF	LHD1	4.0890e-003	0.18
tblVehicleEF	LHD1	0.10	0.04
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.1010e-003	0.00
tblVehicleEF	LHD1	0.16	0.12
tblVehicleEF	LHD1	0.30	0.09
tblVehicleEF	LHD1	0.09	0.12
tblVehicleEF	LHD1	4.8040e-003	5.0800e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	0.18	0.18
tblVehicleEF	LHD1	1.08	1.14
tblVehicleEF	LHD1	1.21	2.09
tblVehicleEF	LHD1	9.28	9.15
tblVehicleEF	LHD1	795.07	797.68
tblVehicleEF	LHD1	11.38	16.38
tblVehicleEF	LHD1	8.2200e-004	7.5500e-004
tblVehicleEF	LHD1	0.05	0.05
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	1.45	1.30
tblVehicleEF	LHD1	0.36	0.48
tblVehicleEF	LHD1	9.4100e-004	8.4300e-004

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD1	0.08	0.08
tblVehicleEF	LHD1	9.8770e-003	9.6480e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.7100e-004	2.6600e-004
tblVehicleEF	LHD1	9.0100e-004	8.0600e-004
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	2.4690e-003	2.4120e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	2.5000e-004	2.4500e-004
tblVehicleEF	LHD1	8.1300e-004	0.14
tblVehicleEF	LHD1	0.11	0.03
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.7400e-004	0.00
tblVehicleEF	LHD1	0.12	0.13
tblVehicleEF	LHD1	0.35	0.09
tblVehicleEF	LHD1	0.09	0.13
tblVehicleEF	LHD1	9.0000e-005	8.9000e-005
tblVehicleEF	LHD1	7.7530e-003	7.7790e-003
tblVehicleEF	LHD1	1.1300e-004	1.6200e-004
tblVehicleEF	LHD1	8.1300e-004	0.14
tblVehicleEF	LHD1	0.11	0.03
tblVehicleEF	LHD1	0.03	0.03
tblVehicleEF	LHD1	3.7400e-004	0.00
tblVehicleEF	LHD1	0.15	0.13
tblVehicleEF	LHD1	0.35	0.09
tblVehicleEF	LHD1	0.10	0.14
tblVehicleEF	LHD2	3.0070e-003	3.0260e-003
tblVehicleEF	LHD2	8.7790e-003	9.2250e-003
tblVehicleEF	LHD2	9.5490e-003	0.01

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD2	0.13	0.14
tblVehicleEF	LHD2	0.84	0.75
tblVehicleEF	LHD2	0.67	1.11
tblVehicleEF	LHD2	14.47	14.38
tblVehicleEF	LHD2	773.43	844.52
tblVehicleEF	LHD2	7.55	9.29
tblVehicleEF	LHD2	1.8330e-003	1.8070e-003
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.40	1.37
tblVehicleEF	LHD2	0.20	0.25
tblVehicleEF	LHD2	1.5250e-003	1.4770e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.3600e-004	1.2400e-004
tblVehicleEF	LHD2	1.4590e-003	1.4130e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7060e-003	2.6990e-003
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.2500e-004	1.1400e-004
tblVehicleEF	LHD2	1.0850e-003	0.08
tblVehicleEF	LHD2	0.05	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.6700e-004	0.00
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.16	0.04
tblVehicleEF	LHD2	0.05	0.07

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD2	7.4610e-003	8.1290e-003
tblVehicleEF	LHD2	7.5000e-005	9.2000e-005
tblVehicleEF	LHD2	1.0850e-003	0.08
tblVehicleEF	LHD2	0.05	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.6700e-004	0.00
tblVehicleEF	LHD2	0.16	0.06
tblVehicleEF	LHD2	0.16	0.04
tblVehicleEF	LHD2	0.05	0.07
tblVehicleEF	LHD2	3.0170e-003	3.0400e-003
tblVehicleEF	LHD2	8.9050e-003	9.3490e-003
tblVehicleEF	LHD2	8.9450e-003	0.01
tblVehicleEF	LHD2	0.13	0.14
tblVehicleEF	LHD2	0.85	0.76
tblVehicleEF	LHD2	0.61	1.02
tblVehicleEF	LHD2	14.47	14.38
tblVehicleEF	LHD2	773.45	844.55
tblVehicleEF	LHD2	7.45	9.13
tblVehicleEF	LHD2	1.8350e-003	1.8090e-003
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.35	1.32
tblVehicleEF	LHD2	0.18	0.23
tblVehicleEF	LHD2	1.5250e-003	1.4770e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.3600e-004	1.2400e-004

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD2	1.4590e-003	1.4130e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7060e-003	2.6990e-003
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.2500e-004	1.1400e-004
tblVehicleEF	LHD2	2.2360e-003	0.10
tblVehicleEF	LHD2	0.06	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.1540e-003	0.00
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.15	0.04
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	7.4610e-003	8.1290e-003
tblVehicleEF	LHD2	7.4000e-005	9.0000e-005
tblVehicleEF	LHD2	2.2360e-003	0.10
tblVehicleEF	LHD2	0.06	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.1540e-003	0.00
tblVehicleEF	LHD2	0.16	0.06
tblVehicleEF	LHD2	0.15	0.04
tblVehicleEF	LHD2	0.05	0.07
tblVehicleEF	LHD2	2.9990e-003	3.0160e-003
tblVehicleEF	LHD2	8.6940e-003	9.1410e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.13	0.14
tblVehicleEF	LHD2	0.83	0.74
tblVehicleEF	LHD2	0.72	1.20
tblVehicleEF	LHD2	14.47	14.38
tblVehicleEF	LHD2	773.42	844.51

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD2	7.64	9.44
tblVehicleEF	LHD2	1.8320e-003	1.8060e-003
tblVehicleEF	LHD2	0.07	0.09
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	1.42	1.38
tblVehicleEF	LHD2	0.21	0.27
tblVehicleEF	LHD2	1.5250e-003	1.4770e-003
tblVehicleEF	LHD2	0.09	0.09
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.3600e-004	1.2400e-004
tblVehicleEF	LHD2	1.4590e-003	1.4130e-003
tblVehicleEF	LHD2	0.04	0.03
tblVehicleEF	LHD2	2.7060e-003	2.6990e-003
tblVehicleEF	LHD2	0.02	0.03
tblVehicleEF	LHD2	1.2500e-004	1.1400e-004
tblVehicleEF	LHD2	4.5100e-004	0.08
tblVehicleEF	LHD2	0.06	0.02
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	2.0800e-004	0.00
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.18	0.05
tblVehicleEF	LHD2	0.05	0.07
tblVehicleEF	LHD2	7.4610e-003	8.1290e-003
tblVehicleEF	LHD2	7.6000e-005	9.3000e-005
tblVehicleEF	LHD2	4.5100e-004	0.08
tblVehicleEF	LHD2	0.06	0.02
tblVehicleEF	LHD2	0.02	0.02

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	LHD2	2.0800e-004	0.00
tblVehicleEF	LHD2	0.16	0.06
tblVehicleEF	LHD2	0.18	0.05
tblVehicleEF	LHD2	0.06	0.08
tblVehicleEF	MCY	0.38	0.22
tblVehicleEF	MCY	0.28	0.23
tblVehicleEF	MCY	21.49	17.22
tblVehicleEF	MCY	9.29	9.05
tblVehicleEF	MCY	219.95	198.49
tblVehicleEF	MCY	64.74	58.31
tblVehicleEF	MCY	0.07	0.05
tblVehicleEF	MCY	0.02	0.01
tblVehicleEF	MCY	1.21	0.73
tblVehicleEF	MCY	0.28	0.19
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.2770e-003	2.1900e-003
tblVehicleEF	MCY	3.5350e-003	3.9780e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.1360e-003	2.0570e-003
tblVehicleEF	MCY	3.3430e-003	3.7590e-003
tblVehicleEF	MCY	0.80	2.43
tblVehicleEF	MCY	0.95	3.51
tblVehicleEF	MCY	0.43	0.00
tblVehicleEF	MCY	2.70	1.58
tblVehicleEF	MCY	0.96	1.60
tblVehicleEF	MCY	2.17	1.80
tblVehicleEF	MCY	2.1770e-003	1.9620e-003
tblVehicleEF	MCY	6.4100e-004	5.7600e-004
tblVehicleEF	MCY	0.80	2.43

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MCY	0.95	3.51
tblVehicleEF	MCY	0.43	0.00
tblVehicleEF	MCY	3.29	1.96
tblVehicleEF	MCY	0.96	1.60
tblVehicleEF	MCY	2.36	1.96
tblVehicleEF	MCY	0.37	0.22
tblVehicleEF	MCY	0.22	0.19
tblVehicleEF	MCY	19.55	16.32
tblVehicleEF	MCY	7.86	7.62
tblVehicleEF	MCY	216.34	196.79
tblVehicleEF	MCY	61.01	54.82
tblVehicleEF	MCY	0.06	0.04
tblVehicleEF	MCY	0.01	9.9500e-003
tblVehicleEF	MCY	1.07	0.64
tblVehicleEF	MCY	0.26	0.17
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.2770e-003	2.1900e-003
tblVehicleEF	MCY	3.5350e-003	3.9780e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.1360e-003	2.0570e-003
tblVehicleEF	MCY	3.3430e-003	3.7590e-003
tblVehicleEF	MCY	1.98	3.30
tblVehicleEF	MCY	1.07	3.68
tblVehicleEF	MCY	1.04	0.00
tblVehicleEF	MCY	2.54	1.50
tblVehicleEF	MCY	0.88	1.54
tblVehicleEF	MCY	1.73	1.44
tblVehicleEF	MCY	2.1410e-003	1.9460e-003
tblVehicleEF	MCY	6.0400e-004	5.4200e-004

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MCY	1.98	3.30
tblVehicleEF	MCY	1.07	3.68
tblVehicleEF	MCY	1.04	0.00
tblVehicleEF	MCY	3.11	1.56
tblVehicleEF	MCY	0.88	1.54
tblVehicleEF	MCY	1.88	1.56
tblVehicleEF	MCY	0.40	0.23
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	23.46	18.20
tblVehicleEF	MCY	10.84	10.57
tblVehicleEF	MCY	223.56	200.28
tblVehicleEF	MCY	68.59	61.89
tblVehicleEF	MCY	0.07	0.05
tblVehicleEF	MCY	0.02	0.01
tblVehicleEF	MCY	1.28	0.77
tblVehicleEF	MCY	0.30	0.20
tblVehicleEF	MCY	0.01	0.01
tblVehicleEF	MCY	2.2770e-003	2.1900e-003
tblVehicleEF	MCY	3.5350e-003	3.9780e-003
tblVehicleEF	MCY	5.0400e-003	4.2000e-003
tblVehicleEF	MCY	2.1360e-003	2.0570e-003
tblVehicleEF	MCY	3.3430e-003	3.7590e-003
tblVehicleEF	MCY	0.23	2.22
tblVehicleEF	MCY	1.14	3.17
tblVehicleEF	MCY	0.12	0.00
tblVehicleEF	MCY	2.84	1.66
tblVehicleEF	MCY	1.11	4.25
tblVehicleEF	MCY	2.59	2.15
tblVehicleEF	MCY	2.2120e-003	1.9800e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MCY	6.7900e-004	6.1200e-004
tblVehicleEF	MCY	0.23	2.22
tblVehicleEF	MCY	1.14	3.17
tblVehicleEF	MCY	0.12	0.00
tblVehicleEF	MCY	3.46	2.34
tblVehicleEF	MCY	1.11	1.73
tblVehicleEF	MCY	2.82	2.34
tblVehicleEF	MDV	5.6770e-003	5.9210e-003
tblVehicleEF	MDV	0.09	0.13
tblVehicleEF	MDV	1.07	1.26
tblVehicleEF	MDV	3.50	5.10
tblVehicleEF	MDV	395.77	430.82
tblVehicleEF	MDV	83.89	110.08
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.04	0.05
tblVehicleEF	MDV	0.11	0.16
tblVehicleEF	MDV	0.39	0.56
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	1.9100e-003	1.7870e-003
tblVehicleEF	MDV	2.0090e-003	2.4020e-003
tblVehicleEF	MDV	0.02	4.0760e-003
tblVehicleEF	MDV	1.7630e-003	1.6490e-003
tblVehicleEF	MDV	1.8470e-003	2.2090e-003
tblVehicleEF	MDV	0.07	0.48
tblVehicleEF	MDV	0.18	0.13
tblVehicleEF	MDV	0.07	0.00
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.08	0.05
tblVehicleEF	MDV	0.48	0.68

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MDV	3.9120e-003	4.2550e-003
tblVehicleEF	MDV	8.3000e-004	1.0880e-003
tblVehicleEF	MDV	0.07	0.48
tblVehicleEF	MDV	0.18	0.13
tblVehicleEF	MDV	0.07	0.00
tblVehicleEF	MDV	0.04	0.74
tblVehicleEF	MDV	0.08	0.05
tblVehicleEF	MDV	0.52	0.74
tblVehicleEF	MDV	6.1480e-003	6.2170e-003
tblVehicleEF	MDV	0.08	0.11
tblVehicleEF	MDV	1.17	1.51
tblVehicleEF	MDV	2.72	3.95
tblVehicleEF	MDV	408.82	446.13
tblVehicleEF	MDV	82.38	107.88
tblVehicleEF	MDV	9.4090e-003	0.01
tblVehicleEF	MDV	0.03	0.04
tblVehicleEF	MDV	0.10	0.13
tblVehicleEF	MDV	0.34	0.49
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	1.9100e-003	1.7870e-003
tblVehicleEF	MDV	2.0090e-003	2.4020e-003
tblVehicleEF	MDV	0.02	4.0760e-003
tblVehicleEF	MDV	1.7630e-003	1.6490e-003
tblVehicleEF	MDV	1.8470e-003	2.2090e-003
tblVehicleEF	MDV	0.15	0.56
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	0.13	0.00
tblVehicleEF	MDV	0.03	0.03
tblVehicleEF	MDV	0.07	0.05

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MDV	0.40	0.56
tblVehicleEF	MDV	4.0410e-003	4.4070e-003
tblVehicleEF	MDV	8.1500e-004	1.0670e-003
tblVehicleEF	MDV	0.15	0.56
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	0.13	0.00
tblVehicleEF	MDV	0.04	0.62
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.43	0.62
tblVehicleEF	MDV	5.5400e-003	5.7680e-003
tblVehicleEF	MDV	0.10	0.14
tblVehicleEF	MDV	1.08	1.27
tblVehicleEF	MDV	4.12	5.99
tblVehicleEF	MDV	395.57	430.58
tblVehicleEF	MDV	85.09	111.82
tblVehicleEF	MDV	0.01	0.01
tblVehicleEF	MDV	0.04	0.05
tblVehicleEF	MDV	0.12	0.17
tblVehicleEF	MDV	0.42	0.61
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	1.9100e-003	1.7870e-003
tblVehicleEF	MDV	2.0090e-003	2.4020e-003
tblVehicleEF	MDV	0.02	4.0760e-003
tblVehicleEF	MDV	1.7630e-003	1.6490e-003
tblVehicleEF	MDV	1.8470e-003	2.2090e-003
tblVehicleEF	MDV	0.03	0.46
tblVehicleEF	MDV	0.19	0.11
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.02	0.03

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.54	0.77
tblVehicleEF	MDV	3.9100e-003	4.2530e-003
tblVehicleEF	MDV	8.4200e-004	1.1050e-003
tblVehicleEF	MDV	0.03	0.46
tblVehicleEF	MDV	0.19	0.11
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.04	0.84
tblVehicleEF	MDV	0.10	0.05
tblVehicleEF	MDV	0.59	0.85
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.65	1.61
tblVehicleEF	MH	2.33	2.67
tblVehicleEF	MH	1,560.55	1,661.47
tblVehicleEF	MH	18.82	22.44
tblVehicleEF	MH	0.07	0.08
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.94	1.89
tblVehicleEF	MH	0.24	0.30
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	2.9000e-004	3.2200e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.3050e-003	3.3330e-003
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	2.6700e-004	2.9600e-004
tblVehicleEF	MH	0.73	37.81

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MH	0.08	10.11
tblVehicleEF	MH	0.27	0.00
tblVehicleEF	MH	0.10	0.10
tblVehicleEF	MH	0.03	2.9350e-003
tblVehicleEF	MH	0.11	0.12
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.8600e-004	2.2200e-004
tblVehicleEF	MH	0.73	37.81
tblVehicleEF	MH	0.08	10.11
tblVehicleEF	MH	0.27	0.00
tblVehicleEF	MH	0.13	0.13
tblVehicleEF	MH	0.03	2.9350e-003
tblVehicleEF	MH	0.12	0.13
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.72	1.68
tblVehicleEF	MH	2.11	2.42
tblVehicleEF	MH	1,560.68	1,661.60
tblVehicleEF	MH	18.46	22.02
tblVehicleEF	MH	0.07	0.08
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.84	1.79
tblVehicleEF	MH	0.22	0.28
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	2.9000e-004	3.2200e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.3050e-003	3.3330e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	2.6700e-004	2.9600e-004
tblVehicleEF	MH	1.49	46.16
tblVehicleEF	MH	0.08	10.85
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.10	0.11
tblVehicleEF	MH	0.02	2.9310e-003
tblVehicleEF	MH	0.10	0.11
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.8300e-004	2.1800e-004
tblVehicleEF	MH	1.49	46.16
tblVehicleEF	MH	0.08	10.85
tblVehicleEF	MH	0.56	0.00
tblVehicleEF	MH	0.14	0.12
tblVehicleEF	MH	0.02	2.9310e-003
tblVehicleEF	MH	0.11	0.12
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	0.03	0.03
tblVehicleEF	MH	1.61	1.57
tblVehicleEF	MH	2.56	2.94
tblVehicleEF	MH	1,560.47	1,661.39
tblVehicleEF	MH	19.21	22.88
tblVehicleEF	MH	0.07	0.08
tblVehicleEF	MH	0.02	0.03
tblVehicleEF	MH	1.97	1.93
tblVehicleEF	MH	0.26	0.32
tblVehicleEF	MH	0.13	0.04
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.04	0.04

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MH	2.9000e-004	3.2200e-004
tblVehicleEF	MH	0.06	0.02
tblVehicleEF	MH	3.3050e-003	3.3330e-003
tblVehicleEF	MH	0.04	0.04
tblVehicleEF	MH	2.6700e-004	2.9600e-004
tblVehicleEF	MH	0.29	35.72
tblVehicleEF	MH	0.09	9.07
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	0.10	0.10
tblVehicleEF	MH	0.03	3.0300e-003
tblVehicleEF	MH	0.11	0.13
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.9000e-004	2.2600e-004
tblVehicleEF	MH	0.29	35.72
tblVehicleEF	MH	0.09	9.07
tblVehicleEF	MH	0.11	0.00
tblVehicleEF	MH	0.13	0.14
tblVehicleEF	MH	0.03	3.0300e-003
tblVehicleEF	MH	0.12	0.14
tblVehicleEF	MHD	2.7120e-003	9.9440e-003
tblVehicleEF	MHD	2.5160e-003	8.3040e-003
tblVehicleEF	MHD	8.4470e-003	9.2490e-003
tblVehicleEF	MHD	0.33	0.68
tblVehicleEF	MHD	0.32	0.46
tblVehicleEF	MHD	1.09	1.21
tblVehicleEF	MHD	67.30	164.95
tblVehicleEF	MHD	1,075.25	1,214.69
tblVehicleEF	MHD	7.80	8.31
tblVehicleEF	MHD	9.8430e-003	0.03

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MHD	0.15	0.16
tblVehicleEF	MHD	5.4720e-003	5.2940e-003
tblVehicleEF	MHD	0.43	0.97
tblVehicleEF	MHD	1.92	1.33
tblVehicleEF	MHD	1.70	1.41
tblVehicleEF	MHD	5.0000e-004	3.1300e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.1300e-004	1.2600e-004
tblVehicleEF	MHD	4.7800e-004	2.9940e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.0400e-004	1.1600e-004
tblVehicleEF	MHD	3.9600e-004	0.03
tblVehicleEF	MHD	0.02	8.6270e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	2.0000e-004	0.00
tblVehicleEF	MHD	0.03	0.05
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	6.3800e-004	1.5440e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.7000e-005	8.2000e-005
tblVehicleEF	MHD	3.9600e-004	0.03
tblVehicleEF	MHD	0.02	8.6270e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	2.0000e-004	0.00
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	0.03	0.02

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	2.5320e-003	9.7940e-003
tblVehicleEF	MHD	2.5880e-003	8.4240e-003
tblVehicleEF	MHD	7.8920e-003	8.6390e-003
tblVehicleEF	MHD	0.28	0.61
tblVehicleEF	MHD	0.32	0.47
tblVehicleEF	MHD	0.99	1.10
tblVehicleEF	MHD	67.60	164.39
tblVehicleEF	MHD	1,075.26	1,214.71
tblVehicleEF	MHD	7.63	8.12
tblVehicleEF	MHD	9.8480e-003	0.03
tblVehicleEF	MHD	0.15	0.16
tblVehicleEF	MHD	5.1900e-003	5.0210e-003
tblVehicleEF	MHD	0.42	0.95
tblVehicleEF	MHD	1.85	1.28
tblVehicleEF	MHD	1.70	1.41
tblVehicleEF	MHD	4.2400e-004	2.6470e-003
tblVehicleEF	MHD	0.13	0.05
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.1300e-004	1.2600e-004
tblVehicleEF	MHD	4.0600e-004	2.5320e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.0400e-004	1.1600e-004
tblVehicleEF	MHD	8.5100e-004	0.04
tblVehicleEF	MHD	0.02	9.2790e-003
tblVehicleEF	MHD	0.01	0.03
tblVehicleEF	MHD	4.3200e-004	0.00
tblVehicleEF	MHD	0.03	0.05

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.04	0.05
tblVehicleEF	MHD	6.4100e-004	1.5390e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.6000e-005	8.0000e-005
tblVehicleEF	MHD	8.5100e-004	0.04
tblVehicleEF	MHD	0.02	9.2790e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	4.3200e-004	0.00
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	2.8340e-003	0.01
tblVehicleEF	MHD	2.4690e-003	8.2240e-003
tblVehicleEF	MHD	8.8760e-003	9.7200e-003
tblVehicleEF	MHD	0.38	0.75
tblVehicleEF	MHD	0.31	0.45
tblVehicleEF	MHD	1.19	1.32
tblVehicleEF	MHD	67.09	165.91
tblVehicleEF	MHD	1,075.24	1,214.68
tblVehicleEF	MHD	7.95	8.49
tblVehicleEF	MHD	9.8410e-003	0.03
tblVehicleEF	MHD	0.15	0.16
tblVehicleEF	MHD	5.6900e-003	5.5040e-003
tblVehicleEF	MHD	0.43	1.00
tblVehicleEF	MHD	1.94	1.35
tblVehicleEF	MHD	1.71	1.42
tblVehicleEF	MHD	6.0400e-004	3.7960e-003
tblVehicleEF	MHD	0.13	0.05

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.1300e-004	1.2600e-004
tblVehicleEF	MHD	5.7800e-004	3.6310e-003
tblVehicleEF	MHD	0.06	0.02
tblVehicleEF	MHD	0.01	0.02
tblVehicleEF	MHD	1.0400e-004	1.1600e-004
tblVehicleEF	MHD	1.5500e-004	0.03
tblVehicleEF	MHD	0.02	7.7410e-003
tblVehicleEF	MHD	0.02	0.03
tblVehicleEF	MHD	7.0000e-005	0.00
tblVehicleEF	MHD	0.03	0.05
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.05	0.06
tblVehicleEF	MHD	6.3600e-004	1.5530e-003
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	7.9000e-005	8.4000e-005
tblVehicleEF	MHD	1.5500e-004	0.03
tblVehicleEF	MHD	0.02	7.7410e-003
tblVehicleEF	MHD	0.02	0.04
tblVehicleEF	MHD	7.0000e-005	0.00
tblVehicleEF	MHD	0.03	0.04
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	0.06	0.06
tblVehicleEF	OBUS	7.9190e-003	7.0810e-003
tblVehicleEF	OBUS	8.7160e-003	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.42	0.38
tblVehicleEF	OBUS	1.03	1.11
tblVehicleEF	OBUS	2.85	2.88

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	56.89	52.60
tblVehicleEF	OBUS	1,500.68	1,493.85
tblVehicleEF	OBUS	20.92	22.24
tblVehicleEF	OBUS	6.8550e-003	6.3750e-003
tblVehicleEF	OBUS	0.11	0.12
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.19	0.22
tblVehicleEF	OBUS	1.38	2.00
tblVehicleEF	OBUS	0.78	0.74
tblVehicleEF	OBUS	6.2000e-005	9.5700e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	5.9650e-003	0.05
tblVehicleEF	OBUS	1.8900e-004	1.8300e-004
tblVehicleEF	OBUS	5.9000e-005	9.1600e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	5.6870e-003	0.05
tblVehicleEF	OBUS	1.7400e-004	1.6900e-004
tblVehicleEF	OBUS	1.7120e-003	0.12
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	7.6600e-004	0.00
tblVehicleEF	OBUS	0.05	0.15
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.14	0.14
tblVehicleEF	OBUS	5.4400e-004	5.0400e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.0700e-004	2.2000e-004
tblVehicleEF	OBUS	1.7120e-003	0.12
tblVehicleEF	OBUS	0.03	0.03

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	7.6600e-004	0.00
tblVehicleEF	OBUS	0.07	0.10
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.15	0.16
tblVehicleEF	OBUS	7.9790e-003	7.1290e-003
tblVehicleEF	OBUS	9.0530e-003	0.01
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.42	0.37
tblVehicleEF	OBUS	1.06	1.14
tblVehicleEF	OBUS	2.59	2.62
tblVehicleEF	OBUS	56.31	52.37
tblVehicleEF	OBUS	1,500.75	1,493.90
tblVehicleEF	OBUS	20.48	21.78
tblVehicleEF	OBUS	6.7690e-003	6.3450e-003
tblVehicleEF	OBUS	0.11	0.12
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.18	0.22
tblVehicleEF	OBUS	1.31	1.91
tblVehicleEF	OBUS	0.76	0.71
tblVehicleEF	OBUS	5.5000e-005	8.0900e-004
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	5.9650e-003	0.05
tblVehicleEF	OBUS	1.8900e-004	1.8300e-004
tblVehicleEF	OBUS	5.2000e-005	7.7400e-004
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	5.6870e-003	0.05
tblVehicleEF	OBUS	1.7400e-004	1.6900e-004
tblVehicleEF	OBUS	3.3950e-003	0.14

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	1.5700e-003	0.00
tblVehicleEF	OBUS	0.05	0.15
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.13	0.13
tblVehicleEF	OBUS	5.3800e-004	5.0100e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.0300e-004	2.1500e-004
tblVehicleEF	OBUS	3.3950e-003	0.14
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.06	0.05
tblVehicleEF	OBUS	1.5700e-003	0.00
tblVehicleEF	OBUS	0.07	0.10
tblVehicleEF	OBUS	0.13	0.04
tblVehicleEF	OBUS	0.14	0.15
tblVehicleEF	OBUS	7.8490e-003	7.0330e-003
tblVehicleEF	OBUS	8.4940e-003	0.01
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.43	0.39
tblVehicleEF	OBUS	1.00	1.09
tblVehicleEF	OBUS	3.12	3.16
tblVehicleEF	OBUS	57.70	52.91
tblVehicleEF	OBUS	1,500.64	1,493.81
tblVehicleEF	OBUS	21.38	22.71
tblVehicleEF	OBUS	6.9780e-003	6.4210e-003
tblVehicleEF	OBUS	0.11	0.12
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.21	0.23

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	OBUS	1.41	2.03
tblVehicleEF	OBUS	0.79	0.75
tblVehicleEF	OBUS	7.1000e-005	1.1610e-003
tblVehicleEF	OBUS	0.13	0.05
tblVehicleEF	OBUS	5.9650e-003	0.05
tblVehicleEF	OBUS	1.8900e-004	1.8300e-004
tblVehicleEF	OBUS	6.8000e-005	1.1110e-003
tblVehicleEF	OBUS	0.06	0.02
tblVehicleEF	OBUS	5.6870e-003	0.05
tblVehicleEF	OBUS	1.7400e-004	1.6900e-004
tblVehicleEF	OBUS	8.1400e-004	0.12
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.04	0.04
tblVehicleEF	OBUS	3.2500e-004	0.00
tblVehicleEF	OBUS	0.05	0.15
tblVehicleEF	OBUS	0.14	0.04
tblVehicleEF	OBUS	0.15	0.15
tblVehicleEF	OBUS	5.5200e-004	5.0700e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	2.1200e-004	2.2400e-004
tblVehicleEF	OBUS	8.1400e-004	0.12
tblVehicleEF	OBUS	0.03	0.03
tblVehicleEF	OBUS	0.05	0.05
tblVehicleEF	OBUS	3.2500e-004	0.00
tblVehicleEF	OBUS	0.07	0.11
tblVehicleEF	OBUS	0.14	0.04
tblVehicleEF	OBUS	0.16	0.17
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	5.0120e-003	0.01

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	1.8110e-003	3.0570e-003
tblVehicleEF	SBUS	1.14	0.91
tblVehicleEF	SBUS	0.36	0.90
tblVehicleEF	SBUS	0.25	0.46
tblVehicleEF	SBUS	324.62	167.40
tblVehicleEF	SBUS	1,099.83	1,056.12
tblVehicleEF	SBUS	1.29	1.95
tblVehicleEF	SBUS	0.05	0.02
tblVehicleEF	SBUS	0.16	0.15
tblVehicleEF	SBUS	1.2880e-003	1.7950e-003
tblVehicleEF	SBUS	3.06	1.36
tblVehicleEF	SBUS	5.64	3.51
tblVehicleEF	SBUS	1.06	0.62
tblVehicleEF	SBUS	3.2580e-003	1.3600e-003
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.6000e-005	1.8000e-005
tblVehicleEF	SBUS	3.1170e-003	1.3010e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.8880e-003	2.8000e-003
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.4000e-005	1.6000e-005
tblVehicleEF	SBUS	1.1700e-004	0.02
tblVehicleEF	SBUS	1.6410e-003	6.1800e-003
tblVehicleEF	SBUS	0.09	0.09
tblVehicleEF	SBUS	5.7000e-005	0.00
tblVehicleEF	SBUS	0.09	0.07
tblVehicleEF	SBUS	3.1780e-003	9.9990e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	3.0740e-003	1.5870e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	1.3000e-005	1.9000e-005
tblVehicleEF	SBUS	1.1700e-004	0.02
tblVehicleEF	SBUS	1.6410e-003	6.1800e-003
tblVehicleEF	SBUS	0.13	0.12
tblVehicleEF	SBUS	5.7000e-005	0.00
tblVehicleEF	SBUS	0.10	0.14
tblVehicleEF	SBUS	3.1780e-003	9.9990e-003
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	5.0600e-003	0.01
tblVehicleEF	SBUS	1.5300e-003	2.5810e-003
tblVehicleEF	SBUS	1.11	0.89
tblVehicleEF	SBUS	0.37	0.92
tblVehicleEF	SBUS	0.19	0.34
tblVehicleEF	SBUS	331.76	169.77
tblVehicleEF	SBUS	1,099.84	1,056.16
tblVehicleEF	SBUS	1.18	1.75
tblVehicleEF	SBUS	0.05	0.02
tblVehicleEF	SBUS	0.16	0.15
tblVehicleEF	SBUS	1.2160e-003	1.6950e-003
tblVehicleEF	SBUS	3.11	1.37
tblVehicleEF	SBUS	5.45	3.37
tblVehicleEF	SBUS	1.06	0.62
tblVehicleEF	SBUS	2.7560e-003	1.1520e-003
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.6000e-005	1.8000e-005
tblVehicleEF	SBUS	2.6370e-003	1.1020e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.8880e-003	2.8000e-003
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.4000e-005	1.6000e-005
tblVehicleEF	SBUS	2.2900e-004	0.03
tblVehicleEF	SBUS	1.6630e-003	6.5740e-003
tblVehicleEF	SBUS	0.09	0.09
tblVehicleEF	SBUS	1.1800e-004	0.00
tblVehicleEF	SBUS	0.09	0.07
tblVehicleEF	SBUS	2.7340e-003	9.8220e-003
tblVehicleEF	SBUS	8.6710e-003	0.02
tblVehicleEF	SBUS	3.1420e-003	1.6090e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	1.2000e-005	1.7000e-005
tblVehicleEF	SBUS	2.2900e-004	0.03
tblVehicleEF	SBUS	1.6630e-003	6.5740e-003
tblVehicleEF	SBUS	0.13	0.12
tblVehicleEF	SBUS	1.1800e-004	0.00
tblVehicleEF	SBUS	0.10	0.12
tblVehicleEF	SBUS	2.7340e-003	9.8220e-003
tblVehicleEF	SBUS	9.4940e-003	0.02
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.9770e-003	0.01
tblVehicleEF	SBUS	2.0870e-003	3.5240e-003
tblVehicleEF	SBUS	1.19	0.93
tblVehicleEF	SBUS	0.36	0.88

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	0.32	0.59
tblVehicleEF	SBUS	314.76	164.13
tblVehicleEF	SBUS	1,099.83	1,056.08
tblVehicleEF	SBUS	1.41	2.17
tblVehicleEF	SBUS	0.05	0.02
tblVehicleEF	SBUS	0.16	0.15
tblVehicleEF	SBUS	1.3520e-003	1.8830e-003
tblVehicleEF	SBUS	2.99	1.34
tblVehicleEF	SBUS	5.70	3.56
tblVehicleEF	SBUS	1.06	0.62
tblVehicleEF	SBUS	3.9510e-003	1.6470e-003
tblVehicleEF	SBUS	0.74	0.04
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.6000e-005	1.8000e-005
tblVehicleEF	SBUS	3.7800e-003	1.5760e-003
tblVehicleEF	SBUS	0.32	0.02
tblVehicleEF	SBUS	2.8880e-003	2.8000e-003
tblVehicleEF	SBUS	0.03	0.02
tblVehicleEF	SBUS	1.4000e-005	1.6000e-005
tblVehicleEF	SBUS	6.0000e-005	0.02
tblVehicleEF	SBUS	1.6530e-003	5.5630e-003
tblVehicleEF	SBUS	0.09	0.09
tblVehicleEF	SBUS	2.5000e-005	0.00
tblVehicleEF	SBUS	0.09	0.07
tblVehicleEF	SBUS	3.9770e-003	0.01
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	2.9810e-003	1.5560e-003
tblVehicleEF	SBUS	0.01	0.01

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	SBUS	1.4000e-005	2.1000e-005
tblVehicleEF	SBUS	6.0000e-005	0.02
tblVehicleEF	SBUS	1.6530e-003	5.5630e-003
tblVehicleEF	SBUS	0.13	0.12
tblVehicleEF	SBUS	2.5000e-005	0.00
tblVehicleEF	SBUS	0.10	0.16
tblVehicleEF	SBUS	3.9770e-003	0.01
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	UBUS	4.02	1.87
tblVehicleEF	UBUS	6.6160e-003	0.01
tblVehicleEF	UBUS	30.79	22.32
tblVehicleEF	UBUS	0.48	1.13
tblVehicleEF	UBUS	1,749.20	1,210.46
tblVehicleEF	UBUS	5.11	9.03
tblVehicleEF	UBUS	0.33	0.22
tblVehicleEF	UBUS	3.8740e-003	0.01
tblVehicleEF	UBUS	0.53	0.22
tblVehicleEF	UBUS	0.05	0.10
tblVehicleEF	UBUS	0.08	0.11
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	3.7840e-003	1.6650e-003
tblVehicleEF	UBUS	4.5000e-005	5.6000e-005
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	7.2700e-003	6.6780e-003
tblVehicleEF	UBUS	3.6190e-003	1.5890e-003
tblVehicleEF	UBUS	4.1000e-005	5.2000e-005
tblVehicleEF	UBUS	1.5200e-004	0.02
tblVehicleEF	UBUS	2.6080e-003	6.0340e-003
tblVehicleEF	UBUS	9.7000e-005	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	UBUS	0.06	0.04
tblVehicleEF	UBUS	6.6500e-004	6.4500e-004
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	4.2150e-003	3.2660e-003
tblVehicleEF	UBUS	5.1000e-005	8.9000e-005
tblVehicleEF	UBUS	1.5200e-004	0.02
tblVehicleEF	UBUS	2.6080e-003	6.0340e-003
tblVehicleEF	UBUS	9.7000e-005	0.00
tblVehicleEF	UBUS	4.11	0.03
tblVehicleEF	UBUS	6.6500e-004	6.4500e-004
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	4.02	1.87
tblVehicleEF	UBUS	5.8670e-003	9.2630e-003
tblVehicleEF	UBUS	30.79	22.32
tblVehicleEF	UBUS	0.39	0.93
tblVehicleEF	UBUS	1,749.20	1,210.46
tblVehicleEF	UBUS	4.94	8.70
tblVehicleEF	UBUS	0.33	0.22
tblVehicleEF	UBUS	3.6950e-003	0.01
tblVehicleEF	UBUS	0.53	0.21
tblVehicleEF	UBUS	0.05	0.09
tblVehicleEF	UBUS	0.08	0.11
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	3.7840e-003	1.6650e-003
tblVehicleEF	UBUS	4.5000e-005	5.6000e-005
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	7.2700e-003	6.6780e-003
tblVehicleEF	UBUS	3.6190e-003	1.5890e-003
tblVehicleEF	UBUS	4.1000e-005	5.2000e-005

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	UBUS	2.9600e-004	0.02
tblVehicleEF	UBUS	2.7610e-003	6.4980e-003
tblVehicleEF	UBUS	2.0500e-004	0.00
tblVehicleEF	UBUS	0.06	0.04
tblVehicleEF	UBUS	5.7300e-004	6.4500e-004
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	4.2150e-003	3.2660e-003
tblVehicleEF	UBUS	4.9000e-005	8.6000e-005
tblVehicleEF	UBUS	2.9600e-004	0.02
tblVehicleEF	UBUS	2.7610e-003	6.4980e-003
tblVehicleEF	UBUS	2.0500e-004	0.00
tblVehicleEF	UBUS	4.11	0.02
tblVehicleEF	UBUS	5.7300e-004	6.4500e-004
tblVehicleEF	UBUS	0.03	0.04
tblVehicleEF	UBUS	4.02	1.87
tblVehicleEF	UBUS	7.2370e-003	0.01
tblVehicleEF	UBUS	30.79	22.32
tblVehicleEF	UBUS	0.58	1.34
tblVehicleEF	UBUS	1,749.20	1,210.45
tblVehicleEF	UBUS	5.26	9.38
tblVehicleEF	UBUS	0.33	0.22
tblVehicleEF	UBUS	4.0260e-003	0.01
tblVehicleEF	UBUS	0.53	0.22
tblVehicleEF	UBUS	0.05	0.10
tblVehicleEF	UBUS	0.08	0.11
tblVehicleEF	UBUS	0.03	0.03
tblVehicleEF	UBUS	3.7840e-003	1.6650e-003
tblVehicleEF	UBUS	4.5000e-005	5.6000e-005
tblVehicleEF	UBUS	0.03	0.04

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleEF	UBUS	7.2700e-003	6.6780e-003
tblVehicleEF	UBUS	3.6190e-003	1.5890e-003
tblVehicleEF	UBUS	4.1000e-005	5.2000e-005
tblVehicleEF	UBUS	7.7000e-005	0.02
tblVehicleEF	UBUS	2.7050e-003	5.3970e-003
tblVehicleEF	UBUS	4.4000e-005	0.00
tblVehicleEF	UBUS	0.06	0.04
tblVehicleEF	UBUS	8.3600e-004	6.6900e-004
tblVehicleEF	UBUS	0.03	0.05
tblVehicleEF	UBUS	4.2150e-003	3.2660e-003
tblVehicleEF	UBUS	5.2000e-005	9.3000e-005
tblVehicleEF	UBUS	7.7000e-005	0.02
tblVehicleEF	UBUS	2.7050e-003	5.3970e-003
tblVehicleEF	UBUS	4.4000e-005	0.00
tblVehicleEF	UBUS	4.11	0.03
tblVehicleEF	UBUS	8.3600e-004	6.6900e-004
tblVehicleEF	UBUS	0.04	0.05
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CNW_TTP	41.00	0.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TL	9.50	10.90
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	77.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.21	0.00
tblVehicleTrips	ST_TR	2.12	0.00
tblVehicleTrips	ST_TR	1.74	1.82
tblVehicleTrips	SU_TR	0.70	0.00
tblVehicleTrips	SU_TR	2.12	0.00
tblVehicleTrips	SU_TR	1.74	1.82
tblVehicleTrips	WD_TR	9.74	0.00
tblVehicleTrips	WD_TR	2.12	0.00
tblVehicleTrips	WD_TR	1.74	1.82
tblWater	IndoorWaterUseRate	2,825,966.59	0.00
tblWater	IndoorWaterUseRate	3,556,625.00	0.00
tblWater	IndoorWaterUseRate	29,063,500.00	173,000.00
tblWater	OutdoorWaterUseRate	1,732,044.04	0.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0691	0.8153	0.4921	1.3500e-003	0.2772	0.0316	0.3088	0.1247	0.0291	0.1538	0.0000	121.8525	121.8525	0.0294	5.1400e-003	124.1190
2023	1.6666	3.6449	4.4901	0.0107	0.5984	0.1391	0.7375	0.1923	0.1323	0.3246	0.0000	961.3128	961.3128	0.1084	0.0435	976.9828
2024	0.0496	0.3442	0.4723	1.1300e-003	0.0489	0.0122	0.0611	0.0132	0.0117	0.0248	0.0000	101.3216	101.3216	9.6200e-003	4.6000e-003	102.9344
Maximum	**1.6666**	**3.6449**	**4.4901**	**0.0107**	**0.5984**	**0.1391**	**0.7375**	**0.1923**	**0.1323**	**0.3246**	**0.0000**	**961.3128**	**961.3128**	**0.1084**	**0.0435**	**976.9828**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0691	0.8153	0.4921	1.3500e-003	0.1303	0.0316	0.1619	0.0576	0.0291	0.0868	0.0000	121.8524	121.8524	0.0294	5.1400e-003	124.1189
2023	1.6666	3.6449	4.4901	0.0107	0.4957	0.1391	0.6347	0.1475	0.1323	0.2798	0.0000	961.3123	961.3123	0.1084	0.0435	976.9822
2024	0.0496	0.3442	0.4723	1.1300e-003	0.0489	0.0122	0.0611	0.0132	0.0117	0.0248	0.0000	101.3215	101.3215	9.6200e-003	4.6000e-003	102.9344
Maximum	**1.6666**	**3.6449**	**4.4901**	**0.0107**	**0.4957**	**0.1391**	**0.6347**	**0.1475**	**0.1323**	**0.2798**	**0.0000**	**961.3123**	**961.3123**	**0.1084**	**0.0435**	**976.9822**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**27.00**	**0.00**	**22.54**	**33.87**	**0.00**	**22.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	**10-21-2022**	**1-20-2023**	1.2491	1.2491
4	**1-21-2023**	**4-20-2023**	1.0379	1.0379
5	**4-21-2023**	**7-20-2023**	0.9286	0.9286
6	**7-21-2023**	**10-20-2023**	2.1499	2.1499
7	**10-21-2023**	**1-20-2024**	1.0116	1.0116
8	**1-21-2024**	**4-20-2024**	0.1859	0.1859
		Highest	2.1499	2.1499

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7515	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131
Energy	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218
Mobile	0.1061	0.6798	1.4518	5.4800e-003	0.3233	5.9600e-003	0.3292	0.0819	5.6400e-003	0.0875	0.0000	525.3504	525.3504	0.0368	0.0534	542.1760
Stationary	0.0247	0.0691	0.0631	1.2000e-004		3.6400e-003	3.6400e-003		3.6400e-003	3.6400e-003	0.0000	11.4810	11.4810	1.6100e-003	0.0000	11.5213
Waste						0.0000	0.0000		0.0000	0.0000	29.9188	0.0000	29.9188	1.7682	0.0000	74.1227
Water						0.0000	0.0000		0.0000	0.0000	0.0549	0.0000	0.0549	5.6400e-003	1.3000e-004	0.2355
Total	**0.8827**	**0.7527**	**1.5243**	**5.6200e-003**	**0.3233**	**9.9000e-003**	**0.3332**	**0.0819**	**9.5800e-003**	**0.0915**	**29.9737**	**540.8417**	**570.8154**	**1.8123**	**0.0536**	**632.0903**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7515	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131
Energy	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218
Mobile	0.1061	0.6798	1.4518	5.4800e-003	0.3233	5.9600e-003	0.3292	0.0819	5.6400e-003	0.0875	0.0000	525.3504	525.3504	0.0368	0.0534	542.1760
Stationary	0.0247	0.0691	0.0631	1.2000e-004		3.6400e-003	3.6400e-003		3.6400e-003	3.6400e-003	0.0000	11.4810	11.4810	1.6100e-003	0.0000	11.5213
Waste						0.0000	0.0000		0.0000	0.0000	29.9188	0.0000	29.9188	1.7682	0.0000	74.1227
Water						0.0000	0.0000		0.0000	0.0000	0.0549	0.0000	0.0549	5.6400e-003	1.3000e-004	0.2355
Total	**0.8827**	**0.7527**	**1.5243**	**5.6200e-003**	**0.3233**	**9.9000e-003**	**0.3332**	**0.0819**	**9.5800e-003**	**0.0915**	**29.9737**	**540.8417**	**570.8154**	**1.8123**	**0.0536**	**632.0903**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-49.5650
Total	**-49.5650**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	11/11/2022	11/24/2022	5	10	
2	Grading	Grading	11/28/2022	2/1/2023	5	48	
3	Building Construction	Building Construction	2/2/2023	2/8/2024	5	266	
4	Architectural Coating	Architectural Coating	9/22/2023	10/19/2023	5	20	
5	Paving	Paving	11/14/2023	11/27/2023	5	10	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 7.73

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 235,442; Non-Residential Outdoor: 78,481; Striped Parking Area: 20,203 (Architectural Coating – sqft)

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	81	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	12.00	0.00	0.00	10.80	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	20.00	0.00	1,750.00	10.80	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	12	362.00	81.00	0.00	10.80	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	3	16.00	0.00	0.00	10.80	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	40.00	0.00	0.00	10.80	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Water Exposed Area

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0682	0.0000	0.0682	0.0340	0.0000	0.0340	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0100	0.1047	0.0582	1.2000e-004		5.0700e-003	5.0700e-003		4.6700e-003	4.6700e-003	0.0000	10.2355	10.2355	3.3100e-003	0.0000	10.3183
Total	**0.0100**	**0.1047**	**0.0582**	**1.2000e-004**	**0.0682**	**5.0700e-003**	**0.0732**	**0.0340**	**4.6700e-003**	**0.0386**	**0.0000**	**10.2355**	**10.2355**	**3.3100e-003**	**0.0000**	**10.3183**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.8000e-004	1.8900e-003	0.0000	4.7000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4007	0.4007	2.0000e-005	1.0000e-005	0.4053
Total	**2.2000e-004**	**1.8000e-004**	**1.8900e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4007**	**0.4007**	**2.0000e-005**	**1.0000e-005**	**0.4053**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0307	0.0000	0.0307	0.0153	0.0000	0.0153	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0100	0.1047	0.0582	1.2000e-004		5.0700e-003	5.0700e-003		4.6700e-003	4.6700e-003	0.0000	10.2355	10.2355	3.3100e-003	0.0000	10.3183
Total	**0.0100**	**0.1047**	**0.0582**	**1.2000e-004**	**0.0307**	**5.0700e-003**	**0.0358**	**0.0153**	**4.6700e-003**	**0.0200**	**0.0000**	**10.2355**	**10.2355**	**3.3100e-003**	**0.0000**	**10.3183**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	1.8000e-004	1.8900e-003	0.0000	4.7000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4007	0.4007	2.0000e-005	1.0000e-005	0.4053
Total	**2.2000e-004**	**1.8000e-004**	**1.8900e-003**	**0.0000**	**4.7000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4007**	**0.4007**	**2.0000e-005**	**1.0000e-005**	**0.4053**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1989	0.0000	0.1989	0.0880	0.0000	0.0880	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0558	0.5955	0.4078	8.8000e-004		0.0257	0.0257		0.0236	0.0236	0.0000	77.5467	77.5467	0.0251	0.0000	78.1737
Total	**0.0558**	**0.5955**	**0.4078**	**8.8000e-004**	**0.1989**	**0.0257**	**0.2245**	**0.0880**	**0.0236**	**0.1116**	**0.0000**	**77.5467**	**77.5467**	**0.0251**	**0.0000**	**78.1737**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-003	0.1142	0.0163	3.2000e-004	7.6600e-003	8.7000e-004	8.5300e-003	2.1000e-003	8.3000e-004	2.9300e-003	0.0000	32.0001	32.0001	9.0000e-004	5.0700e-003	33.5329
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.5000e-004	7.8900e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6695	1.6695	7.0000e-005	6.0000e-005	1.6888
Total	**3.1100e-003**	**0.1150**	**0.0242**	**3.4000e-004**	**9.6400e-003**	**8.8000e-004**	**0.0105**	**2.6300e-003**	**8.4000e-004**	**3.4700e-003**	**0.0000**	**33.6696**	**33.6696**	**9.7000e-004**	**5.1300e-003**	**35.2217**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0895	0.0000	0.0895	0.0396	0.0000	0.0396	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0558	0.5955	0.4078	8.8000e-004		0.0257	0.0257		0.0236	0.0236	0.0000	77.5466	77.5466	0.0251	0.0000	78.1736
Total	**0.0558**	**0.5955**	**0.4078**	**8.8000e-004**	**0.0895**	**0.0257**	**0.1152**	**0.0396**	**0.0236**	**0.0632**	**0.0000**	**77.5466**	**77.5466**	**0.0251**	**0.0000**	**78.1736**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-003	0.1142	0.0163	3.2000e-004	7.6600e-003	8.7000e-004	8.5300e-003	2.1000e-003	8.3000e-004	2.9300e-003	0.0000	32.0001	32.0001	9.0000e-004	5.0700e-003	33.5329
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	7.5000e-004	7.8900e-003	2.0000e-005	1.9800e-003	1.0000e-005	1.9900e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6695	1.6695	7.0000e-005	6.0000e-005	1.6888
Total	**3.1100e-003**	**0.1150**	**0.0242**	**3.4000e-004**	**9.6400e-003**	**8.8000e-004**	**0.0105**	**2.6300e-003**	**8.4000e-004**	**3.4700e-003**	**0.0000**	**33.6696**	**33.6696**	**9.7000e-004**	**5.1300e-003**	**35.2217**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1868	0.0000	0.1868	0.0814	0.0000	0.0814	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0461	0.4789	0.3583	8.1000e-004		0.0201	0.0201		0.0185	0.0185	0.0000	71.3433	71.3433	0.0231	0.0000	71.9201
Total	**0.0461**	**0.4789**	**0.3583**	**8.1000e-004**	**0.1868**	**0.0201**	**0.2069**	**0.0814**	**0.0185**	**0.0999**	**0.0000**	**71.3433**	**71.3433**	**0.0231**	**0.0000**	**71.9201**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0914	0.0136	2.9000e-004	7.0400e-003	6.0000e-004	7.6400e-003	1.9300e-003	5.7000e-004	2.5100e-003	0.0000	28.4704	28.4704	8.1000e-004	4.5100e-003	29.8346
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	6.1000e-004	6.6600e-003	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.8000e-004	1.0000e-005	5.0000e-004	0.0000	1.4902	1.4902	6.0000e-005	5.0000e-005	1.5065
Total	**2.0700e-003**	**0.0920**	**0.0202**	**3.1000e-004**	**8.8600e-003**	**6.1000e-004**	**9.4700e-003**	**2.4100e-003**	**5.8000e-004**	**3.0100e-003**	**0.0000**	**29.9606**	**29.9606**	**8.7000e-004**	**4.5600e-003**	**31.3411**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0841	0.0000	0.0841	0.0366	0.0000	0.0366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0461	0.4789	0.3583	8.1000e-004		0.0201	0.0201		0.0185	0.0185	0.0000	71.3432	71.3432	0.0231	0.0000	71.9200
Total	**0.0461**	**0.4789**	**0.3583**	**8.1000e-004**	**0.0841**	**0.0201**	**0.1042**	**0.0366**	**0.0185**	**0.0551**	**0.0000**	**71.3432**	**71.3432**	**0.0231**	**0.0000**	**71.9200**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0914	0.0136	2.9000e-004	7.0400e-003	6.0000e-004	7.6400e-003	1.9300e-003	5.7000e-004	2.5100e-003	0.0000	28.4704	28.4704	8.1000e-004	4.5100e-003	29.8346
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	6.1000e-004	6.6600e-003	2.0000e-005	1.8200e-003	1.0000e-005	1.8300e-003	4.8000e-004	1.0000e-005	5.0000e-004	0.0000	1.4902	1.4902	6.0000e-005	5.0000e-005	1.5065
Total	**2.0700e-003**	**0.0920**	**0.0202**	**3.1000e-004**	**8.8600e-003**	**6.1000e-004**	**9.4700e-003**	**2.4100e-003**	**5.8000e-004**	**3.0100e-003**	**0.0000**	**29.9606**	**29.9606**	**8.7000e-004**	**4.5600e-003**	**31.3411**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2749	2.2721	2.5956	4.3400e-003		0.1081	0.1081		0.1035	0.1035	0.0000	365.7151	365.7151	0.0665	0.0000	367.3778
Total	**0.2749**	**2.2721**	**2.5956**	**4.3400e-003**		**0.1081**	**0.1081**		**0.1035**	**0.1035**	**0.0000**	**365.7151**	**365.7151**	**0.0665**	**0.0000**	**367.3778**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0136	0.5976	0.1362	2.0200e-003	0.0603	3.3100e-003	0.0636	0.0174	3.1700e-003	0.0206	0.0000	196.3257	196.3257	3.7100e-003	0.0296	205.2232
Worker	0.1463	0.1131	1.2418	3.0300e-003	0.3396	2.2700e-003	0.3419	0.0903	2.0900e-003	0.0924	0.0000	277.9336	277.9336	0.0104	9.3100e-003	280.9680
Total	**0.1598**	**0.7107**	**1.3781**	**5.0500e-003**	**0.3999**	**5.5800e-003**	**0.4054**	**0.1077**	**5.2600e-003**	**0.1130**	**0.0000**	**474.2593**	**474.2593**	**0.0141**	**0.0389**	**486.1912**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2749	2.2721	2.5956	4.3400e-003		0.1081	0.1081		0.1035	0.1035	0.0000	365.7147	365.7147	0.0665	0.0000	367.3774
Total	**0.2749**	**2.2721**	**2.5956**	**4.3400e-003**		**0.1081**	**0.1081**		**0.1035**	**0.1035**	**0.0000**	**365.7147**	**365.7147**	**0.0665**	**0.0000**	**367.3774**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0136	0.5976	0.1362	2.0200e-003	0.0603	3.3100e-003	0.0636	0.0174	3.1700e-003	0.0206	0.0000	196.3257	196.3257	3.7100e-003	0.0296	205.2232
Worker	0.1463	0.1131	1.2418	3.0300e-003	0.3396	2.2700e-003	0.3419	0.0903	2.0900e-003	0.0924	0.0000	277.9336	277.9336	0.0104	9.3100e-003	280.9680
Total	**0.1598**	**0.7107**	**1.3781**	**5.0500e-003**	**0.3999**	**5.5800e-003**	**0.4054**	**0.1077**	**5.2600e-003**	**0.1130**	**0.0000**	**474.2593**	**474.2593**	**0.0141**	**0.0389**	**486.1912**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0313	0.2611	0.3158	5.3000e-004		0.0115	0.0115		0.0110	0.0110	0.0000	44.7536	44.7536	8.0200e-003	0.0000	44.9542
Total	**0.0313**	**0.2611**	**0.3158**	**5.3000e-004**		**0.0115**	**0.0115**		**0.0110**	**0.0110**	**0.0000**	**44.7536**	**44.7536**	**8.0200e-003**	**0.0000**	**44.9542**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5800e-003	0.0708	0.0162	2.4000e-004	7.3700e-003	3.9000e-004	7.7700e-003	2.1300e-003	3.8000e-004	2.5100e-003	0.0000	23.6079	23.6079	4.5000e-004	3.5500e-003	24.6775
Worker	0.0167	0.0123	0.1403	3.6000e-004	0.0416	2.6000e-004	0.0418	0.0111	2.4000e-004	0.0113	0.0000	32.9601	32.9601	1.1500e-003	1.0500e-003	33.3028
Total	**0.0183**	**0.0831**	**0.1565**	**6.0000e-004**	**0.0489**	**6.5000e-004**	**0.0496**	**0.0132**	**6.2000e-004**	**0.0138**	**0.0000**	**56.5680**	**56.5680**	**1.6000e-003**	**4.6000e-003**	**57.9802**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0313	0.2611	0.3158	5.3000e-004		0.0115	0.0115		0.0110	0.0110	0.0000	44.7535	44.7535	8.0200e-003	0.0000	44.9541
Total	**0.0313**	**0.2611**	**0.3158**	**5.3000e-004**		**0.0115**	**0.0115**		**0.0110**	**0.0110**	**0.0000**	**44.7535**	**44.7535**	**8.0200e-003**	**0.0000**	**44.9541**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5800e-003	0.0708	0.0162	2.4000e-004	7.3700e-003	3.9000e-004	7.7700e-003	2.1300e-003	3.8000e-004	2.5100e-003	0.0000	23.6079	23.6079	4.5000e-004	3.5500e-003	24.6775
Worker	0.0167	0.0123	0.1403	3.6000e-004	0.0416	2.6000e-004	0.0418	0.0111	2.4000e-004	0.0113	0.0000	32.9601	32.9601	1.1500e-003	1.0500e-003	33.3028
Total	**0.0183**	**0.0831**	**0.1565**	**6.0000e-004**	**0.0489**	**6.5000e-004**	**0.0496**	**0.0132**	**6.2000e-004**	**0.0138**	**0.0000**	**56.5680**	**56.5680**	**1.6000e-003**	**4.6000e-003**	**57.9802**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1615					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7500e-003	0.0391	0.0543	9.0000e-005		2.1200e-003	2.1200e-003		2.1200e-003	2.1200e-003	0.0000	7.6598	7.6598	4.6000e-004	0.0000	7.6712
Total	**1.1673**	**0.0391**	**0.0543**	**9.0000e-005**		**2.1200e-003**	**2.1200e-003**		**2.1200e-003**	**2.1200e-003**	**0.0000**	**7.6598**	**7.6598**	**4.6000e-004**	**0.0000**	**7.6712**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.2000e-004	4.6300e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.4000e-004	0.0000	1.0367	1.0367	4.0000e-005	3.0000e-005	1.0480
Total	**5.5000e-004**	**4.2000e-004**	**4.6300e-003**	**1.0000e-005**	**1.2700e-003**	**1.0000e-005**	**1.2800e-003**	**3.4000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0367**	**1.0367**	**4.0000e-005**	**3.0000e-005**	**1.0480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.1615					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7500e-003	0.0391	0.0543	9.0000e-005		2.1200e-003	2.1200e-003		2.1200e-003	2.1200e-003	0.0000	7.6598	7.6598	4.6000e-004	0.0000	7.6712
Total	**1.1673**	**0.0391**	**0.0543**	**9.0000e-005**		**2.1200e-003**	**2.1200e-003**		**2.1200e-003**	**2.1200e-003**	**0.0000**	**7.6598**	**7.6598**	**4.6000e-004**	**0.0000**	**7.6712**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	4.2000e-004	4.6300e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.4000e-004	0.0000	1.0367	1.0367	4.0000e-005	3.0000e-005	1.0480
Total	**5.5000e-004**	**4.2000e-004**	**4.6300e-003**	**1.0000e-005**	**1.2700e-003**	**1.0000e-005**	**1.2800e-003**	**3.4000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.0367**	**1.0367**	**4.0000e-005**	**3.0000e-005**	**1.0480**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.1800e-003	0.0512	0.0732	1.1000e-004		2.5600e-003	2.5600e-003		2.3600e-003	2.3600e-003	0.0000	10.0423	10.0423	3.2500e-003	0.0000	10.1235
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0153**	**0.0512**	**0.0732**	**1.1000e-004**		**2.5600e-003**	**2.5600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**10.0423**	**10.0423**	**3.2500e-003**	**0.0000**	**10.1235**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	5.3000e-004	5.7900e-003	1.0000e-005	1.5800e-003	1.0000e-005	1.5900e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2958	1.2958	5.0000e-005	4.0000e-005	1.3100
Total	**6.8000e-004**	**5.3000e-004**	**5.7900e-003**	**1.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.5900e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.2958**	**1.2958**	**5.0000e-005**	**4.0000e-005**	**1.3100**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.1800e-003	0.0512	0.0732	1.1000e-004		2.5600e-003	2.5600e-003		2.3600e-003	2.3600e-003	0.0000	10.0422	10.0422	3.2500e-003	0.0000	10.1234
Paving	0.0101					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0153**	**0.0512**	**0.0732**	**1.1000e-004**		**2.5600e-003**	**2.5600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**10.0422**	**10.0422**	**3.2500e-003**	**0.0000**	**10.1234**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	5.3000e-004	5.7900e-003	1.0000e-005	1.5800e-003	1.0000e-005	1.5900e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.2958	1.2958	5.0000e-005	4.0000e-005	1.3100
Total	**6.8000e-004**	**5.3000e-004**	**5.7900e-003**	**1.0000e-005**	**1.5800e-003**	**1.0000e-005**	**1.5900e-003**	**4.2000e-004**	**1.0000e-005**	**4.3000e-004**	**0.0000**	**1.2958**	**1.2958**	**5.0000e-005**	**4.0000e-005**	**1.3100**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1061	0.6798	1.4518	5.4800e-003	0.3233	5.9600e-003	0.3292	0.0819	5.6400e-003	0.0875	0.0000	525.3504	525.3504	0.0368	0.0534	542.1760
Unmitigated	0.1061	0.6798	1.4518	5.4800e-003	0.3233	5.9600e-003	0.3292	0.0819	5.6400e-003	0.0875	0.0000	525.3504	525.3504	0.0368	0.0534	542.1760

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Refrigerated Warehouse-No Rail	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	228.74	228.74	228.74	907,539	907,539
Total	228.74	228.74	228.74	907,539	907,539

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Refrigerated Warehouse-No	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	10.90	0.00	0.00	100.00	0.00	0.00	100	0	0

4.4 Fleet Mix

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.513048	0.056363	0.205775	0.133516	0.028476	0.006354	0.010941	0.003932	0.000729	0.000845	0.034305	0.001117	0.004598
Other Asphalt Surfaces	0.513048	0.056363	0.205775	0.133516	0.028476	0.006354	0.010941	0.003932	0.000729	0.000845	0.034305	0.001117	0.004598
Refrigerated Warehouse-No Rail	0.513048	0.056363	0.205775	0.133516	0.028476	0.006354	0.010941	0.003932	0.000729	0.000845	0.034305	0.001117	0.004598
Unrefrigerated Warehouse-No Rail	0.473372	0.052004	0.189861	0.123191	0.000000	0.000000	0.000000	0.161572	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218
NaturalGas Unmitigated	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	74920.1	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.0000e-004**	**3.6700e-003**	**3.0800e-003**	**2.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**3.9980**	**3.9980**	**8.0000e-005**	**7.0000e-005**	**4.0218**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	74920.1	4.0000e-004	3.6700e-003	3.0800e-003	2.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004	0.0000	3.9980	3.9980	8.0000e-005	7.0000e-005	4.0218
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.0000e-004**	**3.6700e-003**	**3.0800e-003**	**2.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**	**0.0000**	**3.9980**	**3.9980**	**8.0000e-005**	**7.0000e-005**	**4.0218**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	191436	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	365216	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	472546	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	191286	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	-150	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	365066	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	472396	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7515	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131
Unmitigated	0.7515	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1162					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6348					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.8000e-004	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131
Total	**0.7515**	**6.0000e-005**	**6.2900e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0123**	**0.0123**	**3.0000e-005**	**0.0000**	**0.0131**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1162					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6348					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.8000e-004	6.0000e-005	6.2900e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0123	0.0123	3.0000e-005	0.0000	0.0131
Total	**0.7515**	**6.0000e-005**	**6.2900e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0123**	**0.0123**	**3.0000e-005**	**0.0000**	**0.0131**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0549	5.6400e-003	1.3000e-004	0.2355
Unmitigated	0.0549	5.6400e-003	1.3000e-004	0.2355

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.173 / 0	0.0549	5.6400e-003	1.3000e-004	0.2355
Total		**0.0549**	**5.6400e-003**	**1.3000e-004**	**0.2355**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0.173 / 0	0.0549	5.6400e-003	1.3000e-004	0.2355
Total		**0.0549**	**5.6400e-003**	**1.3000e-004**	**0.2355**

8.0 Waste Detail

8.1 Mitigation Measures Waste

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	29.9188	1.7682	0.0000	74.1227
Unmitigated	29.9188	1.7682	0.0000	74.1227

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	14.79	3.0022	0.1774	0.0000	7.4379
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	14.46	2.9353	0.1735	0.0000	7.2720
Unrefrigerated Warehouse-No Rail	118.14	23.9814	1.4173	0.0000	59.4128
Total		**29.9188**	**1.7682**	**0.0000**	**74.1227**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	14.79	3.0022	0.1774	0.0000	7.4379
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Refrigerated Warehouse-No Rail	14.46	2.9353	0.1735	0.0000	7.2720
Unrefrigerated Warehouse-No Rail	118.14	23.9814	1.4173	0.0000	59.4128
Total		**29.9188**	**1.7682**	**0.0000**	**74.1227**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	4	50	603.5	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (600 - 750 HP)	0.0247	0.0691	0.0631	1.2000e-004		3.6400e-003	3.6400e-003		3.6400e-003	3.6400e-003	0.0000	11.4810	11.4810	1.6100e-003	0.0000	11.5213
Total	**0.0247**	**0.0691**	**0.0631**	**1.2000e-004**		**3.6400e-003**	**3.6400e-003**		**3.6400e-003**	**3.6400e-003**	**0.0000**	**11.4810**	**11.4810**	**1.6100e-003**	**0.0000**	**11.5213**

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-49.5650	0.0000	0.0000	-49.5650

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	11.5 / 0	-49.5650	0.0000	0.0000	-49.5650
Total		**-49.5650**	**0.0000**	**0.0000**	**-49.5650**

Appendix B: Biological Resources Report

100 and 200 Manabe Ow Road
Watsonville, CA

Biological Resources Report



Prepared for:
City of Watsonville
Community Development Department
Planning Division
250 Main Street
Watsonville, California 95076

Prepared by:
MIG
2055 Junction Avenue, Suite 205
San José, CA 95134
(650) 400-5767

April 2022

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1 Introduction

This report provides an evaluation of biological resources that may be impacted by the proposed construction of (1) a logistics distribution center at 100 Manabe Ow Road; and (2) a two-story industrial structure at 200 Manabe Ow Road in Watsonville, Santa Cruz County, California. It identifies sensitive biological resources with the potential to be impacted by the project, and recommended measures to avoid significant impacts defined by the California Environmental Quality Act (CEQA).

The report will be used during project planning and to support the CEQA documentation. The report includes the following sections:

- Section 2 Project Location and Description: provides an overview of the activities proposed under the project.
- Section 3 Regulatory Setting: provides a brief explanation of the federal, state, and local regulations that pertain to the project.
- Section 4 Methods: explains the approach used for the evaluation, including field work and literature review.
- Section 5 Environmental Setting: provides a description of the environmental conditions in the project area, including vegetation communities and associated wildlife habitats present.
- Section 6 Special-status Species and Sensitive Habitats: describes special-status plant and animal species, and sensitive communities that are known to occur or that could potentially occur in the project area.
- Section 7 Biological Impact Assessment: provides an evaluation of the potential impacts to biological resources that may occur as a result of the project; and responses to the CEQA Guidelines Appendix G questions related to biological resources; and provides recommendations to avoid or minimize impacts to biological resources, as needed, to ensure that the project remains in compliance with all applicable federal, state, and local regulatory requirements and avoids significant impacts under CEQA.

2 Project Location and Description

The project areas are located at 100 and 200 Manabe Ow Road (APN 018-711-33/34 and APN 018-711-33, respectively) adjacent to Slough Road West and Ohlone Parkway in Watsonville, Santa Cruz County, California (Appendix A, Figures 1 and 2). They are on the Watsonville West USGS quadrangle. The project areas are located within an urbanized area and are within the Manabe-Ow Business Park Specific Plan.

200 Manabe Ow Road. The proposed project in the 200 Manabe Ow Road project area includes the construction of a two-story industrial structure totaling 156,961 square feet, with a 9,582-square-foot mezzanine for office space, security fencing, a screen wall, landscaping, parking areas, site lighting, and stormwater detention basins. The proposed structure also includes a partial glass façade on one side of the building. The proposed warehouse would operate as a 24-hour distribution facility, Monday through Friday. Operations include multiple shifts of warehouse, delivery, and office employees. The site would be accessed via two driveways on Slough Road West. Site plans and an artistic rendering are included in Appendix B.

100 Manabe Ow Road. The proposed project in the 100 Manabe Ow Road project area includes the construction of a two-story logistics/distribution center totaling 170,328 square feet of warehouse space with 10,000 square feet of office space, security fencing, parking and trailer stalls, stormwater detention basins, and landscaping. The proposed structure also includes a partial glass façade on one side of the building. The site would be accessed via four driveways on Slough Road West and Ohlone Parkway. Site plans and an artistic rendering are included in Appendix B.

3 Regulatory Setting

Biological resources in California are protected under federal, state, and local laws. The laws that may pertain to the biological resources affected by the project are described in this section.

3.1 Federal

3.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended, provides the regulatory framework for the protection of plant and animal species (and their associated critical habitats), which are formally listed, proposed for listing, or candidates for listing as endangered or threatened under FESA. FESA has the following four primary components: (1) provisions for listing species, (2) requirements for consultation with the United States Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), (3) prohibitions against "taking" (i.e., harassing, harming, hunting, shooting, wounding, killing, trapping, capturing, or collecting, or attempting to engage in any such conduct) of listed species, and (4) provisions for permits that allow incidental "take". FESA also discusses recovery plans and the designation of critical habitat for listed species.

Both the USFWS and NOAA Fisheries share the responsibility for administration of FESA. Section 7 requires federal agencies, in consultation with, and with the assistance of the USFWS or NOAA Fisheries, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in

the destruction or adverse modification of critical habitat for these species. Non-federal agencies and private entities can seek authorization for take of federally listed species under Section 10 of FESA, which requires the preparation of an HCP.

3.1.2 U.S. Migratory Bird Treaty Act

The U.S. Migratory Bird Treaty Act (MBTA; 16 USC §§ 703 et seq., Title 50 Code of Federal Regulations [CFR] Part 10) states it is "unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill; attempt to take, capture or kill; possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or in part, of any such bird or any part, nest or egg thereof…" In short, under MBTA it is illegal to disturb a nest that is in active use, since this could result in killing a bird, destroying a nest, or destroying an egg. The USFWS enforces MBTA. The MBTA does not protect some birds that are non-native or human-introduced or that belong to families that are not covered by any of the conventions implemented by MBTA.

3.1.3 Clean Water Act

The Clean Water Act (CWA) is the primary federal law regulating water quality. The implementation of the CWA is the responsibility of the U.S. Environmental Protection Agency (EPA). However, the EPA depends on other agencies, such as the individual states and the U.S. Army Corps of Engineers (USACE), to assist in implementing the CWA. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 404 and 401 of the CWA apply to activities that would impact waters of the U.S. The USACE enforces Section 404 of the CWA, and the California State Water Resources Control Board enforces Section 401.

Section 404

As part of its mandate under Section 404 of the CWA, the EPA regulates the discharge of dredged or fill material into "waters of the United States" (U.S.). "Waters of the U.S." include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high-water marks. Wetlands are defined as those areas "that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3(b)). The discharge of dredged or fill material into waters of the U.S. is prohibited under the CWA except when it is in compliance

with Section 404 of the CWA. Enforcement authority for Section 404 was given to the USACE, which it accomplishes under its regulatory branch. The EPA has veto authority over the USACE's administration of the Section 404 program and may override a USACE decision with respect to permitting.

Substantial impacts to waters of the U.S. may require an Individual Permit. Projects that only minimally affect waters of the U.S. may meet the conditions of one of the existing Nationwide Permits, provided that such permits' other respective conditions are satisfied. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions (see below).

Section 401

Any applicant for a federal permit to impact waters of the U.S. under Section 404 of the CWA, including Nationwide Permits where pre-construction notification is required, must also provide to the USACE a certification or waiver from the State of California. The "401 Certification" is provided by the State Water Resources Control Board through the local Regional Water Quality Control Board (RWQCB).

The RWQCB issues and enforces permits for discharge of treated water, landfills, stormwater runoff, filling of any surface waters or wetlands, dredging, agricultural activities and wastewater recycling. The RWQCB recommends the "401 Certification" application be made at the same time that any applications are provided to other agencies, such as the USACE, USFWS, or NOAA Fisheries. The application is not final until completion of environmental review under CEQA. The application to the RWQCB is similar to the pre-construction notification that is required by the USACE. It must include a description of the habitat that is being impacted, a description of how the impact is proposed to be minimized and proposed mitigation measures with goals, schedules, and performance standards. Mitigation must include a replacement of functions and values, and replacement of wetland at a minimum ratio of 2:1, or twice as many acres of wetlands provided as are removed. The RWQCB looks for mitigation that is on site and in-kind, with functions and values as good as or better than the water-based habitat that is being removed.

3.2 State

3.2.1 California Environmental Quality Act (CEQA)

CEQA (Public Resources Code Sections 21000 et. seq.) requires public agencies to review activities which may affect the quality of the environment so that consideration is given to preventing damage to the environment. When a lead agency issues a permit for development that could affect the environment, it must disclose the potential environmental effects of the project. This is done with an "Initial Study and Negative Declaration" (or Mitigated Negative

Declaration) or with an “Environmental Impact Report”. Certain classes of projects are exempt from detailed analysis under CEQA if they meet specific criteria and are eligible for a Categorical Exemption.

CEQA Guidelines Section 15380 defines endangered, threatened, and rare species for purposes of CEQA and clarifies that CEQA review extends to other species that are not formally listed under the state or federal Endangered Species acts but that meet specified criteria. The state maintains a list of sensitive, or “special-status”, biological resources, including those listed by the state or federal government or the California Native Plant Society (CNPS) as endangered, threatened, rare or of special concern due to declining populations. During CEQA analysis for a proposed project, the California Natural Diversity Data Base (CNDDB) is usually consulted. CNDDB relies on information provided by the California Department of Fish and Wildlife (CDFW), USFWS, and CNPS, among others. Under CEQA, the lists kept by these, and any other widely recognized organizations are considered when determining the impact of a project.

3.2.1 California Endangered Species Act

The California Endangered Species Act (CESA; Fish and Game Code 2050 et seq.) generally parallels FESA. It establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. Section 2080 of the California Fish and Game Code prohibits the take, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or by the regulations. “Take” is defined in Section 86 of the California Fish and Game Code as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” This definition differs from the definition of “take” under FESA. CESA is administered by CDFW. CESA allows for take incidental to otherwise lawful projects but mandates that State lead agencies consult with the CDFW to ensure that a project would not jeopardize the continued existence of threatened or endangered species.

3.2.2 California Fish and Game Code Sections 1600-1607

Sections 1600-1607 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration application be submitted to CDFW for “any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake.” CDFW reviews the proposed actions in the application and, if necessary, prepares a Lake or Streambed Alteration Agreement (LSAA or SAA), that includes measures to protect affected fish and wildlife resources.

3.2.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) was created in 1977 with the intent to preserve, protect, and enhance rare and endangered plants in California (California Fish and Game Code sections 1900 to 1913). The NPPA is administered by CDFW, which has the authority to designate native plants as endangered or rare and to protect them from "take." CDFW maintains a list of plant species that have been officially classified as endangered, threatened, or rare. These special-status plants have special protection under California law and projects that directly impact them may not qualify for a categorical exemption under CEQA guidelines.

3.2.4 Fully Protected Species and Species of Special Concern

The classification of California fully protected (CFP) species was the CDFW's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under CESA and/or FESA. The Fish and Game Code sections (§5515 for fish, §5050 for amphibian and reptiles, §3511 for birds, §4700 for mammals) deal with CFP species and state that these species "…may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species" (CDFW Fish and Game Commission 1998). "Take" of these species may be authorized for necessary scientific research. This language makes the CFP designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with CFP species were amended to allow the CDFW to authorize take resulting from recovery activities for state-listed species.

California species of special concern (CSSC) are broadly defined as animals not listed under FESA or CESA, but which are nonetheless of concern to CDFW because they are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals by CDFW, land managers, consulting biologists, and others, and is intended to focus attention on the species to help avert the need for costly listing under FESA and CESA, and cumbersome recovery efforts that might ultimately be required. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them. Although these species generally have no special legal status, they are given special consideration under CEQA during project review.

3.2.5 California Migratory Bird Protection Act

Fish & Game Code section 3513 states that federal authorization of take or possession is no longer lawful under the state Fish & Game Code if the federal rules or regulations are

inconsistent with state law. The California Migratory Bird Protection Act (MBPA) was passed in September 2019 to provide a level of protection to migratory birds in California consistent with the U.S. MBTA before it was altered by Executive Order in 2017.

3.2.6 Nesting Birds

Nesting birds, including raptors, are protected under California Fish and Game Code Section 3503, which reads, “It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.” In addition, under California Fish and Game Code Section 3503.5, “it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto”. Passerines and non-passerine land birds are further protected under California Fish and Game Code 3513. As such, CDFW typically recommends surveys for nesting birds that could potentially be directly (e.g., actual removal of trees/vegetation) or indirectly (e.g., noise disturbance) impacted by project-related activities. Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “take” by CDFW.

3.2.7 Non-Game Mammals

Sections 4150-4155 of the California Fish and Game Code protects non-game mammals, including bats. Section 4150 states “A mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a nongame mammal. A non-game mammal may not be taken or possessed except as provided in this code or in accordance with regulations adopted by the commission”. The non-game mammals that may be taken or possessed are primarily those that cause crop or property damage. Bats are classified as a non-game mammal and are protected under California Fish and Game Code, in addition to being protected if they are a listed species (e.g., CSSC, CFP, state or federal threatened, or state or federal endangered).

3.2.8 Sensitive Vegetation Communities

Sensitive vegetation communities are natural communities and habitats that are either unique in constituent components, of relatively limited distribution in the region, or are of particularly high wildlife value. These communities may or may not necessarily contain special-status species. Sensitive natural communities are usually identified in local or regional plans, policies, or regulations, or by the CDFW (i.e., CNDDB) or the USFWS. The CNDDB identifies a number of natural communities as rare, which are given the highest inventory priority (Holland 1986; CDFW 2022). Impacts to sensitive natural communities and habitats must be considered and evaluated under CEQA (CCR: Title 14, Div. 6, Chap. 3, Appendix G).

3.2.9 Porter-Cologne Water Quality Control Act

The intent of the Porter-Cologne Water Quality Control Act (Porter-Cologne) is to protect water quality and the beneficial uses of water, and it applies to both surface and ground water. Under this law, the State Water Resources Control Board develops statewide water quality plans, and the RWQCBs develop basin plans, which identify beneficial uses, water quality objectives, and implementation plans. The RWQCBs have the primary responsibility to implement the provisions of both statewide and basin plans. Waters regulated under Porter-Cologne, referred to as "waters of the State," include isolated waters that are not regulated by the USACE. Projects that require a USACE permit, or fall under other federal jurisdiction, and have the potential to impact waters of the State are required to comply with the terms of the Water Quality Certification Program. If a proposed project does not require a federal license or permit, any person discharging, or proposing to discharge, waste (e.g., soil) to waters of the State must file a Notice of Intent (NOI) or a Report of Waste Discharge and receive either waste discharge requirements (WDRs) or a waiver to WDRs before beginning the discharge.

3.2.10 State and Local Requirements to Control Construction-Phase and Post-Construction Water Quality Impacts

Construction Phase. The CWA has nationally regulated the discharge of pollutants to the waters of the U.S. from any point source since 1972. In 1987, amendments to the CWA added Section 402(p), which established a framework for regulating nonpoint source storm water discharges under the National Pollutant Discharge Elimination System (NPDES). The NPDES is a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the U.S. In California, this permit program is administered by the RWQCBs. The NPDES General Construction Permit requirements apply to clearing, grading, and disturbances to the ground such as excavation. Construction activities on one or more acres are subject to a series of permitting requirements contained in the NPDES General Construction Permit. This permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) to be implemented during project construction. The project sponsor is also required to submit a Notice of Intent (NOI) with the State Water Resources Control Board Division of Water Quality. The NOI includes general information on the types of construction activities that would occur on the site.

Post-Construction Phase. In Watsonville, development projects that create and/or replace more than 2,500 square feet of impervious surface must also comply with the *California Regional Water Quality Control Board, Central Coast Region, Central Coast Post-Construction Stormwater Requirements (PCRs)* (Resolution R3-2013-0032). This resolution requires that all projects implement BMPs and incorporate Low Impact Development practices into the design that prevents stormwater runoff pollution, promotes infiltration, and holds/slows down the volume of water coming from a site. To meet these permit and policy requirements, projects

must incorporate the use of green roofs, pervious surfaces, tree planters, bioretention and/or detention basins, among other methods.

3.3 Local

3.3.1 Watsonville Municipal Code

The following provisions of the Watsonville Municipal Code help to minimize adverse effects to biological resources as a result of development in Watsonville:

Chapter 7-11, Street Trees. it is unlawful to plant, trim, or remove any street tree without procuring a permit from the Director of Public Works.

Chapter 7-13, Preservation of Historical Trees. the City's Recreation Department and the Recreation and Parks Commission are authorized to recommend to the City Council that certain trees be "designated" and preserved for their special character, historical value, or aesthetic interest. The Recreation Department maintains a record of designated trees. Any permit application for work that would impact a designated tree is forwarded to the Recreation Department and the Recreation and Parks Commission for review.

3.3.2 Watsonville 2005 General Plan

The Watsonville 2005 General Plan includes policies that are relevant to the protection of biological resources and applicable to the proposed projects. The policies are identified in Chapter 9, Environmental Resource Management, of the General Plan and are listed below (Accessed March 2002 at https://www.cityofwatsonville.org/160/2005-General-Plan).

Policy 9.B Natural Resource Protection. The City shall designate land necessary for the preservation of natural resources and to avoid conflicts with urban land uses.

- 9.B.6 Environmental Review – The City shall conduct an appropriate environmental review process and require that proposed projects adjacent to surrounding, or containing, wetlands be subject to a site-specific analysis which will determine the appropriate size and configuration of areas to buffer wetlands from urban development.

Policy 9.D Water Quality. The City shall provide for the protection of water quality to meet all beneficial uses, including domestic, agricultural, industrial, recreational, and ecological uses.

- 9.D.5 Wetland Protection – Where drainage from developments involves discharge into sloughs or wetlands, grease, sediment traps, or other protection measures shall be required. Mitigation monitoring shall be required and enforced by the City to ensure performance as appropriate.

Policy 9.E Soil conservation. The City shall prevent degradation of local soil resources through erosion control improvement and grading guidelines.

- 9.E.1 Vegetation – The City shall require that removal of vegetation from a site be limited to the area required for building, and that all exposed soils be provided with new vegetation prior to project completion.
- 9.E.3 Wetland Protection – The City shall require that new construction on slopes leading toward sloughs and wetlands, maintain an undisturbed protective buffer between all cut and fill slopes and the riparian zone.
- 9.E.4 Sediment Containment – The City shall require that all topsoil stored on-site during construction be contained to prevent escape of sediment from the site.

Policy 9.F Wildlife Habitat Protection. The City shall designate for open space and environmental management those areas rich in wildlife species and fragile in ecological makeup. These habitat zones shall be made part of the greenbelt where appropriate.

- 9.F.1 Habitat Protection – Impacts to important wildlife habitat areas shall be identified as part of the City's development review and environmental review processes, and appropriate mitigations shall be considered. Mitigation measures to be considered include designation of sensitive areas as open space, restriction of new development on lands that provide important wildlife habitat, setback requirements, habitat conservation plans, and habitat mitigation banking. Lands within the urban limit line that provide important wildlife habitat include, but are not limited to the following:
    a. Riparian Corridors
    b. Freshwater Marshes and Sloughs
    c. Woodlands and Steep Slopes
- 9.F.4 Fish and Game Consultation – The City shall refer development proposals to the California Department of Fish and Game for its recommendations on conservation measures for native plant communities, riparian vegetation, wildlife habitat, and wetland preservation.

4 Methods

This section describes the methods used to complete the biological resources report. Methods include a database and literature review, field survey, an assessment of plant communities and wildlife habitats and corridors, an assessment of sensitive habitats and aquatic features, and a habitat evaluation for special-status species.

4.1 Background Review

Available background information pertaining to the biological resources on and near the project was reviewed prior to conducting field surveys. Information was compiled and subsequently compared against site conditions during field surveys. The following sources were consulted:

- CNDDB record search for the eight quadrangles[1] including and surrounding the project areas: *Watsonville East*, *Mt. Madonna*, *Prunedale*, *Watsonville West*, *Laurel*, *Loma Prieta, Moss Landing,* and *Soquel* (CNDDB 2022).
- CNPS Rare Plant Program *Inventory of Rare and Endangered Plants of California* record eight-quadrangle search, including: *Watsonville East*, *Mt. Madonna*, *Prunedale*, *Watsonville West*, *Laurel*, *Loma Prieta, Moss Landing,* and *Soquel* (CNPS 2022).
- CDFW CNDDB for natural communities of special concern that occur within the project region (CNDDB 2022).
- USFWS Information for Planning and Consultation (IPaC) tool (USFWS 2022).
- Other relevant scientific literature, technical databases, resource agency reports, and Federal Register notices and other information published by USFWS and NMFS to assess the current distribution of special-status plants and animals in the project vicinity.

4.2 Field Surveys

Field surveys of the project area were conducted by MIG senior biologist David Gallagher, M.S. on March 10, 2022. (Appendix A, Figure 2). The surveys were conducted to provide a project-specific impact assessment for the development of the site as described in the project description (see Section 2 above). Specifically, surveys were conducted to (1) assess existing biotic habitats and plant and animal communities in the project area; (2) assess the project area for its potential to support special-status species and their habitats; and (3) identify potential jurisdictional habitats (e.g., waters of the U.S./state), and other sensitive biological resources.

4.2.1 Sensitive Habitats and Aquatic Features

All plant communities observed in the project area were evaluated to determine if they are considered sensitive. Sensitive natural communities are communities that are especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies. Elimination or substantial degradation of these communities would constitute a significant impact under CEQA.

The project area was also inspected for the presence of wetlands, drainages, streams, coastal waterways, and other aquatic features, including those that support stream-dependent (i.e.,

[1] Usually, one quadrangle is surrounded by eight others, for a total of nine quadrangles, but because of its coastal location, Watsonville West is surrounded by seven others (there is not a quadrangle over open water in Monterey Bay).

riparian) plant species that could be subject to jurisdiction by the USACE, RWQCB, and/or CDFW. Wetlands are defined for regulatory purposes in the 33 CFR 328.3 and 40 CFR 230.3 as “areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” To be considered subject to federal jurisdiction, a wetland must be located within the project area and normally exhibit positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

4.2.2 Special-Status Species Habitat Evaluation

During the field survey, Mr. Gallagher evaluated the suitability of the habitat to support special-status species documented in the project area. For the purposes of this assessment, special-status species include those plants and animals listed, proposed for listing or candidates for listing as threatened or endangered by the USFWS or NOAA Fisheries under FESA, those listed or proposed for listing as rare, threatened or endangered by the CDFW under CESA, animals designated as CFP or CSSC by CDFW, birds protected by USFWS under the MBTA and/or by CDFW under Fish and Game Code Sections 3503 and 3513, and plants listed as Rank 1A, 1B, 2, 3 and 4 in the CNPS Inventory.

The potential occurrence of special-status plant and animal species in the project area was initially evaluated by developing a list of special-status species that are known to or have the potential to occur in the vicinity of the project area based on an eight-quad search of current database records (e.g., CNDDB and CNPS Electronic Inventory records) and review of the USFWS list of federal endangered and threatened species (i.e., IPaC). The potential for occurrence of those species included on the eight-quad list was then evaluated based on the habitat requirements of each species relative to the habitat conditions documented in the project area. If there are no documented occurrences within five miles of the project area, if there is clearly no suitable habitat present, and if the project area is clearly outside of the expected range of the species, these species were eliminated from consideration and are not discussed further. All remaining species were then evaluated for the potential to occur on or in the immediate vicinity of the project area according to the following criteria:

> *Not Expected:* CNDDB or other documents do not record the occurrence of the species within or reasonably near the project area within the last 10 years, and/or no components of suitable habitat are present within or adjacent to the project area.
>
> *Low Potential:* The CNDDB or other documents may or may not record the occurrence of the species within a 5-mile radius of the project area. However, few components of suitable habitat are present within or adjacent to the project area.
>
> *Moderate Potential*. Species does not meet all terms of High or Low category. For example: CNDDB or other reputable documents may record the occurrence of the

species near but beyond a 5-mile radius of the project area, or some of the components representing suitable habitat are present within or adjacent to the project area, but the habitat is substantially degraded or fragmented.

High Potential: The CNDDB or other reputable documents record the occurrence of the species off-site, but within a 5-mile radius of the project area and within the last 10 years. All or most of the components representing suitable habitat are present within the project area.

Present or Assumed Present. Species was observed on the project area, or recent species records (within 5 years) from literature or other sources are known within the project area.

5 Existing Land Uses, Natural Communities, and Habitats

5.1 General Project Area Description

The 100 and 200 Manabe Ow Road project areas (13.4 acres and 11.6 acres, respectively) are within the Manabe-Ow Business Park Specific Plan and are located in the *Watsonville West*, California 7.5-minute USGS quadrangle (Appendix A, Figure 2). The project areas are located within an urban area, including residential and commercial development, approximately 1 mile west of the Watsonville downtown area. Agricultural lands are also nearby to the south and west. The project areas are bordered by Highway 1 to the west, railroad tracks to the south, Slough Road West to the north and Ohlone Parkway to the east. Watsonville Slough is just north of Slough Road West and borders a section of the 200 Manabe Ow Road project area. The project area is mainly flat with elevations ranging from approximately 15 feet to 18 feet North American Vertical Datum of 1988 (NAVD88) (Google Inc. 2022). As recently as 2015 the project areas were used for agriculture (Google Inc. 2022).

The climate at the project areas is coastal Mediterranean, with most rain falling in the winter and spring. Mild cool temperatures are common in the winter and mild to cool temperatures are common in the summer due to the presence of fog. Climate conditions in the area include a 30-year average of approximately 22 inches of annual precipitation with an average temperature range from 47ºF to 68ºF (PRISM Climate Group 2022).

The National Resource Conservation Service (NRCS) maps two soil types within the project areas (NRCS 2022a) (Appendix A, Figure 3): (1) Clear Lake clay, drained, 0 to 1 percent

slopes, MLRA[2] 14; and (2) Conejo clay loam, 0 to 2 percent slopes, cool, MLRA 14. The Clear Lake clay series is found in alluvial basins. The water table depth is 36 to 72 inches and has slow permeability. The Conejo clay loam series is found in alluvial fans and plains. The water table depth is 60 inches and has moderate permeability. The Clear Lake clay soil type is classified as a hydric soil in Santa Cruz County on the National Hydric Soils List (NRCS 2022b).

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) maps Watsonville Slough as a permanently flooded, perennial riverine feature with a streambed (R2UBHx) (NWI 2022).

5.2 Existing Land Uses, Vegetation Communities, and Habitats

The project areas are located within the Central Coast Subregion of the Central Western Californian Region, both of which are contained within the larger California Floristic Province (Baldwin et al. 2012). Where applicable, vegetation communities were mapped using CDFW's Vegetation Classification and Mapping Program's (VegCAMP) currently accepted list of vegetation alliances and associations (CDFW 2022). The reconnaissance-level field survey identified three vegetation communities, habitats, and land cover types in the project area: (1) developed; (2) *Wild Oats and Annual Brome Grassland* (*Avena* spp. – *Bromus* spp. Semi-natural Alliance), and (3) *Cattail Marsh* (*Typha* spp. Alliance). Existing land cover types, vegetation communities, and habitats in the project areas are summarized in Table 1, and their distribution is depicted in Appendix A, Figure 4.

[2] Major Land Resource Area

Table 1. Summary of Existing Land Cover Types, Vegetation Communities, and Habitats in the Project Areas.

Land Cover Types, Vegetation Communities, and Habitats	Area (acres)
100 Manabe Ow Road	
Developed	13.4
200 Manabe Ow Road	
Wild Oats and Annual Brome Grassland	11.4
Cattail Marsh	0.19
Project Areas Total	**25.0**

5.2.1 Developed

The entire 100 Manabe Ow Road project area was mapped as developed due to sparse vegetation cover, and recent grading and disking of the site. Most areas within this land cover type were devoid of vegetation, but there were areas with sparse non-native herbaceous species growing (Appendix C, Photo 1) (see section 5.2.2 for a list of species observed). Without frequent grading or disking, the developed land cover in the Manabe 100 Ow project area will likely revert to the *Wild Oats and Annual Brome Grassland* vegetation community found in the adjacent 200 Manabe Ow project area.

Due to the scarcity of vegetation, developed land cover provides relatively low-quality habitat for wildlife species. However, a wide variety of wildlife, including the wildlife described in Section 5.2.2 and 5.2.3, may move through developed areas en route to other habitats, especially since the developed areas are near Watsonville Slough and its riparian corridor (see Section 5.2.3 below). The wildlife most often associated with developed areas are those that are tolerant of human disturbance, including introduced species such as the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), rock pigeon (*Columba livia*), house mouse (*Mus musculus*), and Norway rat (*Rattus norvegicus*). Several common native species are also able to use this habitat, including raccoon (*Procyon lotor*), Anna's hummingbird (*Calypte anna*), dark-eyed junco (*Junco hyemalis*), house finch (*Haemorhous mexicanus*), and California towhee (*Melozone crissalis*).

5.2.2 *Wild Oats and Annual Brome Grassland* (*Avena* spp. – *Bromus* spp. Semi-natural Alliance)

Wild Oats and Annual Brome Grassland is an annual grassland dominated by non-native grasses. Both native and non-native herbaceous annuals are also present (Appendix C, Photo 2). Dominant species observed included non-native grasses such as wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*), and Italian rye grass (*Festuca perennis*). The dominant non-native herbaceous species observed included bristly ox-tongue (*Helminthotheca echioides*),

filarees (*Erodium* spp.), wild radish (*Raphanus sativus*), rose clover (*Trifolium hirtum*), English plantain (*Plantago lanceolata*), cutleaf geranium (*Geranium dissectum*), Italian thistle (*Carduus pycnocephalus*), vetch (*Vicia* spp.) and bur clover (*Medicago polymorpha).* The native shrub Coyote brush (*Baccharis pilularis*) was observed growing near the train tracks along the southern boundary of the site. A few native Arroyo willow (*Salix lasiolepis*) and non-native silver wattle (*Acacia dealbata*) shrubs were scattered throughout the grassland, likely due to a high groundwater table. Common native forbs observed included common yarrow (*Achillea millefolium*), annual lupine (*Lupinus bicolor*), and Arroyo lupine (*Lupinus succulentus*). The highly invasive non-native species pampass grass (*Cortaderia jubata*) ice plant (*Carpobrotus* sp.), and French broom (*Genista monspessulana*) were also observed.

The grassland may support ground-nesting birds, such as the western meadowlark (*Sturnella neglecta*). Additional bird species that nest in nearby riparian or developed habitats and forage in grassland areas during the nesting season include western bluebird (*Sialia mexicana*), black phoebe (*Sayornis nigricans*), American kestrel (*Falco sparverius*), and cliff swallow (*Petrochelidon pyrrhonota*). Further, raptors, such as red-tailed hawks (*Buteo jamaicensis*), and white-tailed kites (*Elanus leucurus*) forage for small mammals within grassland habitats. Numerous additional avian species may also forage in the grassland within the project area during spring and fall migration, including Canada goose (*Branta canadensis*). Avian species observed during the field visit included red-tailed hawk, western meadowlark, Canada goose, and Anna's hummingbird.

The grassland habitat within the study area provides abundant refugia for reptiles. Several reptile species may occur in the annual grassland habitats, including the western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), and coast garter snake (*Thamnophis elegans terrestris*). Several burrows observed during the site visit, likely made by California ground squirrel (*Otospermophilus beecheyi*), provide refuges for these reptile species, as well as for common amphibians such as the western toad (*Anaxyrus boreas*) and Pacific treefrog (*Pseudacris regilla*).

5.2.3 *Cattail Marsh* (*Typha* spp. Alliance)

The *Cattail Marsh* is perennial freshwater marsh that occurs in a stormwater drainage channel along the western edge of the 200 Manabe Ow Road project area. The channel is confluent with Watsonville Slough (Appendix C, Photo 3). Based on aerial photography, the drainage was likely constructed between 1963 and 1975 (UCSB 2022). At the time of the site visit, water was present in the ditch and was ponded up to a depth of approximately 1 foot. The vegetation was dominated by the native common cattail (*Typha latifolia*). Other species observed included the native broadfruit bur reed (*Sparganium eurycarpum*) and Arroyo willow. The non-native curly dock (*Rumex crispus*) was also observed. According to the City, the drainage ditch is mowed quarterly to reduce vegetation build-up. During the site visit, last year's growth was present

throughout the channel, suggesting the ditch had not been mowed since last year. Therefore, vegetation conditions may vary depending on the time of year.

The perennial freshwater marsh may provide habitat for a diverse suite of wetland-associated wildlife species, including common amphibians such as the Pacific chorus frog, western toad. The federally listed (threatened) California red-legged frog (*Rana draytonii*) may breed in the marsh (see section 6.2.2), and reptiles such as the coast garter snake and aquatic garter snake (*Thamnophis atratus*) may forage and disperse through the marsh. However, the relatively small size and uncertain ponding depth of the perennial freshwater marsh may preclude the presence of waterbirds such as ducks, gulls, and terns. Similarly, passerine birds associated with more extensive wetlands, such as the marsh wren (*Cistothorus palustris)* and common yellowthroat (*Geothlypis trichas*) are not expected to nest here. Terrestrial bird species that occur in adjacent habitats, such as house finches, black phoebes, and sparrows, will forage occasionally in the freshwater wetland vegetation. Mammals that may use the marsh and adjacent grassland include striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), and racoon (*Procyon lotor*).

Because the perennial freshwater marsh is confluent with Watsonville Slough, native fishes may be present depending on water depth and flow rate, including California roach (*Hesperoleucus symmetricus*), Sacramento pikeminnow (*Ptychocheilus grandis*), Sacramento blackfish (*Orthodon microlepidotus*), three-spined stickleback (*Gasterosteus aculeatus*) as well as non-native fishes, including Western mosquitofish (*Gambusia affinis*), which were observed in the *Cattail Marsh* in the project area during the site visit.

The Watsonville Slough watershed drains 14 square miles from the hills of southern Santa Cruz County into the Pajaro River and Monterey Bay. One of the last remaining large coastal freshwater ecosystems in California, the Watsonville Slough includes approximately 800 acres of freshwater marsh, seasonal wetland, estuarine, and riparian habitat with six major slough branches, including Watsonville Slough, Harkins Slough, Gallighan Slough, Hanson Slough, the main branch of the Struve Slough, and the western branch of Struve Slough (Hager et al. 2004) (Appendix C, Photo 4).

6 Special-Status Species and Sensitive Habitats

CEQA requires assessment of the effects of a project on species that are “threatened, rare, or endangered”; such species are typically described as “special-status species”. Impacts on these species are regulated by federal and state laws described under the Regulatory Setting above.

6.1 Special-Status Plants

The CNPS Inventory (2022) and CNDDB (2022) identify 70 special-status plant species as potentially occurring in the nine 7.5-minute quadrangles containing and/or surrounding the

project area. All but one of the 70 potentially occurring special-status plant species were determined to be absent from the project area for at least one of the following reasons: (1) a lack of specific habitat (e.g., estuarine marsh) and/or edaphic requirements (e.g., serpentine soils) for the species in question, (2) the geographic range of the species does not overlap the project areas, (3) the species is known to be extirpated from the site vicinity, and/or (4) the habitats within the project areas are too degraded to reasonably expect any special-status species to occur due to the long history (at least 75 years based on aerial imagery) of agricultural use of the site (UCSB 2022). Plowing, tilling, and other land disturbance associated with agriculture at the site has likely eliminated most soil seed banks of native plants.

However, based on suitable grassland habitat, hydric clay soils, and documented nearby locations, Santa Cruz tarplant (*Holocarpha macradenia*) has a moderate potential to occur within the 200 Manabe Ow Road project area. There was no suitable habitat for Santa Cruz tarplant in the 100 Manabe 100 Ow Road project area due to the lack of grassland habitat and hydric soils. Santa Cruz tarplant is discussed in detail below and summarized in Table 2.

Santa Cruz Tarplant. Santa Cruz tarplant is annual herb in the sunflower family (Asteraceae) that occurs in coastal prairie grassland, usually on clay soils and is endemic to California. The blooming period for this species extends from June to October. Santa Cruz tarplant is listed as endangered under the California Endangered Species Act, as a threatened species under the federal Endangered Species Act, and has a CRPR rank of 1B.1, which means it is rare throughout its range and populations have declined significantly over the last century, and it is considered severely threatened. This species is seriously threatened by urbanization, agriculture, non-native plants, and lack of appropriate ecological disturbance. There are nine documented occurrences of Santa Cruz tarplant form the last 20 years, mainly from Santa Cruz County and Monterey County.

The closest documented occurrence to the project areas is from 2015 on Tarplant Hill off Ohlone Parkway, approximately 0.5 mile from the project areas (CNPS 2022). Because of the proximity of this documented occurrence, Santa Cruz tarplant fruits could be dispersed to the project areas by common animals that would be expected to use the project areas, including striped skunks, opossums, racoons, and other small mammals, including small birds (USFWS 2002). Additionally, the clay soils are mapped as hydric (see Section 5.1). Such seasonally saturated soils are a characteristic of Santa Cruz tarplant habitat (USFWS 2002). During the site visit, several areas within the 200 Manabe Ow Road project area exhibited evidence of recent ponding, including water-stained leaves, supporting the hydric soil classification (Appendix C, Photo 5).

Given that small populations of Santa Cruz tarplant may facilitate greater gene flow, the conservation of existing populations, even small populations, may be essential for preserving its genetic resources and ensuring its persistence in the County. Gene flow often occurs through

pollen movement between populations, and likely occurs over short distances. Most native insect pollinators of Santa Cruz tarplant generally travel less than 0.3 mile at one time (USFWS 2002).

6.2 Special-Status Animals

Based on a review of the USFWS and CNDDB databases, the biologist's knowledge of sensitive species, and an assessment of the types of habitats within the project area, it was determined that one wildlife species could potentially occur within or near the project areas. This determination was made due to the presence of essential habitat requirements for the species, the presence of known occurrences within 5 miles of the project areas, and/or the project areas location within the species' known range of distribution. The legal status and likelihood of occurrence of special-status animal species in the project areas are presented in Table 2 and discussed in greater detail below.

Special-status species that are not expected to occur in the project areas because they lack suitable habitat, are outside the known range of the species, and/or are isolated from the nearest known extant populations by development or otherwise unsuitable habitat were excluded from the analysis.

Animal species not expected to occur in the project areas for these reasons include Monterey Hitch (*Lavinia exilicauda harengus*), monarch butterfly (*Danaus plexippus*), California giant salamander (*Dicamptodon ensatus)*, California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (*Rana boylii*), Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*), black legless lizard (*Anniella pulchra nigra*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), short-eared owl (*Asio flammeus*), and long-eared owl (*Asio otus*).

Table 2. Special-Status Species with Potential to Occur in the Project Areas

Common Name	Regulatory Status	Likelihood of Occurrence in the 100 Manabe Ow Road Project Area	Likelihood of Occurrence in the 200 Manabe Ow Road Project Area
Plants			
Santa Cruz Tarplant	FT, SE, CRPR 1B.1	Not Expected	**Moderate Potential**
Fish			
Pacific Lamprey	CSSC	Not Expected	Not Expected
Tidewater Goby	FE	Not Expected	Not Expected
South-central California Coast Steelhead DPS	FT	Not Expected	Not Expected
Amphibians and Reptiles			
California red-legged Frog	FT, CSSC	Not Expected	**High Potential**
Western Pond Turtle	CSSC	Not Expected	**High Potential**
Mammals			
San Francisco dusky-footed woodrat	CSSC	Not Expected	Not Expected
Birds			
American Peregrine Falcon	FP	Not Expected (nesting); may forage in the area	Not Expected (nesting); may forage in the area
Burrowing Owl	CSSC	Not Expected (nesting); may forage in the area	**Moderate; (breeding and roosting)**
Northern harrier	CSSC (nesting)	Not Expected (nesting); may forage in the area	Not Expected (nesting); may forage in the area
Tricolored Blackbird	ST (nesting)	Not Expected (nesting); may forage in the area	Not Expected (nesting); may forage in the area
White-tailed Kite	FP	Not Expected (nesting); may forage in the area	Not Expected (nesting); may forage in the area
Yellow Warbler	CSSC (nesting)	Not Expected (nesting); may forage in the area	Not Expected (nesting); may forage in the area

***Key to Status Abbreviations**: Federally Listed as Endangered (FE); Federally Listed as Threatened (FT); Federal Candidate for Listing (FC), Federal Species of Concern (FSC), State Listed as Endangered (SE); State Listed as Threatened (ST); State Candidate for Listing (SC); State Fully Protected (FP); California Species of Special Concern (CSSC)*

CRPR = California Native Plant Society Rare Plant Rank

1B = Plants that are rare, threatened, or endangered in California and elsewhere

2B = Plants rare, threatened, or endangered in California but more common elsewhere

3 = Plants about which information is needed-a review list

4 = A watch list of plants of limited distribution

0.1: Seriously endangered in California

0.2: Fairly endangered in California

0.3: Not very endangered in California

6.2.1 Special-Status Fish

Pacific Lamprey (*Entosphenus tridentatus*). Federal Listing Status: None; State Listing Status: California Species of Special Concern. Pacific Lamprey is an anadromous species that, like steelhead, migrates into freshwater to spawn, and juveniles return to the ocean to mature. Pacific lamprey was historically abundant along the West Coast of North America, however, their abundance declined, and distribution contracted throughout Oregon, Washington, Idaho, and California. In California, Pacific lamprey occur from high elevation streams of the Sierras, the Sacramento River, and from coastal salmon and steelhead streams, including the Pajaro River watershed (Goodman and Reid 2012). Spawning habitat is similar to that for steelhead, but adult migration times for lamprey tend to occur somewhat later (March to May) than the peak of the steelhead adult migration (January to March).

Even though the Watsonville Slough watershed does support suitable spawning habitat for Pacific lamprey, only small numbers of Pacific lamprey may find their way into Watsonville Slough from the Pajaro River. This species is not expected to occur in substantial numbers in the section of Watsonville Slough and the *Cattail Marsh* adjacent to the project areas (Goodman and Reid 2012).

South-central California Coast Steelhead (*Oncorhynchus mykiss irideus*). Federal Listing Status: Threatened; State Listing Status: None. The South-Central California Coast (CCC) steelhead Distinct Population Segment (DPS) was listed as threatened on August 18, 1997 (NMFS 1997), and the threatened status was reaffirmed on January 5, 2006 (NMFS 2006). Critical habitat was designated for the CCC steelhead DPS on September 2, 2005 (NMFS 2005), and a final recovery plan was published in October 2013. Critical habitat for the Central California Coast steelhead DPS was designated on September 2, 2005 (NMFS 2006). Like CCC coho salmon, steelhead populations in many areas have declined due to degradation of spawning habitat, introduction of barriers to upstream migration, over-harvesting by recreational fisheries, reduction in winter flows due to damming, and reduction of spring flows due to water diversions (NMFS 1997). In addition, non-native fish species, such as striped bass (*Morone saxatilis*), common carp (*Cyprinus carpio*), and white catfish (*Ameiurus catus*), may pose risks to native steelhead populations through predation, competition, and habitat modification. Increasing predation pressure at river mouths and in the ocean from the growing California sea lion population is also posing significant risk to CCC steelhead.

Steelhead are found along the entire Pacific Coast of the United States. The CCC steelhead DPS includes all naturally spawned populations of steelhead in coastal streams from the Pajaro River (at the boundary between Santa Cruz and Monterey counties) south to Arroyo Grande Creek (San Luis Obispo County). Steelhead enter the rivers and streams during winter and spring, when storms produce sufficient runoff to breach the sandbars at the rivers' mouths and provide fish passage to upstream spawning and rearing habitats. Steelhead in the CCC DPS are winter-spawning steelhead, maturing in the ocean and spawning shortly after entering

freshwater. Winter steelhead enter rivers and streams in the late fall and winter months when higher flows and associated lower water temperatures occur. Adult female steelhead prepare a redd (or nest) in a gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Preferred streams typically support dense canopy cover that provides shade, woody debris, and organic matter, and are usually free of rooted or aquatic vegetation. The length of the incubation period is dependent on water temperature. Fry emerge from the gravel, and rear along the stream margins, moving gradually into pools and riffles as they grow larger. Young juveniles feed primarily on aquatic invertebrate drift.

In California, juveniles usually live in freshwater for 1 to 3 years (Shapovalov and Taft 1954; Barnhart 1986; Busby et al. 1996) then smolt and migrate to the sea. Because of this multi-year rearing period, steelhead can only spawn in tributaries that maintain suitable temperature and other water quality parameters year-round. Most downstream smolt migration takes place between February and June, with peak timing of steelhead smolt outmigration in Central California occurring from March to May (Barnhart 1986; Fukushima and Lesh 1998).

The Pajaro River serves as a migration pathway for adult steelhead migrating to spawning and nursery habitat in the upper watershed and for steelhead smolts (1- to 2-year-old juveniles) returning to the ocean. Historically, the Watsonville Slough watershed did not support suitable spawning habitat for steelhead and there are no documented occurrences of steelhead spawning in the Watsonville Slough watershed. While small numbers of steelhead may find their way into Watsonville Slough from the Pajaro River they are not expected to occur in substantial numbers in the section of Watsonville Slough adjacent to the project areas and are not expected to occur in the *Cattail Marsh* in the 200 Manabe Ow Road project area.

Tidewater Goby (*Eucyclogobius newberryi*). Federal Listing Status: Endangered; State Listing Status: None. The tidewater goby was listed as endangered on March 7, 1994 (USFWS 1994) and critical habitat was designated on November 20, 2000 (USFWS 2000). The tidewater goby is endemic to California, where it is found primarily in waters of lagoons, estuaries, and marshes along the coast. Tidewater goby is generally absent from areas where the coastline is steep, and streams do not form lagoons or estuaries. This species generally occur along the bottom of brackish, shallow lagoons and lower stream reaches where the water is still, but not stagnant (USFWS 2005). Tidewater gobies prefer a sandy substrate for breeding, but they can be found on rocky, mud, and silt substrates as well. Favorable habitat includes shallow open water with emergent vegetation. Aquatic vegetation is important for protection and presumably feeding, while open water is important to breeding where spawning may occur year-round, but it is less frequent in December through March. The lagoons in which tidewater gobies are found range in size from a few square yards of surface area to about 2,000 acres. However, most lagoons are much smaller, ranging from approximately 1.25 to 12.5 acres (USFWS 2005). Tidewater gobies often migrate upstream into tributaries, as far as 0.5 mile from the estuary.

However, in the Santa Ynez River, Santa Barbara County, tidewater gobies are often collected 3 to 5 miles upstream of tidal lagoons (USFWS 2005).

Tidewater gobies are found in the lower reaches of the Pajaro River and in Watsonville Slough but are not expected to occur in the section of Watsonville Slough adjacent to the project areas due to the lack of brackish habitat (USFWS 2005).

6.2.2 Special-Status Amphibians

California Red-legged Frog *(Rana draytonii)*. Federal status: Threatened; State status: Species of Special Concern. The California red-legged frog was federally listed as threatened in June 1996 (USFWS 1996) based largely on a significant range reduction and continued threats to surviving populations. Critical habitat was most recently designated in March 2010 (USFWS 2010). Designated critical habitat is not present in the project area. The historical distribution of the California red-legged frog extended from the city of Redding in the Central Valley and Point Reyes National Seashore along the coast, south to Baja California, Mexico. The species' current distribution includes isolated locations in the Sierra Nevada and the San Francisco Bay Area, and along the central coast (USFWS 2002a).

The California red-legged frog inhabits freshwater pools, streams, and ponds throughout the Central California Coast Range and isolated portions of the western slope of the Sierra Nevada (Fellers 2005). Its preferred breeding habitat consists of deep perennial pools with emergent vegetation for attaching egg clusters (Fellers 2005), as well as shallow benches to act as nurseries for juveniles (Jennings and Hayes 1994). However, red-legged frogs will also breed in small, shallow pools as well as intermittent streams. Non-breeding frogs may be found adjacent to streams and ponds and may travel up to two miles from their breeding locations across a variety of upland habitats to other suitable non-breeding habitats (Bulger et al. 2003; Fellers and Kleeman 2007). However, the distance moved is highly site-dependent and is influenced by the local landscape (Fellers and Kleeman 2007). California red-legged frogs generally disperse during the wet season from mid-October to mid-April.

The Manabe-Ow Business Park Specific Plan Draft Master Environmental Impact Report (MEIR) identified the 200 Manabe Ow Road project area as an active agricultural field with no habitat value for red-legged frog, and the drainage channel was not identified as an aquatic feature (RBF Consulting 2010). Site conditions have changed significantly since the preparation of the MEIR in 2010 and there is currently suitable habitat for California red-legged frog in the 200 Manabe Ow Road project area. Additionally, California red-legged frog is well documented from the marsh complex formed by the confluence of Watsonville, Struve, and Hanson Sloughs (CNDDB 2022), approximately 0.3 mile downstream of the project areas.

The section of Watsonville Slough adjacent to the project areas and the *Cattail Marsh* provide suitable foraging and dispersal habitat. At the time of the site visit, the *Cattail Marsh* does not

provide high quality breeding habitat due to low water levels. However, the *Cattail Marsh* may provide potential breeding habitat for red-legged frog (i.e., a slow-moving stream with emergent vegetation for egg mass attachment) in years with higher water levels (red-legged frogs are known to breed in 1 foot of water with dense vegetation cover). Additionally, the grassland habitat in the 200 Manabe Ow Road project area provides upland dispersal and refugia habitat (i.e., low density of small mammal burrows). However, the developed land cover in the 100 Manabe Ow Road project area does not provide suitable upland dispersal and foraging habitat. According to the City, the *Cattail Marsh* and adjacent upland areas are regularly mowed (see Section 5.2.3). Regular mowing of the *Cattail Marsh* may substantially reduce the habitat value for California red-legged frog, but they still could potentially make use of the marsh habitat. At the time of the site visit, the *Cattail Marsh* provides suitable foraging, dispersal, and potential breeding habitat for California red-legged frog. Therefore, due the presence of suitable habitat in the 200 Manabe Ow Road project area, as observed during the site visit, there is a high potential for California red-legged frog to be present in the *Cattail Marsh* and the adjacent upland areas.

6.2.3 Special-Status Reptiles

Western Pond Turtle (*Actinemys marmorata*). Federal status: None; State status: Species of Special Concern. The western pond turtle occurs in ponds, streams, and other wetland habitats in the Pacific slope drainages of California (Bury and Germano 2008). Ponds or slack-water pools with suitable basking sites (such as logs) are an important habitat component for this species, and western pond turtles do not occur commonly along high-gradient streams. Females lay eggs in upland habitats, in clay or silty soils in unshaded areas. Juveniles occur in shallow aquatic habitats with emergent vegetation and ample invertebrate prey. Nesting habitat is typically found within 600 feet of aquatic habitat (Jennings and Hayes 1994), but if no suitable nesting habitat can be found close by, adults may travel overland considerable distances to nest.

The Manabe-Ow Business Park Specific Plan MEIR identified the 200 Manabe Ow Road project area has an active agricultural field with no habitat value for western pond turtle, and the drainage channel was not identified as an aquatic feature (RBF Consulting 2010). Site conditions have changed significantly since the preparation of the MEIR in 2010 and there is currently suitable habitat for western pond turtle in the 200 Manabe Ow Road project area. The developed land cover in the 100 Manabe Ow Road project area does not provide suitable upland habitat for western pond turtle.

There are documented occurrences for western pond turtle from the Pajaro River, Struve Slough, and the lower reach of Watsonville Slough with the most recent occurrences from 2007 (CNDDB 2022). The Watsonville Slough adjacent to the project areas as well as the *Cattail Marsh* within the 200 Manabe Ow Road project area provide suitable aquatic habitat for western pond turtle (i.e., perennial slow-moving stream with substantial emergent vegetation and

basking sites). The grassland habitat in the 200 Manabe Ow Road project area provides potential upland breeding habitat (i.e., presence of silty clay soils). Therefore, due the presence of suitable habitat in the 200 Manabe Ow Road project area, as observed during the site visit, there is a high potential for western pond turtle to be present in the *Cattail Marsh* and the adjacent upland areas.

6.2.4 Special-status Mammals

San Francisco Dusky-footed Woodrat (*Neotoma fuscipes annectens*). Federal status: None; State status: Species of Special Concern. The San Francisco dusky-footed woodrat occurs in a variety of woodland and scrub habitats throughout San Mateo County and the adjacent Central Coast Range, south to the Pajaro River in Monterey County (Hall 1981, Zeiner et al. 1990). San Francisco dusky-footed woodrats prefer riparian and oak woodland forests with dense understory cover, or thick chaparral habitat, and build large, complex houses of sticks and other woody debris, which may be maintained by a series of occupants for several generations (Carraway and Verts 1991; Lee and Tietje 2005). Also, they will often build these stick houses in the canopy of trees. Woodrats also use human-made structures, and can nest in electrical boxes, sheds, pipes, abandoned vehicles, wooden pallets, and portable storage containers. The breeding season for dusky-footed woodrat begins in February and sometimes continues through September, with females bearing a single brood of one to four young per year (Carraway and Verts 1991).

There is no suitable habitat for dusky-footed woodrat within the project areas, including along the *Cattail Marsh*, and no woodrat houses were observed during the field survey. However, San Francisco dusky-footed woodrat could occur in the riparian habitat along the section of Watsonville Slough adjacent to the project areas. Since the riparian habitat along the Watsonville Slough is at least 80 feet away from the project areas, project activities are not expected to impact San Francisco dusky-footed woodrat.

6.2.5 Bat Colonies

Bats tend to forage and roost near freshwater sources. Both the Watsonville Slough and the *Cattail Marsh* provide a seasonal source of freshwater within and adjacent to the project areas. Cavities within trees, culverts, buildings, and other structures may provide suitable day and maternity roost habitat for many species of bats.

Roost sites play a critical role in mating, hibernation, rearing young, conserving energy, and protection from adverse weather and predators. Selection of roost sites is influenced by distribution and abundance of food resources, risks of predation, as well as the physical attributes of the roost itself. Roost selection is paramount to the success of a species and the removal of roost habitat could adversely impact the survivorship of a species (Kunz 1982).

Depending upon species, maternity roosts can host from a few to thousands of reproductive female bats that congregate during spring and summer months to give birth and nurse their young. In California, maternity roosts may remain active from April through August. As a potentially uncommon and limited resource, maternity roosts may be the limiting resource for a local population of bats, and thus may be essential to the survival of a local bat population. Maternity roosts tend to have sensitivity to disturbance, with documented instances of abandonment even during the presence of flightless young. As bats have a low reproductive rate of typically one pup per year, negative impacts to maternity roosts can have profound impacts on a local population of bats (Szewczak 2013).

Disturbance of roosting habitat of any bat species would be considered significant under CEQA guidelines. No suitable tree cavities or other roosting habitat was observed within the project areas or 50 feet of the project areas. However, roosting bats could be present in the riparian habitat along the section of Watsonville Slough adjacent to the project areas. Since the riparian habitat along the Watsonville Slough is at least 80 feet away from the project areas, project activities are not expected to impact roosting bats.

6.2.6 Special-status Birds

American Peregrine Falcon (*Falco peregrinus anatum*). Federal Listing Status: None; State Listing Status: Fully Protected. The American peregrine falcon occurs throughout much of the world and is known as one of the fastest flying birds of prey. Peregrine falcons prey almost entirely on birds, which they kill while in flight. These falcons nest on ledges and caves on steep cliffs, as well as on human-made structures such as buildings, bridges, and electrical transmission towers. In California, they are known to nest along the entire California coastline, , and the Cascade Ranges and Sierra Nevada.

A severe decline in populations of the widespread North American subspecies *anatum* began in the late 1940s. This decline was attributed to the accumulation of DDE, a metabolite of the organochlorine pesticide DDT, in aquatic food chains. When concentrated in the bodies of predatory birds such as the peregrine falcon, this contaminant led to reproductive effects, such as the thinning of eggshells. The American peregrine falcon was listed as endangered by the USFWS in 1970 (USFWS 1970) and by the State of California in 1971. Recovery efforts included the banning of DDT in North America, and captive breeding programs to help bolster populations. The USFWS removed the American peregrine falcon from the endangered species list in 1999 (USFWS 1999), and it was removed from the state endangered species list in 2009.

There is no suitable nesting habitat within or adjacent to the project areas. However, peregrines nesting elsewhere in the project region, as well as migrants and wintering birds, may occasionally forage in the project areas. Peregrine falcons have been observed along the Watsonville Slough near the project areas (Cornell Lab of Ornithology 2022).

Burrowing Owl (*Athene cunicularia*). Federal Listing Status: None; State Listing Status: Species of Special Concern. Burrowing owls occur year-round in Santa Cruz County, using open, agricultural or grassland areas with active small mammal burrows, which they use for nesting and roosting. Typical burrowing owl habitat is treeless with minimal shrub cover, woody plant encroachment, and low density and foliage height diversity. In the San Francisco Bay Area, burrowing owls are chiefly associated with burrows of California ground squirrels, whose burrows provide nesting and roosting cavities. In the absence of ground squirrel populations, habitats soon become unsuitable for occupancy by owls (Plumpton and Lutz 1993).

The burrowing owl nesting season as recognized by the CDFW runs from February 1 through August 31. After nesting is completed, adult owls may remain in their nesting burrows or in nearby burrows, or they may migrate and over-winter elsewhere (Gorman et al. 2003). Young birds disperse across the landscape from 0.1 mile to 35 miles from their natal burrows (Rosier et al. 2006). Philopatry (the tendency for individuals to breed at or near their place of birth), site tenacity (the tendency for individuals to breed at or near their prior nest location), and nest burrow reuse have been well documented for burrowing owls (Plumpton and Lutz 1993a), and burrowing owls may return to a nesting site and attempt to nest even after the site has been developed.

There are several documented occurrences within 1 mile of the project areas (Cornell Lab of Ornithology 2022). There is potential breeding habitat within the 200 Manabe Ow Road project site due to the presence of small mammal burrows and the grassland habitat within the project area, and adjacent areas provide suitable foraging habitat for burrowing owl. Due to nearby documented occurrences and the presence of small mammal burrows, there is a moderate potential for borrowing owl to be present in the 200 Manabe Ow Road project area.

Northern Harrier (*Circus cyaneus*). Federal Listing Status: None; State Listing Status: Species of Special Concern (Nesting). The northern harrier nests in marshes and grasslands with tall vegetation and sufficient moisture to inhibit accessibility of nest sites to predators. This species forages primarily on small mammals and birds in a variety of open grassland, ruderal, and agricultural habitats. Northern harriers forage in a variety of open habitats, especially during the nonbreeding season. The species is widespread as a forager in grasslands, extensive wetlands, and agricultural areas in the project region during migration and winter. Northern harriers are not expected to nest on the project areas due to a lack of suitable habitat. However, harriers may nest in nearby marsh habitats along the Watsonville slough downstream of the project areas and forage in the project areas.

Tricolored Blackbird (*Agelaius tricolor*). Federal Listing Status: None; State Listing Status: Threatened (Nesting Colony). Tricolored blackbird was listed as a threatened species by the California Fish and Game Commission on April 19, 2018. Tricolored blackbirds are found primarily in the Central Valley and in the central and southern coastal areas of California. The

tricolored blackbird is highly colonial in its nesting habits, and forms dense nesting colonies that, in some parts of the Central Valley, may consist of up to tens of thousands of pairs. Suitable tricolored blackbird nesting habitat includes flooded stands of tall and dense, thorny, or spiny vegetation dominated by cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.), and willows (*Salix* spp.), but also will nest in dense stands of blackberry bushes (*Rubus* spp.) and wild rose (*Rosa* spp.) bushes, as well as thistles (*Cirsium* and *Centaurea* spp.) and nettles (*Urtica* spp.), usually near extensive open areas such as marshes, grassland, or agricultural land that provide foraging habitat. Nesting colonies are usually located near fresh water. Tricolored blackbirds form large, often multi-species flocks during the nonbreeding period and range more widely than during the nesting season. Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields (e.g., oats, wheat, silage), as well as annual grasslands, cattle feedlots, and dairies (Shuford and Gardali 2008). These blackbirds also forage in remnant native habitats, including wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders.

Even though the *Cattail Marsh* in the 200 Wanabe Ow Road project area consists of dense stands of cattails, the small size of the marsh likely precludes nesting tri-colored blackbirds. Tricolored blackbirds are well documented from the marsh complex formed by the confluence of Watsonville, Struve, and Hanson sloughs, approximately 0.3 mile from the project areas (CNDDB 2022, Cornell Lab of Ornithology 2022). Therefore, tricolored blackbirds may forage in the grassland and *Cattail Marsh* in the 200 Manabe Ow Road project area and/or migrate through both project areas but are not expected to nest in the project areas.

White-tailed Kite (*Elanus leucurus*). Federal Listing Status: None; State Listing Status: Fully Protected. In California, white-tailed kites can be found in the Central Valley and along the coast in grasslands, agricultural fields, cismontane woodlands, and other open habitats (Zeiner et al. 1990a, Dunk 1995, Erichsen et al. 1996). White-tailed kites are year-round residents of the state, establishing nesting territories that encompass open areas with healthy prey populations and snags, shrubs, trees, or other substrates for nesting (Dunk 1995). Nonbreeding birds typically remain in the same area over the winter, although some movements do occur (Polite 1990). The presence of white-tailed kites is closely tied to the presence of prey species, particularly voles, and prey base may be the most important factor in determining habitat quality for white-tailed kites (Dunk and Cooper 1994, Skonieczny and Dunk 1997). Although the species recovered after population declines during the early 20th century, its populations may be exhibiting new declines because of recent increases in habitat loss and disturbance (Dunk 1995, Erichsen et al. 1996).

White-tailed kites are common residents in the vicinity of the project areas where open grassland and agricultural habitats are present (Cornell Lab of Ornithology 2022). There is no suitable nesting habitat within the project areas, but there may be suitable nesting habitat in the riparian corridor along Watsonville Slough adjacent to the project areas. Since the riparian

habitat along the Watsonville Slough is at least 80 feet away from the project area, project activities are not expected to impact nesting kites. However, the grassland habitat within the 200 Manabe Ow Road project area provides potential foraging opportunities for this species and two individuals were observed in the 200 Manabe Ow Road project area in 2019 (Cornell Lab of Ornithology 2022).

Yellow Warbler (*Setophaga petechia*). Federal Listing Status: None; State Listing Status: Species of Special Concern. In California, the yellow warbler occupies wooded riparian habitats (Heath 2008). This species prefers riparian corridors with an overstory of mature cottonwoods and sycamores, a midstory of box elder and willow, and a substantial shrub understory (Bousman 2007), particularly in areas with more open space adjacent to the riparian habitat. Yellow warblers construct open-cup nests in upright forks of shrubs or trees in dense willow thickets or other dense vegetation (Lowther et al. 1999).

The yellow warbler is an un-common to rare breeder in wooded riparian habitats, occurring primarily in association with alders and willows, in Santa Cruz County. Riparian woodlands in the County provide suitable nesting and foraging habitat for this species, but the species is scarce and local, being particularly scarce as a breeder on the immediate coast (Shuford and Gardali 2008). Nevertheless, it is possible that yellow warblers may breed in the riparian habitat along Watsonville Slough adjacent to the project areas, but they are not expected to nest in the project areas. Otherwise, this species is a commonly observed migrant along the Watsonville Slough near the project areas (Cornell Lab of Ornithology 2022).

6.2.7 Nesting Birds

Nesting birds may occur in trees, shrubs, understory vegetation, and shallow scrapes on bare ground in and around the project areas. All migratory bird species are protected under California Fish and Game Code.

6.3 Sensitive and Regulated Plant Communities and Habitats

Natural communities have been considered part of the Natural Heritage Conservation triad, along with plants and animals of conservation significance since the state inception of the Natural Heritage Program in 1979. CDFW determines the level of rarity and imperilment of vegetation types; and tracks sensitive communities in its Rarefind database (CNDDB 2022). Global rankings (G) of natural communities reflect the overall condition (rarity and endangerment) of a habitat throughout its range, whereas state (S) rankings reflect the condition of a habitat within California. Natural communities are defined using NatureServe's standard heritage program methodology as follows (CDFG 2007):

- G1/S1: Less than 6 viable occurrences or less than 2,000 acres.
- G2/S2: Between 6 and 20 occurrences or 2,000 to 10,000 acres.

- G3/S3: Between 21 and 100 occurrences or 10,000 to 50,000 acres.
- G4/S4: The community is apparently secure, but factors and threats exist to cause some concern.
- G5/S4: The community is demonstrably secure to ineradicable due to being common throughout the world (for global rank) or the state of California (for state rank).

State rankings are further described by the following threat code extensions:

- S1.1: Very threatened.
- S1.2: Threatened.
- S1.3: No current threats known.

In addition to tracking sensitive natural communities, CDFW also ranks vegetation alliances, defined by repeating patterns of plants across a landscape that reflect climate, soil, water, disturbance, and other environmental factors (Sawyer et al. 1995). If an alliance is marked G1-G3, all the vegetation associations within it will also be of high priority (CDFG 2007). CDFW provides the Vegetation Classification and Mapping Program's (VegCAMP) currently accepted list of vegetation alliances and associations (CDFW 2022).

Natural Communities of Special Concern. There is one CDFW classified sensitive natural community within the project areas. The *Cattail Marsh* within the 200 Manabe Ow Road project area is classified as Coastal and Valley Freshwater Marsh.

- **Coastal and Valley Freshwater Marsh**. Coastal and Valley Freshwater Marsh is a wetland plant community found in seasonally or permanently flooded areas along streams, lakes, ponds, and springs. If the marsh is within a riverine system that drains into estuarine habitats, the marsh may be brackish at the end closest to the estuary end and entirely freshwater farther up the channel. Typical species include cattails (*Typha* spp.), bulrush (*Scirpus* spp.), and sedges (*Cyperus* spp., *Carex* spp., and *Eleocharis* spp.).

Sensitive Vegetation Alliances. There are no CDFW classified sensitive plant communities within the project areas.

CDFW Stream/Riparian Habitat. As described above under Regulatory Setting, the California Fish and Game Code includes regulations governing the use of, or impacts to, many of the state's fish, wildlife, and sensitive habitats, including the bed and banks of rivers, lakes, and streams. The *Cattail Marsh* in the 200 Manabe Ow Road project area and its associated riparian habitat up to the top of bank is subject to CDFW jurisdiction under Section 1600 et seq. of State Fish and Game Code (Appendix A, Figure 4).

Critical Habitat/Essential Fish Habitat (EFH). There is no designated critical habitat or EFH within the project areas. However, critical habitat for several species and EFH is located within 5 miles of the project areas (Appendix A, Figure 5).

- **Santa Cruz Tarplant**. Critical habitat for Santa Cruz tarplant is located approximately 150 feet north of the project areas on the north side of Watsonville Slough (Unit I) and approximately 2.3 miles northeast of the project areas along Elkhorn Road (Unit K).
- **California Red-legged Frog**. Critical habitat for California red-legged frog is located approximately 0.23 miles northwest of the project areas, including Watsonville Slough, Harkins Slough, and Struve Slough (Unit SCZ-2).
- **South-Central California Coast Steelhead DPS.** Critical habitat for steelhead includes the Pajaro River and Lagoon, but does not include Watsonville, Harkins, or Struve sloughs. The confluence of the Pajaro River and Watsonville Slough is approximately 5 miles downstream of the project areas.
- **Tidewater Goby**. Critical habitat for tidewater goby includes the lower reach of the Pajaro River and lagoon, as well as the lowermost 1.2 miles of Watsonville Slough south of West Beach Road (Unit SC-8), approximately 4 miles from the project areas. Watsonville Slough north of West Beach Road, including the Harkins and Struve Sloughs are not designated as critical habitat.
- **EFH**. All tidally influenced areas of the Pajaro River, and Watsonville Slough are designated as EFH for species federally managed under fisheries management plans (FMPs) (Pacific Fisheries Management Council 1998, 2011, 2012). Only the lowermost portion of Watsonville Slough is tidally influenced, approximately 4 miles downstream of the project areas.

Waters of the U.S./State. The *Cattail Marsh* meets the definition of waters of the U.S./state and any impacts to verified waters of the U.S./state within the project area would be subject to jurisdiction by the USACE and RWQCB. Waters of the state generally extend to the top of the bank (Appendix A, Figure 4).

6.4 Wildlife Corridors

Wildlife corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: first, as habitat patches become smaller, they are unable to support as many individuals (patch size); and second, the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity).

Due to habitat fragmentation in the project region, the vegetation communities along streams and other aquatic features often function as environmental corridors that allow animals to move among habitat patches. Since the drainage channel within the 200 Manabe Ow Road project area is confluent with Watsonville Slough, the channel, and adjacent upland areas likely function

as a wildlife movement corridor that provides movement and refugia for wildlife found in the Watsonville Slough corridor. Since the developed and grassland areas of the project areas are in an urban setting and are not adjacent to or connect open space areas, these areas likely function as an isolated wildlife corridor that provides movement and refugia for wildlife that are commonly found in developed areas.

7 Biological Impact Assessment

This section describes potential impacts to sensitive biological resources—including special-status plants and animals, and waters of the U.S. and the state—that may occur as a result of implementing the projects.

The CEQA Guidelines define which impacts are considered significant. The Act defines “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the proposed project.” Potential impacts to biological resources were determined in accordance with Appendix G of the CEQA Guidelines. Impacts would be considered potentially significant if the proposed project will:

A. "have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service".
B. "have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service".
C. "have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means”.
D. "interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites".
E. "conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance".
F. "conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan".

Direct take of a federally or state listed species is considered a significant impact. Per Section 3(18) of FESA, the term take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Temporary and/or permanent habitat loss is not considered a significant impact to sensitive species (other than for listed or candidate species under the FESA and CESA), unless a significant percentage of total suitable

habitat throughout the species' range is degraded or somehow made unsuitable, or areas supporting a large proportion of the species' population are substantially and adversely impacted. Potential impacts to nesting bird species and bat colonies would be considered significant due to their protection under California Fish and Game Code.

7.1 Impacts to Special-Status Plant Species – Less than Significant with Mitigation

Santa Cruz tarplant,has the potential to occur within the *Wild Oats and Annual Brome Grassland* in the 200 Manabe Ow Road project area. If present, project development may affect special-status plants due to disturbance or destruction of individuals or suitable habitat. Direct impacts could include grading or filling areas supporting these species, trampling, or crushing of plants, and soil compaction. Indirect impacts could include increased mobilization of dust onto plants, which can affect their photosynthesis and respiration, or changes to hydrology supporting these plants due to grading or construction in nearby habitats.

Conservation of a state and federally listed species is important because even the smallest of populations contribute to preserving the genetic resources for the species and ensuring its persistence in the County and state. For Santa Cruz tarplant, extirpation of any individuals located within the project area could negatively impact the species' genetic resources and would be considered significant under CEQA. Implementation of the following mitigation measures will reduce impacts on special-status plants to a less than significant level.

Mitigation Measure BIO-1a. Pre-Activity Focused Survey for Santa Cruz Tarplant. Prior to initial ground disturbance in grassland and wetland habitats, and during the appropriate blooming period (June to October), a focused survey for Santa Cruz tarplant will be conducted by a qualified plant ecologist within suitable habitat in the project footprint and a 50-foot buffer around the project footprint, where feasible. The purpose of the survey will be to assess the presence or absence of Santa Cruz tarplant. If Santa Cruz tarplant is not found in the impact area or the identified buffer, then no further mitigation will be warranted. If Santa Cruz tarplant is found in the impact area, then Mitigation Measures BIO-1b will be implemented. The results of the survey will be documented.

A qualified plant ecologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for special-status plant species that may be present within the project areas. During or following academic training, the qualified plant ecologist will have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-1b. Avoidance Buffers. To the extent feasible, and in consultation with a qualified plant ecologist, the project proponent will construct the project to avoid impacts on all populations of special-status plant species within the project site or within the identified

buffer of the impact area, to the extent feasible. Avoided special-status plant populations will be protected by establishing and observing the identified buffer between plant populations and the impact area. All such populations located in the impact area or the identified buffer, and their associated designated avoidance areas, will be clearly depicted on any construction plans. In addition, prior to initial ground disturbance or vegetation removal, the limits of the identified buffer around special-status plants to be avoided will be flagged or fenced. The flagging will be maintained intact and in good condition throughout project-related construction activities.

If avoidance is not feasible, then CDFW and/or USFWS will be consulted to determine the appropriate mitigation measures, which may include salvage and relocation of individual plants and/or off-site preservation, enhancement, and management of occupied habitat for the species.

7.2 Impacts to California Red-legged Frog and Western Pond Turtle– Less than Significant with Mitigation

California red-legged frog and western pond turtle may be present in the *Cattail Marsh* and adjacent upland areas within the *Wild Oats and Annual Brome Grassland* in the 200 Manabe Ow Road project area. The *Cattail Marsh* is outside of the project footprint and will not be directly impacted by the proposed project. However, project activities would result in the permanent loss of potential California red-legged frog and western pond turtle upland refugia and breeding habitat, respectively, due to the conversion of the grassland to developed land cover. Project activities could also potentially result in the loss of individuals (e.g., during construction activities) if they were present in the *Wild Oats and Annual Brome Grassland* or if they moved into the project area from the *Cattail Marsh* during construction activities. Due to the rarity of both species, project-related impacts on individual California red-legged frogs and western pond turtle would be significant under CEQA. For example,

- project activities may result in the injury or mortality of individuals as a result of worker foot traffic or equipment use.
- disturbance from project activities may disrupt foraging and dispersal behavior of both species.
- seasonal movements may be temporarily affected during project activities because of disturbance, and substrate vibrations may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation.
- petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals, although BMPs to control releases of such chemicals make this unlikely.
- increases in human concentration and activity in the vicinity of suitable habitat may result in an increase in native and non-native predators that would be attracted to trash left at

the work site and that would prey opportunistically on California red-legged frog and western pond turtle.

- movement of project personnel within the site, and between on-site and off-site areas, could also spread pathogens such as chytrid fungus, which can impair the health of amphibians.

The proposed project will result in the loss of approximately 11.4 acres of potential California red-legged frog and western pond turtle upland refugia and breeding habitat, respectively. However, the impact of the loss of habitat is not significant in the project region due to the presence of nearby higher quality habitat in the Watsonville Slough corridor, including the 25-acre Manabe Restoration Project site and other nearby open space areas, including the 589-acre Watsonville Slough Ecological Reserve and 4,000 acres of designated Critical Habitat for red-legged frog. Furthermore, the long history of agricultural use within the 200 Manabe Ow Road project area, low density of small mammal burrows, regular mowing of the *Cattail Marsh* and adjacent areas, and other human disturbance (e.g., homeless encampments) reduces the habitat value for California red-legged frog and western pond turtle.

Consistent with the current impact analysis, the 2010 MEIR did not identify loss of habitat as a significant impact to California red-legged frog and western pond turtle within the planning area The MEIR also concluded that the Manabe-Ow Business Park Specific Plan would not result in cumulative impacts to California red-legged frog or western pond turtle (RBF Consulting 2010).

Furthermore, habitat restoration for California-red-legged frog and other wildlife is included in the Manabe-Ow Business Park Specific Plan, which includes the restoration of 25 acres of the Watsonville Slough known as the Manabe Restoration Project. The restoration project was completed in 2012 with support from the Resource Conservation District of Santa Cruz County (RCD) and created/restored high quality aquatic and upland habitat for California red-legged frog and western pond turtle, approximately 0.37 miles northeast from the 200 Manabe Ow Road project area.

Site conditions have changed since the preparation of the MEIR in 2010 and there is currently potential for impacts to red-legged frog and western pond turtle during construction. However, the implementation of Mitigation Measures BIO-2a through BIO-2j will reduce project impacts and avoid take of California red-legged frog and western pond turtle that may be present within the 200 Manabe Ow Road project area. With the implementation of these measures the impacts to these species will be less than significant.

Mitigation Measure BIO-2a. Conduct Preconstruction Survey. No more than 24 hours prior to the date of initial ground disturbance, a pre-construction survey for California red-legged frog and western pond turtle will be conducted within the impact area by a qualified biologist. The survey will consist of walking the limits of impact to ascertain the possible presence of the species. The qualified biologist will investigate all potential areas that could be used by

California red-legged frog and western pond turtle for feeding, sheltering, movement, and other essential behaviors.

A qualified biologist is an individual who shall have a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for each amphibian and reptile special-status species that may be present within the project areas. During or following academic training, the qualified biologist shall have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements. Additionally, the qualified biologist must be permitted or authorized to handle and relocate California red-legged frog and western pond turtle.

Mitigation Measure BIO-2b. Worker Environmental Awareness Program. All construction personnel will participate in a worker environmental awareness program. These personnel will be informed about the possible presence of all special-status species and habitats associated with the species identified here to be potentially present in the parcel and that unlawful take of the animal or destruction of its habitat is a violation of law. Prior to construction activities, a qualified biologist will instruct all construction personnel about (1) the description and status of the species; (2) the importance of their associated habitats; (3) a list of measures being taken to reduce impacts on these species during project construction and implementation; and (4) measures to be followed if special-status species are encountered during construction activities. A fact sheet conveying this information will be prepared for distribution to the construction crew and anyone else who enters the project site.

Mitigation Measure BIO-2c. Install Wildlife Exclusion Barrier. Prior to any ground disturbance in the work area, a temporary wildlife exclusion barrier will be installed along the limits of disturbance. A qualified biologist will inspect the area prior to installation of the barrier. The barrier will be designed to allow the California red-legged frog and western pond turtle to leave the work area and prevent them from entering the work area. The fence will remain in place until all development activities have been completed. This barrier will be inspected daily and maintained and repaired as necessary to ensure that it is functional and is not a hazard to California red-legged frogs on the outer side of the barrier.

Mitigation Measure BIO-2d. Vegetation Removal. All vegetation within the work area will be cut to four inches in height by a high-wheel mower or weed-whip just prior to the initiation of grading to remove cover that might be used by California red-legged frogs and/or western pond turtles. A qualified biologist authorized to handle California red-legged frogs and/or western pond turtles will walk with the mower/whip to monitor for species during the vegetation removal.

Mitigation Measure BIO-2e. Construction Monitoring. A qualified biologist or biological monitor will be onsite during all project activities that may result in take of any special-status species. The qualified biologist will be given the authority to freely communicate verbally, by

telephone, electronic mail, or in writing at any time with construction personnel, any other person(s) at the project site, otherwise associated with the project, and regulatory agencies (e.g., USFWS or CDFW). The qualified biologist or biological monitor will have oversight over implementation of all the mitigation measures and will have the authority and responsibility to stop project activities if they determine any of the measures are not being fulfilled.

A biological monitor is an individual who shall have academic and professional experience in biological sciences and related resource management activities as it pertains to this project, experience with construction-level biological monitoring, be able to recognize species that may be present within the project area and be familiar with the habits and behavior of those species.

Mitigation Measure BIO-2f. Relocation of California Red-legged Frog and Western Pond Turtle. If a red-legged frog or western pond turtle is found during project activities, work will stop until a qualified biologist that is permitted to handle California red-legged frog or authorized to handle western pond turtle relocates the animal from the impact area before groundwork starts again. Only a qualified biologist will capture, handle, and move California red-legged frog and western pond turtle. The qualified biologist will monitor any relocated frog or turtle until it is determined that it is not imperiled by predators or other dangers. See Mitigation Measure BIO-2a for the definition of a qualified biologist.

Mitigation Measure BIO-2g. Daytime Restriction. No work will be performed during nighttime hours. If construction is necessary at dawn or dusk, lights will be directed away from Watsonville Slough and the *Cattail Marsh* habitats.

Mitigation Measure BIO-2h. Food and Trash. To eliminate an attraction for the predators of the California red-legged frog and western pond turtle, all food-related trash items such as wrappers, cans, bottles, and food scraps will be disposed of in solid, closed containers (trash cans) and removed at the end of each working day from the entire construction site. Dogs or other pets will not be allowed on site during construction.

Mitigation Measure BIO-2i. Steep-walled Holes and Trenches. To prevent inadvertent entrapment of the California red-legged frog or western pond turtle, a qualified biologist, biological monitor, and/or construction foreman/manager will ensure that all excavated, steep-walled holes or trenches more than one foot deep are completely covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks and inspected by a qualified biologist. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals by a qualified biologist and/or construction foreman/manager. If at any time a trapped California red-legged frog or western pond turtle is discovered by a qualified biologist or anyone else, the steps in Mitigation Measure BIO-2f Relocation of California red-legged frog and Western Pond Turtle will be followed.

Mitigation Measure BIO-2j. Prohibition of Plastic Mono-filament Netting. To prevent trapping California red-legged frogs or other species at the project site, erosion control materials containing plastic mono-filament netting or similar material will not be used, even if it is labeled as biodegradable. Acceptable substitutes include coconut coir matting, straw/coconut finer erosion blanket, straw wattles wrapped in burlap, coir logs, and/or tackifier.

7.3 Impacts to Burrowing Owl – Less than Significant with Mitigation

The *Wild Oats and Annual Brome Grassland* in the 200 Manabe Ow Road project area contains small mammal burrows that provide potential nesting, wintering, and foraging habitat for burrowing owls. If active burrowing owl nests are present in the project area at the time of construction, construction-related disturbance could result in injury or mortality of an owl. In addition, construction-related disturbance could lead to the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Even if burrowing owls are not breeding on the site, construction could result in injury or mortality of an owl if an occupied burrow is filled or compacted during construction.

The proposed project will result in the loss of approximately 11.4 acres of potential burrowing owl habitat. However, the impact of the loss of habitat is not significant in the project region due to the presence of permanently protected higher quality habitat in nearby open space areas, including the 589-acre Watsonville Slough Ecological Reserve. Furthermore, the low density of small mammal burrows, regular mowing of the *Cattail Marsh* and adjacent areas, and other human disturbance (e.g., homeless encampments) reduces the habitat value for burrowing owl.

Mitigation Measure BIO-3a: Conduct Pre-construction Surveys for Burrowing Owls. Pre-construction surveys for burrowing owls will be conducted prior to the initiation of all project activities within suitable burrowing owl nesting and roosting habitat (i.e., *Wild Oats and Annual Brome Grassland* in the 200 Manabe Ow Road project area). Pre-construction surveys will be completed in conformance with the CDFW's 2012 guidelines (CDFG 2012), which include the following:

- At least 2 weeks prior to the onset of vegetation mowing/removal or ground disturbing activities, an initial habitat assessment will be conducted by a qualified biologist to determine if suitable burrowing owl habitat is present. During the habitat assessment, the biologist will survey the entire activity area for burrows that could be used by burrowing owls for nesting and roosting, and signs of use (e.g., feathers, pellets, whitewash).
- The survey shall also include all areas within 250 feet of the site, as access allows.
- If no suitable burrowing owl habitat is present, no additional surveys will be required.

- If suitable burrows and signs of activity are found, an additional survey shall be conducted within the 24-hour period prior to the initiation of project activities in any given area.
- The results of the surveys will be documented.

If burrowing owls are observed during the surveys, then Mitigation Measure BIO-3b will be implemented.

A qualified biologist is an individual who has a degree in biological sciences or related resource management with a minimum of two seasonal years post-degree experience conducting surveys for burrowing owl. During or following academic training, the qualified biologist will have achieved a high level of professional experience and knowledge in biological sciences and special-status species identification, ecology, and habitat requirements.

Mitigation Measure BIO-3b: Implement Buffer Zones for Burrowing Owls. If burrowing owls are present during the nonbreeding season (September 1 to January 31), a 150-foot buffer zone will be maintained around the occupied burrow(s), if feasible relative to property lines. If maintaining such a buffer is not feasible, then the buffer must be great enough to avoid injury or mortality of individual owls. During the breeding season (February 1 to August 31), a 250-foot buffer, within which no newly initiated project-related activities will be permissible, will be maintained between project activities and occupied burrows. Owls present between February 1 and August 31 will be assumed to be nesting, and the 250-foot protected area will remain in effect until August 31. If monitoring indicates that the owls are no longer nesting or the young owls are foraging independently, the buffer may be reduced, or the owls may be relocated prior to August 31, as determined by a qualified biologist. Relocation of owls will be completed by a qualified biologist using one-way doors, which should be installed in all burrows within the impact area and left in-place for at least two nights. These one-way doors will then be removed and the burrows back-filled immediately prior to vegetation mowing/removal or grading.

7.4 Impacts to American Peregrine Falcon, Northern Harrier, Tricolored Blackbird, White-tailed Kite, and Yellow Warbler – Less than Significant Impact

American peregrine falcon, northern harrier, tricolored blackbird, white-tailed kite, and yellow warbler are seen regularly in the project region and may fly through or forage in the project site. However, these species are unlikely to nest in the project areas or adjacent areas because of the lack of suitable nesting habitat. All five species would only be temporarily displaced by construction noise and can forage in areas surrounding the project. Therefore, impacts to American peregrine falcon, northern harrier, tricolored blackbird, white-tailed Kite, and yellow warbler will be less than significant. In the unlikely event that any of these species nest in the project areas, compliance with Mitigation Measure BIO-4 (See Section 7.5) would reduce project impacts on these species to less than significant.

7.5 Impacts to Nesting Birds – Less than Significant Impact with Mitigation

All migratory bird species and their nests are protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. Project activities must comply with the provisions of the MBTA and California Fish and Game Code (i.e., avoid take of protected nesting birds). Project-related impacts to nesting birds would be considered significant under CEQA.

Construction disturbance during the avian breeding season (February 1 through September 15, for most species) could result in the incidental loss of eggs or nestlings, either directly through the destruction or disturbance of active nests or indirectly by causing the abandonment of nests. In addition, noise and increased construction activity could temporarily alter foraging behavior, potentially resulting in the abandonment of nest sites. However, with the implementation of Mitigation Measure BIO-4 below, impacts to nesting birds will be less than significant.

Mitigation Measure BIO-4: Pre-Construction/Pre-Disturbance Survey for Nesting Birds for 100 and 200 Manabe Ow Road Project Areas.

Avoidance. To the extent feasible, construction activities should be scheduled to avoid the nesting season. If construction activities are scheduled to take place outside the nesting season, all impacts to nesting birds protected under the MBTA and California Fish and Game Code would be avoided. The nesting season for most birds in Santa Cruz County extends from February 1 through September 15.

Pre-Construction Surveys. To avoid impacts to nesting birds and violation of state and federal laws pertaining to birds, all construction-related activities (including but not limited to mobilization and staging, clearing, grubbing, vegetation removal, fence installation, demolition, and grading) should occur outside the avian nesting season (that is, prior to February 1 or after September 15). If construction and construction noise occurs within the avian nesting season (from February 1 to September 15), all suitable habitats located within the project's area of disturbance, including staging and storage areas plus a 250-foot (passerines) and 1,000-foot (raptor nests) buffer around these areas shall be thoroughly surveyed, as feasible, for the presence of active nests. The surveys will be conducted by a qualified biologist no more than 5 days before commencement of any vegetation trimming, site disturbance activities and equipment mobilization. If project activities are delayed by more than 5 days, an additional nesting bird survey shall be performed. Active nesting is present if a bird is building a nest, sitting in a nest, a nest has eggs or chicks in it, or adults are observed carrying food to the nest. The results of the surveys shall be documented.

If pre-construction nesting bird surveys result in the location of active nests, no site disturbance and mobilization of heavy equipment (including but not limited to equipment staging, fence installation, clearing, grubbing, vegetation removal, fence installation, demolition, and grading), shall take place within 250 feet of non-raptor nests and 1,000 feet of raptor nests, unless

smaller buffers are determined by a qualified biologist. The buffer shall remain in place until the chicks have fledged. Monitoring will ensure compliance with MBTA and relevant California Fish and Game Code requirements. Monitoring dates and findings shall be documented.

7.6 Impacts from Bird Collisions – Less than Significant Impact with Mitigation

Both projects propose two-story buildings with a partial glass façade on one side of the building. Glass windows and facades have the potential to cause injury or mortality to birds when birds collide with these surfaces. Birds do not perceive glass as an obstruction in the same way that humans do. As a result, they may collide with glass walls or windows if the glass reflects the sky or nearby vegetation and is not perceived as an obstruction, when transparent glass appears to be a clear pathway, or when vegetation behind transparent glass (such as behind glass railings) appears unobstructed.

The *Cattail Marsh* attracts a variety of urban-adapted and riparian bird species. Additionally, the Watsonville Slough riparian corridor provides high quality habitat for a variety of bird species, which could travel through both project areas en route to the riparian corridor. Based on a review of the building renderings in the site plans (Appendix B), at least half of one side of the proposed buildings would be composed of glass and the project would incorporate landscaping with trees, grasses, and shrubs around the buildings. While this landscaping is minimal and would not have a high habitat value to birds, it would attract birds in the area and increase bird activity around the buildings. Therefore, following construction of the projects, birds using the on-site landscaping and flying between landscaped areas on the site and the *Cattail Marsh* and the Watsonville Slough riparian corridor may collide with the buildings, resulting in the death of migratory species. Special-status bird species are not expected to make use of the landscaping in the project areas.

The most common bird strike zone is from the ground to 60 feet, and then again at 500 feet for skyscrapers (SF Planning Department 2011). The proposed buildings would be glazed from grade level or just above grade level to approximately 25 feet above grade. Glazing starts to be a hazard to birds at about 24 square feet in size, and both buildings have expanses of glass that exceed that size. The site plans do not detail the type of glass that is proposed for the buildings, so it is unknown if the glass is made with patterns or has light reflectance values that may be more visible to birds and thereby reduce the likelihood of collision with the glass. There are no adopted City of Watsonville bird-safe standards.

Since the buildings are surrounding by landscaping and are adjacent to habitats that attract a variety of birds there could be a cumulatively significant loss of birds over time and in addition to bird loss from other similar buildings planned in the project area. The cumulative impact is potentially significant under CEQA. However, with the implementation of Mitigation Measure BIO-5 would minimize the loss of birds by window strike.

Mitigation Measure BIO-5: Standards for Bird Safe Buildings. The 100 Manabe Ow Road and 200 Manabe Ow Road projects shall implement the following bird-safe design considerations:

- Use glazing or window coatings/markings that reduce bird strike hazard caused by transparency, reflectance, black hole, or passage effect, etc., such as Guardian Bird1st etch glass or similar. See recommendations by the American Bird Conservatory at https://abcbirds.org/.
- Minimize plants or landscaped areas behind glass.
- Minimize concentrations of plantings adjacent to glass facades.

7.7 Impacts to Sensitive Communities – No Impact

Sensitive vegetation communities include riparian habitat or other sensitive natural communities identified in local or regional plans, policies, or regulations, or designated by the USFWS and CDFW. The *Cattail Marsh* (Coastal and Valley Freshwater Marsh) within the 200 Manabe Ow Road project area is classified as a sensitive community. Since the *Cattail Marsh* is subject to regulatory jurisdiction of the USACE, RWQCB, and CDFW, potential impacts to the marsh are discussed below in Section 7.8.

7.8 Impacts to Jurisdictional Waters – Less than Significant

The *Cattail Marsh* is subject to the regulatory jurisdiction of the USACE, RWQCB and CDFW, and will require CWA 401/404 and LSAA permits, if impacted. The proposed project does not directly impact the *Cattail Marsh*. However, the proposed projects include the creation of impervious surfaces due to the construction of buildings and paved roads and parking areas, which will result in an increase in stormwater runoff into stream habitat, including the *Cattail Marsh* and Watsonville Slough. Runoff may contain harmful pollutants like trash, chemicals, and dirt/sediment which may adversely affect water quality and wildlife. Construction activities could cause the degradation of surface or ground water quality in the *Cattail Marsh* and Watsonville Slough due to erosion and transport of fine sediments or unintentional release of contaminants. Therefore, project-related impacts to stream habitat would be considered significant under CEQA.

Construction projects in California causing land disturbances that are equal to 1.0 acre or greater must comply with State requirements to control the discharge of stormwater pollutants under National Pollutant Discharge Elimination System (NPDES)/Construction General Permit. Prior to the start of construction/demolition, a Notice of Intent must be filed with the State Water Board describing the project. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and maintained during the project, and it must include the use of BMPs to protect water quality until the site is stabilized. Standard permit conditions under the NPDES/Construction General Permit require that the applicant use various measures including,

among other measures, on-site sediment control best management practices, damp street sweeping, temporary cover of disturbed land surfaces to control erosion during construction, and utilization of stabilized construction entrances and/or wash racks.

A stormwater management plan will be developed to ensure that, during rain events, construction activities do not increase the levels of erosion and sedimentation. This plan will include the use of erosion-control materials (e.g., baffles, fiber rolls, or hay bales; temporary containment berms) and erosion-control measures such as straw application or hydroseeding with native grasses on disturbed slopes; and floating sediment booms and/or curtains to minimize any impacts that may occur due to increased mobilization of sediments. Suitable erosion control, sediment control, source control, treatment control, material management, and non-stormwater management best management practices will be implemented.

The following list of BMPs will protect biological resources:

- Work areas that are temporarily impacted will be restored with respect to pre-existing contours and conditions, to the extent feasible, upon completion of work. Restoration work including re-vegetation and soil stabilization will be evaluated upon completion of work and performed, as needed.
- Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with stormwater.
- Control and prevent the discharge of all potential pollutants, including solid wastes, paints, concrete, petroleum products, chemicals, wash water or sediment and non-stormwater discharges to storm drains and water courses.
- Avoid cleaning, fueling, or maintaining vehicles on site, except in a designated area in which run-off is contained and treated.
- Perform clearing and earth moving activities during dry weather to the maximum extent practical.
- Remove spoils promptly and avoid stockpiling of fill materials when rain is forecast. Cover soil stockpiles and other materials with a tarp or other waterproof material during qualifying rain events.
- Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination and dispersal by wind.
- In the event of rain, all grading work is to cease immediately.
- Implement an erosion control plan during the wet season (October 15 through April 15), including, at a minimum, the following:
    - All paved areas will be kept clear of earth material and debris
    - Inlet protection will be installed at open inlets to prevent sediment from entering the storm drain system.

    - Straw rolls will be placed at the toe of slopes, and along the down slope perimeter of the project area.
    - To prevent trapping of animals, plastic mono-filament netting (erosion control matting), rolled erosion control products or similar material will not be used at the project site.
- Implement an approved accidental spill plan to describe what actions will be taken in the event of a spill. The plan will incorporate preventative measures to be implemented, such as vehicle and equipment staging, cleaning, maintenance, and refueling; and contaminant (including fuel) management and storage. In the event of a contaminant spill, work at the site will immediately cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination and notify appropriate authorities (such as the City or other permitting agencies) and mitigate damage. Adequate spill containment materials, such as oil diapers and hydrocarbon cleanup kits, shall always be available on site. Containers for storage, transportation, and disposal of contaminated absorbent materials will be provided in the project site.

In addition to construction-phase requirements, new and redevelopment projects in many California counties, including Santa Cruz County, that create and/or replace more than 2,500 square feet of impervious surface must also comply with the *California Regional Water Quality Control Board, Central Coast Region, Central Coast Post-Construction Stormwater Requirements (PCRs)* (Resolution R3-2013-0032). The resolution requires that projects implement BMPs and incorporate Low Impact Development practices into the design that prevent stormwater runoff pollution, promote infiltration, and hold/slow down the volume of stormwater runoff from a site. To meet these permit and policy requirements, projects must incorporate the use of green roofs, pervious surfaces, bioretention and/or detention basins, among other on-site treatment controls.

During the construction phase, compliance with the requirements to control the discharge of stormwater pollutants under the NPDES Construction General Permit and PCRs will reduce impacts to stream habitat to a less than significant level. Both projects incorporate stormwater detention basins to manage stormwater runoff (Appendix B).

7.9 Impacts to Wildlife Movement– Less than Significant Impact

Construction activities could temporarily restrict some wildlife species from moving between suitable habitat patches. Noise and disturbance associated with construction activities could cause a temporary reduction in habitat connectivity through the site for species that commonly use habitats in the project area. Furthermore, construction fencing and/or wildlife exclusion fencing could substantially reduce habitat connectivity through the site. However, wildlife would still be able to move through the Watsonville Slough and the *Cattail Marsh* habitats adjacent to the site. Because project construction will not occur at night when many mammals, reptiles, and amphibians are active, use of these habitats by dispersing nocturnal animals would not be

diminished during construction. Therefore, impacts to wildlife movement from construction activities are expected to be less than significant

Once construction activities are complete, the developed land cover (e.g., parking areas and buildings) would restrict wildlife movement through the sites compared to existing conditions. However, wildlife would still be able to move through the project areas by using the riparian corridor of Watsonville Slough. Wildlife movement in the *Cattail Marsh* would be similar to pre-project conditions. Numerous animals likely breed within and around the project areas, but no particularly important wildlife nursery areas are present in the project areas or would be impacted by the projects. Therefore, wildlife dispersal through the project areas after completion of the projects is a less than significant impact.

7.10 Impacts due to Conflicts with Local Policies – No Impact

The proposed projects due not conflict with local policies, including the Watsonville Municipal Code and the Watsonville 2005 General Plan.

7.11 Impact due to Conflicts with an Adopted Habitat Conservation Plan – No Impact

The proposed project does not conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan, as they are not located in a conservation plan area. The project areas are not included in the Coastal Zone and are not subject to Coastal Land Use Plan and policies.

8 Summary of Mitigation Measures

Table 3 summarizes the mitigation measures for the 100 Manabe Ow Road and 200 Manabe Ow Road project areas.

Table 3. Summary of Mitigation Measures for the 100 and 200 Manabe Ow Project Areas

Mitigation Measure	100 Manabe Ow Road Project Area	200 Manabe Ow Road Project Area
Mitigation Measures BIO-1a and BIO-1b (measures to minimize impacts to Santa Cruz tarplant)	No	Yes
Mitigation Measures BIO-2a to BIO-2j (measures to minimize impacts to California red-legged frog and western pond turtle)	No	Yes
Mitigation Measure BIO-3a and BIO-3b (measures to minimize impacts to burrowing owl)	No	Yes
Mitigation Measure BIO-4 (measure to protect nesting birds)	Yes	Yes
Mitigation Measure BIO-5 (measure to minimize bird collisions with glass facades on buildings)	Yes	Yes

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Appendix A Figures

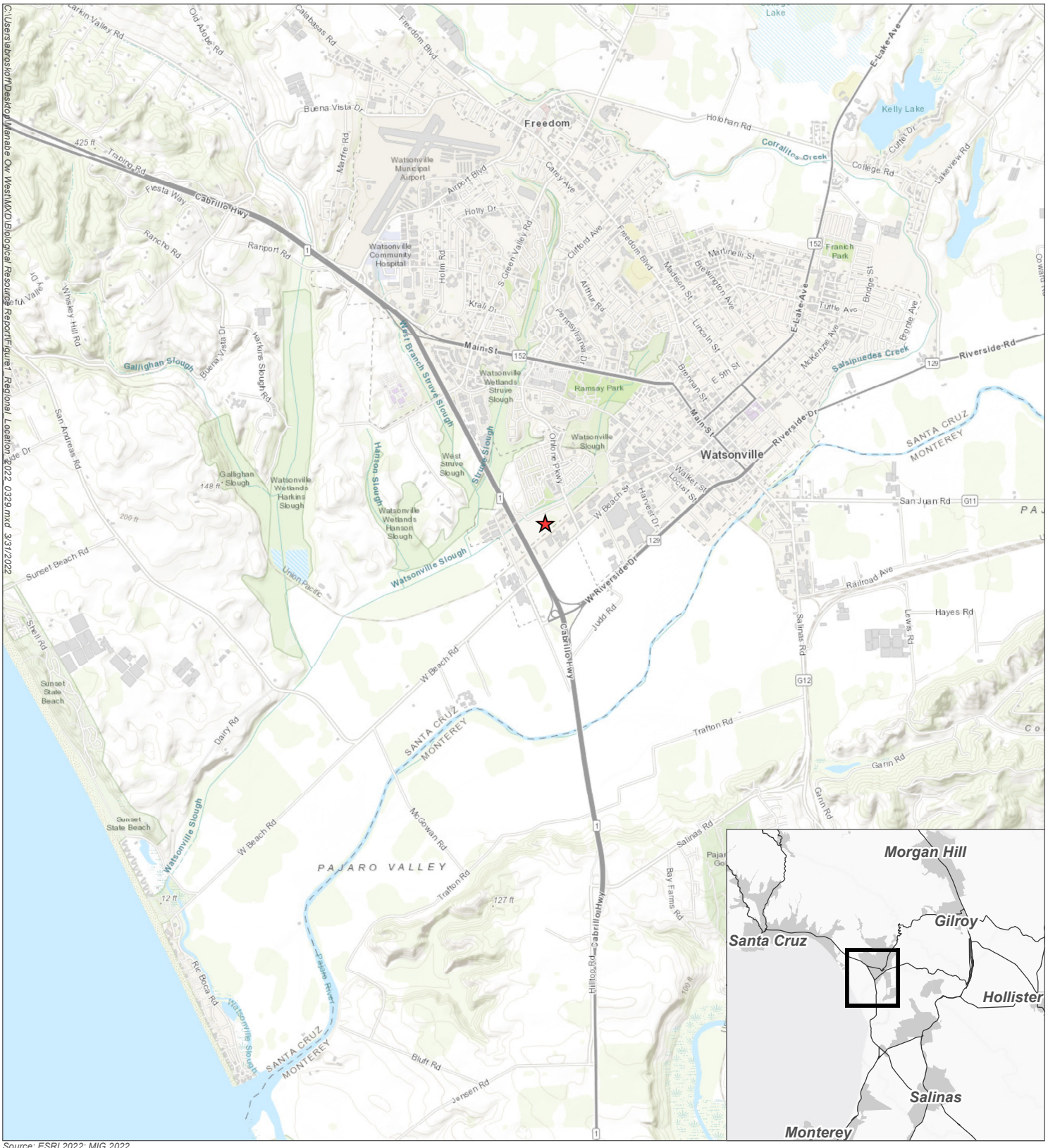


Figure 1 Regional Location Map

100 and 200 Manabe Ow Road Biological Resources Report



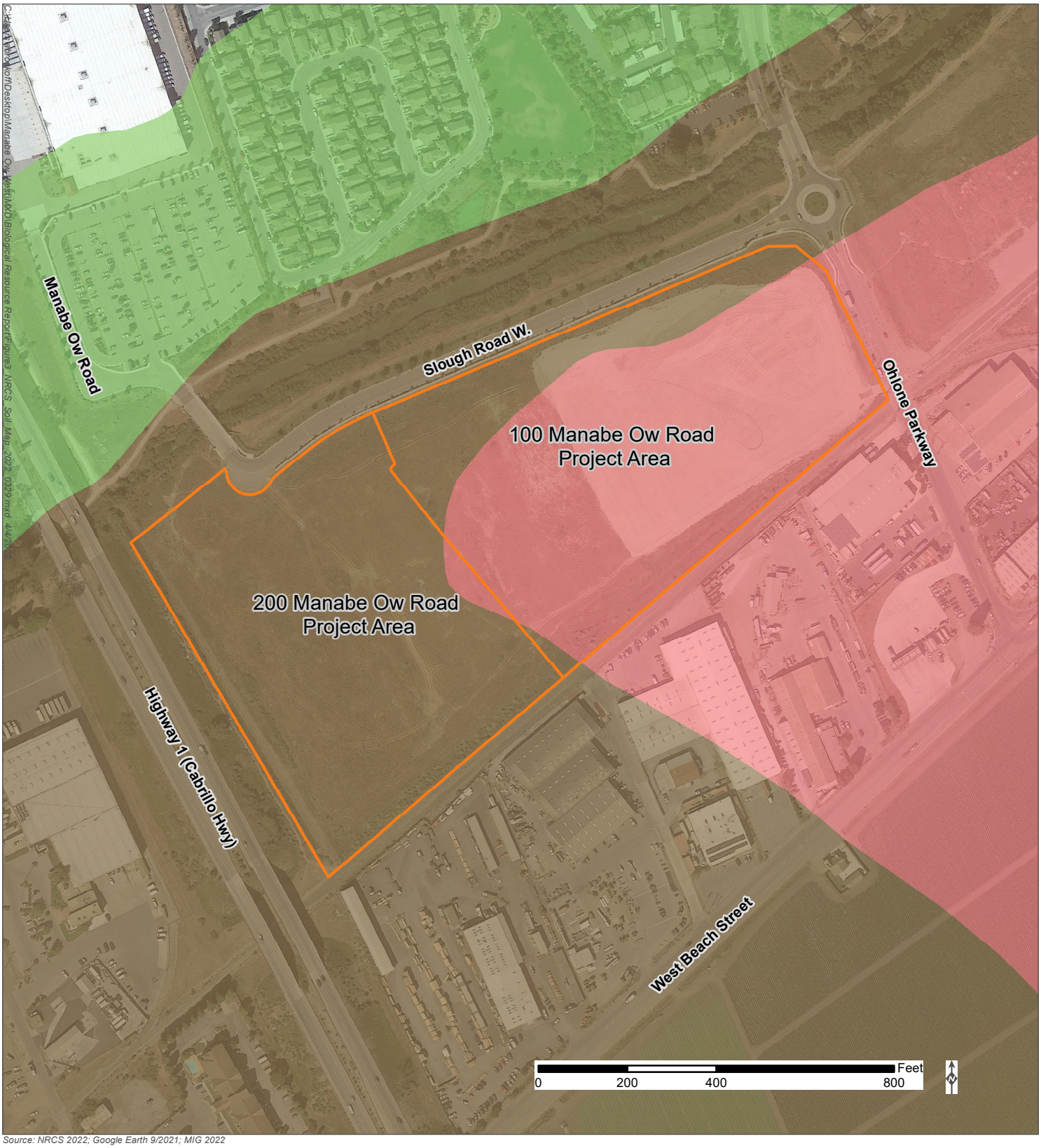
Source: Google Earth 9/2021; MIG 2022

0 200 400 800 Feet

Project Area

Figure 2 Project Area Map

100 and 200 Manabe Ow Road Biological Resources Report



Source: NRCS 2022; Google Earth 9/2021; MIG 2022

Project Area

NRCS Soils

- Clear Lake clay, drained, 0 to 1 percent slopes, MLRA
- Conejo clay loam, 0 to 2 percent slopes, cool, MLRA 14
- Watsonville loam, 2 to 15 percent slopes

Figure 3 NRCS Soil Map

100 and 200 Manabe Ow Road Biological Resources Report



Source: Google Earth 9/2021; MIG 2022

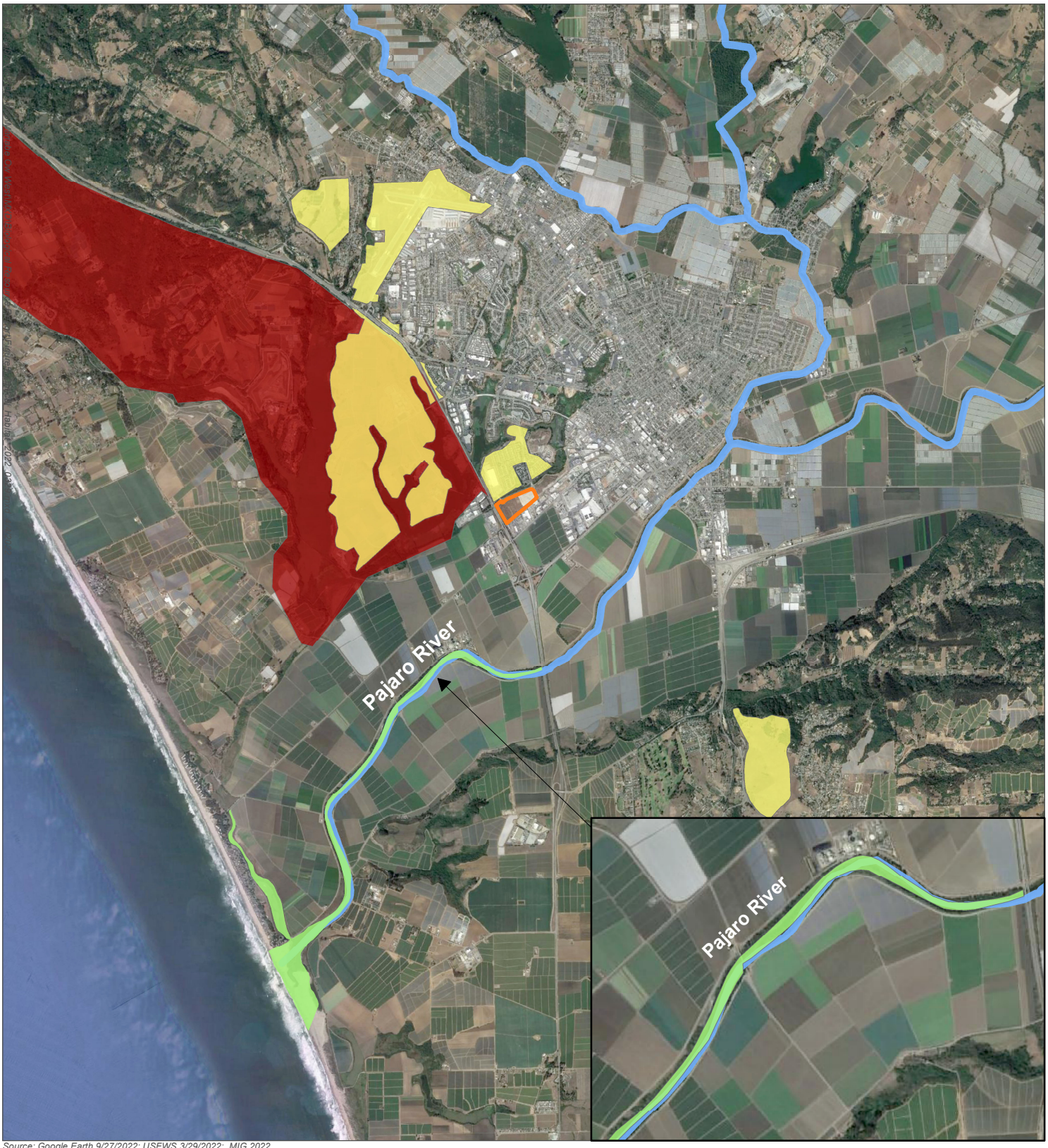
0 165 330 660 Feet

- Project Area
- Wild Oats and Annual Brome Grassland
- Developed
- Cattail Marsh

Figure 4 Existing Land Uses, Vegetation Communities, and Habitats

100 and 200 Manabe Ow Road Biological Resources Report

MIG



Source: Google Earth 9/27/2022; USFWS 3/29/2022; MIG 2022

Study Area
California Red-Legged Frog Critical Habitat
Santa Cruz Tarplant Critical Habitat
South-Central California Coast Steelhead DPS Critical Habitat
Tidewater Goby Critical Habitat

0 0.75 1.5 3 Miles

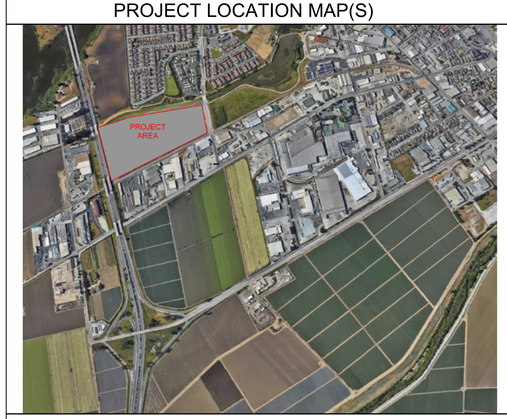
Figure 5 Critical Habitat

Appendix B Site Plans



GBxMB AT *WATSONVILLE, CA 95706*

PROJECT LOCATION MAP(S)



PROJECT INFORMATION

ASSESSOR'S PARCEL NUMBER:	**018-711-33**
ZONING:	**MANABE OW SPECIFIC PLAN IL -INDUSTRIAL**
LEGAL DESCRIPTION:	**REFER TO TITLE SHEET**
PROJECT DESCRIPTION:	± 11.5 AC OF THE TOTAL SITE WILL BE DEVELOPED FOR A NEW DISTRIBUTION FACILITY. THE BUILDING IS ±156,200 SF. THERE WILL BE A ±7,950 SF MEZZANINE FOR THE OFFICE. NEW LANDSCAPING, NEW PARKING, NEW SITE LIGHTING, NEW STORM WATER DETENTION. 9' TALL SECURITY FENCING WILL BE PLACED AROUND THE TRUCK COURT.
CURRENT LAND USE:	**VACANT COMMERCIAL LAND LOCATED IN THE MANABE OW SPECIFIC PLAN AREA. SITE IS DESIGNATED AS BUSINESS PARK WITH INDUSTRIAL USE.**
PROPOSED LAND USE:	**INDUSTRIAL USE WAREHOUSE AND DISTRIBUTION**
LANDSCAPE AREA:	**108,681 SQ.FT.** **91,836 SQ.FT. / 502,351.6 SQ.FT = 21%**

SITE SUMMARY:		
	GROSS SITE AREA:	**+/- 502,351.6 SQ.FT. (11.5 ACRES)**
	DETENTION AREA:	**+/- 59,000 SQ.FT. (@ 8.5%)**
	DRIVE AISLE AREA:	**+/- 492,284.7 SQ.FT.**

FAR CALCULATION:		
	BUILDING FOOTPRINT:	**+/- 147,379 SQ.FT. (@25.8%)**
	MEZZANINE:	**+/- 9,582 SQ.FT.**
	TOTAL BUILDING AREA:	**+/- 156,961 SQ.FT.**
		FAR = G/B
		FAR = 502,351.6 / 158,026
		FAR = .31

BUILDING SUMMARY:	
	BUILDING TYPE: TYPE IIIB FULLY SPRINKLERED ESFR
	BUILDING OCCUPANCY: PRIMARY S-2 ACCESSORY S-1, B, A
	UNLIMITED BUILDING AREA PER CBC 507

PARKING SUMMARY:		
	AUTO STALLS REQUIRED: **OFFICE:** **0 TO 20,000 SQUARE FEET FLOOR AREA, 1 SPACE FOR EACH 300 SF FLOOR AREA, PLUS 1 SPACE FOR EACH 500 SF FLOOR AREA IN EXCESS OF 20,000 SQUARE FEET = 53 STALLS** **WAREHOUSE:** **5 SPACES, PLUS 1 SPACE FOR EACH EMPLOYEE ON THE SHIFT WITH THE MAXIMUM NUMBER OF PERSONNEL = 40 STALLS** **TOTAL REQUIRED = 93 STALLS**	
	TRUCK DOCKS PROVIDED:	**20 STALLS**
	TRAILER STALL PROVIDED:	**33 TRAILERS**
	TRAILER BAY:	**2 STALLS**
	GRADE DOORS:	**6**
	AUTO STALLS PROVIDED:	**93 STALLS @ .7/1000**
	BICYCLE STALLS PROVIDED: RACKS	**REQUIRED: 9 PROVIDED: 10**
	LONG TERM LOCKERS	**REQUIRED: 9 PROVIDED: 10**
	ADA STALLS:	**REQUIRED: 7 PROVIDED: 8**
	EV STALLS:	**REQUIRED: 10 PROVIDED: 10**
	CLEAN AIR/VANPOOL/EV STALLS:	**REQUIRED: 16 PROVIDED: 16**

LEGAL DESCRIPTION

PARCEL 1:
SITUATE IN THE CITY OF WATSONVILLE, COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA AND

BEING A PORTION OF THE LANDS CONVEYED TO OW FAMILY-OHLONE PARKWAY, LLC , A CALIFORNIA LIMITED LIABILITY COMPANY, BY GRANT DEED RECORDED OCTOBER 13, 2015 AT 11:26 AM IN DOCUMENT NO. 2015-0041365 OFFICIAL RECORDS OF SANTA CRUZ COUNTY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION BY QUITCLAIM DEED RECORDED OCTOBER 12, 2012 AT 8:36 AM IN DOCUMENT NO. 2012-0050154 OFFICIAL RECORDS OF SANTA CRUZ COUNTY FROM WHICH THE INTERSECTION OF SAID NORTHWESTERN BOUNDARY WITH THE EASTERN BOUNDARY OF CALIFORNIA STATE HIGHWAY ROUTE NO. 1 AS SHOWN ON THAT CERTAIN MAP ENTITLED "RECORD OF SURVEY - MANABE WETLANDS RESTORATION PROJECT" FILED FOR RECORD MAY 22, 2015 IN VOLUME 123 OF MAPS, PAGE 21, SANTA CRUZ COUNTY RECORDS BEARS SOUTH 51° 10' 29" WEST 455.11 FEET DISTANT; THENCE FROM SAID POINT OF BEGINNING AND LEAVING SAID NORTHWESTERN BOUNDARY OF THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION NORTH 29° 28' 42" WEST 766.89 FEET TO THE SOUTHERN BOUNDARY OF MANABE OW ROAD, A CITY STREET 78 FEET WIDE, AS CONVEYED TO THE CITY OF WATSONVILLE, A MUNICIPAL CORPORATION BY GRANT DEED RECORDED SEPTEMBER 1, 2016 AT 7:47 AM IN DOCUMENT NO. 2016- 0032795 OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE ALONG SAID SOUTHERN BOUNDARY THEREOF SOUTH 53° 27' 55" WEST 90.14 FEET TO A POINT OF CURVATURE; THENCE ALONG A TANGENT CURVE TO THE LEFT WITH A RADIUS OF 31.00 FEET, THROUGH A CENTRAL ANGLE OF 26° 55' 45" AND AN ARC LENGTH OF 14.57 FEET TO A POINT OF REVERSE CURVATURE; THENCE ALONG A TANGENT CURVE TO THE RIGHT WITH A RADIUS OF 52.00 FEET, THROUGH A CENTRAL ANGLE OF 152° 53' 17" AND AN ARC LENGTH OF 138.76 FEET TO THE END OF SAID CURVE; THENCE NORTH 36°
36' 52" WEST 4.47 FEET TO THE SOUTHERN BOUNDARY OF THE LANDS CONVEYED TO THE CITY OF WATSONVILLE, A MUNICIPAL CORPORATION, BY GRANT DEED RECORDED JANUARY 30, 2012 AT 8:07 AM IN DOCUMENT NO. 2012-0004808 OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE LEAVING SAID MANABE OW ROAD AND ALONG THE LAST SAID SOUTHERN BOUNDARY CONVEYED TO THE CITY OF WATSONVILLE THEREOF SOUTH 53° 27' 55" WEST 268.38 FEET TO THE INTERSECTION WITH THE AFOREMENTIONED EASTERN BOUNDARY OF CALIFORNIA STATE HIGHWAY ROUTE NO. 1; THENCE LEAVING THE LANDS OF THE CITY OF WATSONVILLE AND ALONG SAID EASTERN BOUNDARY THEREOF SOUTH 29° 28' 42" EAST 808.19 FEET AND SOUTH 24° 48' 19" EAST 56.38 FEET TO THE HEREINABOVE SAID NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION; THENCE LEAVING CALIFORNIA STATE HIGHWAY ROUTE NO. 1 AND ALONG SAID NORTHWESTERN BOUNDARY THEREOF NORTH 51° 10' 29" EAST 455.11 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION.

THIS LEGAL DESCRIPTION IS MADE PURSUANT TO THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED JULY 24, 2018, AS INSTRUMENT NO. 2018-022647 OF OFFICIAL RECORDS.

PARCEL 2:

SITUATE IN THE CITY OF WATSONVILLE, COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA AND

BEING A PORTION OF THE LANDS CONVEYED TO OW FAMILY-OHLONE PARKWAY, LLC , A CALIFORNIA LIMITED LIABILITY COMPANY, BY GRANT DEED RECORDED OCTOBER 13, 2015 AT 11:28 AM IN DOCUMENT NO. 2015-0041365 OFFICIAL RECORDS OF SANTA CRUZ COUNTY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION BY QUITCLAIM DEED RECORDED OCTOBER 12, 2012 AT 8:36 AM IN DOCUMENT NO. 2012-0050154 OFFICIAL RECORDS OF SANTA CRUZ COUNTY FROM WHICH THE INTERSECTION OF SAID NORTHWESTERN BOUNDARY WITH THE EASTERN BOUNDARY OF CALIFORNIA STATE HIGHWAY ROUTE NO. 1 AS SHOWN ON THAT CERTAIN MAP ENTITLED "RECORD OF SURVEY - MANABE WETLANDS RESTORATION PROJECT" FILED FOR RECORD MAY 22, 2015 IN VOLUME 123 OF MAPS, PAGE 21, SANTA CRUZ COUNTY RECORDS BEARS SOUTH 51° 10' 29" WEST 925.48 FEET DISTANT; THENCE FROM SAID POINT OF BEGINNING AND LEAVING SAID NORTHWESTERN BOUNDARY OF THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION NORTH 21° 38' 53" WEST 641.87 FEET TO THE SOUTHERN BOUNDARY OF MANABE OW ROAD, A CITY STREET 78 FEET WIDE, AS CONVEYED TO THE CITY OF WATSONVILLE, A MUNICIPAL CORPORATION BY GRANT DEED RECORDED SEPTEMBER 1, 2016 AT 7:47 AM IN DOCUMENT NO. 2016- 0032795 OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE ALONG SAID SOUTHERN BOUNDARY THEREOF SOUTH 68° 21' 07" WEST 392.77 FEET TO A POINT OF CURVATURE; THENCE ALONG A TANGENT CURVE TO THE LEFT WITH A RADIUS OF 627.00 FEET, THROUGH A CENTRAL ANGLE OF 14° 53' 18" AND AN ARC LENGTH OF 162.93 FEET TO THE END OF SAID CURVE; THENCE LEAVING SAID MANABE OW ROAD SOUTH 29° 28' 42" EAST 766.89 FEET TO THE INTERSECTION WITH THE HEREINABOVE DESCRIBED NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION; THENCE ALONG SAID NORTHWESTERN BOUNDARY THEREOF NORTH 51° 10' 29" EAST 470.37 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION.

THIS LEGAL DESCRIPTION IS MADE PURSUANT TO THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED JULY 24, 2018, AS INSTRUMENT NO. 2018-022648 OF OFFICIAL RECORDS.

PARCEL 3:

SITUATE IN THE CITY OF WATSONVILLE, COUNTY OF SANTA CRUZ, STATE OF CALIFORNIA AND

BEING A PORTION OF THE LANDS CONVEYED TO OW FAMILY-OHLONE PARKWAY, LLC , A CALIFORNIA LIMITED LIABILITY COMPANY, BY GRANT DEED RECORDED OCTOBER 13, 2015 AT 11:28 AM IN DOCUMENT NO. HYPERLINK "https://docs.clarityfirst.com/meta/index?m=ff1877e0-016d-4b55-bc91-a8998e85a21a&q=q7WmzVDH640n1ptZlJogyYeyptH4GTjjaHRy9FkwhuuKqo%3d&h=9b9e526b-1058-47ef-90d4-a4e1095cff1"2015-0041365 OFFICIAL RECORDS OF SANTA CRUZ COUNTY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION BY QUITCLAIM DEED RECORDED OCTOBER 12, 2012 AT 8:36 AM IN DOCUMENT NO. 2012-0050154 OFFICIAL RECORDS OF SANTA CRUZ COUNTY FROM WHICH THE INTERSECTION OF SAID NORTHWESTERN BOUNDARY WITH THE EASTERN BOUNDARY OF CALIFORNIA STATE HIGHWAY ROUTE NO. 1 AS SHOWN ON THAT CERTAIN MAP ENTITLED "RECORD OF SURVEY - MANABE WETLANDS RESTORATION PROJECT" FILED FOR RECORD MAY 22, 2015 IN HYPERLINK "https://docs.clarityfirst.com/meta/index?m=ff1877e0-016d-4b55-bc91-a8998e85a21a&q=q7WmzVDH640n1ptZlJogyXtvIAWUrdIWNfpCcfvbJL0%3d&h=90327197-b699-4a7f-9edc-c72eb77b9565"2012-0050154 OFFICIAL RECORDS OF SANTA CRUZ COUNTY FROM WHICH THE INTERSECTION OF SAID NORTHWESTERN BOUNDARY WITH THE EASTERN BOUNDARY OF CALIFORNIA STATE HIGHWAY ROUTE NO. 1 AS SHOWN ON THAT CERTAIN MAP ENTITLED "RECORD OF SURVEY - MANABE WETLANDS RESTORATION PROJECT" FILED FOR RECORD MAY 22, 2015 IN HYPERLINK "https://docs.clarityfirst.com/meta/index?m=ff1877e0-016d-4b55-bc91-a8998e85a21a&q=q7WmzVDH640n1ptZlJogybiCj38y6oeajoufPRIZ3XE%3d&h=428b5998-34c7-422e-837a-416ad648abf7"VOLUME 123 OF MAPS, PAGE 21, SANTA CRUZ COUNTY RECORDS BEARS SOUTH 51° 10' 29" WEST 925.48 FEET DISTANT; THENCE FROM SAID POINT OF BEGINNING AND LEAVING SAID NORTHWESTERN BOUNDARY OF THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION NORTH 21° 38' 53" WEST 641.87 FEET TO THE SOUTHERN BOUNDARY OF MANABE OW ROAD, A CITY STREET 78 FEET WIDE, AS CONVEYED TO THE CITY OF WATSONVILLE, A MUNICIPAL CORPORATION BY GRANT DEED RECORDED SEPTEMBER 1, 2016 AT 7:47 AM IN DOCUMENT NO. HYPERLINK "https://docs.clarityfirst.com/meta/index?m=ff1877e0-016d-4b55-bc91-a8998e85a21a&q=q7WmzVDH640n1ptZlJogydpT8uccyptvd0SrE7lk2RDLfk%3d&h=d513f7a6-b843-4a54-ab5b-f8e2ddd87c04"2016- HYPERLINK "https://docs.clarityfirst.com/meta/index?m=ff1877e0-016d-4b55-bc91-a8998e85a21a&q=q7WmzVDH640n1ptZlJogydpT8uccyptvd0SrE7lk2RDLfk%3d&h=d513f7a6-b843-4a54-ab5b-f8e2ddd87c04"0032795 OFFICIAL RECORDS OF SANTA CRUZ COUNTY; THENCE ALONG SAID SOUTHERN BOUNDARY THEREOF NORTH 68° 21' 07" EAST 632.96 FEET TO A POINT OF CURVATURE; THENCE ALONG A NON-TANGENT CURVE TO THE RIGHT WITH A RADIAL BEARING OF SOUTH 12° 47' 23" EAST, A RADIUS OF
55.50 FEET, THROUGH A CENTRAL ANGLE OF 37° 09' 23" AND AN ARC LENGTH OF 35.99 FEET TO THE END OF SAID CURVE; THENCE LEAVING SAID CURVE SOUTH 65° 38' 00" EAST 5.34 TO THE WESTERN BOUNDARY OF OHLONE PARKWAY, A CITY STREET 110 FEET WIDE) AS SHOWN ON THE ABOVE SAID RECORD OF SURVEY MAP; THENCE LEAVING MANABE OW ROAD AND ALONG SAID WESTERN BOUNDARY OF OHLONE PARKWAY SOUTH 22° 12' 23" EAST 414.00 FEET TO THE INTERSECTION WITH THE HEREINABOVE DESCRIBED NORTHWESTERN BOUNDARY OF THE LANDS CONVEYED TO THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION; THENCE ALONG SAID NORTHWESTERN BOUNDARY THEREOF SOUTH 51° 10' 29" WEST 703.47 FEET TO THE POINT OF BEGINNING OF THIS DESCRIPTION.

THIS LEGAL DESCRIPTION IS MADE PURSUANT TO THAT CERTAIN CERTIFICATE OF COMPLIANCE RECORDED JULY 24, 2018, AS INSTRUMENT NO. 2018-022649 OF OFFICIAL RECORDS.

PROJECT TEAM

ARCHITECT OF RECORD
RYAN A+E, INC.
4275 EXECUTIVE SQUARE, SUITE 370
LA JOLLA, CA
PHONE: (858) 812-7910
LORI JOHNSON
Lori.Johnson@RyanCompanies.com

CIVIL ENGINEER
BOWMAN & WILLIAMS CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073
PHONE: (831) 426-3560
JOEL RICCA
Joel@bowmanandwilliams.com

LANDSCAPE ARCHITECT
SSA LANDSCAPE ARCHITECTS, INC.
303 POTRERO ST., SUITE 40-C
SANTA CRUZ, CA 95060
PHONE: (831) 459-0455
CHRISTIAN HARRIS
christian@ssala.com

ELECTRICAL
KRAEMER CONSULTING ENGINEERS, P.L.L.C.
2050 WEST WHISPERING WIND DR., SUITE 158
PHOENIX, AZ 85085
PHONE: (602) 285-1669
JAMES JONES, JR.
jj@kraemereng.com

OWNER
LONE OAK-WATSONVILLE, L.L.C
6250 NORTH RIVER ROAD
ROSEMONT, IL 60018
(847) 430-9766
PEHR PETERSON
PAPeterson@reyesholdings.com

DESIGN/BUILDER
RYAN COMPANIES US, INC.
4275 EXECUTIVE SQUARE, SUITE 370
LA JOLLA, CA
PHONE: (858) 812-7910
MICHAEL BEADLE
Michael.Beadle@RyanCcompanies.com

PROJECT MANAGER
RYAN COMPANIES US, INC.
533 SOUTH THIRD STREET, SUITE 100
MINNEAPOLIS, MN 55415
PHONE: (612) 492-4679
MARK SHEFCHIK
Mark.Shefchik@RyanCompanies.com

RYAN A+E, INC.
4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
858-812-7930 fax

WWW.RYANCOMPANIES.COM

OWNER

CONSULTANTS

SSA LANDSCAPE ARCHITECTS creating better places

BOWMAN & WILLIAMS CONSULTING CIVIL ENGINEERS & LAND SURVEYORS

Kraemer Consulting Engineers, PLLC.
Mechanical and Electrical Engineers
2050 West Whispering Wind Dr. - Suite 158
Phoenix, Arizona 85085-2864
(602) 285-1669
(602) 285-84450 - fax
JOB #

PROJECT INFORMATION

Lone Oak-Watsonville, L.L.C.

WATSONVILLE, CA 95076

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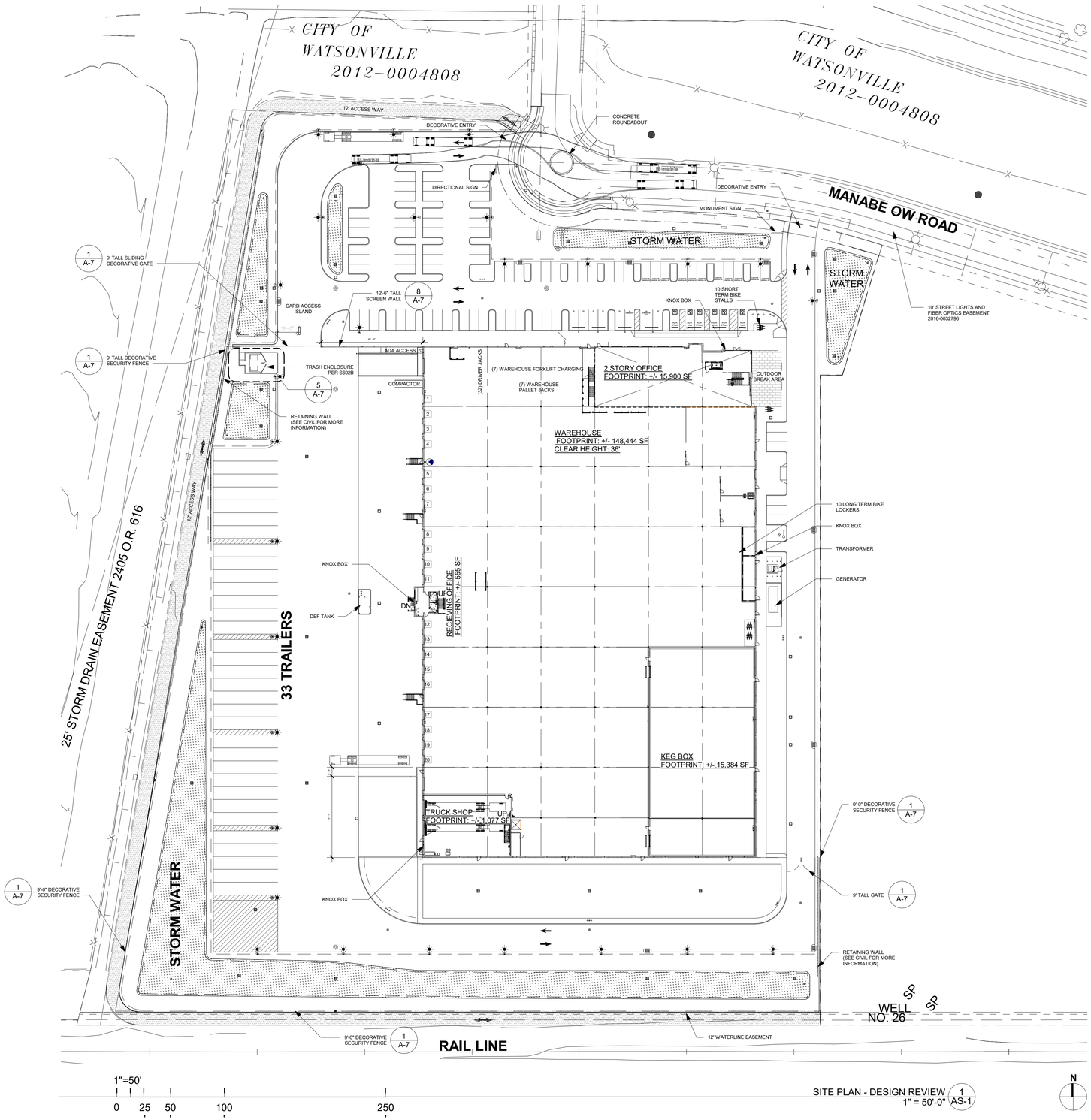
2022.07.15

TITLE SHEET

G-1



PROJECT INFORMATION

ASSESSOR'S PARCEL NUMBER:	**018-711-33**
ZONING:	**MANABE OW SPECIFIC PLAN IL -INDUSTRIAL**
LEGAL DESCRIPTION:	**REFER TO TITLE SHEET**
PROJECT DESCRIPTION:	± 11.5 AC OF THE TOTAL SITE WILL BE DEVELOPED FOR A NEW DISTRIBUTION FACILITY. THE BUILDING IS ±156,200 SF. THERE WILL BE A ±7,950 SF MEZZANINE FOR THE OFFICE. NEW LANDSCAPING, NEW PARKING, NEW SITE LIGHTING, NEW STORM WATER DETENTION. 9'-0" TALL SECURITY FENCING WILL BE PLACED AROUND THE TRUCK COURT.
CURRENT LAND USE:	**VACANT COMMERCIAL LAND LOCATED IN THE MANABE OW SPECIFIC PLAN AREA. SITE IS DESIGNATED AS BUSINESS PARK WITH INDUSTRIAL USE.**
PROPOSED LAND USE:	**INDUSTRIAL USE WAREHOUSE AND DISTRIBUTION**
LANDSCAPE AREA:	**103,334 SQ.FT.** **103,334 SQ.FT. / 502,351.6 SQ.FT = 21%**

SITE SUMMARY:

GROSS SITE AREA:	**+/- 502,351.6 SQ.FT. (11.5 ACRES)**
DETENTION AREA:	**+/- 59,000 SQ.FT. (@ 8.5%)**
DRIVE AISLE AREA:	**+/- 492,284.7 SQ.FT.**

FAR CALCULATION:

BUILDING FOOTPRINT:	**+/- 147,379 SQ.FT. (@25.8%)**
MEZZANINE:	**+/- 9,582 SQ.FT.**
TOTAL BUILDING AREA:	**+/- 156,961 SQ.FT.**
	FAR = G/B
	FAR = 502,351.6 / 158,026
	FAR = .31

BUILDING SUMMARY:

BUILDING TYPE:	**TYPE IIIB FULLY SPRINKLERED ESFR**
BUILDING OCCUPANCY:	**PRIMARY S-2 ACCESSORY S-1, B, A**
	UNLIMITED BUILDING AREA PER CBC 507

PARKING SUMMARY:

AUTO STALLS REQUIRED:

OFFICE:
0 TO 20,000 SQUARE FEET FLOOR AREA, 1 SPACE FOR EACH 300 SF FLOOR AREA, PLUS 1 SPACE FOR EACH 500 SF FLOOR AREA IN EXCESS OF 20,000 SQUARE FEET = 53 STALLS

WAREHOUSE:
5 SPACES, PLUS 1 SPACE FOR EACH EMPLOYEE ON THE SHIFT WITH THE MAXIMUM NUMBER OF PERSONNEL = 40 STALLS

TOTAL REQUIRED = 93 STALLS

TRUCK DOCKS PROVIDED:		**20 STALLS**
TRAILER STALL PROVIDED:		**33 TRAILERS**
TRAILER BAY:		**2 STALLS**
GRADE DOORS:		**6**
AUTO STALLS PROVIDED:		**93 STALLS @ .7/1000**
BICYCLE STALLS PROVIDED: RACKS	**REQUIRED: 9**	**PROVIDED: 10**
LONG TERM LOCKERS	**REQUIRED: 9**	**PROVIDED: 10**
ADA STALLS:	**REQUIRED: 7**	**PROVIDED: 8**
EV STALLS:	**REQUIRED: 10**	**PROVIDED: 10**
CLEAN AIR/VANPOOL/EV STALLS:	**REQUIRED: 16**	**PROVIDED: 16**

EMPLOYEE SCHEDULE:

DELIVERY - GROUP A	**8**	**MONDAY THRU FRIDAY**	**4:00AM TO 1:00PM**
DELIVERY - GROUP B	**8**	**MONDAY THRU FRIDAY**	**5:30AM TO 2:30PM**
DELIVERY - GROUP C	**8**	**MONDAY THRU FRIDAY**	**7:00AM TO 4:00PM**
WAREHOUSE - DAY	**6**	**MONDAY THRU FRIDAY**	**5:00AM TO 2:00PM**
WAREHOUSE - SWING	**3**	**MONDAY THRU FRIDAY**	**11:00AM TO 8:00PM**
WAREHOUSE - NIGHT	**15**	**SUNDAY THRU THURSDAY**	**6:00PM TO 4:00AM**
SALES	**25**	**N/A**	**N/A**
ADMIN	**2**	**MONDAY THRU FRIDAY**	**8:00AM TO 5:00PM**

GENERAL NOTES:

1. ALL GATES WILL REQUIRE THE INSTALLATION OF KNOX OVERRIDE SWITCHES.
2. EMERGENCY RESPONDER RADIO COVERAGE SYSTEM WILL BE REQUIRED.
3. ALL FIRE HYDRANTS WILL BE PRIVATE HYDRANTS AND WILL BE PAINTED SAFETY RED AND MAINTAINED IN ACCORDANCE WITH NFPA 20 & 24.
4. CLASS I STANDPIPES SHALL BE INSTALLED.
5. NO TRUCK WASHING WILL BE PERFORMED ON SITE, NO SEWER ALLOWED IN TRUCK AREA.

RYAN

RYAN A+E, INC.
4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
858-812-7930 fax

WWW.RYANCOMPANIES.COM

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SSA LANDSCAPE ARCHITECTS creating better places

BOWMAN & WILLIAMS CONSULTING CIVIL ENGINEERS & LAND SURVEYORS

Kraemer Consulting Engineers, PLLC.
Mechanical and Electrical Engineers
7502 E. Monterosa Mesa Dr. - Suite 156
Phoenix, Arizona 85020-2864
(602) 285-1669
(602) 285-94450 - fax
JOB #

PROJECT INFORMATION

Lone Oak-Watsonville, L.L.C.

WATSONVILLE, CA 95076

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JOB NO. 701-048	**DATE** 2022-07-15

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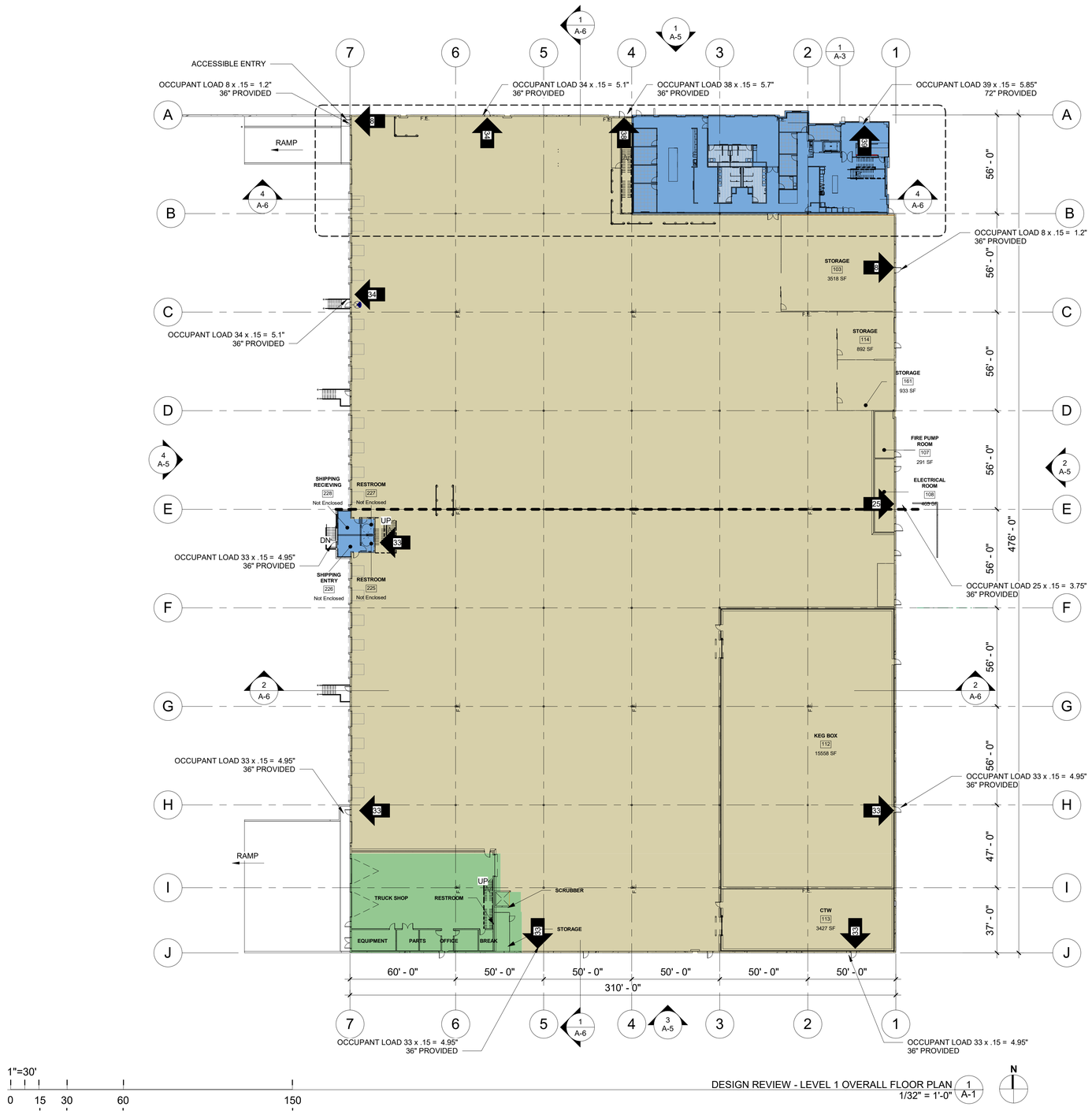
DESIGN REVIEW RESUBMITTAL
2022.07.15

SITE PLAN

AS-1



1"=30'
0 15 30 60 150

DESIGN REVIEW - LEVEL 1 OVERALL FLOOR PLAN 1/32" = 1'-0" (1 A-1)

N

OCCUPANCY

OCCUPANCY		FLOOR AREA
	BUSINESS AREAS (B)	150 GROSS
	ASSEMBLY (A-2)(A-3) NO FIXED SEATING - CONCENTRATED (CHAIRS)	7 NET
	- STANDING SPACE	5 NET
	- UNCONCENTRATED	15 NET
	ASSEMBLY (A-5) NO FIXED SEATING	15 NET
	STORAGE (ACCESSORY) (S-1)	500 GROSS
	STORAGE (S-2)	500 GROSS
	CIRCULATION	N.O.
	VERTICAL CIRCULATION	N.O.

TRAVEL DISTANCE

EXIT ACCESS TRAVEL DISTANCE PER:

WITH SPRINKLERS:

OCCUPANCY		MAX. TRAVEL DISTANCE
BUSINESS AREAS	(B)	300'
ASSEMBLY: NO FIXED SEATING (A-2)		250'
STORAGE: ACCESSORY	(S-1)	400'
STORAGE	(S-2)	400'
UTILITY / MISC. SERVICES	(U-1)	400'

EGRESS

- 1 — NUMBER OF OCCUPANTS EXITING FROM ANOTHER LEVEL
- 50 — COMBINED NUMBER OF OCCUPANTS EXITING FROM SMALLER SPACE INTO LARGER SPACE
- 50 — NUMBER OF OCCUPANTS EXITING FROM SPACE
- 50 — NUMBER OF OCCUPANTS UTILIZING EXITING FROM SPACE
- INDICATES EGRESS PATH
- INDICATES EGRESS EXIT

OCCUPANCY LOAD 1ST FLOOR

Rm. No.	Name	Occupancy Type	Area	S.F. Per Person	Persons
103	STORAGE		3518 SF		
106	RE-PACK		Not Placed		
107	FIRE PUMP ROOM		291 SF		
108	ELECTRICAL ROOM		463 SF		
112	KEG BOX		15558 SF		
113	CTW		3427 SF		
114	STORAGE		892 SF		
115	DRAFT		Not Placed		
116	TRUCK SHOP		4523 SF		
117	STORAGE		192 SF		
118	WAREHOUSE		Not Placed		
118	WAREHOUSE		114836 SF		
119	RESTROOM 01		68 SF		
120	WOMEN'S RESTROOM		Not Placed		
120	RESTROOM 02		68 SF		
121	SHIPPING & RECEIVING OFFICE		303 SF		
122	DRIVERS OFFICE		Not Placed		
127	WAREHOUSE	S-1	Not Placed	500	
139	FIRE RISER ROOM		Not Placed	100	
140	ELECTRICAL ROOM		Not Placed	100	
141	DRAFT	S-2	Not Placed	500	
142	RE-PACK	S-2	Not Placed	500	
153	ELEVATOR		Not Placed		
153	ELEVATOR		55 SF		
154	MECH.		Not Placed		
154	PANEL ROOM		29 SF		
155	MECH ROOM		Not Placed		
155	DRAFT		Not Placed		
156	FUTURE OFFICE		Not Placed		
156	BIKE LOCKER		Not Placed		
156	BIKE LOCKER		238 SF		
157	SCRUBBER		64 SF		
158	WAREHOUSE		Not Placed		
160	ELEVATOR		Not Placed		
160	ELEVATOR		55 SF		
161	STORAGE		933 SF		
162	SHIPPING & RECEIVING OFFICE		454 SF		
250	SCRUBBER	B	121534 SF	100	1215
					1215

RYAN

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La Jolla, CA 92037
858-812-7910 tel
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7502 E. Monterosa Mesa Dr., Suite 156
Phoenix, Arizona 85020-2864
(602) 285-1669
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JOB #

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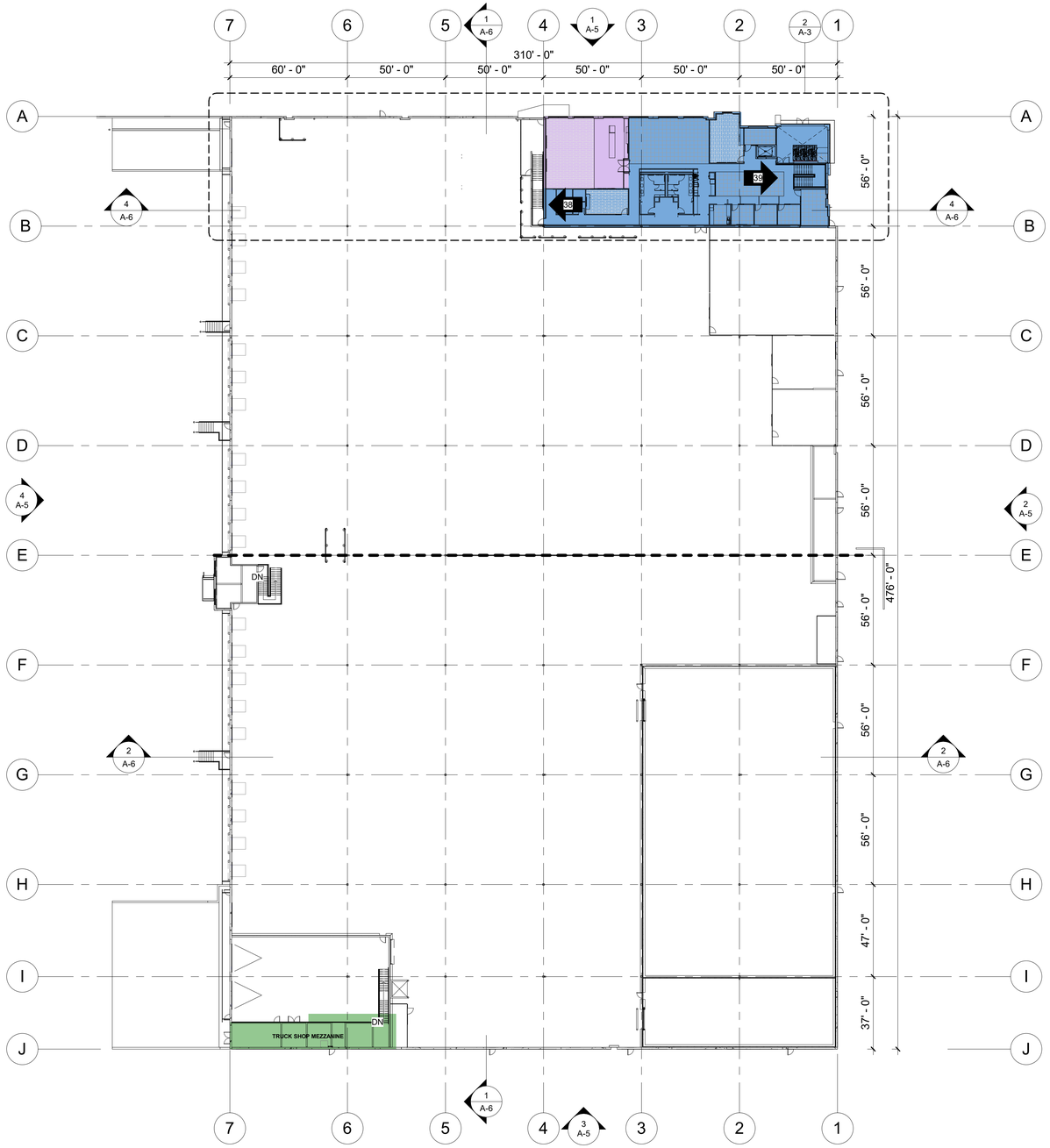
FLOOR PLAN

A-1



1"=30'

0 15 30 60 150

DESIGN REVIEW - MEZZANINE PLAN 1 A-2
1/32" = 1'-0"

N

OCCUPANCY

OCCUPANCY	FLOOR AREA
BUSINESS AREAS (B)	150 GROSS
ASSEMBLY (A-2)(A-3) NO FIXED SEATING - CONCENTRATED (CHAIRS)	7 NET
- STANDING SPACE	5 NET
- UNCONCENTRATED	15 NET
ASSEMBLY (A-5) NO FIXED SEATING	15 NET
STORAGE (ACCESSORY) (S-1)	500 GROSS
STORAGE (S-2)	500 GROSS
CIRCULATION	N.O.
VERTICAL CIRCULATION	N.O.

TRAVEL DISTANCE

EXIT ACCESS TRAVEL DISTANCE PER:

WITH SPRINKLERS:

OCCUPANCY		MAX. TRAVEL DISTANCE
BUSINESS AREAS	(B)	300'
ASSEMBLY: NO FIXED SEATING (A-2)		250'
STORAGE: ACCESSORY	(S-1)	400'
STORAGE	(S-2)	400'
UTILITY / MISC. SERVICES	(U-1)	400'

EGRESS

1 NUMBER OF OCCUPANTS EXITING FROM ANOTHER LEVEL

50 COMBINED NUMBER OF OCCUPANTS EXITING FROM SMALLER SPACE INTO LARGER SPACE

50 NUMBER OF OCCUPANTS EXITING FROM SPACE

50 NUMBER OF OCCUPANTS UTILIZING EXITING FROM SPACE

INDICATES EGRESS PATH

INDICATES EGRESS EXIT

Occupancy Tabulation Per 2003 IBC Table 1004.12 MEZZ LEVEL

Rm. No.	Name	Room Occupancy	Occupancy Type	Area	S.F. Per Person	Persons
250	SCRUBBER	Business Areas	B	121534 SF	100	1215
						1215

RYAN

RYAN A+E, INC.
4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
858-812-7930 fax

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Kraemer Consulting Engineers, PLLC.
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7272 E. Indian School Road Trk - Suite 150
Phoenix, Arizona 85251-2864
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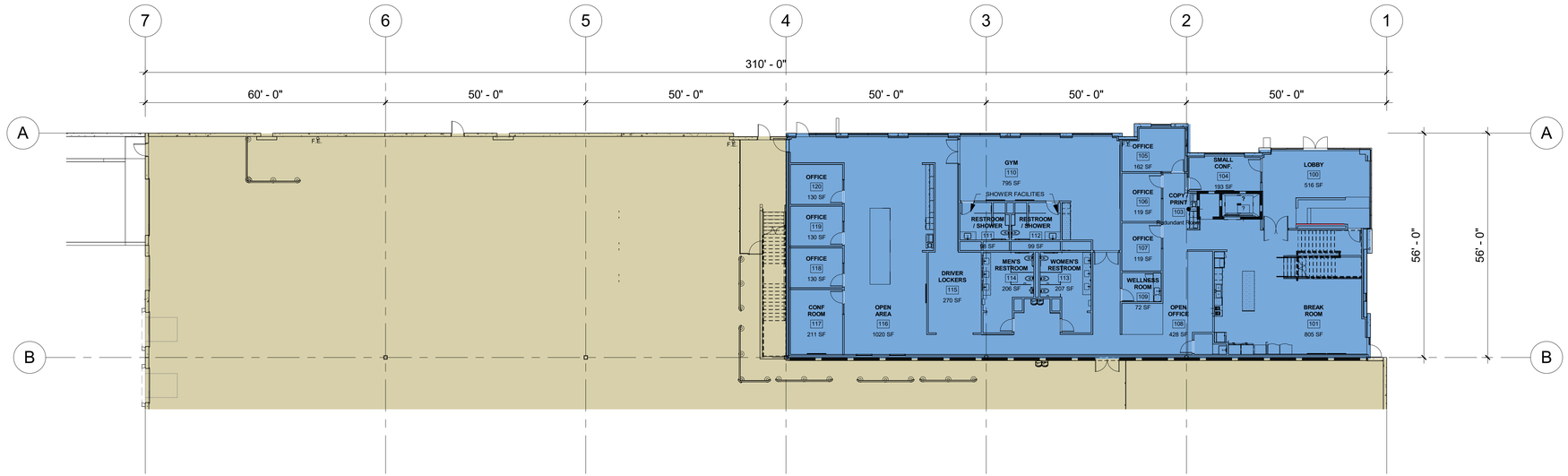
MEZZANINE PLAN

A-2

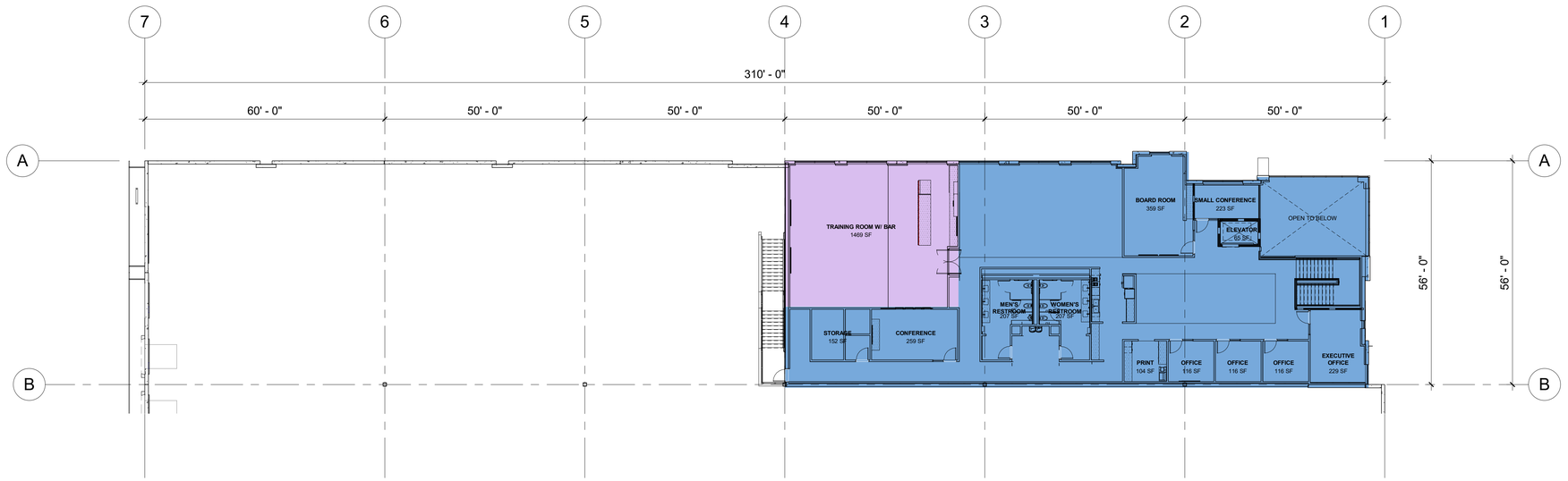


1/16"=1'-0"

0 8' 16' 32 64

DESIGN REVIEW - LEVEL 1 ENLARGED PLAN 1 / A-3
1/16" = 1'-0"

N



1/16"=1'-0"

0 8' 16' 32 64

DESIGN REVIEW - MEZZANINE ENLARGED PLAN 2 / A-3
1/16" = 1'-0"

N

OCCUPANCY

OCCUPANCY	FLOOR AREA
BUSINESS AREAS (B)	150 GROSS
ASSEMBLY (A-2)(A-3) NO FIXED SEATING - CONCENTRATED (CHAIRS)	7 NET
- STANDING SPACE	5 NET
- UNCONCENTRATED	15 NET
ASSEMBLY (A-5) NO FIXED SEATING	15 NET
STORAGE (ACCESSORY) (S-1)	500 GROSS
STORAGE (S-2)	500 GROSS
CIRCULATION	N.O.
VERTICAL CIRCULATION	N.O.

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RYAN A+E, INC.
4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
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Mechanical and Electrical Engineers
7502 E. Monterosa Mesa Dr., Suite 156
Phoenix, Arizona 85020-2864
(602) 285-1669
(602) 285-04052 - fax
JOB #

PROJECT INFORMATION

Lone Oak-Watsonville, L.L.C.

WATSONVILLE, CA 95076

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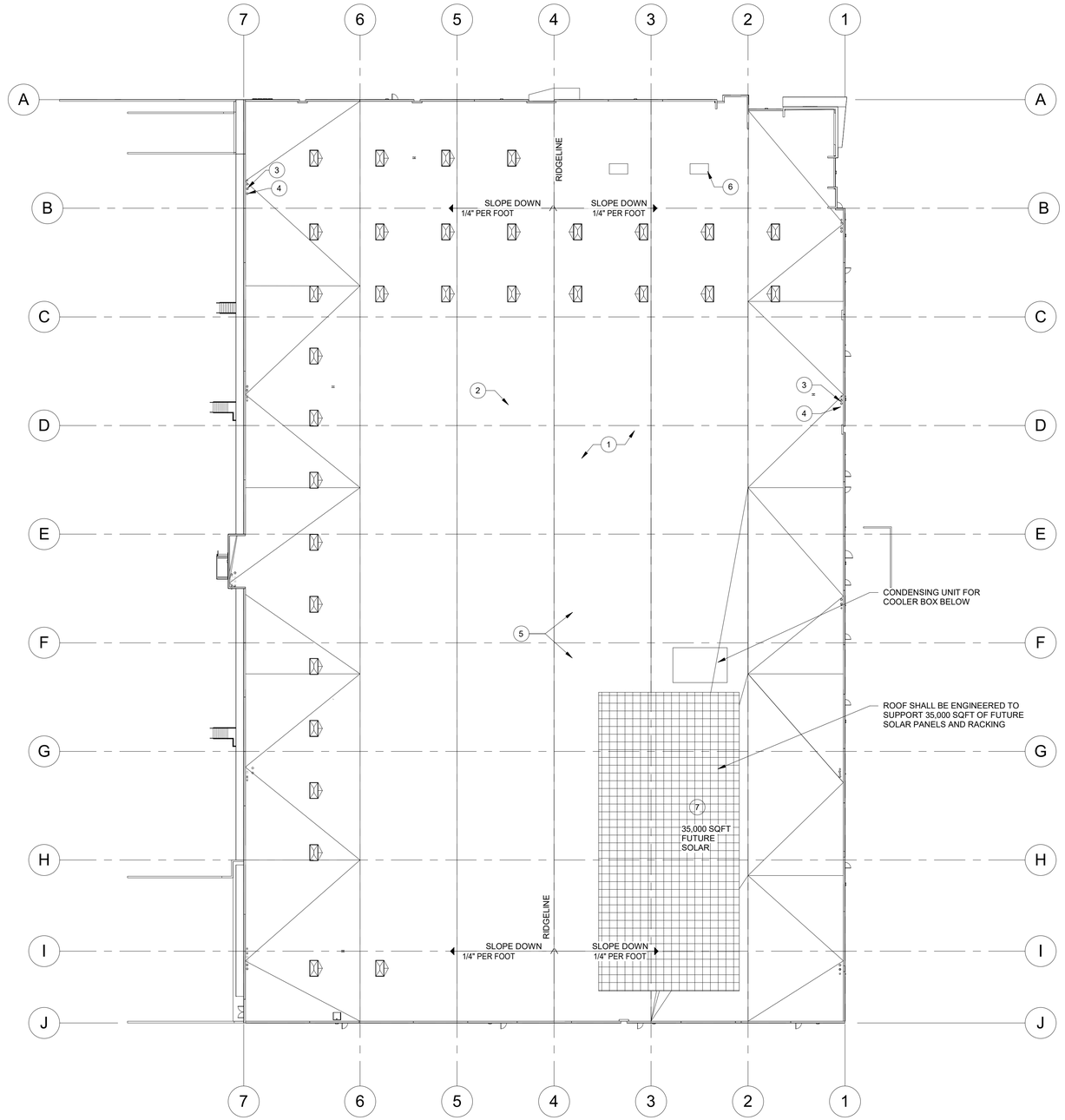
ENLARGED FLOOR PLANS

A-3



1"=30'

0 15 30 60 150

DESIGN REVIEW - ROOF PLAN (1 / A-4)
1/32" = 1'-0"

N

GENERAL NOTES

1. REFER TO STRUCTURAL DRAWINGS FOR SLAB ON GRADE CONSTRUCTION, CONTROL AND ISOLATION JOINTS.
2. COORDINATE UNDERGROUND AND UNDER SLAB UTILITIES WITH RELEVANT TRADES PRIOR TO SLAB POUR. COORDINATE ALL SLEEVES THROUGH/UNDER FOOTING AND FOUNDATION W/ STRUCTURAL ENGINEER.
3. ALL WALLS TO ROOF DECK TO BE CONSTRUCTED TO ACCOMMODATE DEFLECTION OF ROOF STRUCTURE.
4. REFER TO STRUCTURAL ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION PERTAINING TO STRUCTURAL COMPONENT SIZES, LOCATIONS, CONFIGURATIONS, AND CAPACITIES.
5. STAIR SUPPLIER SHALL BE RESONSIBLE FOR CODE COMPLIANCE AND STRUCTURAL INTEGRITY FOR ALL MATERIALS FURNISHED.
6. PROVIDE FIRE EXTINGUISHERS OF SIZE AND TYPE AND LOCATION AS REQUIRED BY THE FIRE MARSHALL.
7. ROOFING SYSTEM TO BE 60-MIL TPO MECHANICALLY FASTENED ROOFING SYSTEM OVER 1/2" RETRO-FIT BOARD AND 2 LAYERS OF 2½" POLY ISO INSULATION (R-30).
8. ALL EQUIPMENT SHOWN FOR REFERENCE ONLY. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR EXACT EQUIPMENT, SIZE AND LOCATION.

DIMENSIONS:

1. SUBCONTRACTOR TO VERIFY DIMENSIONS AND CONDITIONS SHOWN ON THESE DRAWINGS ANY OMISSIONS, DISCREPANCIES, OR CONFLICTS MUST BE REPORTED TO THE DESIGN BUILD IMMEDIATELY.
2. DIMENSIONS ARE AT 3'-0" ABOVE FINISHED FLOOR AND FROM FACE OF FINISHED PARTITION UNLESS NOTED OTHERWISE.
3. DRAWINGS SHOULD NOT BE SCALED - DIMENSIONS GOVERN. LARGE SCALE DRAWINGS GOVERN OVER SMALL SCALE DRAWINGS.
4. DIMENSIONS AT EXTERIOR WALLS ARE TAKEN TO EXTERIOR FACE OF CONCRETE WALL OR TO EXTERIOR SIDE OF SHEATHING UNLESS NOTED OTHERWISE.
5. DIMENSIONS AT INTERIOR WALLS ARE TAKEN TO FACE OF GYP UNLESS NOTED OTHERWISE.

ROOF PLAN KEYNOTES

1. SINGLE PLY ROOF WITH REFLECTIVE MEMBRANE
2. 4'-0" x 8'-0" SKYLIGHT
3. PRIMARY ROOF DRAIN
4. SECONDARY ROOF DRAIN
5. TAPERED INSULATION CRICKET
6. MECHANICAL UNIT
7. APPX LOCATION OF FUTURE SOLAR PANELS

ADDITIONAL NOTES PER ROOF PLAN

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4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
858-812-7930 fax

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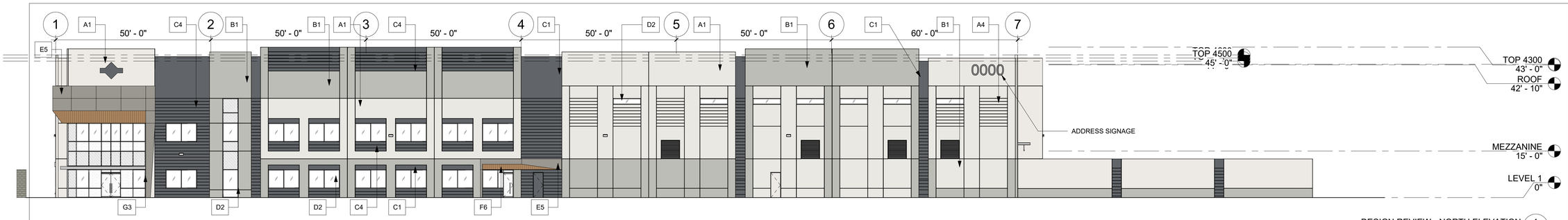
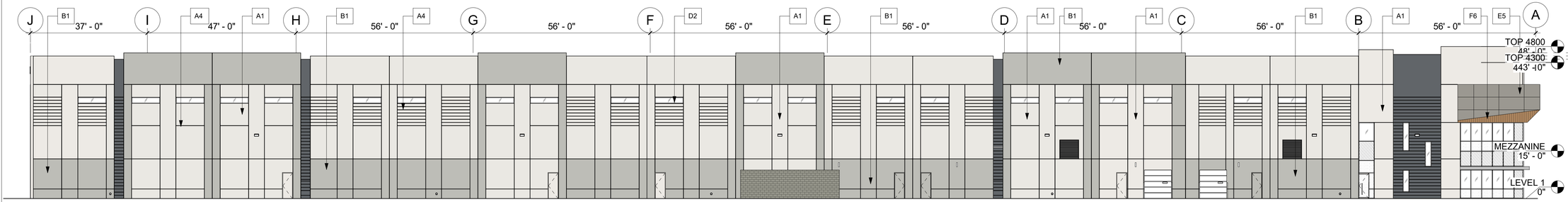
ROOF PLAN

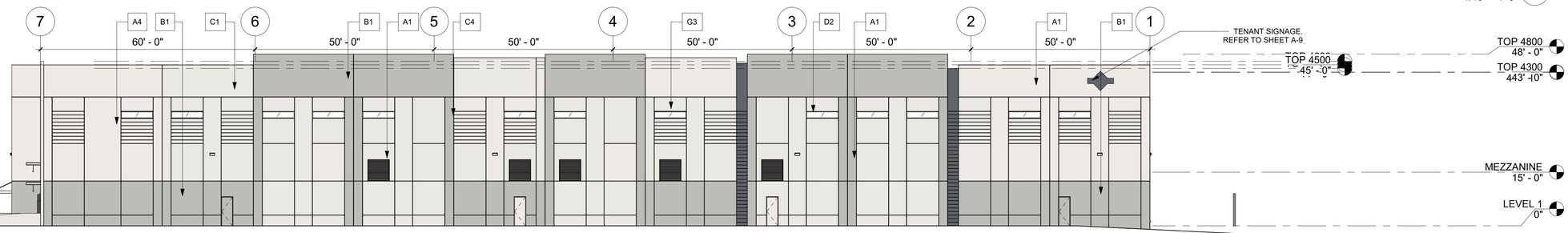
A-4



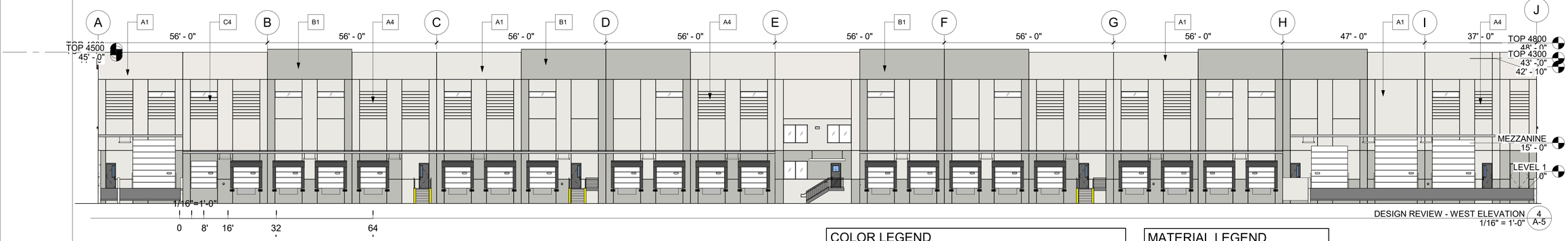
DESIGN REVIEW - NORTH ELEVATION 1/16" = 1'-0" (1 / A-5)



DESIGN REVIEW - EAST ELEVATION 1/16" = 1'-0" (2 / A-5)



DESIGN REVIEW - SOUTH ELEVATION 1/16" = 1'-0" (3 / A-5)



DESIGN REVIEW - WEST ELEVATION 1/16" = 1'-0" (4 / A-5)

COLOR LEGEND

A	PT-1 SHERWIN WILLIAMS SNOWBOUND MATTE 7004	
B	PT-2 SHERWIN WILLIAMS ARGOS MATTE 7065	
C	PT-3 SHERWIN WILLIAMS WEB GRAY MATTE 7075	
D	KAWNEER CLEAR ANODIZED ALUMINUM	
E	ALPOLIC METAL COMPOSITE MATERIAL AZZ QUARTZ ZINC	
F	ALPOLIC TIMBER SERIES TEAK 4-QBB-30 LRV N/A	
G	VITRO GLASS SOLAR BAN 60 SOLARGRAY + CLEAR	

MATERIAL LEGEND

1	TILT-UP CONCRETE
2	ALUMINUM STOREFRONT
3	1" INSULATED GLAZING
4	3/4" 'V' REVEAL
5	ALUMINUM COMPOSITE PANEL METAL FINISH
6	ALUMINUM COMPOSITE PANEL WOOD FINISH

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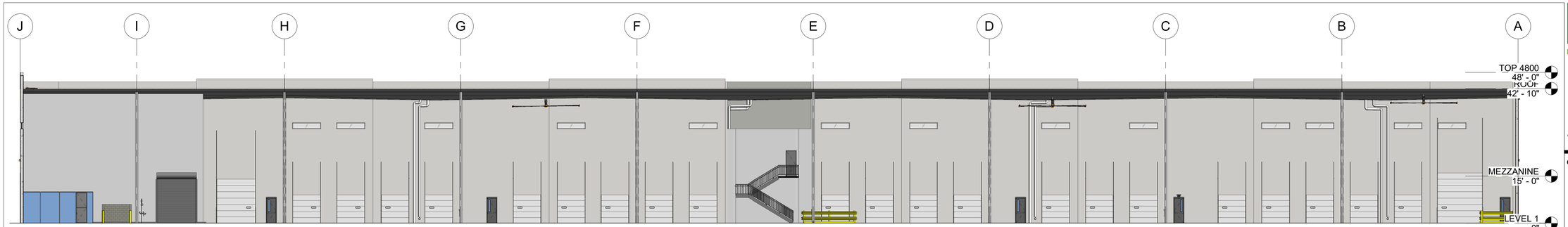
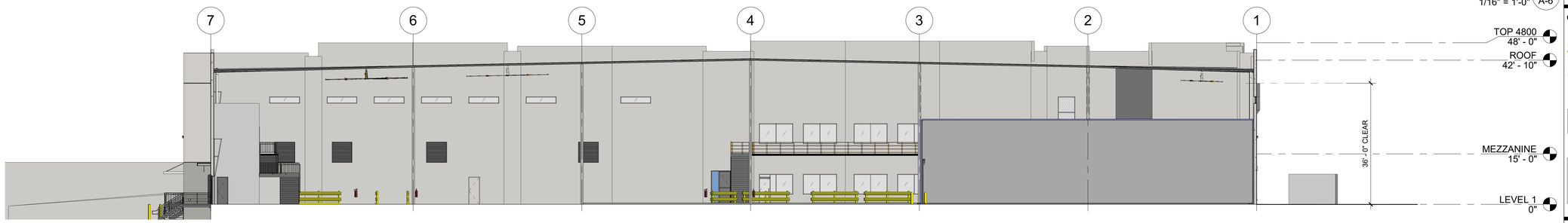
EXTERIOR ELEVATIONS

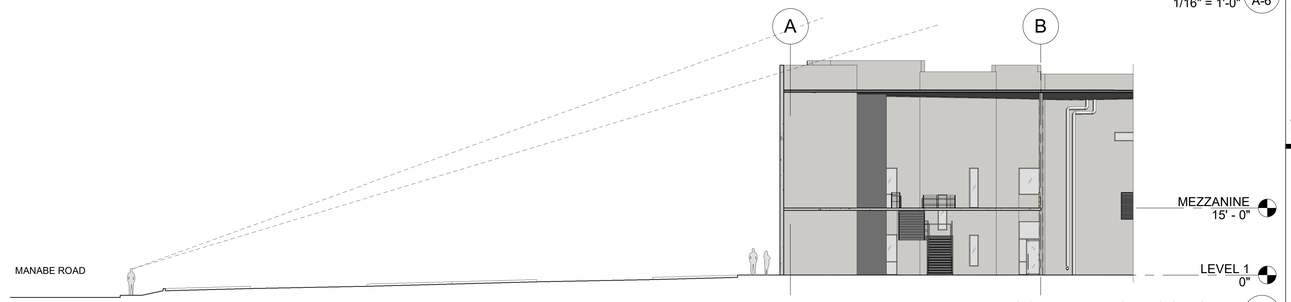
A-5



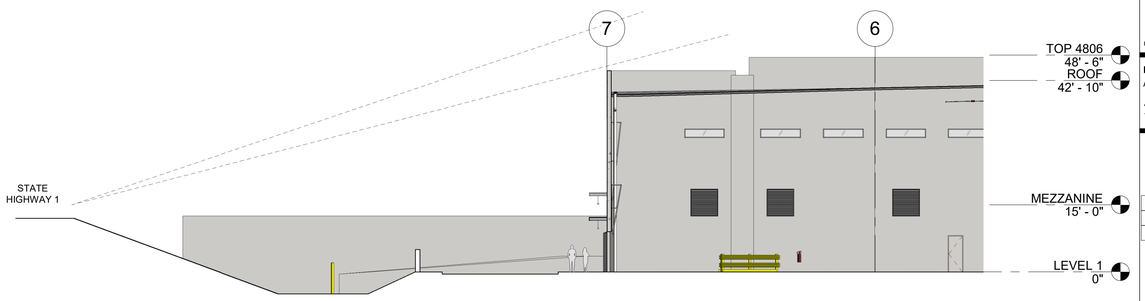
DESIGN REVIEW - N/S BUILDING SECTION 1/16" = 1'-0" (1 / A-6)



DESIGN REVIEW - E/W BUILDING SECTION 1/16" = 1'-0" (2 / A-6)



DESIGN REVIEW - NORTH SIGHT STUDY 1/16" = 1'-0" (3 / A-6)



DESIGN REVIEW - WEST SITE STUDY 1/16" = 1'-0" (4 / A-6)

1/16"=1'-0"

0 8' 16' 32 64

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4275 Executive Square, Suite 370
La Jolla, CA 92037
858-812-7910 tel
858-812-7930 fax

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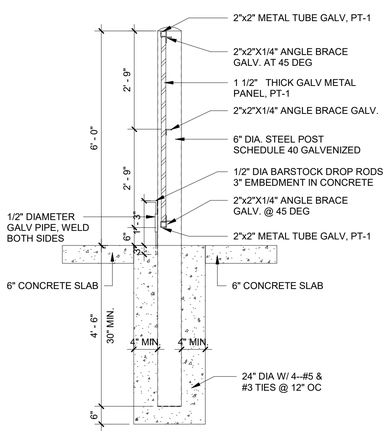
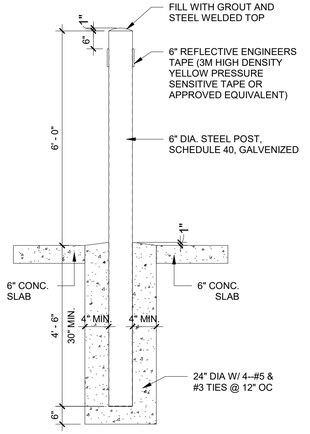
BUILDING SECTIONS

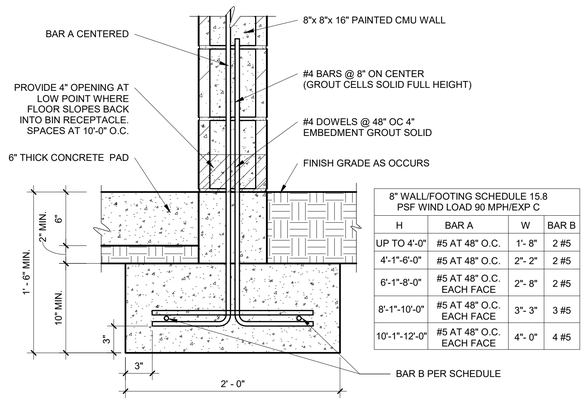
A-6



TRASH ENCLOSURE GATE DETAIL 4 A-7
1/2" = 1'-0"



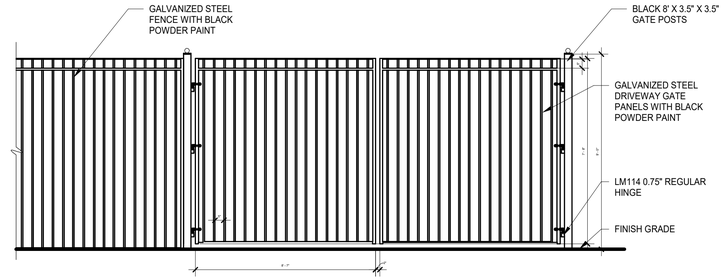
TRASH ENCLOSURE BOLLARD DETAIL 3 A-7
1/2" = 1'-0"



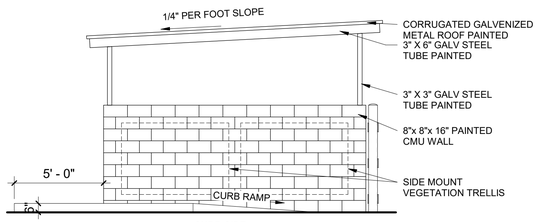
8" WALL/FOOTING SCHEDULE 15.8 PSF WIND LOAD 90 MPH/EXP C

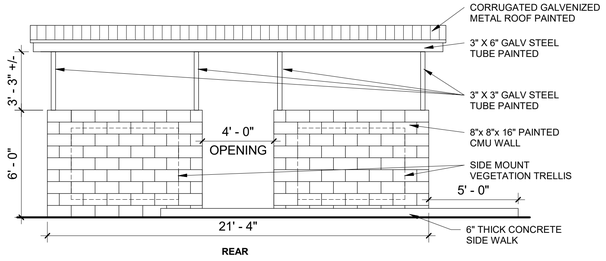
H	BAR A	W	BAR B
UP TO 4'-0"	#5 AT 48" O.C.	1'- 8"	2 #5
4'-1"-6'-0"	#5 AT 48" O.C.	2'- 2"	2 #5
6'-1"-8'-0"	#5 AT 48" O.C. EACH FACE	2'- 8"	2 #5
8'-1"-10'-0"	#5 AT 48" O.C. EACH FACE	3'- 3"	3 #5
10'-1"-12'-0"	#5 AT 48" O.C. EACH FACE	4'- 0"	4 #5

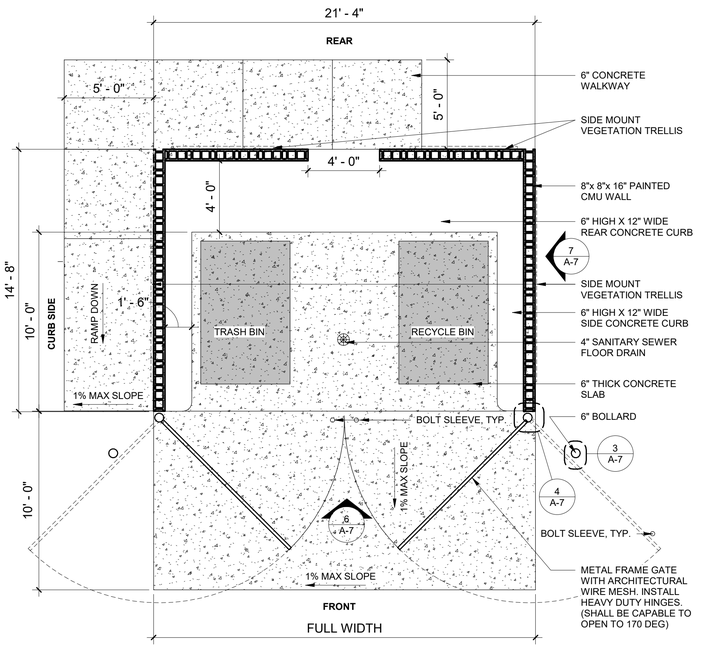
TRASH ENCLOSURE CMU WALL DETAIL 2 A-7
1 1/2" = 1'-0"



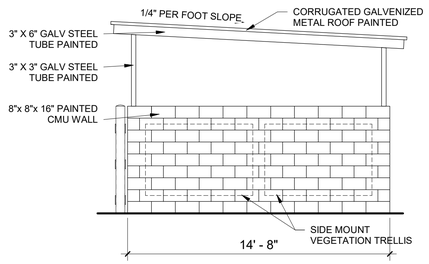
DECORATIVE FENCE/GATE 1 A-7
N.T.S.



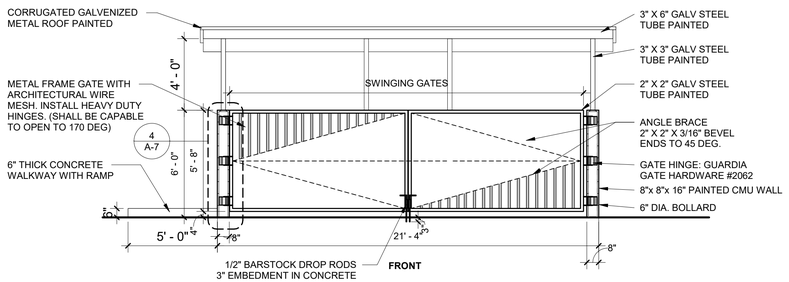




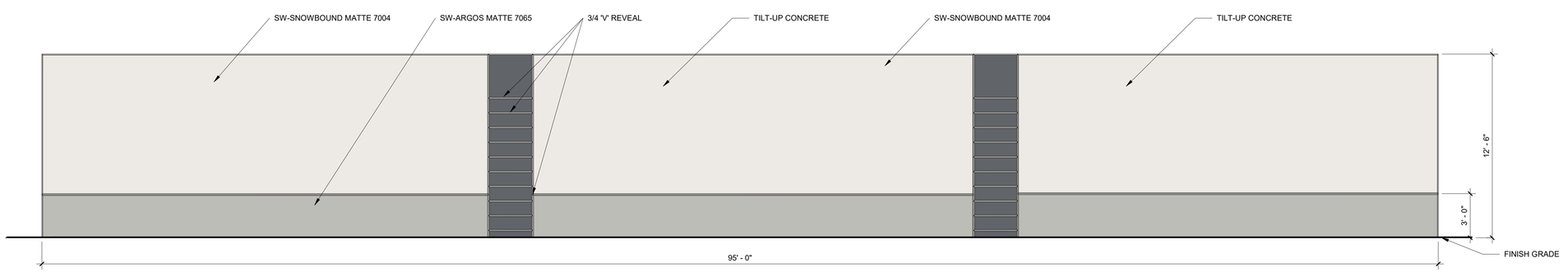
TRASH ENCLOSURE ENLARGED PLAN 5 A-7
1/4" = 1'-0"



TRASH ENCLOSURE SIDE ELEVATIONS 7 A-7
1/4" = 1'-0"



TRASH ENCLOSURE FRONT/REAR ELEVATIONS 6 A-7
1/4" = 1'-0"



SCREEN WALL 8 A-7
1/4" = 1'-0"

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La Jolla, CA 92037
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TRASH ENCLOSURE, SCREEN WALLS, AND FENCES

A-7



NORTH-EAST CORNER BUILDING PERPECTIVE 1 A-8



SOUTH-WEST CORNER BUILDING PERPECTIVE 2 A-8



NORTH BUILDING PERPECTIVE 3 A-8

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BUILDING 3D VIEWS

A-8



40.0 SQFT

FABRICATE (1) NON-ILLUMINATED WALL SIGN.
.080 ALUMINUM FACE WITH 2" RETURNS.
RAIL-MOUNTED FLUSH WITH WALL SURFACE.
PRINTED VINYL GRAPHICS.
RETURNS PAINTED BLACK.

MOUNTED ON TOP OF NORTH AND SOUTH ELEVATION PANEL,
CENTERED VERTICALLY AT BETWEEN CONCRETE PANEL JOINTS.



EXAMPLE SIGNAGE FOR REFERENCE ON EXISTING BUILDING

BUILDING SIGNAGE 1
1" = 1'-0" A-9



30.0 SQFT

FABRICATE (1) DOUBLE-FACED NON-ILLUMINATED MONUMENT SIGN.
.080 ALUMINUM FACE WITH 2" RETURNS.
STUD MOUNTED TO EXISTING MONUMENT.
PRINTED VINYL GRAPHICS.
RETURNS PAINTED BLACK.



EXAMPLE MONUMENT SIGNAGE FOR REFERENCE ON AN EXISTING BUILDING



1.4 SQFT

FABRICATE (1) SET OF ADDRESS NUMBERS.
.5" ACRYLIC PAINTED SATIN BLACK.
STUD MOUNTED TO EXISTING MONUMENT
ON STREET SIDE.

MONUMENT SIGNAGE 2
1" = 1'-0" A-9

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Mechanical and Electrical Engineers
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Phoenix, Arizona 85258-2864
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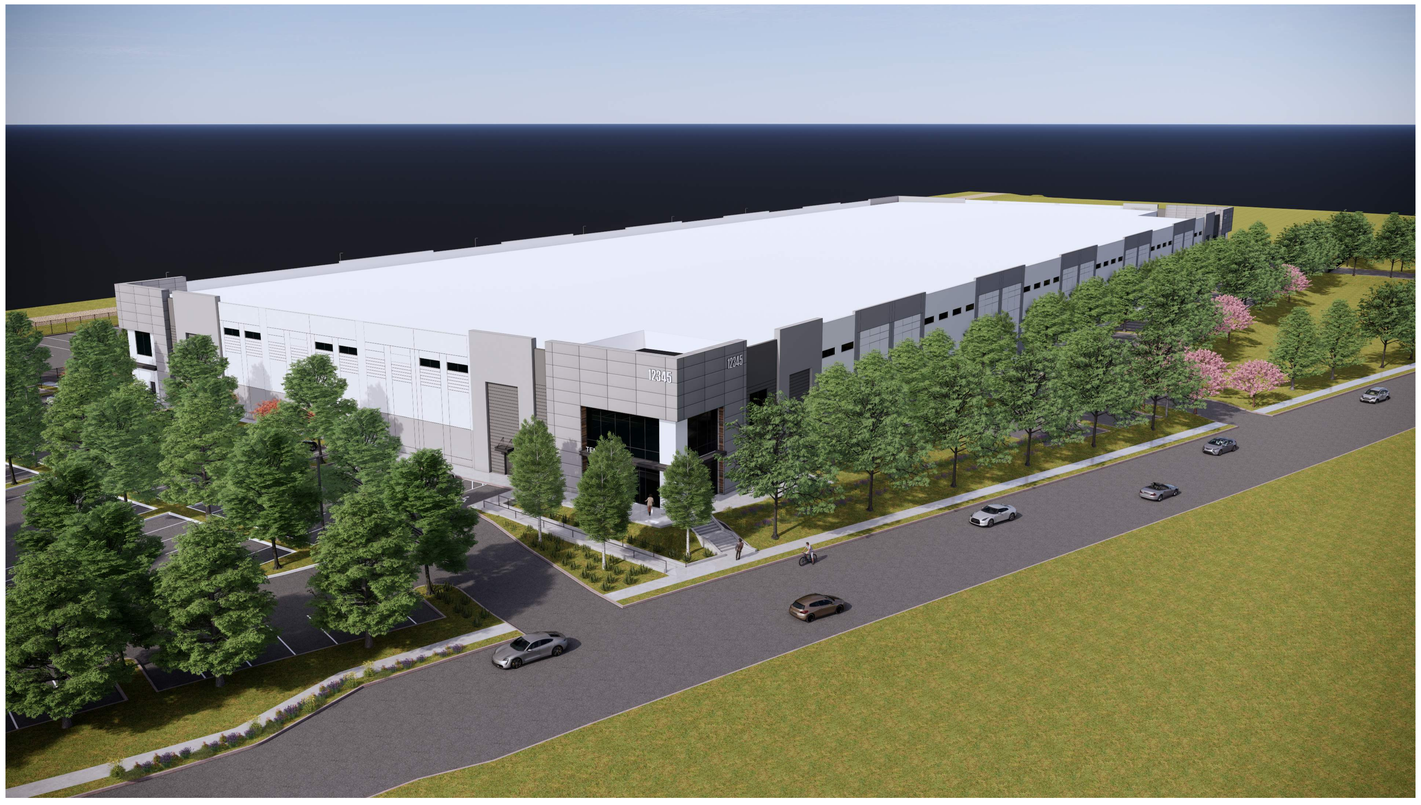
EXAMPLE SIGNAGE

A-9

CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

OHLONE PARKWAY INDUSTRIAL

100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076



SHEET INDEX

TOTAL SHEETS: 41

ARCHITECTURAL

A0.1	TITLE SHEET
A0.1a	PERSPECTIVE VIEWS
A1.1	SITE PLAN
A1.1a	SITE PLAN - VEHICLE ACCESS
A1.1b	SITE PLAN - PEDESTRIAN ACCESS
A2.1	FIRST FLOOR PLAN
A3.1	ROOF PLAN
A4.1	EXTERIOR ELEVATIONS
A5.0	BUILDING & SITE SECTIONS

ARCHITECTURAL SHEET COUNT: 9

CIVIL

C0.0	COVER SHEET
C0.1	EXISTING CONDITIONS MAP - BOUNDARIES AND EASEMENTS
C1.1	EXISTING CONDITIONS MAP - TOPOGRAPHY
C1.2	PRELIMINARY DEMOLITION PLAN
C2.1	PRELIMINARY SITE PLAN
C2.3	PRELIMINARY STREET IMPROVEMENT PLANS
C3.1	PRELIMINARY GRADING PLAN
C3.2	PRELIMINARY CROSS SECTIONS
C4.0	PRELIMINARY DRAINAGE PLAN
C5.0	PRELIMINARY UTILITY PLAN
C6.0	PHASE 1 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN
C6.1	PHASE 2 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN
C6.2	PHASE 1 PRELIMINARY SEDIMENT TRAPS SIZING & DETAILS
C6.3	PRELIMINARY EROSION CONTROL DETAILS
C7.1	STANDARD DETAILS
C7.2	STANDARD DETAILS
C7.3	STANDARD LID DETAILS
C7.4	STANDARD LID DETAILS
C7.5	STANDARD LID DETAILS

CIVIL SHEET COUNT: 19

ELECTRICAL

P1	PRELIMINARY PHOTOMETRIC PLAN

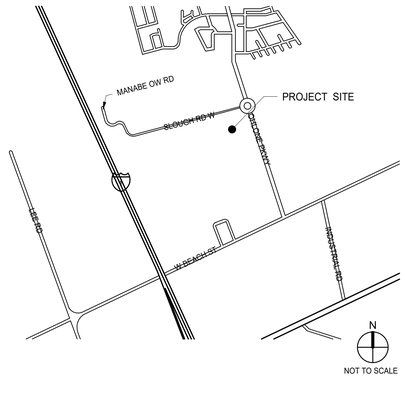
ELECTRICAL SHEET COUNT: 1

LANDSCAPE

L0	RECOMMENDED PLANT LIST, NOTES AND DETAILS
L1	PRELIMINARY LANDSCAPE PLAN
L2	PRELIMINARY LANDSCAPE PLAN
L3	PRELIMINARY LANDSCAPE PLAN
L4	PRELIMINARY LANDSCAPE PLAN

LANDSCAPE SHEET COUNT: 5

VICINITY MAP



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2303 MAIN STREET
SUITE 1300
IRVINE, CA 92614

PRIMARY CONTACT: WILLAIM LU
PH: (872) 259-1838
EMAIL: wlu@ca-ventures.com
ALTERNATE CONTACT: GEORGE ATALLA
PH:
EMAIL: gatalla@ca-ventures.com

OWNER'S CONSULTANTS

CIVIL ENGINEER
BOWMAN & WILLIAMS
3949 RESEARCH PARK COURT
SUITE 100
SOQUEL, CA 95073

PRIMARY CONTACT: JOEL RICCA
PH: (831) 566-4616
EMAIL: joel@bowmanandwilliams.com
ALTERNATE CONTACT:
PH:
EMAIL:

GEOTECHNICAL ENGINEER
CORNERSTONE EARTH GROUP
1259 OAKMEAD PARKWAY
SUNNYVALE, CA 94085

PRIMARY CONTACT: MATTHEW SCHAFFER
PH: (408) 245-4600
EMAIL:
ALTERNATE CONTACT:
PH:
EMAIL:

ARCHITECT

WARE MALCOMB
4683 CHABOT DR #300
PLEASANTON, CA 94588
P 925.244.9620
F 925.244.9621

PRIMARY CONTACT: YANG ZHANG
PH: (925) 480-6155
EMAIL: yzhang@waremalcomb.com
ALTERNATE CONTACT:
PH:
EMAIL:

ARCHITECT'S CONSULTANTS

LANDSCAPE ARCHITECT
RW STOVER & ASSOCIATES, INC
1620 NORTH MAIN STREET
SUITE 4
WALNUTCREEK, CA 94596

PRIMARY CONTACT: RICK STOVER
PH: (925)933-2583
EMAIL: RSTOVER@RWSLA.COM
ALTERNATE CONTACT:
PH:
EMAIL:

PROJECT INFORMATION

ZONING:	IP - INDUSTRIAL PARK
LAND USE:	INDUSTRIAL
GENERAL PLAN:	MANABE OW SPECIFIC PLAN
APNs:	018-711-34, 018-711-35
PARCEL AREA:	13.4 ACRES 584,140 SF
PROPOSED BUILDING AREA:	175,760 SF
FAR:	0.3 SF
BUILDING HEIGHT:	43' - 0"
CONSTRUCTION TYPE:	TBD
PROJECT DISCRIPTION:	

THE PROPOSED PROJECTS IS A +/-175,760 SQUARE FOOT COLD, DARK SHELL WAREHOUSE BUILDING SITUATED ON 13.4 ACRES WITHIN THE MANABE OW SPECIFIC PLAN AREA.

ANTICIPATED FUTURE TENANT WILL BE FOR WAREHOUSE USE, AND THE PARKING COUNTS REFLECT THE REQUIREMENTS FOR SUCH USE.

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INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr, Suite #300
Pleasanton, CA 94588
P 925.244.9620

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

TITLE SHEET

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	S.K.
JOB NO.:	SNR21-0142-00

SHEET
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NORTHEAST CORNER VIEW
SCALE: N.T.S. 1



OHLONE PARKWAY DRIVEWAY VIEW
SCALE: N.T.S. 3



SOUTHEAST CORNER VIEW
SCALE: N.T.S. 2

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PERSPECTIVE VIEWS

DATE	REMARKS
05/23/2022	Planning Submittal #2

PA/PM:	Approver
DRAWN BY.:	Author
JOB NO.:	SNR21-0142-00

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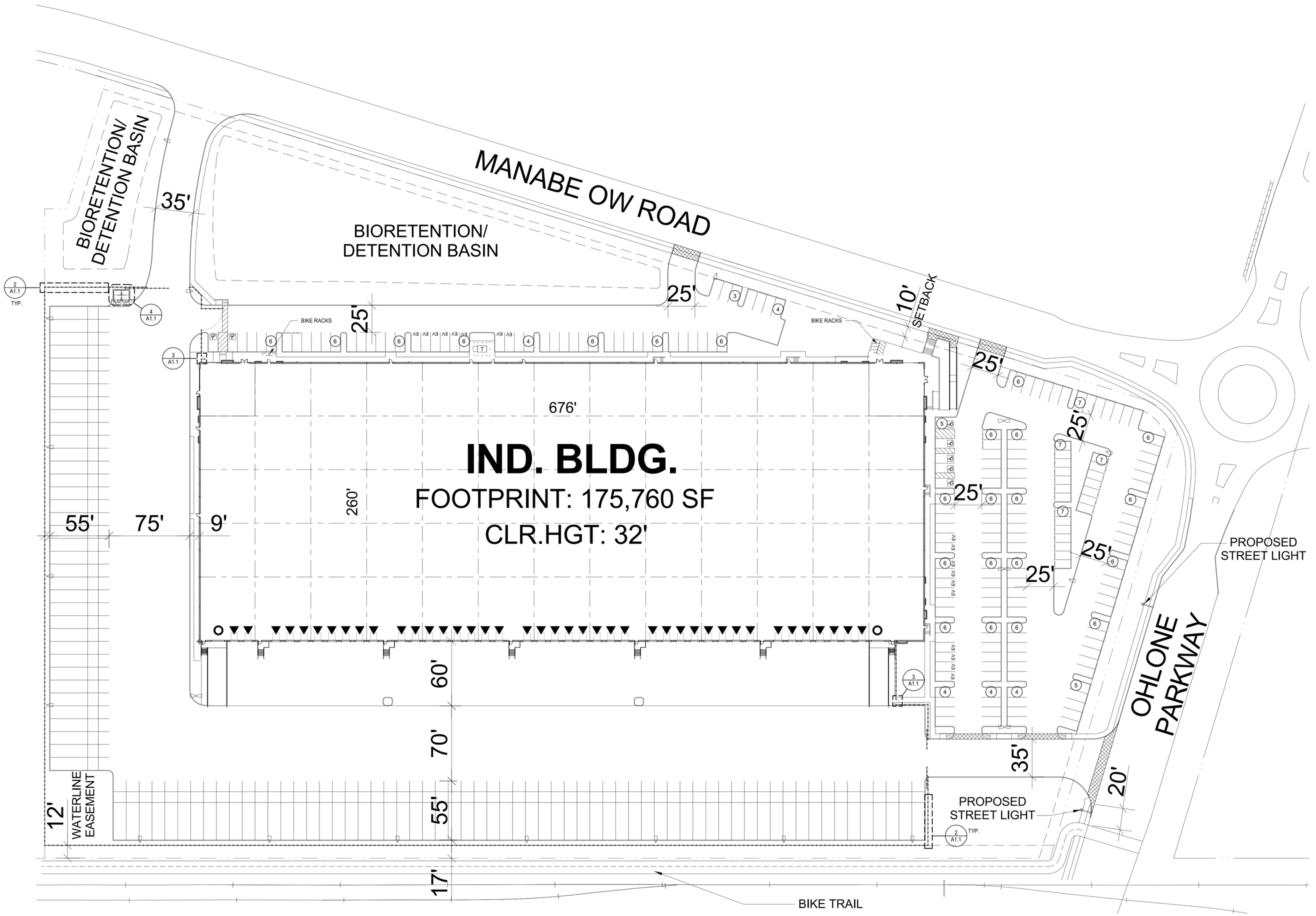


SITE PLAN

SCALE: 1" = 40'-0"

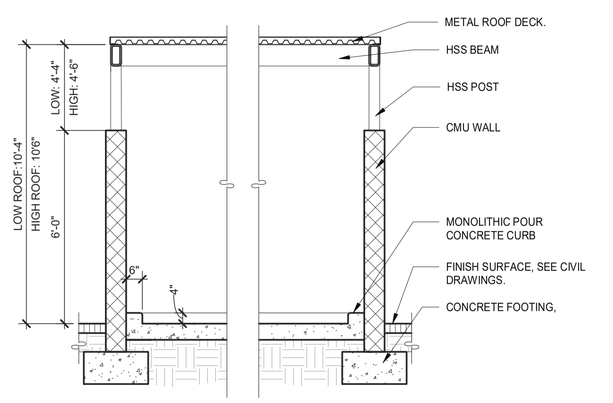
SITE DATA

ZONING:	IP - INDUSTRIAL PARK MANABE OW SPECIFIC PLAN
OVERALL SITE AREA:	
GROSS:	13.41 ACRES 584,140 SF
DETENTION:	40,236 SF
NET:	12.5 ACRES 543,904 SF
BUILDING FOOTPRINT:	175,760 SF
COVERAGE:	30% GROSS (32.2% NET)
PARKING REQUIRED:	
WAREHOUSE (5+1/EMPLOYEE):	166 STALLS (MAX 161 EMPLOYEES)
OFFICE (1/300 SF):	34 STALLS
PARKING PROVIDED:	
STANDARD (9'X19')	171 STALLS
ACCESSIBLE	7 STALLS
CLEAN AIR/EV/VANPOOL	22 STALLS
(FUTURE CHARGING*	18 STALLS)
TOTAL:	200 STALLS
TRAILER PARKING	99 STALLS
BIKE PARKING(5%)	10 STALLS

*NOTE: FUTURE CHARGING STALLS LISTED AS SUBSET OF CLEAN AIR DESIGNATED STALLS, NOT INCLUDED IN TOTAL. QUANTITY PROVIDED REFLECTS CGBSC 2019 REQUIREMENTS.

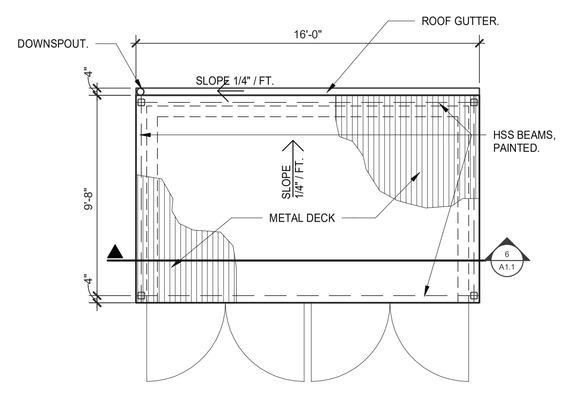
SITE LEGEND

- ACCESSIBLE PATH OF TRAVEL. 1:20 MAX. SLOPE, 2% MAX. CROSS SLOPE.
- PROPERTY LINE.
- FENCING.
- POLE MOUNTED SITE LIGHTING FIXTURE.
- POLE MOUNTED STREET LIGHTING FIXTURE (CITY STD S-501).
- T — TRANSFORMER WITH CONCRETE PAD. (PROVIDE PROTECTION BOLLARDS PER LOCAL UTILITY OR PUBLIC WORK STANDARDS)
- FIRE LANE (HATCHED)
- DECORATIVE CONCRETE PAVING
- (1) PARKING STALL COUNT TOTAL
- DOCK HIGH TRUCK DOOR
- GRADE LEVEL TRUCK DOOR



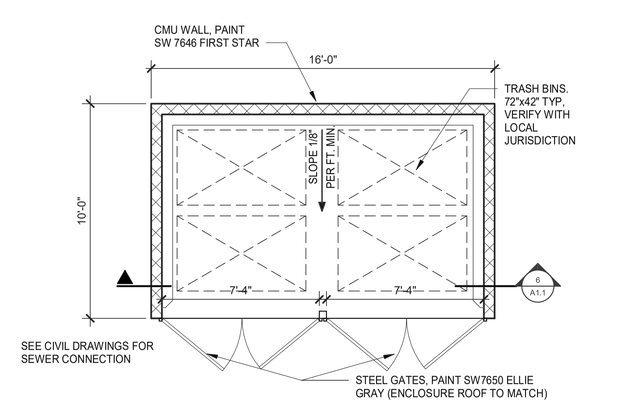
TRASH ENCLOSURE SECTION 6

SCALE: 3/8" = 1'-0"



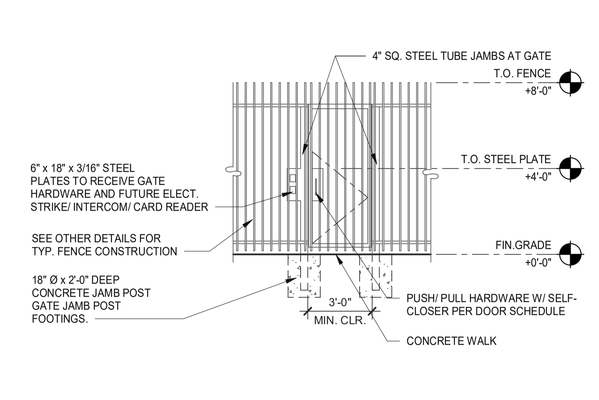
TRASH ENCLOSURE ROOF PLAN 5

SCALE: 1/4" = 1'-0"



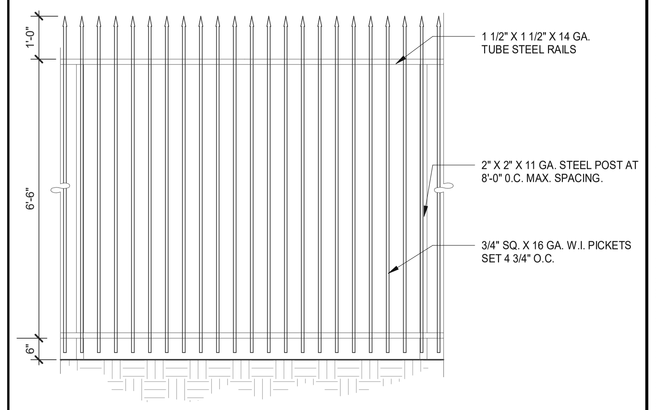
TRASH ENCLOSURE PLAN 4

SCALE: 1/4" = 1'-0"



WROUGHT IRON GATE 3

SCALE: 1/4" = 1'-0"



WROUGHT IRON FENCE 2

SCALE: 1/2" = 1'-0"

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OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

SITE PLAN

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	Z.P.
JOB NO.:	SNR21-0142-00

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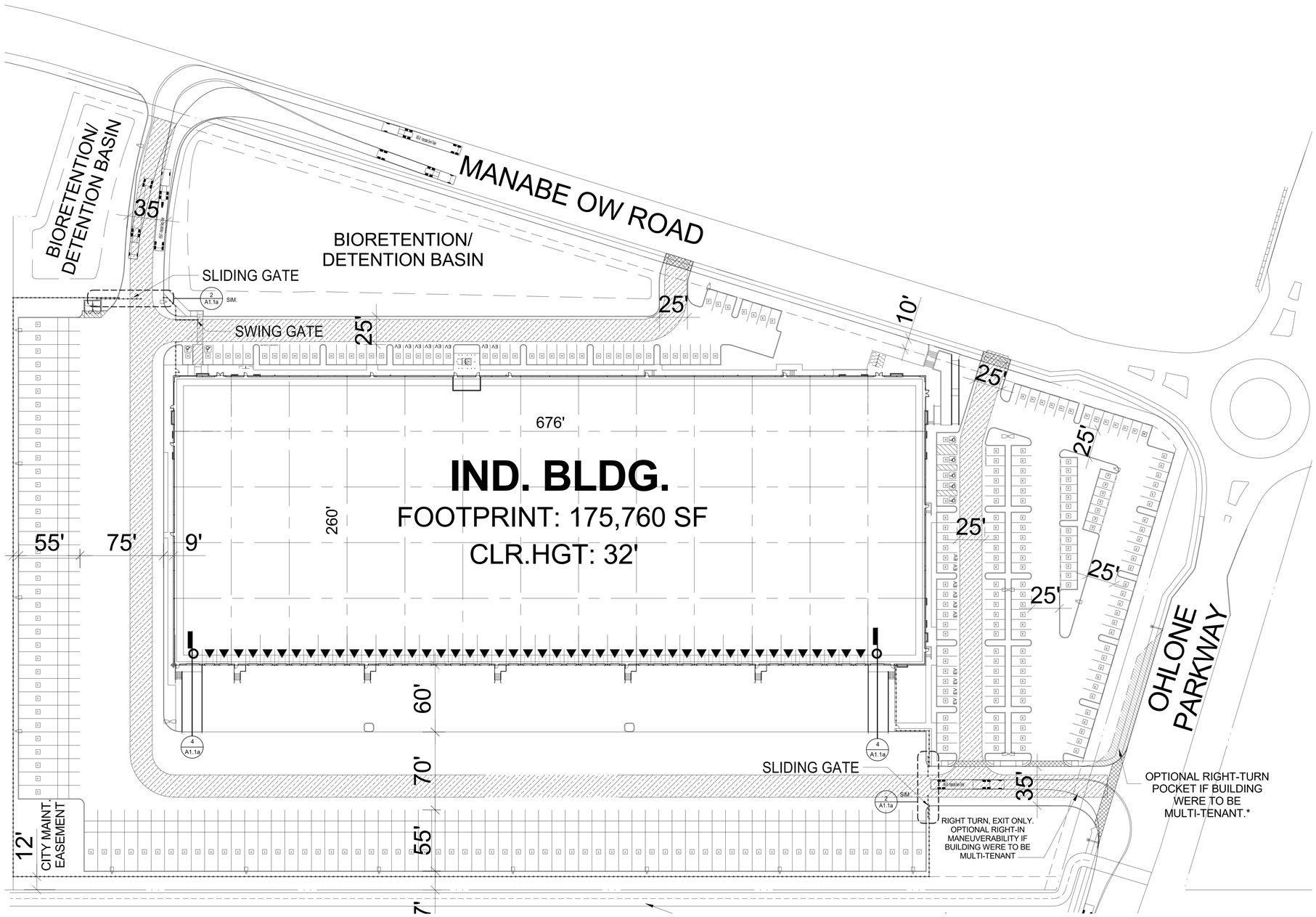
MANABE OW ROAD
BIORETENTION/ DETENTION BASIN
BIORETENTION/ DETENTION BASIN
SLIDING GATE
SWING GATE
2 A1.1a SIM.
35'
25'
10'
25'
676'
IND. BLDG.
FOOTPRINT: 175,760 SF
CLR.HGT: 32'
260'
55'
75'
9'
60'
70'
55'
7'
12'
CITY MAINT. EASEMENT
4 A1.1a
SLIDING GATE
SIM
35'
RIGHT TURN, EXIT ONLY. OPTIONAL RIGHT-IN MANEUVERABILITY IF BUILDING WERE TO BE MULTI-TENANT
OPTIONAL RIGHT-TURN POCKET IF BUILDING WERE TO BE MULTI-TENANT.*
OHLONE PARKWAY
25'
25'
25'

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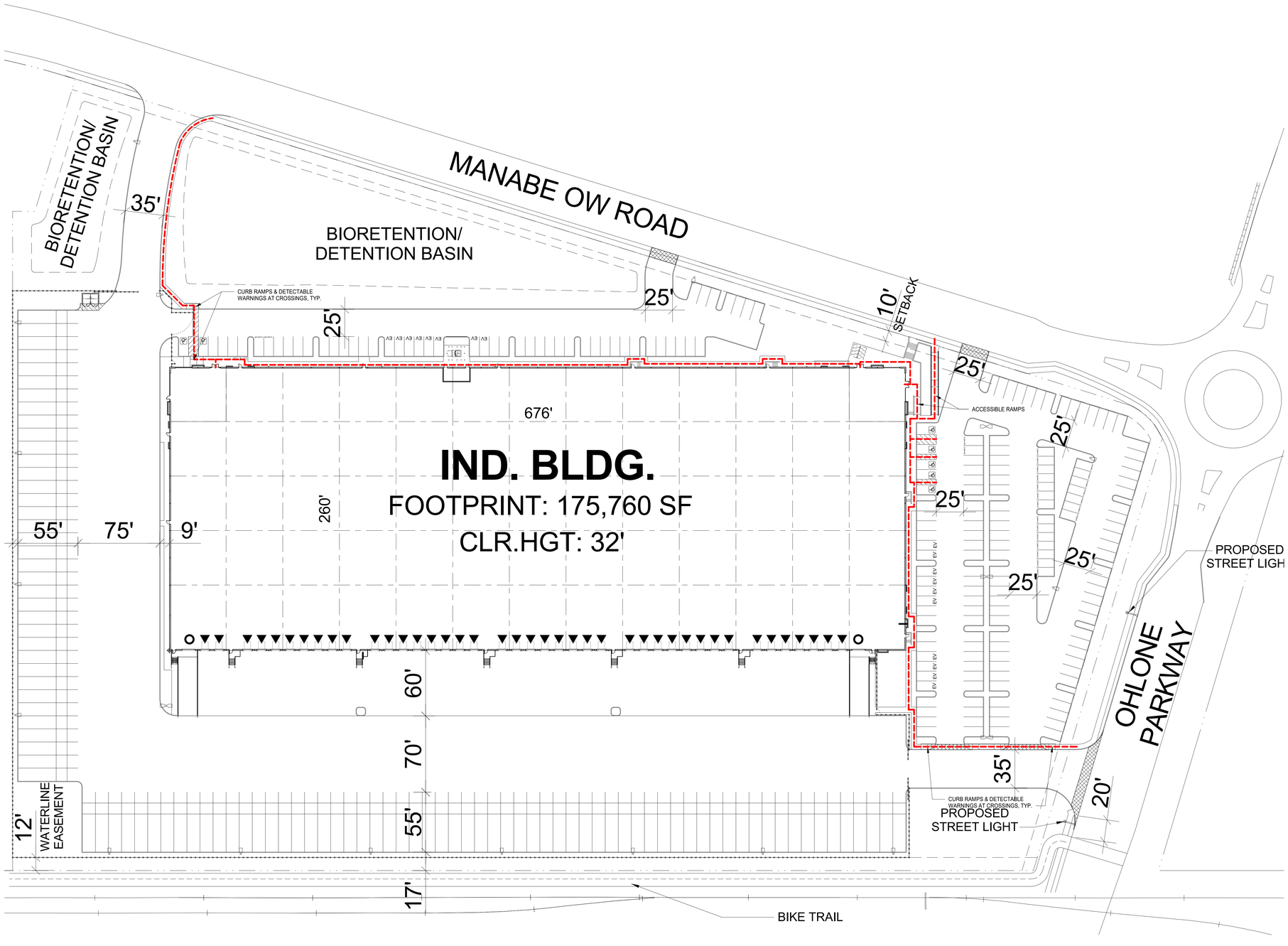

SITE LEGEND

- ACCESSIBLE PATH OF TRAVEL. 1:20 MAX. SLOPE, 2% MAX. CROSS SLOPE.
- PROPERTY LINE.
- FENCING.
- POLE MOUNTED SITE LIGHTING FIXTURE.
- POLE MOUNTED STREET LIGHTING FIXTURE (CITY STD S-501).
- T — TRANSFORMER WITH CONCRETE PAD. (PROVIDE PROTECTION BOLLARDS PER LOCAL UTILITY OR PUBLIC WORK STANDARDS)
- FIRE LANE (HATCHED)
- DECORATIVE CONCRETE PAVING
- (1) — PARKING STALL COUNT TOTAL
- DOCK HIGH TRUCK DOOR
- GRADE LEVEL TRUCK DOOR

1"=40'
0 20' 40' 80' 200'

SITE PLAN
SCALE: 1" = 40'-0"

N

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INDUSTRIAL
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WATSONVILLE, CALIFORNIA 95076

SITE PLAN - PEDESTRIAN ACCESS

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	Z.P.
JOB NO.:	SNR21-0142-00

SHEET
A1.1b

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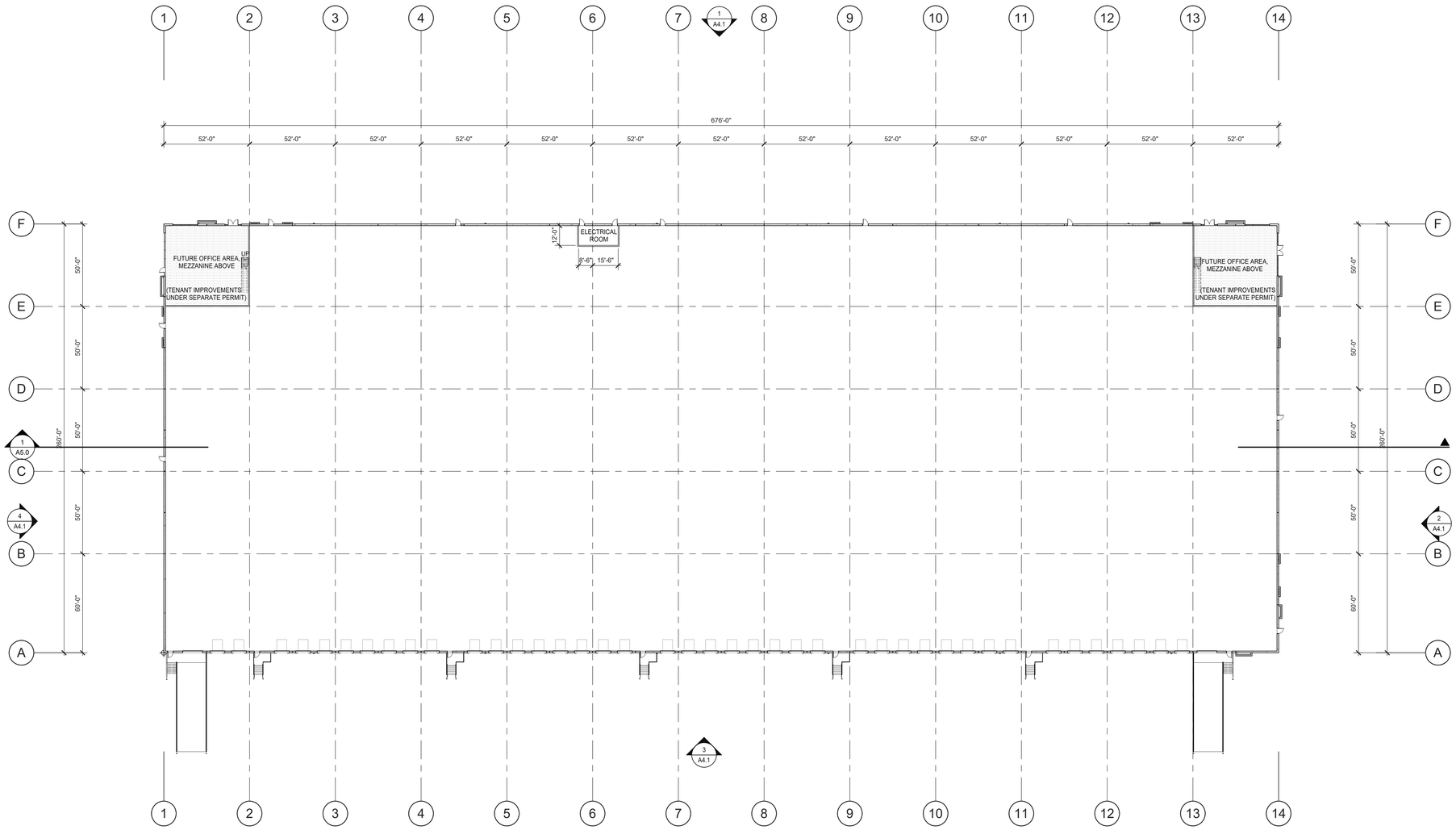
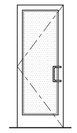


KEYNOTES:

SEE SHEET A0.2 FOR GENERAL NOTES

DOOR TYPES



SF1 3'-0" x 8'-0"
CLEAR ANOD. ALUM. STOREFRONT DOOR W/TEMPERED GLAZING (NARROW STILE)

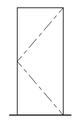
SF2 6'-0" x 8'-0" (PAIR)
CLEAR ANOD. ALUM. STOREFRONT DOOR W/TEMPERED GLAZING (NARROW STILE)

FRAME: MANUFACTURER

HARDWARE:

2 SETS	PIVOT SET
2 SETS	INTER PIVOT
1 EA	MORTISE CYLINDER
2 SETS	OFFSET PULL
2 EA	OH CLOSER
1 EA	THRESHOLD
1 EA	DECAL

NOTE: WEATHERSEAL BY DOOR MANUFACTURER



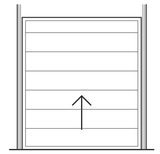
F1 3'-0" x 7'-0"
PAINTED INSULATED HOLLOW METAL DOOR

F1* 4'-0" x 7'-0"
PAINTED INSULATED HOLLOW METAL DOOR

FRAME: PAINTED HOLLOW METAL

HARDWARE:

3 EA	HINGES
1 EA	EXIT DEVICE
1 EA	CYLINDER
1 EA	CLOSER
1 EA	PERIMETER SEAL
1 EA	BOTTOM DRIP
1 EA	THRESHOLD
1 EA	LOCK GUARD
1 EA	HVY DUTY FLOOR STOP



SD1 9'-0" x 10'-0"
DOCK HIGH SECTIONAL VERTICAL LIFT OVERHEAD DOOR W/ FACTORY PAINTED FINISH.

SD2 12'-0" x 14'-0"
SECTIONAL VERTICAL LIFT OVERHEAD DOOR W/ FACTORY PAINTED FINISH

HARDWARE:

1 EA	SLIDE BOLT
1 EA	PAD LOCK

1/8"=1'-0"
0 4' 8' 16' 32'

FLOOR PLAN
SCALE: 1" = 30'-0"

N

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FIRST FLOOR PLAN

DATE	REMARKS
12/13/2021	Preliminary Planning
09/22/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	S.K.
JOB NO.:	SNR21-0142-00

SHEET
A2.1

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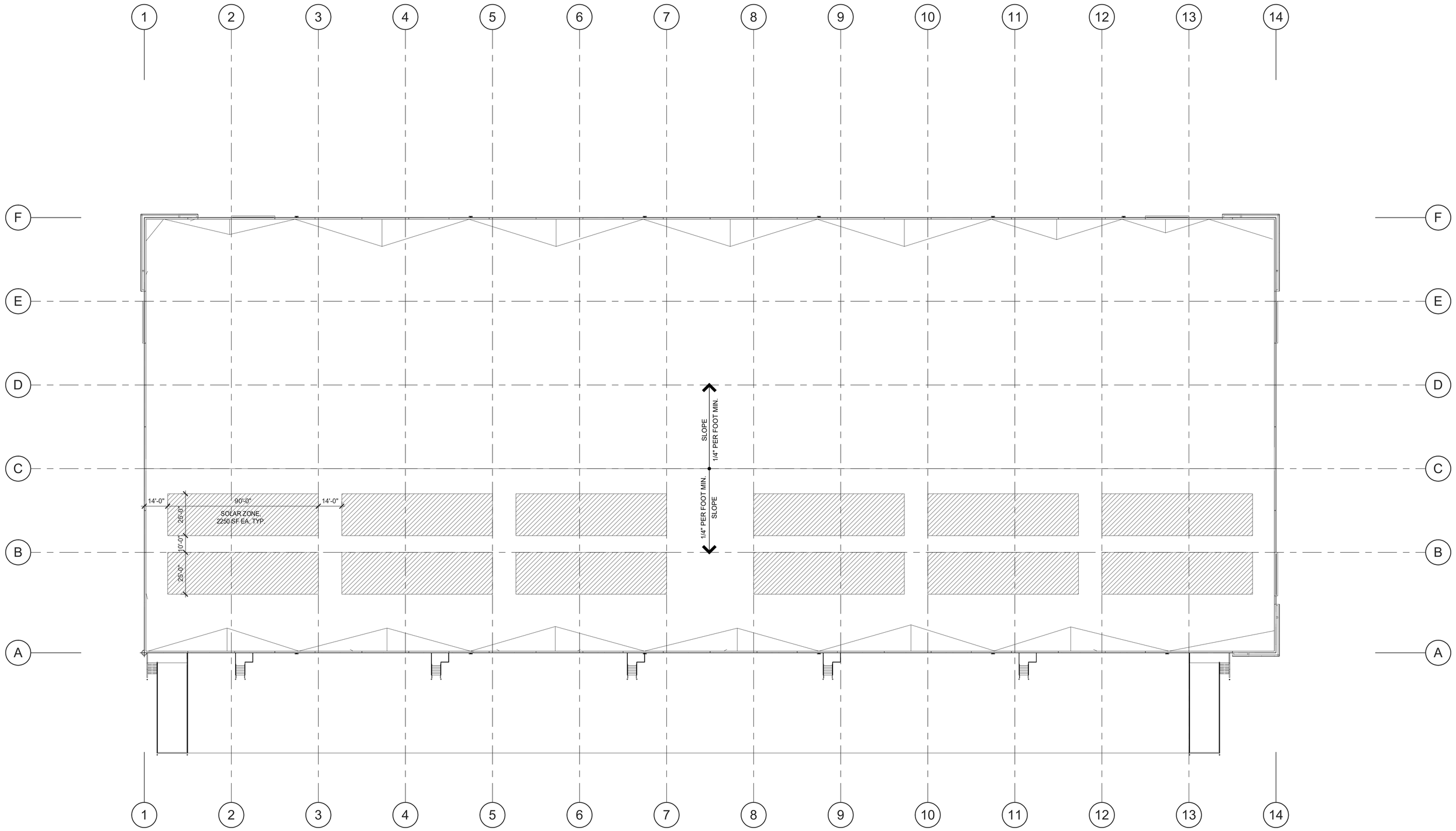

KEYNOTES:

FUTURE SOLAR:

ROOF AREA:	175,760	S.F.
SKYLIGHT AREA:	0	S.F.
ROOF AREA LESS SKYLIGHT:	175,760	S.F.
15% OF ROOF AREA (LESS SKYLIGHTS):	26,364	S.F.
TOTAL AREA FOR FUTURE SOLAR REQUIRED:	26,364	S.F.*
TOTAL AREA FOR FUTURE SOLAR PROVIDED:	27,000	S.F.

* CEC SECTION 110.10(B)4 DOES NOT REQUIRE THE INCLUSION OF ANY COLLATERAL LOADS FOR FUTURE SOLAR ENERGY SYSTEMS.

ROOF PLAN
SCALE: 1" = 30'-0"

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WATSONVILLE, CALIFORNIA 95076

ROOF PLAN

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	S.K.
JOB NO.:	SNR21-0142-00

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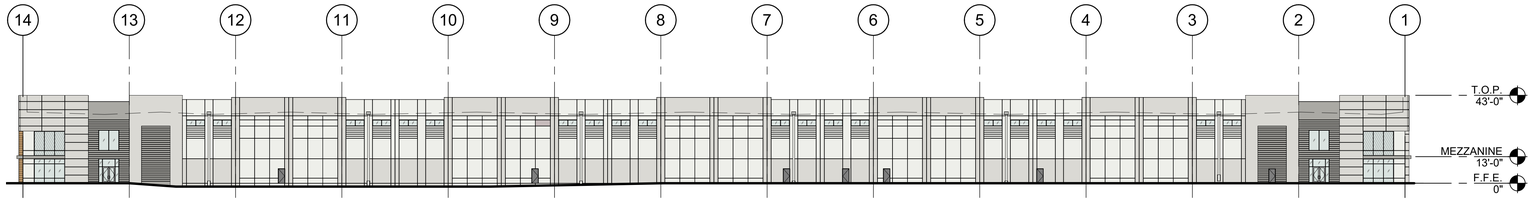
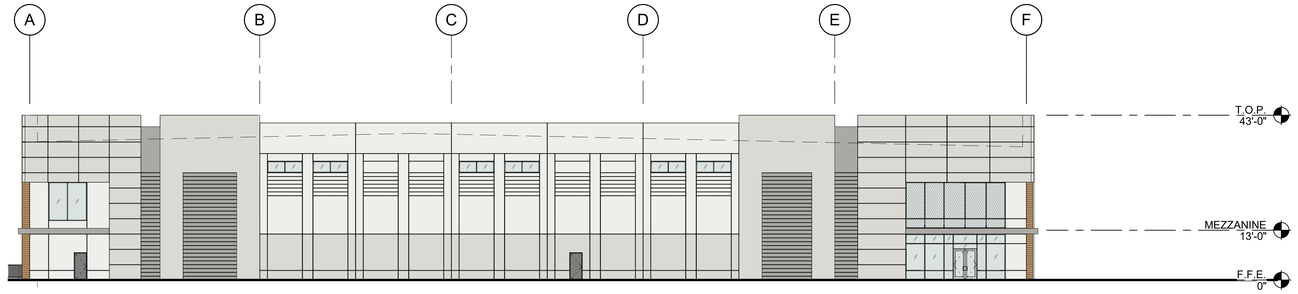


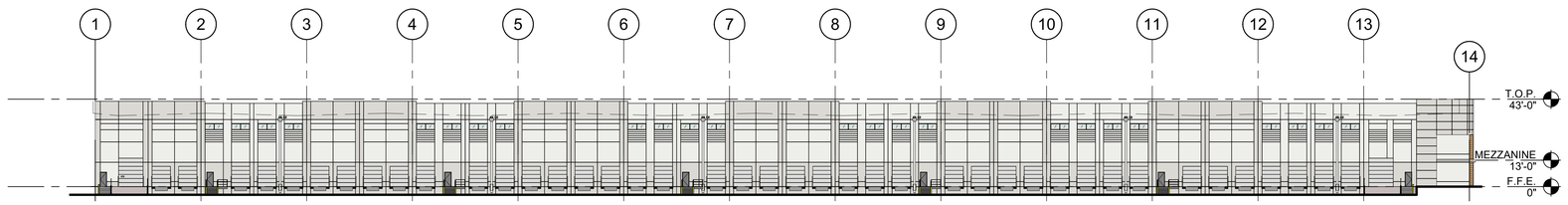
NORTH ELEVATION 1

SCALE: 1" = 30'-0"



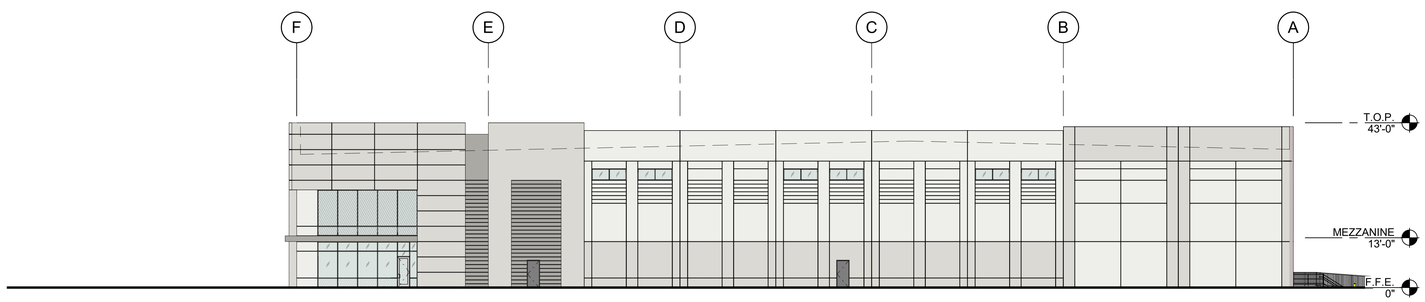
EAST ELEVATION 2

SCALE: 1/16" = 1'-0"



SOUTH ELEVATION 3

SCALE: 1" = 30'-0"



WEST ELEVATION 4

SCALE: 1/16" = 1'-0"

KEYNOTES:

LEGEND

MATERIALS:

- EXTERIOR PAINTED ALUMINUM COMPOSITE METAL PANEL OVER METAL STUD WALL
- EXTERIOR WOOD SCREEN OVER METAL STUD WALL
- METAL CANOPY, PAINTED

GLASS:

- VISION GLASS
- SPANDREL GLASS
- TEMPERED GLASS

COLORS:

PROVIDE 6'-0" WIDE PAINT COLOR MOCK-UP FULL HEIGHT OF BUILDING FOR OWNER/ARCHITECT REVIEW.

- BASE COLOR: SW 7006 EXTRA WHITE
- ACCENT COLOR: SW 7646 FIRST STAR
- ACCENT COLOR: SW 7650 ELLIE GRAY

ALL GLASS USED ON THE ENVELOPE OF THE BUILDING TO BE:
XXXXXXX
U FACTOR = 0.28 AND SHGC = 0.28
GLASS WIND LOAD RESISTANCE CALCULATIONS ARE UNDER SEPARATE PERMIT

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Pleasanton, CA 94588
P: 925.244.6620
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WATSONVILLE, CALIFORNIA 95076

EXTERIOR ELEVATIONS

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. Zhang
DRAWN BY.:	S.K./Z.P.
JOB NO.:	SNR21-0142-00

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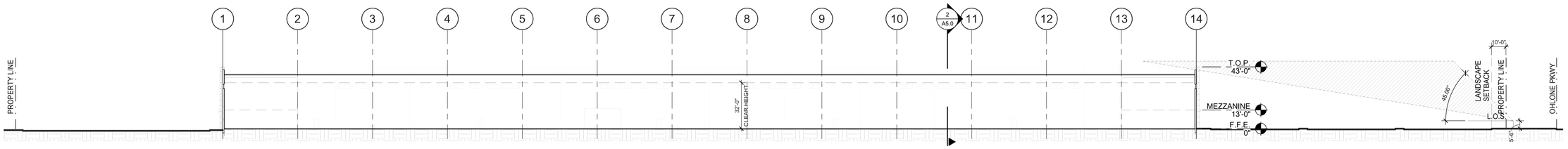
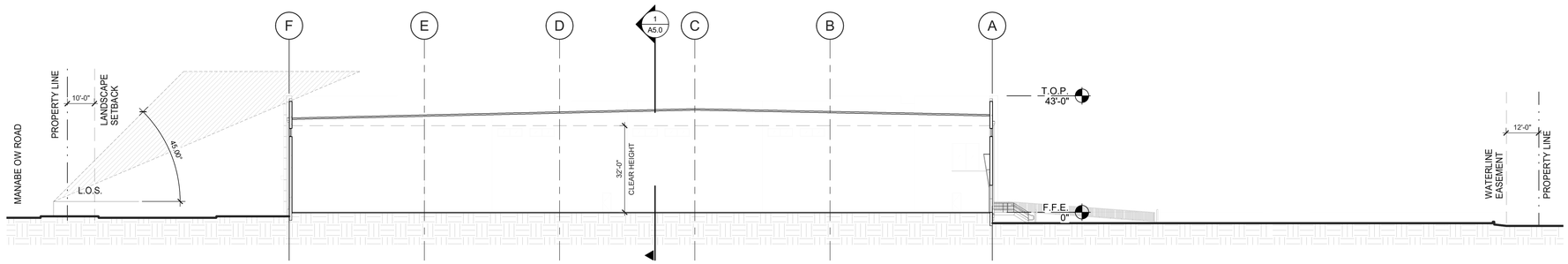


BUILDING CROSS SECTION 1

SCALE: 1" = 30'-0"



BUILDING CROSS SECTION 2

SCALE: 1" = 20'-0"

KEYNOTES: -

SEE SHEET A0.2 FOR GENERAL NOTES

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING LANDSCAPE
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.249.3520

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

BUILDING & SITE SECTIONS

DATE	REMARKS
12/13/2021	Preliminary Planning
05/23/2022	Planning Submittal #2

PA/PM:	Y. ZHANG
DRAWN BY.:	Z.P.
JOB NO.:	SNR21-0142-00

SHEET
A5.0

5/23/2022 11:15:29 AM

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C:_Revit\0142_A_Zorkash#.rvt

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DESIGN REVIEW - CIVIL IMPROVEMENT PLANS
OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD

APN 018-711-34 (PART) AND 018-711-35 WATSONVILLE, CALIFORNIA

THE INTENT OF THESE IMPROVEMENT PLANS IS TO SHOW:

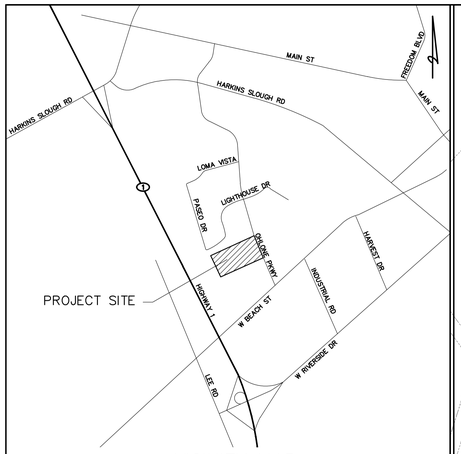
1. THE DESIGN FOR REVIEW BY THE CITY OF WATSONVILLE.
2. TO ACCOMPANY PLANS BY WARE MALCOMB.

NOTES ON TOPOGRAPHIC INFORMATION

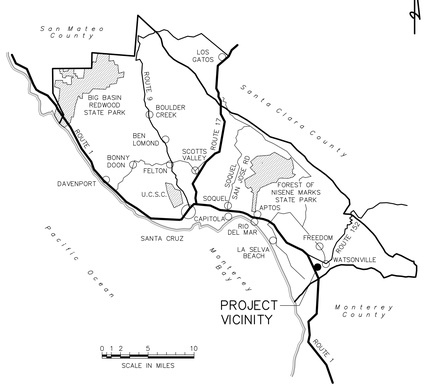
1. ALL SURVEY INFORMATION HAS BEEN PROVIDED BY MID COAST ENGINEERS, CIVIL ENGINEERS AND LAND SURVEYORS, WATSONVILLE CA, (831) 724-2580. THEIR JOB NO. 2014323, DATED 12/30/20.
2. THE TOPOGRAPHIC BASE MAP WAS FROM AN AERIAL SURVEY. PRIOR TO FINAL DESIGN THE EXISTING UTILITY AND SITE IMPROVEMENT CONFORMS SHOULD BE SURVEYED TO CONFIRM A HIGHER LEVEL OF ACCURACY.
3. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE PLANS WERE OBTAINED FROM UTILITY COMPANIES AND MAY NOT REPRESENT TRUE LOCATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH OF THESE UTILITIES PRIOR TO CONSTRUCTION, AND TO NOTIFY THE PROJECT ENGINEER IN CASE OF CONFLICT.
4. CALL U.S.A. (UNDERGROUND SERVICE ALERT) (800) 642-2444 BEFORE ANY EXCAVATION.

CONDITIONS OF APPROVAL

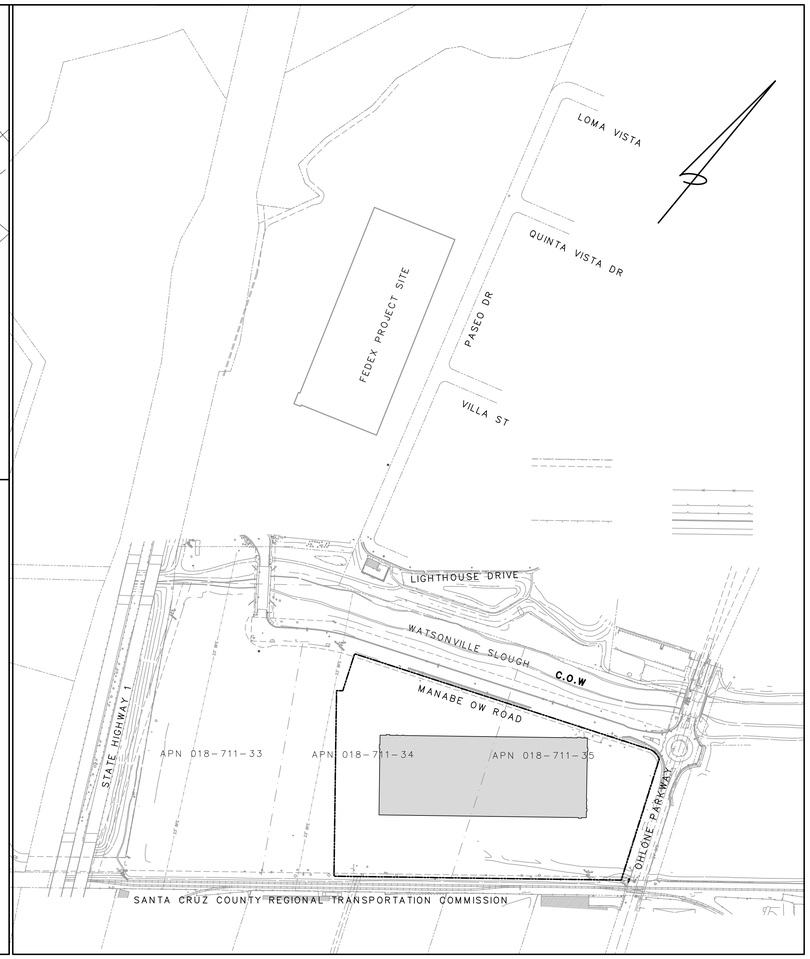
1. UTILITIES RELATED TO NEW CONSTRUCTION SHALL BE INSTALLED UNDERGROUND. NEW CONSTRUCTION THAT ABUT A PUBLIC STREET, PLACE, OR WAY THAT CONTAIN EXISTING OVERHEAD UTILITIES SHALL RELOCATE SUCH EXISTING OVERHEAD UTILITIES UNDERGROUND, EXCEPT AS MAY OTHERWISE BE EXEMPTED BY WMC CHAPTER 7-16.
2. THE PROPERTY LIES WITHIN THE FEMA 100-YEAR FLOOD ZONE, SO THE BUILDING MUST BE DESIGNED SUCH THAT ITS FINISH FLOOR IS AT LEAST 1' ABOVE THE 24' BASE FLOOD ELEVATION AND A FEMA ELEVATION CERTIFICATE SUBMITTED. IF NOT, IT MUST BE FLOOD-PROOFED IN COMPLIANCE WITH THE CITY'S MUNI CODE (WMC) TITLE 9, CHAPTER 2, FLOODPLAIN MANAGEMENT.
3. INDUSTRIAL ZONED PARCELS AND THOSE ADDING <500 SF OF FLOOR AREA ARE REQUIRED TO PAY STREET IMPROVEMENT AND UNDERGROUND UTILITY IN-LIEU FEES.
4. LANDSCAPE & IRRIGATION DESIGNS SHALL COMPLY W/THE CALIFORNIA MODEL WATER EFFICIENT LANDSCAPE ORDINANCE.
5. WIDEN THE EXISTING 10' WATERLINE EASEMENT ALONG THE PROPERTY'S SOUTH PROPERTY LINE TO A MINIMUM OF 12' (FINAL WIDTH SUBJECT TO EXISTING 12" CIP WATER MAIN POTHOLING RESULTS AND CITY APPROVAL) AND AMEND THE EASEMENT ALIGNMENT TO CONTAIN ITS WIDENING AROUND THE EXISTING RR CROSSING SIGNAL POLE AND GATE ARM IN A NEW RECORDED GRANT OF EASEMENT IN FAVOR OF THE CITY.
6. ANY GRADING PERFORMED BEYOND THE PROPERTY BOUNDARY, AS SHOWN AT ITS WEST PROPERTY LINE ON SHT. C3.1, WILL REQUIRE AN AGREEMENT WITH THE ABUTTING PROPERTY OWNER.
7. PROVIDE A SWPPP APPROVED BY THE CRWQCB.
8. APPLICANT IS REQUIRED TO WORK WITH PG&E TO REMOVE THE TWO (2) ELECTRICAL SERVICE POLES IN THE SW CORNER OF THE PROPERTY AND GET A COUNTY-APPROVED WELL DRILLER (SEE ATTACHMENT 2 FOR LIST) TO SUBMIT A COUNTY WELL PERMIT FOR DESTRUCTION OF "PVWMA WELL NO. 26" ON THEIR BEHALF AND PROCESS IT THROUGH THE COUNTY OF SANTA CRUZ EHS.
9. PROVIDE A "FINAL" PROJECT GEOTECHNICAL INVESTIGATION.
10. PRIOR TO BUILDING PERMIT FINAL, ANY EXISTING WATER AND SEWER LATERAL STUB OUTS THAT WILL NOT BE UTILIZED FOR THIS DEVELOPMENT SHALL BE REMOVED AT THE MAIN.



VICINITY MAP



LOCATION MAP



SITE PLAN
SCALE: 1"=200'

ABBREVIATIONS

AC	ASPHALT CONCRETE
AP	ANGLE POINT
BC	BEGIN CURVE
BW	BACK OF WALK
BS	BOTTOM OF STEP
B.P.R.N.	BUSINESS PARK ROAD NORTH
B.P.R.S.	BUSINESS PARK ROAD SOUTH
CB	CATCH BASIN
CL	CENTERLINE
C.O.W.	CITY OF WATSONVILLE
DTL	DETAIL
DS	DOWNSPOUT
EC	END CURVE
ELEV	ELEVATION
(E), EX	EXISTING
FD	FIRE DEPARTMENT
FG	FINISHED GRADE
FL	FLOWLINE
FS	FIRE SERVICE
FT	FEET
FW	FACE OF WALL
HP	HIGH POINT
INV	INVERT
LF	LINEAR FEET
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
O.H.W.L.	ORDINARY HIGH WATER LEVEL
(P), P	PROPOSED
PERF	PERFORATED
PVMT	PAVEMENT
R=	RADIUS
RIM	RIM ELEVATION
RT	RIGHT
S=	SLOPE
SCWD	SANTA CRUZ WATER DEPARTMENT
SD	STORM DRAIN
SDCO	STORM DRAIN CLEANOUT
SLV	IRRIGATION SLEEVE
SSCO	SANITARY SEWER CLEANOUT
STA	STATION
S.R.W.	SLOUGH ROAD WEST
TC	TOP OF CURB
TG	TOP OF GRAVEL
TP	TOP OF PAVEMENT
TS	TOP OF STEP
TW	TOP OF WALL
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
WS	WATER SERVICE

LEGEND

FINISH GRADE SPOT ELEVATION	384.60 TP
(P) CATCH BASIN	
(P) CONC PAVEMENT	
(P) FIRE LANE ASPHALT PAVEMENT	
(P) ASPHALT PAVEMENT	
(P) LANDSCAPED AREAS	
(P) BIO-RETENTION AREAS	
(P) CONTOUR	474
(P) STORM DRAIN	SD
(P) PERFORATED PIPE	
(E) SEWER	SS
(P) SEWER	SS
(E) ELECTRICAL	E
(E) GAS	G
(E) WATER LINE	W
(P) WATER LINE	W
(P) FIRE WATER LINE	FW
(P) BOUNDARY LINE	

SHEET INDEX

C0.0	COVER SHEET
C1.0	EXISTING CONDITIONS MAP – BOUNDARIES AND EASEMENTS
C1.1	EXISTING CONDITIONS MAP – TOPOGRAPHY
C1.2	PRELIMINARY DEMOLITION PLAN
C2.1	PRELIMINARY SITE PLAN
C2.3	PRELIMINARY STREET IMPROVEMENT PLANS
C3.1	PRELIMINARY GRADING PLAN
C3.2	PRELIMINARY CROSS SECTIONS
C4.0	PRELIMINARY DRAINAGE PLAN
C5.0	PRELIMINARY UTILITY PLAN
C6.0	PHASE 1 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN
C6.1	PHASE 2 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN
C6.2	PHASE 1 PRELIMINARY SEDIMENT TRAPS SIZING & DETAILS
C6.3	PRELIMINARY EROSION CONTROL DETAILS
C7.1	STANDARD DETAILS
C7.2	STANDARD DETAILS
C7.3	STANDARD LID DETAILS
C7.4	STANDARD LID DETAILS
C7.5	STANDARD LID DETAILS

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REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53588 STATE OF CALIFORNIA

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APN 018-711-34 (PART) & -35

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MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

COVER SHEET

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN	JOB NO. 28595	SHEET C0.0
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME	FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING SURVEYING
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #200
Pleasanton, CA 94588
P (925) 244-6600

CIENT LOGO

CIVIL COVER SHEET

REMARKS	DATE
2ND SUBMITTAL	MAY 23, 2022

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C0.0

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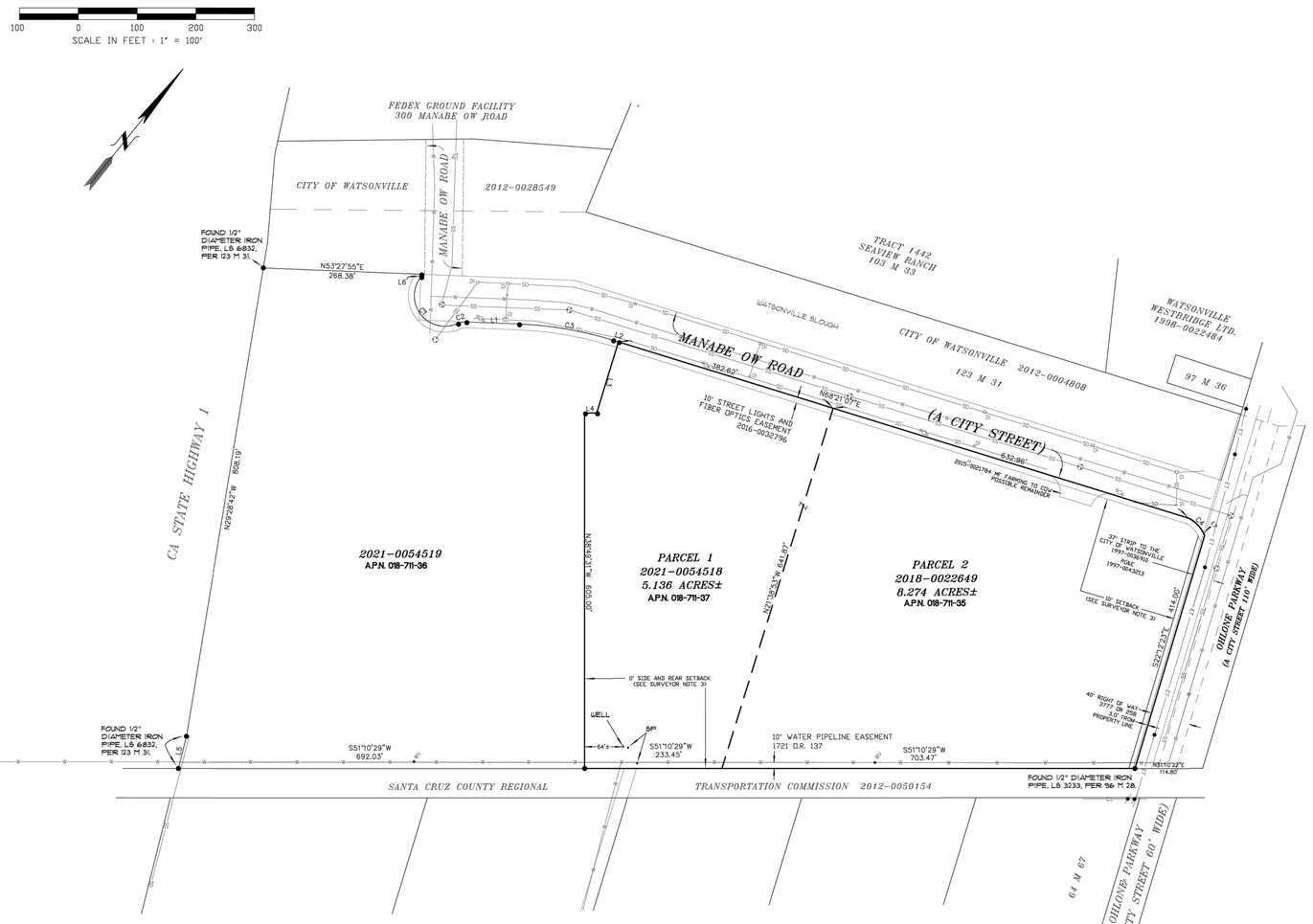

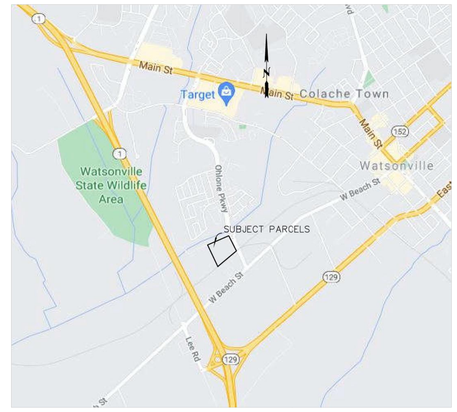

VICINITY MAP
NO SCALE

SUMMARY TABLE

EXISTING PARCEL	OWNERSHIP	LAND USE	EXISTING LOT AREA:	PROPOSED LOT AREA:
Parcel 1 (Doc #2021-0054518) A.P.N.: 018-711-07	CA/FSRE WATSONVILLE INDUSTRIAL, LLC.	INDUSTRIAL; BUSINESS PARK DISTRICT (MANABE-OW SPECIFIC PLAN)	5.14± Acres 223,898.4± Sq. ft.	13.41± Acres 584,139.6± Sq. ft.
Parcel 2 (Doc #2018-0022649) A.P.N.: 018-711-35	CA/FSRE WATSONVILLE INDUSTRIAL, LLC.	INDUSTRIAL; BUSINESS PARK DISTRICT (MANABE-OW SPECIFIC PLAN)	8.27± Acres 360,241.2± Sq. ft.	

WATER MANAGEMENT AGENCY: PAJARO VALLEY WATER MANAGEMENT AGENCY DIVISION A
FIRE DISTRICT: CITY OF WATSONVILLE

OWNER – REPRESENTATIVE CONTACT INFORMATION

GEORGE ATALLA
DEVELOPMENT MANAGER 2030
MAIN STREET, STE 1300
IRVINE, CA 92614
PHONE (M): 760-964-4411
GAtalla@ca-ventures.com

LEGEND

- ● 1/2" PIPE WITH PLASTIC CAP, STAMPED L.S. 6832 PER XXX UNLESS SHOWN OTHERWISE
- SUBJECT BOUNDARY
- LOT LINE TO BE ABANDONED
- ADJOINER BOUNDARY
- FORMER BOUNDARY
- CENTERLINE
- EASEMENT / RIGHT OF WAY

DISTANCES ARE IN FEET AND DECIMALS THEREOF. BASIS OF BEARINGS IS NAD 1983 (2007.00), CCS ZONE 3, PER CITY OF WATSONVILLE CONTROL SURVEY 115 M 7. DISTANCES SHOWN ARE GROUND BASED.

DI DROP INLET
SP SIGNAL POLE
WV WATER VALVE

FIRE HYDRANT
WATER VALVE
MANHOLE
JOINT UTILITY POLE

CURVE TABLE

NUM	DELTA	ARC	RADIUS	CHORD BEARING
C1	152°53'30"	138.76'	52.00'	S77°01'12"E
C2	26°55'45"	14.57'	31.00'	S40°00'02"W
C3	14°53'18"	162.93'	627.00'	S60°54'28"W
C4	37°09'23"	35.99'	55.50'	N84°12'41"W

LINE TABLE

NUM	BEARING	DISTANCE
L1	S53°27'55"W	90.14'
L2	S68°21'07"W	10.15'
L3	N21°52'14"W	126.75'
L4	N51°10'29"E	20.50'
L5	S24°48'19"E	56.38'
L6	N36°36'52"W	4.47'
L7	N65°38'00"W	5.34'

SURVEYOR NOTES

1. PARCEL 1 AND PARCEL 2 HAVE ACCESS TO OHLONE PARKWAY AND MANABE OW ROAD, BOTH PUBLIC RIGHTS OF WAYS.
2. 10' STREET-SIDE SETBACK PER DOCUMENT ENTITLED "CITY OF WATSONVILLE MANABE-OW BUSINESS PARK, FINAL SPECIFIC PLAN," DATED DECEMBER 2010 (SEE SECTION 3.2.1 TABLE 3-2: BP DISTRICT DEVELOPMENT STANDARDS).
3. 0' REAR AND SIDE SETBACK PER DOCUMENT ENTITLED "CITY OF WATSONVILLE MANABE-OW BUSINESS PARK, FINAL SPECIFIC PLAN," DATED DECEMBER 2010 (SEE SECTION 3.2.1 TABLE 3-2: BP DISTRICT DEVELOPMENT STANDARDS).
4. UTILITY LINES ARE PER WATSONVILLE CITY GIS AND ARE APPROXIMATE. NO USA SURVEY WAS PERFORMED. UTILITIES MAY EXIST NOT SHOWN HEREON.

PROFESSIONAL LAND SURVEYOR JOSEPH S. NIELSEN No. 6832 03/06/2022 STATE OF CALIFORNIA

LOT MERGER
TENTATIVE MAP (PP 2202-2883)
LANDS OF
CA/FSRE WATSONVILLE INDUSTRIAL, LLC
A DELAWARE LIMITED LIABILITY COMPANY

CITY OF WATSONVILLE SANTA CRUZ COUNTY CALIFORNIA

PREPARED BY:

MID COAST ENGINEERS
CIVIL ENGINEERS AND LAND SURVEYORS
70 PENNY LANE, SUITE A, WATSONVILLE, CA 95076
(831) 724-2580
JOB NO. 2198LM SHEET: 1 OF 1
©1/18/2022

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APN 018-711-34 (PART) & -35

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MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

BOUNDARIES AND EASEMENTS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE	1" = 100'
DATE	DECEMBER 13, 2021
DESIGN	
DRAWN	
CHECKED	
DWG NAME	
JOB NO.	28595
INDEX	PAJARO 2
FILE NO.	28595
SHEET	C1.0 OF 19

WARE MALCOMB
ARCHITECTURE PLANNING INTERIORS
CIVIL ENGINEERING BRANDING BUILDING MEASUREMENT
4683 Chabot Dr. Suite #320
Pleasanton, CA 94588
P 925.244.9826

CIENT LOGO

BOUNDARIES AND EASEMENTS

REMARKS
2ND SUBMITTAL

DATE
MAY 23, 2022

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C1.0

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NOTES ON TOPOGRAPHIC INFORMATION

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2. THE TOPOGRAPHIC BASE MAP WAS FROM AN AERIAL SURVEY. PRIOR TO FINAL DESIGN THE EXISTING UTILITY AND SITE IMPROVEMENT CONFORMS SHOULD BE SURVEYED TO CONFIRM A HIGHER LEVEL OF ACCURACY.

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4. CALL U.S.A. (UNDERGROUND SERVICE ALERT) (800) 642-2444 BEFORE ANY EXCAVATION.

LEGEND

SUBJECT BOUNDARY
ADJOINER BOUNDARY
INDEX CONTOUR
DASH ICONTOUR
DEP. ICONTOUR
DASH DEP. ICONTOUR
CONTOUR
DASH CONTOUR
DEP. CONTOUR
DASH DEP. CONTOUR
CONTOUR INTERVAL EQUALS ONE FOOT.

SANITARY SEWER MAIN
STORM DRAIN LINE
WATER LINE
ELECTRIC AND TELEPHONE
LANE STRIPE
FENCE
DASHED FENCE
RETAINING WALL
RETAINING WALL W/FENCE
BLOCK WALL
PIPE
STATE HWY.

GUARDRAIL
RAILROAD
PILES,ROCKS
TRENCH
CULVERT
WATER
POOL,SPA
VEGETATION,ORCHARD
BRUSH
EDGE OF ASPHALT,RAMPS
CURB & GUTTER,DRIVEWAY,SIDEWALK
GUTTER
CONCRETE
DIRT ROAD,TRAIL

NUM	BEARING	DISTANCE
L31	N88°29'39"E	63.14'
L32	S79°13'45"E	42.92'
L33	S80°55'22"E	48.67'
L34	S62°54'59"E	51.01'
L35	S88°17'16"E	61.27'
L36	N86°55'04"E	48.08'
L37	N22°12'23"W	6.09'
L38	S67°47'37"W	5.00'
L39	N22°12'23"W	375.19'
L40	N29°29'06"E	6.37'
L41	N22°12'23"W	76.98'

SYMBOLS

POST
1 POST SIGN
2 POST SIGN
WATER VALVE
DROP INLET
CATCH BASIN
FIRE HYDRANT
MANHOLE
POWERPOLE
DIRECTIONAL POWERPOLE
GUY ANCHOR
STREET LIGHT
STREET LIGHT W/ARM
RAIL ROAD SIGNAL

ABBREVIATIONS

ASPH ASPHALT
CONC CONCRETE
DI DROP INLET
JP JOINT UTILITY POLE
SDMH STORM DRAIN MANHOLE
SSMH SANITARY SEWER MANHOLE
SP SIGNAL POLE
WV WATER VALVE

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

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APN 018-711-34 (PART) & -35

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MAY 23, 2022 2ND SUBMITTAL

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CONSULTING CIVIL ENGINEERS
AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

EXISTING CONDITIONS MAP
TOPOGRAPHY

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 100'	DRAWN	JOB NO. 28595	SHEET C1.1
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	
DESIGN	DWG NAME	FILE NO. 28595	OF 19

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INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #200
Pleasanton, CA 94588
P (925) 244-6600

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

EXISTING CONDITIONS MAP
TOPOGRAPHY

DATE MAY 23, 2022
REMARKS 2ND SUBMITTAL

PA/PM:
DRAWN BY.:
JOB NO.: SNR21-0142-00

SHEET C1.1

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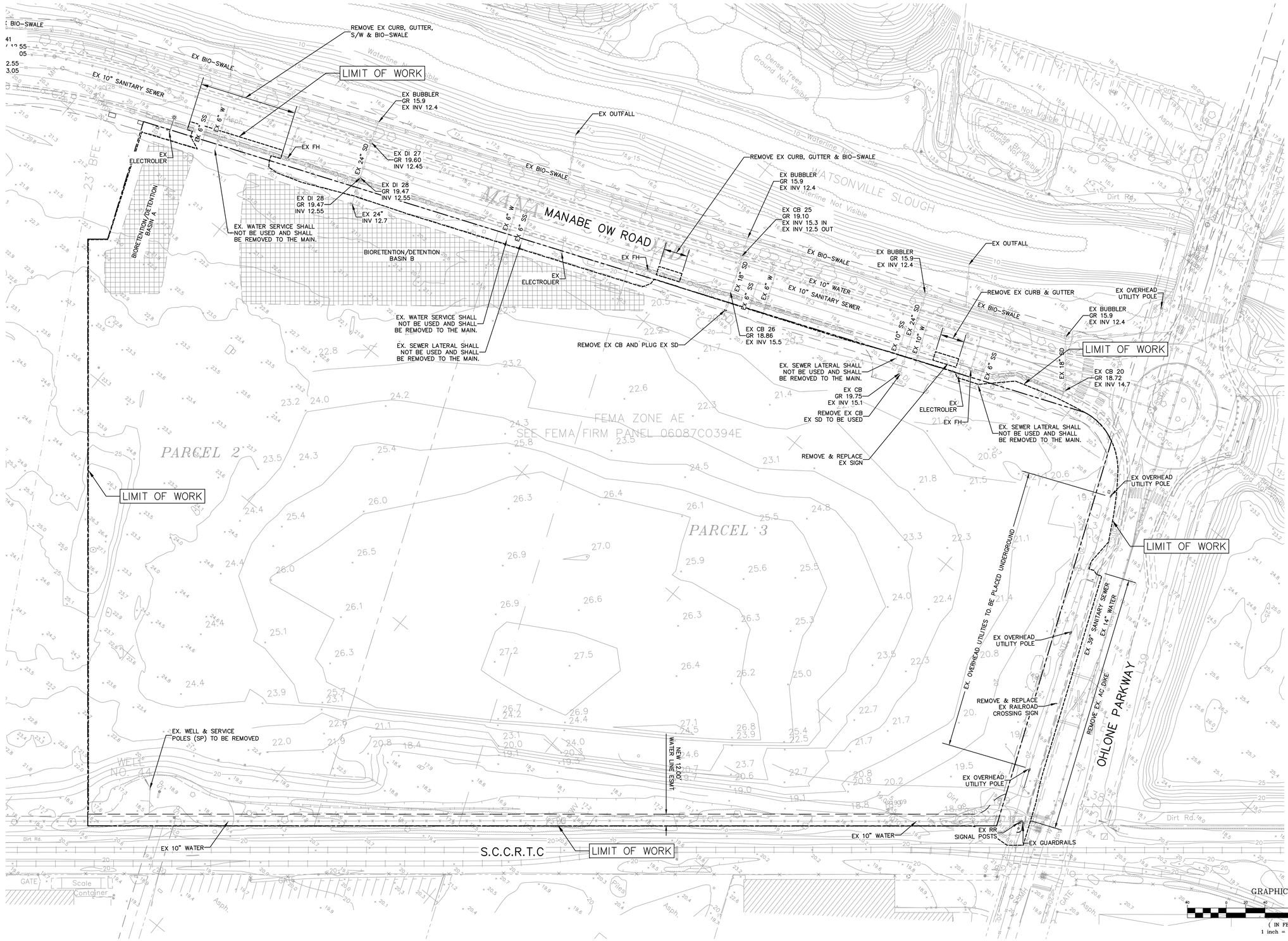

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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MAY 23, 2022 2ND SUBMITTAL	

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY DEMOLITION PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	C1.2
DESIGN	DWG NAME	FILE NO. 28595	OF 19

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING LANDSCAPE
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #200
Pleasanton, CA 94588
P 925.249.3520

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PRELIMINARY DEMOLITION PLAN

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C1.2

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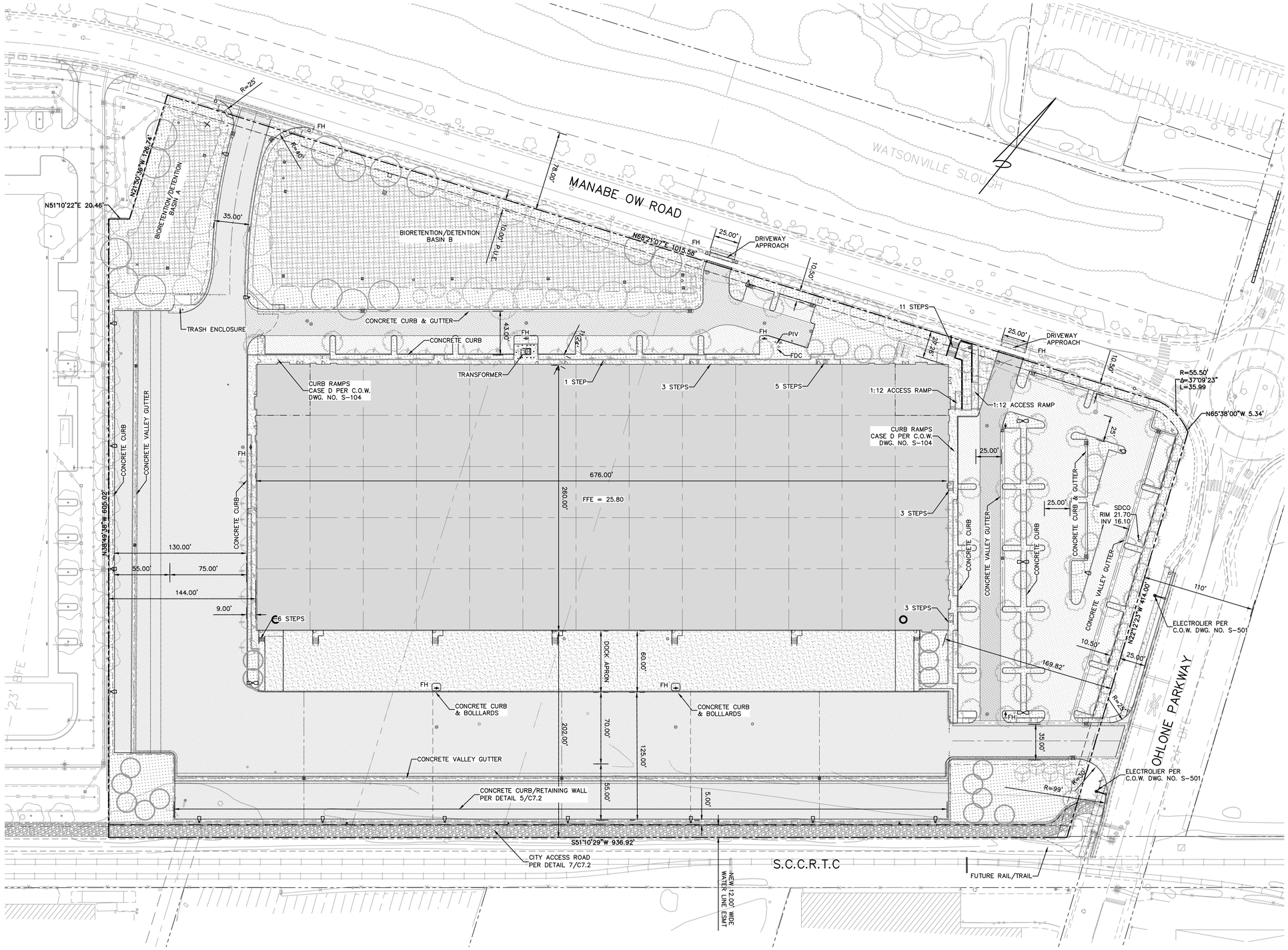

NOTES:

1. FOR ASPHALT CONCRETE (AC) PAVEMENT TYPICAL SECTION SEE DETAIL 1/C7.1.
2. FOR CONCRETE CURB AND GUTTER SEE DETAIL 2/C7.2.
3. FOR CONCRETE CURB SEE DETAIL 3/C7.2
4. FOR CONCRETE SIDEWALK SEE DETAIL 1/C7.2
5. FOR VALLEY GUTTER SEE CONCRETE CROSS GUTTER C.O.W. DWG. NO. S-103
6. SEE SHEET C7.4 FOR STREET BIO-SWALE DETAILS.
7. SEE SHEET C7.5 FOR ON-SITE BIO-RETENTION DETAILS
8. HEAVY DUTY CONCRETE PAVEMENT INCLUDES #4 REINF. BARS @ 18" GRID SPACING
9. MEDIUM DUTY CONCRETE PAVEMENT INCLUDES 6X6 WWF.
10. CONCRETE PAVEMENT CONSTRUCTION JOINTS SHALL HAVE PNA – DIAMOND DOWEL'LOAD TRANSFER PLATES. MAXIMUM DISTANCE BETWEEN SAW CUTS IS 15'-0"EACH WAY. THE POURS SHALL BE NO MORE THAN 75' LONG CONTINUOUS.
11. FOR WORK IN THE CITY R/W SEE SHEETS C7.1 – C7.4 FOR CITY STANDARD DETAILS.
12. NEW 12' WIDE WATERLINE EASEMENT IS SUBJECT TO EXISTING 12" CIP WATER MAIN POTHOLING RESULTS AND CITY APPROVAL.
13. COMPLY WITH PAVEMENT CUTOFF RECOMMENDATIONS PER GEOTECHNICAL INVESTIGATION SEC. 10.4 AND SEC. 9.4 RECOMMENDATIONS FOR EXTERIOR CONCRETE FLATWORK DESIGN AND ISOLATION FROM ADJACENT IMPROVEMENTS.

PVMT TYPE	A.C. (MIN. THICK)	A.B. (MIN. THICK)
AUTOMOBILE PARKING	3.0"	9.0"
AUTO. DRIVE AISLES	3.0"	9.0"
FIRE/TRUCK ACCESS LANES	4.0"	14.5"
HEAVY DUTY CONCRETE PAVEMENT	8.0" (SEE NOTE 7.)	6.0"
MEDIUM DUTY CONCRETE PAVEMENT	6.5" (SEE NOTE 8.)	6.0"

NOTES:

1. THICKNESSES CITED ARE FOR UN-TREATED SUBGRADE
2. PCC CONCRETE FLEXURAL STRENGTH > 550 PSI W/MIN. 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, AND TO INCLUDE EXPANSION & CONTROL JOINTS PER GEOTECHNICAL INVESTIGATION SEC. 10.2, PAGE 38.
3. REFERENCE IS MADE TO THE GEOTECHNICAL INVESTIGATION "COMPACTION REQUIREMENTS" SEC. 6.9 FOR SUBGRADE PREPARATION.

LEGEND

- (P) CONC PAVEMENT
- (P) FIRE LANE ASPHALT PAVEMENT
- (P) ASPHALT PAVEMENT
- (P) LANDSCAPED AREAS
- (P) BIO-RETENTION AREAS

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

811 Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53588 CIVIL STATE OF CALIFORNIA

PRELIMINARY FOR DESIGN REVIEW ONLY

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APN 018-711-34 (PART) & -35

REVISED	
	MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY SITE PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN	JOB NO. 28595	SHEET C2.1
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME	FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING PLANNING LANDSCAPE ARCHITECTURE INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #308 Pleasanton, CA 94588 P 925.249.9525

CIENT LOGO

PRELIMINARY SITE PLAN

DATE MAY 23, 2022

REMARKS 2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET C2.1

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

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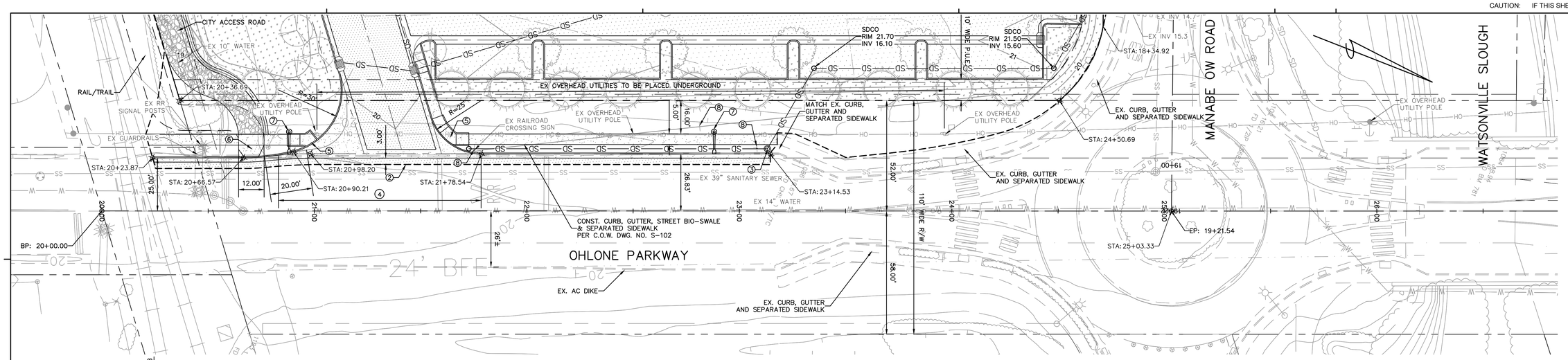
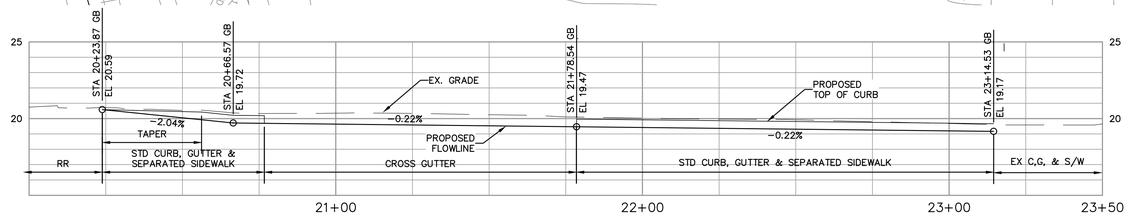
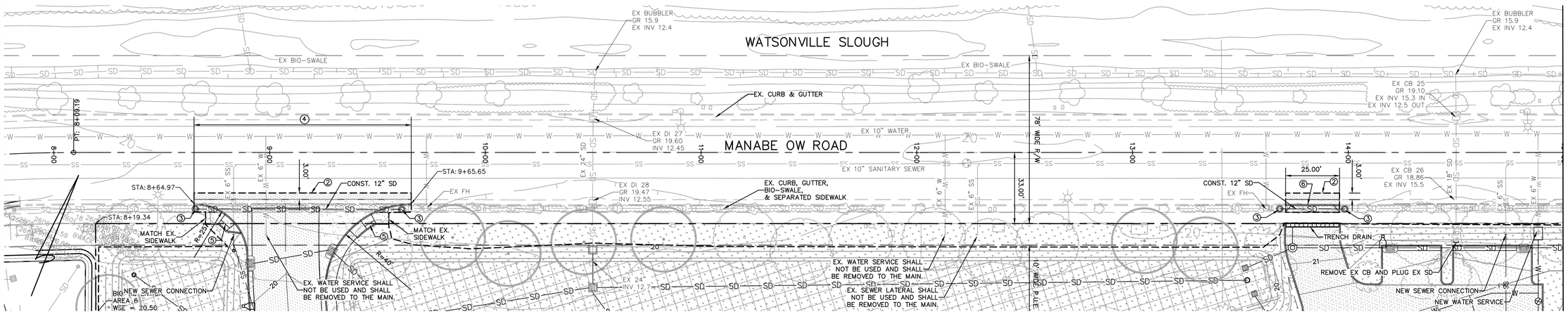
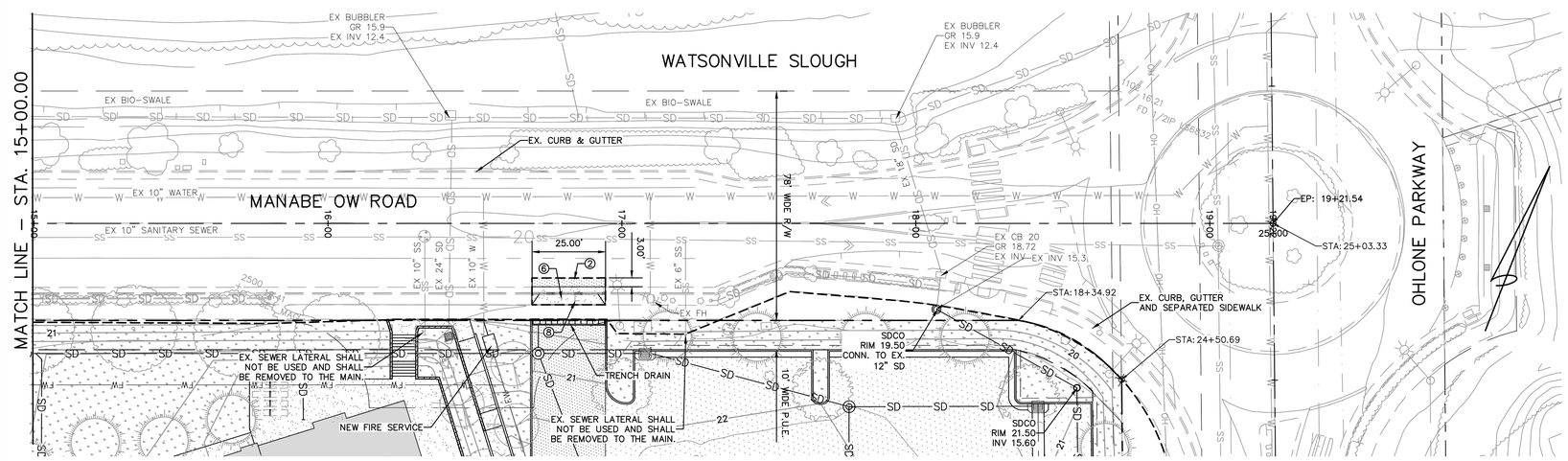




OHLONE PARKWAY – WEST SIDE GUTTER FLOWLINE PROFILE

SCALE: 1" = 20' H., 1" = 4' V.





SITE PLAN NOTES:

1. BEFORE PROJECT COMPLETION, REPLACE ANY CRACKED AND/OR BROKEN CITY CURB, GUTTER, AND SIDEWALK ALONG THE PROJECT FRONTAGE OF MANABE OW ROAD AND OHLONE PARKWAY AT THE SATISFACTION OF THE CITY.
2. SAWCUT EX PAVEMENT TO PRODUCE A STRAIGHT VERTICAL EDGE AGAINST WHICH TO ABUT NEW PAVEMENT.
3. CONSTRUCT OVERFLOW STRUCTURE PER C.O.W. DWG. NO. LID-003.
4. CONSTRUCT 4' WIDE CROSS GUTTER PER C.O.W. DWG. NO. S-103.
5. CURB RAMPS SHALL BE CASE C PER C.O.W. DWG. NO. S-104.
6. DRIVEWAY APPROACHES SHALL BE TYPE "A" WITH A 5' WIDE SIDEWALK (EXISTING) AND 4' WIDE DRIVEWAY APPROACH PER C.O.W. DWG. NO. S-105.
7. ELECTROLIER SHALL BE PER C.O.W. DWG. NO. S-501.
8. REMOVE AND REPLACE EX. SIGN

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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APN 018-711-34 (PART) & -35

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS ATIGA No. 53588 STATE OF CALIFORNIA CIVIL

REVISED
MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY STREET IMPROVEMENT PLANS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 20'	DRAWN
DATE DECEMBER 13, 2021	CHECKED
DESIGN	DWG NAME
JOB NO. 28595	INDEX PAJARO 2
FILE NO. 28595	SHEET C2.2 OF 19

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING PLANNING LANDSCAPE ARCHITECTURE INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300 Pleasanton, CA 94588 P 925.249.9520

CIENT LOGO

PRELIMINARY STREET IMPROVEMENT PLANS

REMARKS	DATE
2ND SUBMITTAL	MAY 23, 2022

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET C2.2

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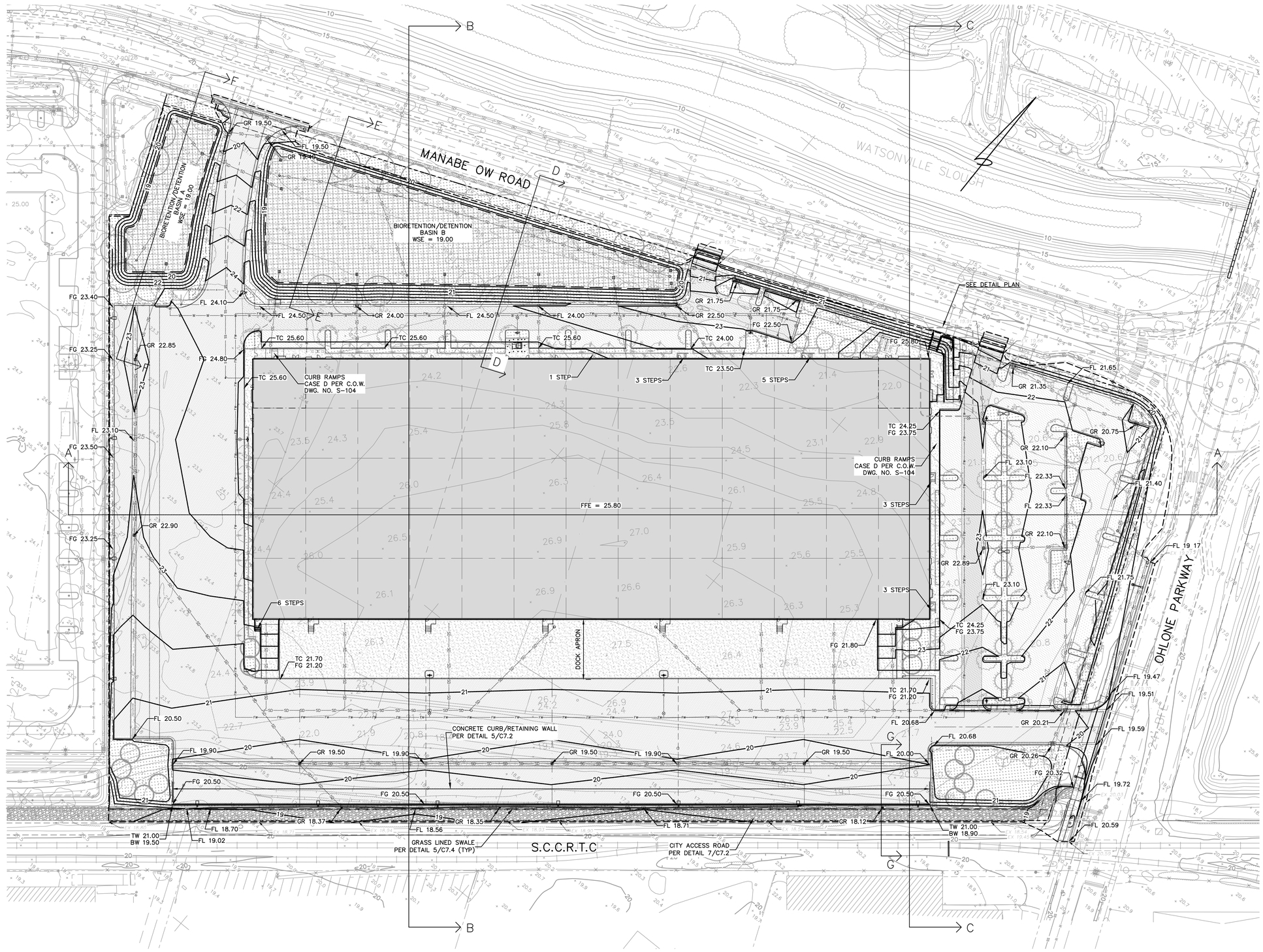

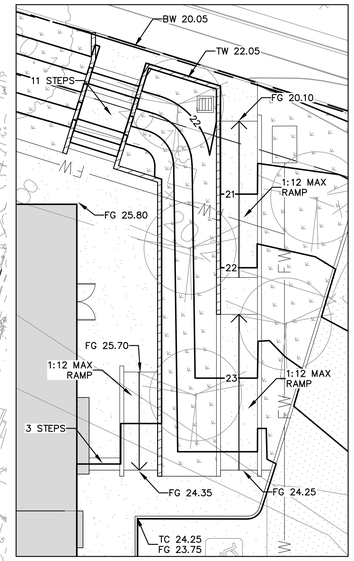

DETAIL PLAN

SCALE: 1" = 10'

NOTES:

1. SEE SHEET C7.5 FOR STREET BIO-SWALE DETAILS.
2. SEE SHEET C7.5 FOR ON-SITE BIO-RETENTION DETAILS.
3. SEE SHEET C7.2 FOR RETAINING WALL DETAILS.
4. REFERENCE IS MADE TO THE GEOTECHNICAL INVESTIGATION FOR THE PROPOSED OHLONE PARKWAY INDUSTRIAL FACILITY, OHLONE PARKWAY AND MANABE OW ROAD WASTONVILLE, CA PREPARED FOR CA VENTURES BY CORNERSTONE EARTH GROUP PROJECT NO. 1309-2-1, DATED MAY 5, 2022, FOR SITE CLEARING & PREPARATION, COMPACTION, WET SOIL STABILIZATION, DEWATERING & SHORING REQUIREMENTS
5. THE PAVING AREAS SHALL MEET THE FOLLOWING SLOPE REQUIREMENTS:
   a. DOCK APRONS = MINIMUM OF 1% AND MAXIMUM OF 1.5% (STRAIGHT AWAY FROM BUILDING).
   b. TRUCK AREAS = MINIMUM OF 1% AND MAXIMUM 5%.
   c. CAR AREAS = MINIMUM OF 1% AND MAXIMUM 6% (MUST MEET ALL ADA REQUIREMENTS).
   d. CANOPY SLABS = MINIMUM OF 1% AND MAXIMUM OF 1.5% (STRAIGHT AWAY FROM BUILDING).
   e. ALL HARD
6. ALL GRADED SLOPES SHALL BE 3:1 MAXIMUM.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS AVIGA No. 53588 STATE OF CALIFORNIA

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APN 018-711-34 (PART) & -35

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	MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY GRADING PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN	JOB NO. 28595	SHEET C3.1
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME	FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING PLANNING LANDSCAPE ARCHITECTURE INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300 Pleasanton, CA 94588 P 925.249.9520

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PRELIMINARY GRADING PLAN

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C3.1

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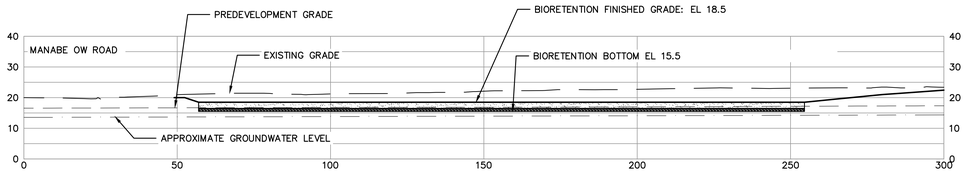
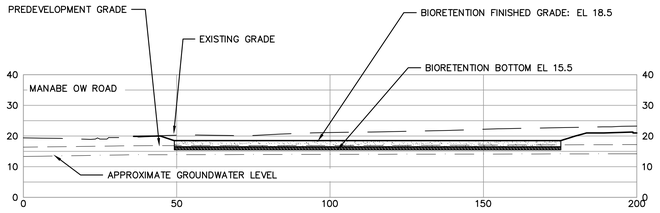
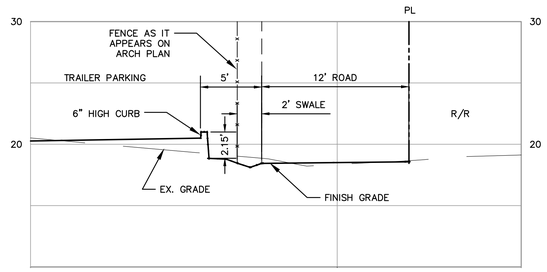


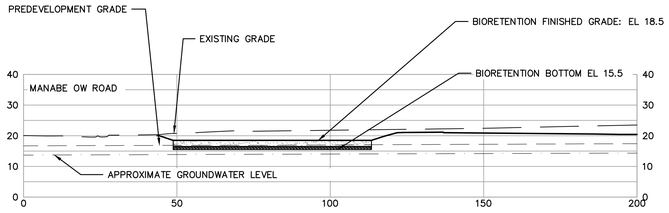
SECTION F – F
SCALE: 1" = 20'



SECTION E – E
SCALE: 1" = 20'



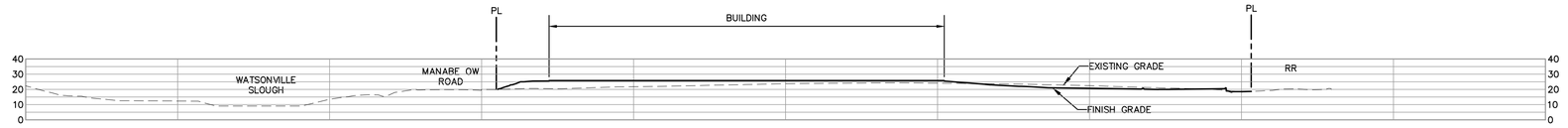
SECTION G – G
SCALE: 1" = 10'



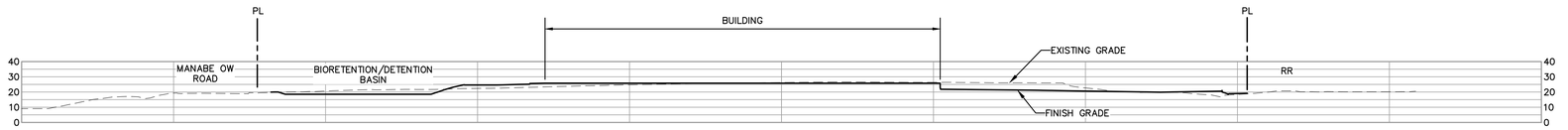
SECTION D – D
SCALE: 1" = 20'

NOTES:

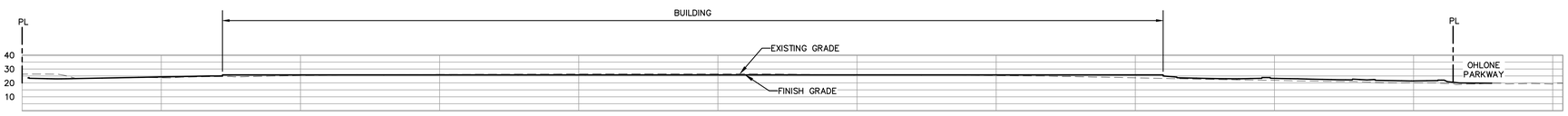
1. PREDEVELOPMENT ELEVATIONS SHOWN HEREON ARE FROM THE AERIAL SURVEY FOR THE MANABE–OW BUSINESS MASTER PLAN & FINAL IMPROVEMENTS PLANS, APPLICATION NO. PP2013–14, BW JOB 24735, DATED SEPTEMBER 6, 2013 (CONVERTED TO NAVD88 DATUM)
2. GROUNDWATER LEVELS SHOWN HEREON ARE SET AT 3 FEET BELOW THE NATIVE SOIL LEVEL, AS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION FOR THE OHLONE PARKWAY INDUSTRIAL FACILITY, PREPARED BY CORNERSTONE EARTH GROUP, DATED MAY 5, 2022, PROJECT 1309–2–1.



SECTION C – C
SCALE: 1" = 40'



SECTION B – B
SCALE: 1" = 40'



SECTION A – A
SCALE: 1" = 40'

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DECEMBER 13, 2021 2ND SUBMITTAL	

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AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073–2094
(831) 426–3560

PRELIMINARY CROSS SECTIONS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	C3.2
DESIGN	DWG NAME	FILE NO. 28595	OF 19

WARE MALCOMB
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PLANNING SURVEYING
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.249.3520

CIENT LOGO

PRELIMINARY CROSS SECTIONS

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

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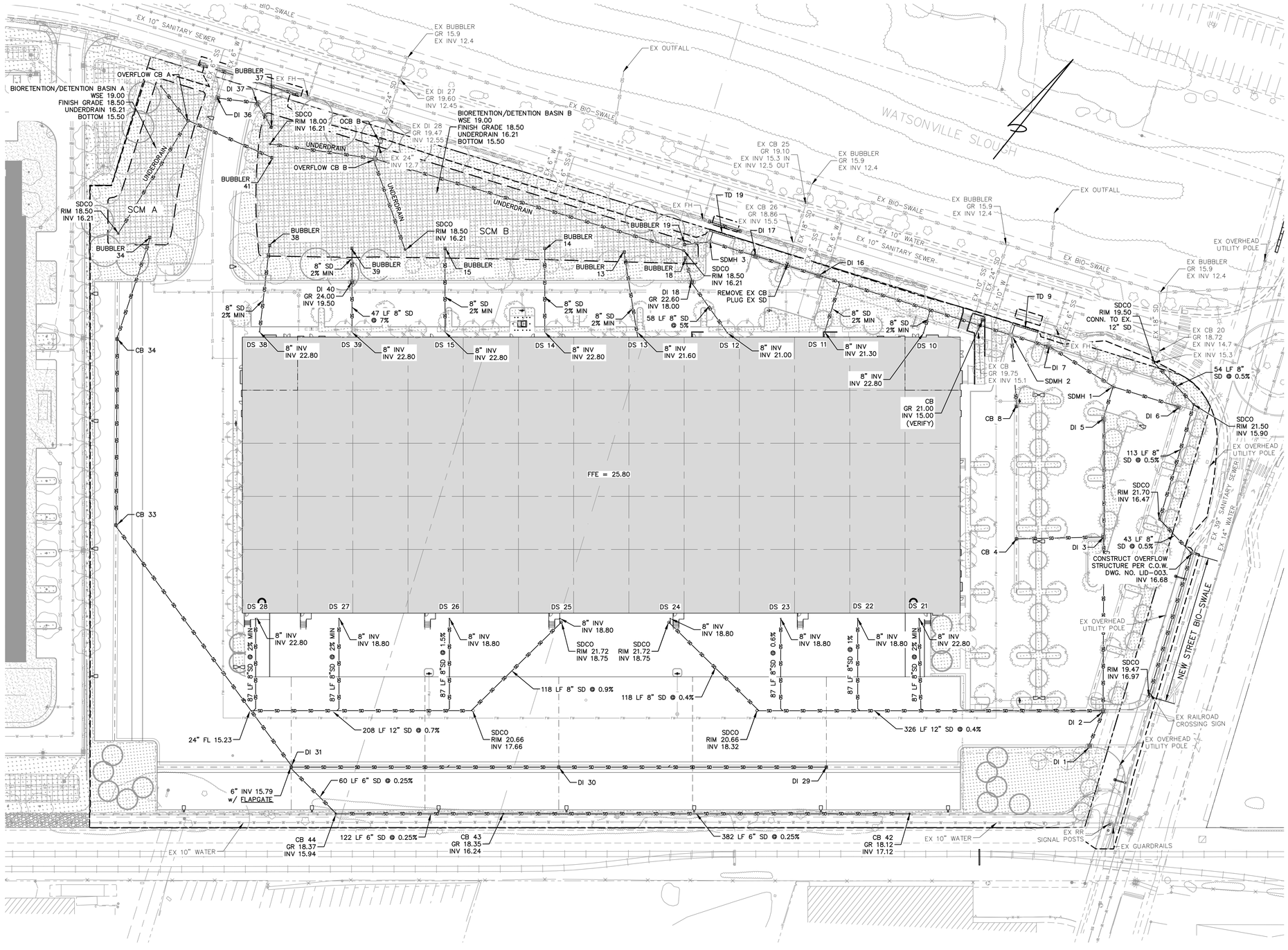

DRAINAGE STRUCTURE	LENGTH (FT)	DIA. (IN)		SLOPE %	GR/RIM	INV IN	INV OUT
DI 1					20.26		18.70
DI 2	35	6	PVC	0.40	20.21	18.56	17.56
DI 3	163	18	PVC	0.40	22.25	16.90	16.90
DI 4					22.89		20.39
DI 3	82	12	PVC	3.76	22.25	17.31	16.90
DI 5	112	18	PVC	0.39	22.75	16.46	16.46
SDMH 1	32	18	PVC	0.41	21.96	16.33	16.33
CB 6					20.75		17.75
SDMH 1	65	6	PVC	0.35	21.96	17.52	16.33
CB 7	63	18	PVC	0.40	21.35	16.08	16.08
SDMH 2	72	18	PVC	0.40	20.60	15.79	15.79
CB 8					21.35		18.35
SDMH 2	36	6	PVC	3.06	20.60	17.25	15.79
TD 9					19.67		18.00
SDMH 2	10	6	PVC	1.40	20.36	17.86	15.79
DI 16	190	18	PVC	0.40	21.75	15.03	15.03
DI 17	62	18	PVC	0.40	21.75	14.78	14.78
SDMH 3	45	18	PVC	0.40	20.40	14.60	14.60
TD 19					19.56		17.89
SDMH 3	10	6	PVC	12.30	20.40	16.66	14.60
BUBBLER 19	24	18	PVC	0.42	18.50	14.50	14.50
CB 29					19.90		16.50
CB 30	126	18	PVC	0.30	19.90	16.12	15.62
CB 31	126	24	PVC	0.30	19.90	15.24	15.24
CB 33	281	24	PVC	0.30	22.90	14.40	14.40
CB 33	175	24	PVC	0.30	22.90	13.88	13.88
BUBBLER 34	100	24	PVC	0.30	18.50	13.58	
OVERFLOW CB A					19.00		13.28
BUBBLER 41	92	24	PVC	0.30	18.50	13.00	
DI 36					19.50	14.66	14.66
DI 37	40	12	PVC	0.83	19.40	14.33	14.33
BUBBLER 37	24	12	PVC	1.38	18.50	14.00	
OVERFLOW CB B					19.00	12.70	12.70
OCB B	13	24	PVC	0.77	20.00	12.60	12.60
EX DI 28	21	24	PVC	0.24	19.47	12.55	12.55
EX DI 27	40	24	PVC	0.25	19.60	12.45	12.45
EX BUBBLER	21	24	PVC	0.24	15.90	12.40	
EX 26					18.86		15.50
EX 25	40	18	PVC	0.50	19.10	15.30	12.50
EX BUBBLER	20	18	PVC	0.50	15.90	12.40	
EX 20					18.72	14.70	14.70
EX BUBBLER	20	18	PVC	11.50	15.90	12.40	

NOTES:

1. SEE SHEET C7.4 FOR STREET BIO-SWALE DETAILS.
2. FOR BUBBLER STRUCTURE SEE DETAIL 4/C7.5
3. FOR OVERFLOW STRUCTURE SEE DETAIL 3/C7.5
4. FOR OCB SEE DETAIL 5/C7.5
5. FOR BIO-RETENTION SEE DETAIL 1/7.5
6. FOR DI SEE DWG. NO. S-204 ON SHEET C7.4
7. FOR CB SEE DETAIL 3 ON SHEET C7.4
8. FOR SDCO SEE DETAIL 2 ON SHEET C7.4
9. FOR SDMH SEE DWG. NO. S-202 ON SHEET C7.1
10. ALL DRAINAGE INLETS SHALL BE MARKED PER STORM DRAIN MARKER INSTALLATION DWG. NO. S-207 ON SHEET C7.1
11. OUTLET CONTROL BOX 1 SHALL HAVE A WEIR AND ORIFICE FLOW CONTROL PLATE PER DETAIL 5/C7.5.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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APN 018-711-34 (PART) & -35

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MAY 23, 2022	2ND SUBMITTAL

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3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY DRAINAGE PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN
DATE DECEMBER 13, 2021	CHECKED
DESIGN	DWG NAME
JOB NO. 28595	SHEET C4.0
INDEX PAJARO 2	OF 19
FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING PLANNING LANDSCAPE ARCHITECTURE INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300 Pleasanton, CA 94588 P 925.249.9520

CIENT LOGO

PRELIMINARY DRAINAGE PLAN

DATE MAY 23, 2022

REMARKS
2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C4.0

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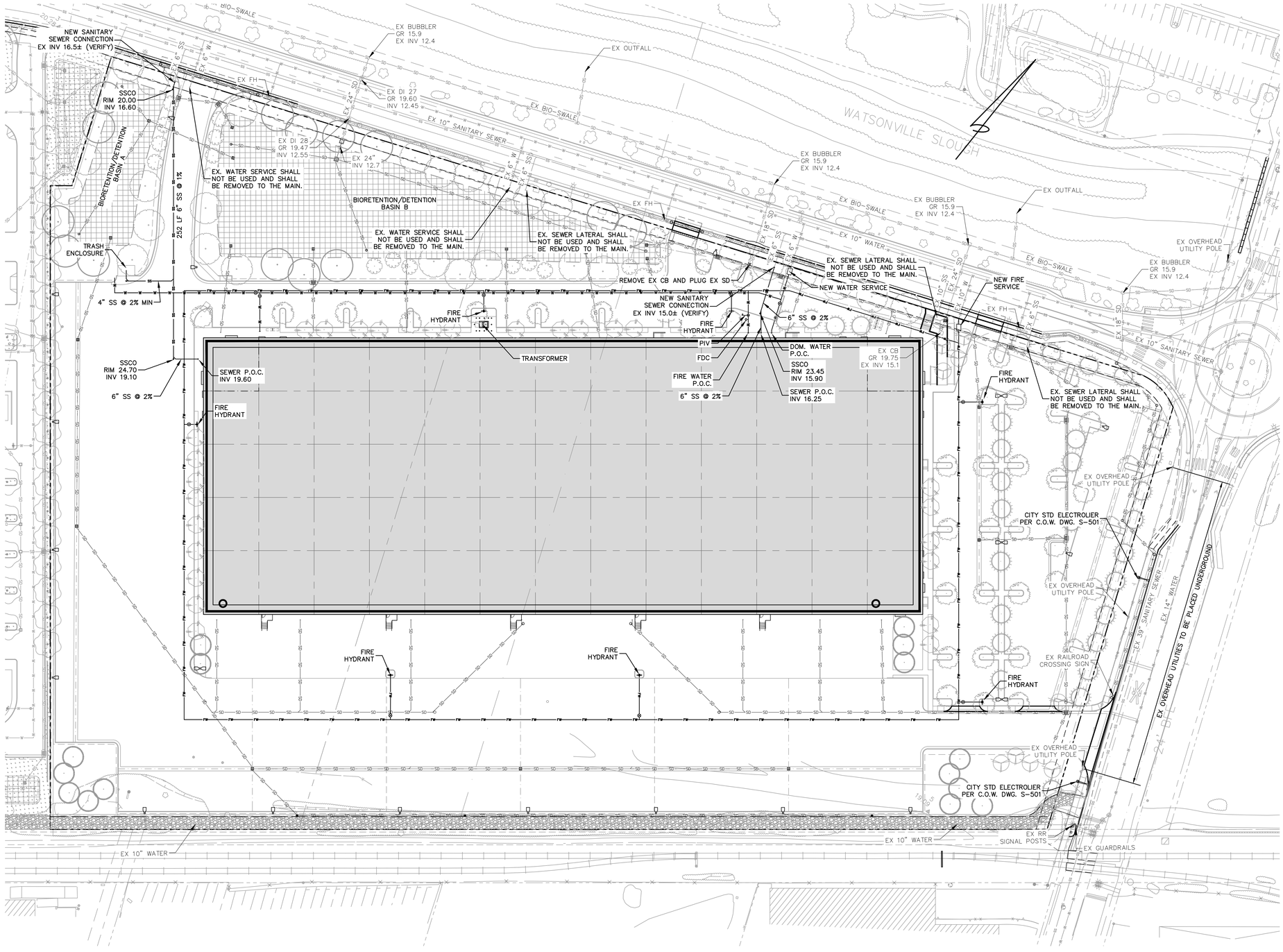

NOTES:

1. FOR WATER, SANITARY SEWER & STORM SEWER PIPING SEE DWG. NO. S-201 ON SHEET C7.1.
2. FOR STANDARD MANHOLE SEE DWG. NO. S-202 ON SHEET C7.1.
3. FOR SEWER LATERAL SEE DWG. NO. S-208a ON SHEET C7.2.
4. FOR STANDARD TRENCH BACKFILL SECTION SEE DWG. NO. S-401 ON SHEET C7.2. WHERE TRENCHES PASS INTO BUILDING AND PAVEMENT AREAS, INCLUDE A PLUG OF LOW-PERMEABILITY CLAY SOIL, SAND-CEMENT SLURRY, OR LEAN CONCRETE.
5. PRIOR TO BUILDING PERMIT ISSUANCE, APPLICANT SHALL PAY SEWER CONNECTION FEE (WMC §6- 3.523).
   a. CONNECTION FEES AND CHARGES SHALL BE IN ACCORDANCE WITH A SCHEDULE ESTABLISHED BY RESOLUTION OF THE COUNCIL. CONNECTION FEES SHALL BE IN EFFECT FOR ALL NEW CONNECTIONS TO A PUBLIC SANITARY SEWER MAIN.
   b. NEW CONSTRUCTION. ALL NEWLY CONSTRUCTED RESIDENTIAL OR COMMERCIAL UNITS SHALL PAY THE APPROPRIATE SANITARY SEWER CONNECTION FEES AS SET FORTH BY COUNCIL RESOLUTION PRIOR TO RECEIVING AN OCCUPANCY PERMIT. ALL NEWLY CONSTRUCTED INDUSTRIAL FACILITIES SHALL, PRIOR TO RECEIVING AN OCCUPANCY PERMIT, ACQUIRE BY PURCHASE OR LEASE SUFFICIENT POTW CAPACITY IN AN AMOUNT EQUAL TO NOT LESS THAN ITS ESTIMATED PEAK MONTHLY DISCHARGE.
6. IF ANY TRUCK OR VEHICLE WASHING WILL BE PERFORMED ON SITE, A TRUCK WASH STATION APPROVED BY THE CITY WILL BE REQUIRED ON SITE.
7. ANY WASTEWATER PRETREATMENT DEVICE AT THIS FACILITY MUST BE APPROVED BY SOURCE CONTROL BEFORE INSTALLATION.
8. PRIOR TO BUILDING PERMIT FINAL, COMPLIANT BACKFLOW PREVENTION DEVICES SHALL BE PROVIDED FOR ALL NEW FIRE AND WATER SERVICE CONNECTIONS.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53588 STATE OF CALIFORNIA

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APN 018-711-34 (PART) & -35

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MAY 23, 2022 2ND SUBMITTAL	

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SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY UTILITY PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN	JOB NO. 28595	SHEET C5.0
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME	FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING LANDSCAPE ARCHITECTURE
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #308
Pleasanton, CA 94588
P 925.249.9320

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PRELIMINARY UTILITY PLAN

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C5.0

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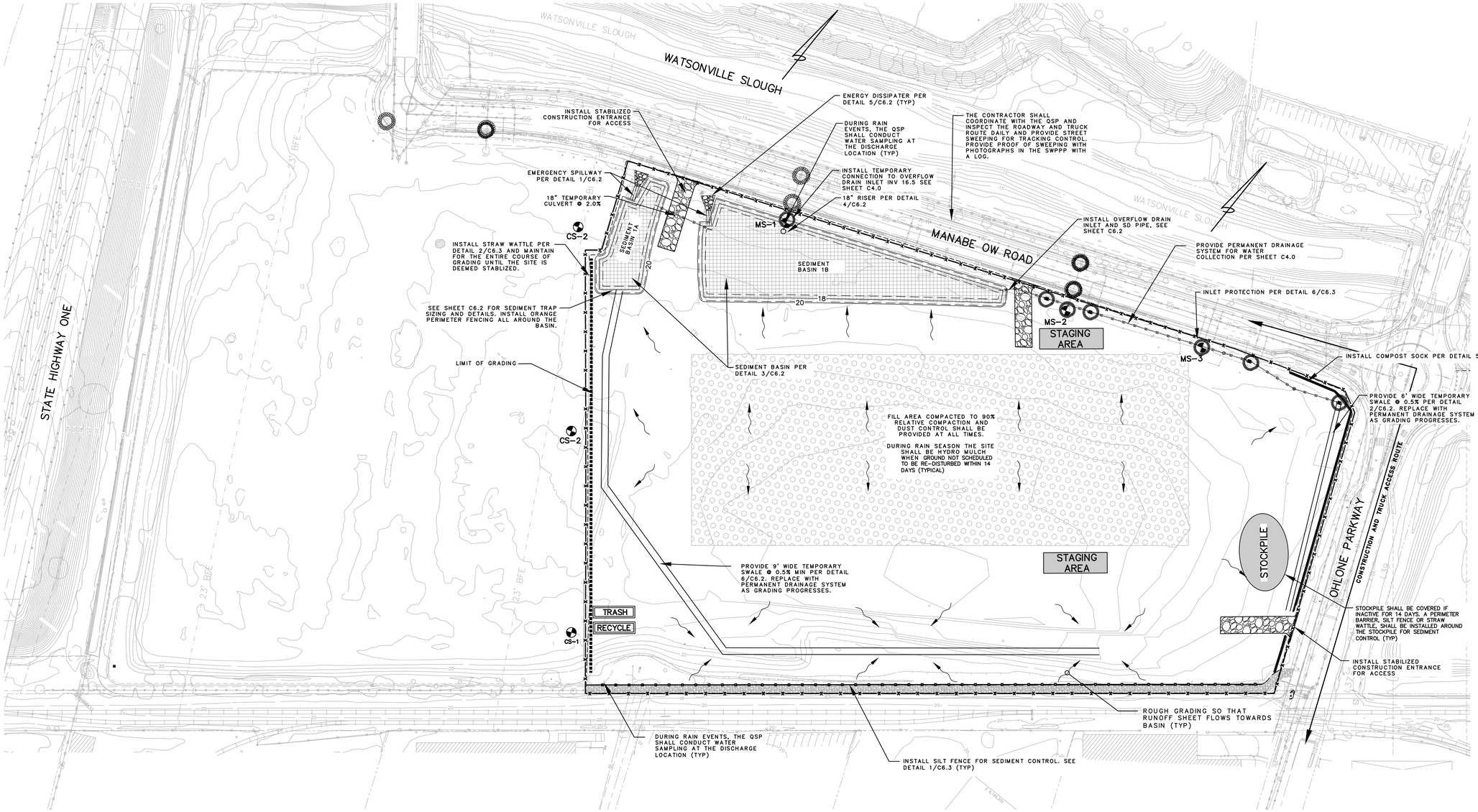

LEGEND

- STRAW WATTLE/FIBER ROLL
- INLET PROTECTION DEVICE
- FILTREXX COMPOST SOCK
- PROPERTY LINE
- GRADING LIMITS
- CONTROL OR UPSTREAM (UNCONTAMINATED) SAMPLING LOCATION FOR NON-VISIBLE POLLUTANTS IN THE EVENT OF A SPILL OR UNPLANNED DISCHARGE. — CS-1
- SITE GRADING & EXCAVATION
- CONSTRUCTION ENTRANCE & EXIT
- BUILDING PAD
- POLLUTANT MONITORING SAMPLING LOCATION FOR NON-VISIBLE POLLUTANTS IN THE EVEN OF A SPILL OR UNPLANNED DISCHARGE. ALSO SERVES AS TURBIDITY AND PH TESTING LOCATION. — MS-1

PHASE 1 OPERATIONS

1. MAINTAIN PERIMETER SEDIMENT AND EROSION CONTROL MEASURES.
2. CONSTRUCT AND/OR PROVIDE ADDITIONAL BMPS FOR DISTURBED AREAS NOT UNDER CONSTRUCTION.
3. STABILIZE DISTURBED GROUND NOT SCHEDULED TO BE RE-DISTURBED WITHIN 14 DAYS.
4. USE SOIL BINDER OR HYDRO MULCH AS TEMPORARY BMP TO STABILIZE DISTURBED SOILS PRIOR TO OCCASIONAL LIGHT STORM EVENTS.
5. THE QSP SHALL MONITOR AND EVALUATE THE SOIL CONDITION AT THE PROJECT SITE AND DIRECT THE CONTRACTOR TO INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED TO PREVENT FURTHER EROSION.
6. ALL DISTURBED AREAS NOT TO BE RE-DISTURBED SHALL BE HYDROSEEDED WITH NATIVE MIX AND MULCH PER THE CITY OF WATSONVILLE MIX ON SHEET 6.3
7. PROVIDE WASTE MANAGEMENT BMPS.
8. EARTHWORK INVOLVING >1,000 CY SHALL BE SUPERVISED BY THE PROJECT SOILS ENGINEER.

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

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REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS RICCA — No. 53698 — CIVIL — STATE OF CALIFORNIA

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MAY 23, 2022	2ND SUBMITTAL

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CONSULTING CIVIL ENGINEERS
AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PHASE 1 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN
OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 60'	DRAWN	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	C6.0
DESIGN	DWG NAME	FILE NO. 28595	OF 19

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4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.244.9620

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PHASE 1 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C6.0

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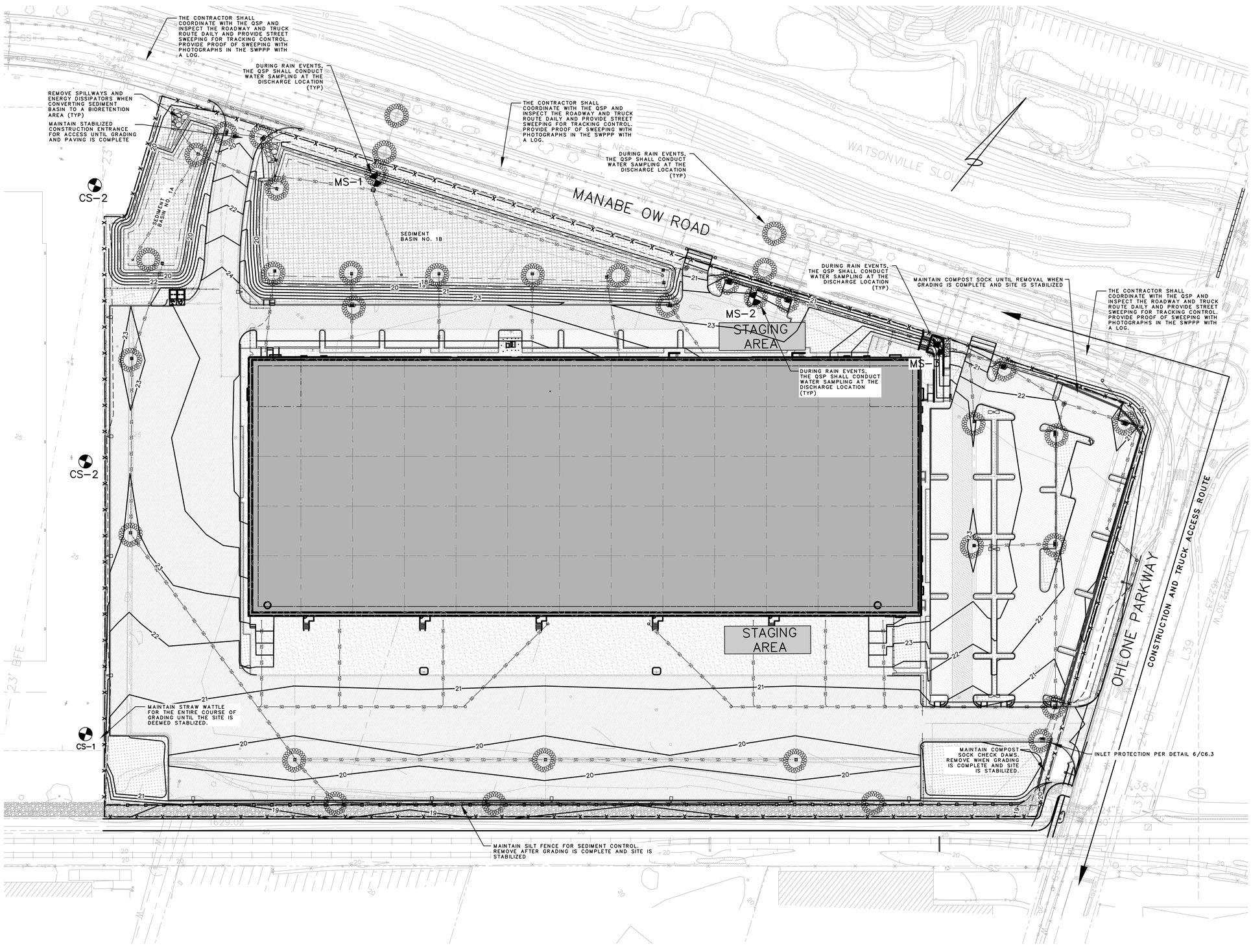

PHASE 2 OPERATIONS

1. INSTALL PERIMETER SEDIMENT AND EROSION CONTROL MEASURES.
2. CONSTRUCT AND/OR PROVIDE ADDITIONAL BMPS FOR DISTURBED AREAS NOT UNDER CONSTRUCTION.
3. STABILIZE DISTURBED GROUND NOT SCHEDULED TO BE RE-DISTURBED WITHIN 14 DAYS.
4. USE SOIL BINDER OR HYDRO MULCH AS TEMPORARY BMP TO STABILIZE DISTURBED SOILS PRIOR TO OCCASIONAL LIGHT STORM EVENTS.
5. PRIOR TO RAINY SEASONS, ALL DISTURBED SOIL AREAS SHALL BE STABILIZED WITH ADDITIONAL SEDIMENT BARRIER, SUCH AS STRAW WATTLE OR COMPOST SOCK, AT TOP AND BOTTOM OF SLOPE.
6. GRADED AREAS NOT TO BE RE-DISTURBEDED SHALL BE LANDSCAPED OR HYDROSEED WITH MULCH. SEED MIX SHALL BE PER CITY OF WATSONVILLE MIX ON SHEET C6.3.
7. PROVIDE WASTE MANAGEMENT BMPS.

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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JOEL FRANCIS RICCA
No. 53588
STATE OF CALIFORNIA

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DECEMBER 20, 2021	2ND SUBMITTAL
MAY 23, 2022	3RD SUBMITTAL

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SOQUEL, CA 95073-2094
(831) 426-3560

PHASE 2 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 40'	DRAWN	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	C6.1
DESIGN	DWG NAME	FILE NO. 28595	OF 19

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PHASE 2 PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
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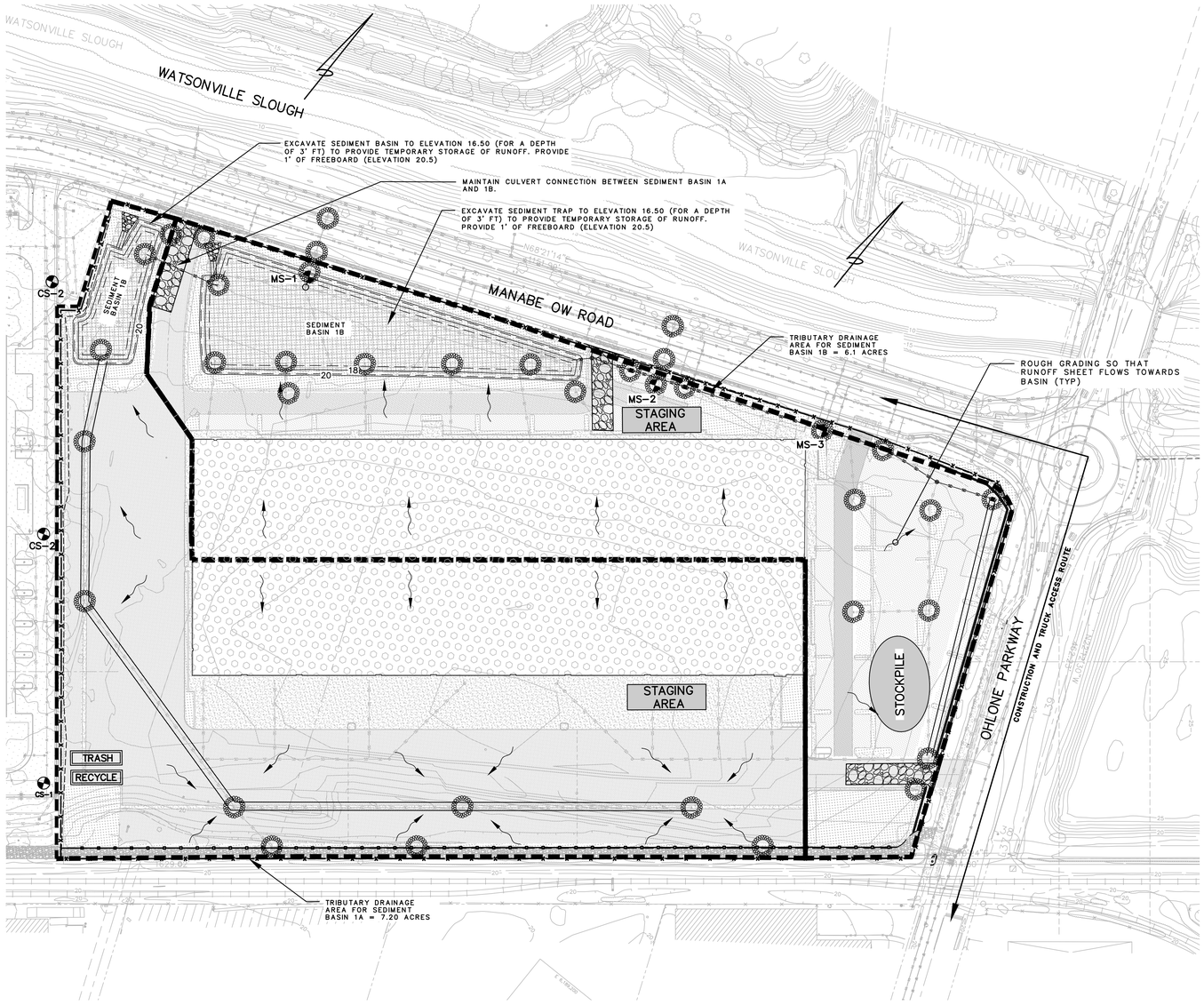
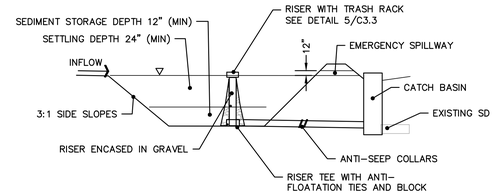
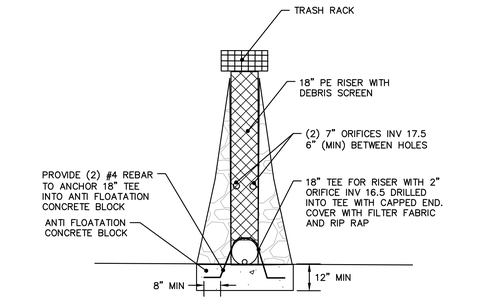


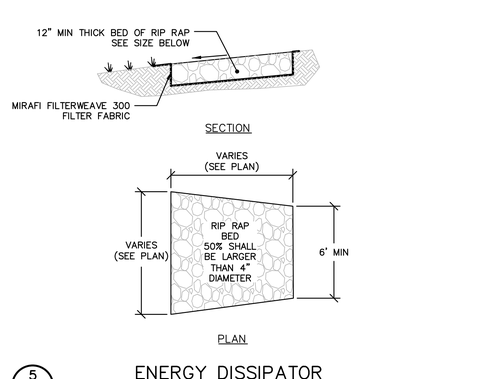


NOTE:
1. PROVIDE CHAIN LINK FENCE AROUND THE SEDIMENT BASIN.
2. THE BASIN ALIGNMENT IS DESIGNED SUCH THAT THE LENGTH OF THE BASIN IS MORE THAN TWICE THE WIDTH OF THE BASIN; ANY MODIFICATION TO THE BASIN REQUIRES APPROVAL BY THE QSD.
3. APPROXIMATE SEDIMENT LOSS ACCUMULATED BY THE BASIN IS 330 TONS (4400 CF). CONTRACTOR SHALL BE RESPONSIBLE FOR ANNUAL SEDIMENT REMOVAL.

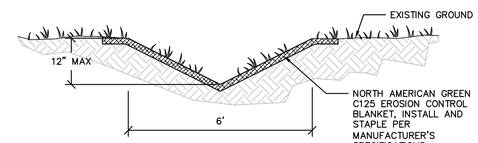
3 / C6.2 SEDIMENT BASIN
SCALE: N.T.S.



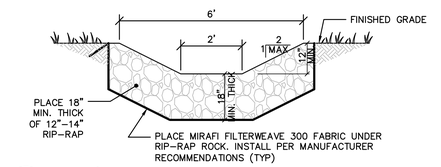
4 / C6.2 18" RISER DETAIL
SCALE: N.T.S.



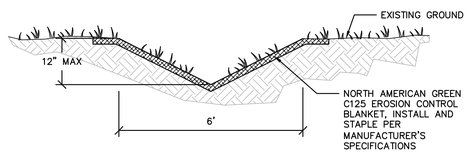
5 / C6.2 ENERGY DISSIPATOR
SCALE: NTS



6 / C6.2 9' GRASS LINED SWALE
SCALE: NTS



1 / C6.2 6' WIDE SPILL WAY TYPICAL SECTION
SCALE 1/2" = 1'-0"



2 / C6.2 6' GRASS LINED SWALE
SCALE: NTS

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

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APN 018-711-34 (PART) & -35

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MAY 23, 2022 2ND SUBMITTAL

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CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

REGISTERED PROFESSIONAL ENGINEER JOY FRANCIS RICA No. 53588 CIVIL STATE OF CALIFORNIA

PHASE 1 PRELIMINARY SEDIMENT TRAPS SIZING & DETAILS
OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE 1" = 60'	DRAWN
DATE DECEMBER 13, 2021	CHECKED
DESIGN	DWG NAME
JOB NO. 28595	SHEET C6.2
INDEX PAJARO 2	OF 19
FILE NO. 28595	

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INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.249.3520

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

PHASE 1 PRELIMINARY SEDIMENT TRAP SIZING & DETAILS

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C6.2

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City of Watsonville
Erosion Control Standards

Temporary erosion control measures are effective all year long

.

General Requirements

1. If any grading operations, other than lot finish grading, are to be performed during the rainy season, October 15 through April 15, an **Erosion Control Plan must be submitted by August 15** and the plan must be approved by the City of Watsonville prior to the commencement of any such grading operations.

2. All erosion and sediment control measures shall be constructed and maintained in accordance with the ***Erosion and Sediment Control Field Manual***, published by the California Regional Water Quality Control Board, Region 2, unless otherwise stated within these Standards. Recommended practices cited in these standards come from the Third Edition, July 1999. Control measures are subject to the inspection and approval of the City. Schedule an initial site inspection by calling 831-728-6018 at least 48 hours prior to the start of any work.

3. Except as otherwise directed by the Inspector, **all devices shown on the Erosion Control Plan shall be in place at the end of each day**. All erosion control facilities must be inspected and repaired by the owner/contractor at the end of each working day ~~during the rainy season~~ and maintained ~~during the rainy season (October 15 to April 15)~~. Any erosion control facilities that are disturbed during the work day must be in place and functional by the end of each day.

4. **Temporary erosion control devices and Best Management Practices (BMPs) shall be relocated or modified only with approval of the Inspector**.

5. The Permittee or Contractor shall be responsible for any and all emergency work during rainstorms.

6. Borrow areas and temporary stockpiles shall be protected with appropriate erosion control measures to the satisfaction of the Inspector. (Recommended Practices: *Temporary seeding and mulching, p. 31; Hydromulching - hydroseeding, p. 35; Erosion control blankets and geotextiles, p. 45; Fiber rolls, p. 47*).

7. Sufficient erosion control materials shall be stored on site and placed at intervals shown on erosion control plans.

Inspections

8. After October 15, all erosion control measures will be **inspected by the City daily and after each storm**. After October 15, damage to BMPs must be repaired at the close of each day and whenever rain is forecast.

Hydroseeding and Mulching

9. **All graded areas with slopes in excess of 5% shall be hydroseeded per the *Erosion and Sediment Control Field Manual, p. 35*.** In addition to hydroseeding, application of **straw with a tackifier or mulch may be required** by the City. Graded areas with slopes less than 5% shall be protected from erosion with straw and a tackifier. An approved mix design follows:

~~Blando Brome~~	BROMUS CARINATUS	~~30 lbs./acre~~ 25 LBS./ACRE
~~Zorro Fescue~~	ELYMUS GLAUCUS	~~10 lbs./acre~~ 10 LBS./ACRE
~~Hykon Rose Clover~~	VULPIA MICROSTACHYS	~~12 lbs./acre~~ 6 LBS./ACRE
~~California Native Wildflower~~	TRIFOLIUM CILIATUM	~~8 lbs./acre~~ 4 LBS./ACRE
Fertilizer (ammonium phosphate with sulfur, 16-20-0)		200 lbs./acre
Organic Binder		100 lbs./acre
Straw Mulch		4000 lbs./acre (about 45 bales/acre)

~~Note: Santa Cruz County Erosion Control Mix (used at 60 lbs/acre) may be used for the seed portion of the above mix.~~

Stormwater Conveyance

10. If the permanent storm drain system is not installed by October 1, **temporary ditches shall be constructed** to contain the storm water and direct it to sediment control facilities. Temporary ditches shall be lined with a suitable material that prevents erosion of the ditch.

Provide **velocity check dams in all unpaved graded channels** at the intervals indicated below. (Recommended Practices: *Check dams, p. 57; Temporary straw bale dike, p. 65; Sand/gravel bag barrier, p. 69*).

Grade of Channel	Interval
Less than 3%	100 feet
3% to 6%	50 feet
Over 6%	25 feet

11. **All cut and fill slopes are to be protected to prevent overbank flow** using 4" earth berms or sand bags. When directed by the Inspector, a 12-inch berm shall be maintained along the top of the slope of those fills on which grading is not in progress. (Recommended Practice: *Sand/gravel bag barrier*, p. 69).

12. Provide **velocity check dams in all unpaved streets** at the intervals indicated below. Velocity check dams may be constructed of straw bales, sandbags or other erosion resistant materials approved by the Inspector, and shall extend completely across the street or channel at right angles to the centerline. Earth dikes may not be used as velocity check dams. (Recommended Practices: *Check dams, p. 57; Temporary straw bale dike, p. 65; Sand/gravel bag barrier, p. 69*).

Grade of the Street	Interval
Less than 2%	As required
2% to 4%	100 feet
4% to 10%	50 feet
Over 10%	25 feet

Construction Entrances

13. The Contractor shall place drain rock as a gravel roadway (6" minimum thickness for the full width and 50 feet long) at each road entrance to the site. Any mud that is tracked onto public streets shall be removed the same day. (Recommended Practices: *Stabilized construction entrance, p. 51; Entrance/exit tire wash, p. 53*).

14. All soil and debris shall be removed from any street areas impacted by construction on a daily basis, or more frequently as directed by the Inspector. The site shall be maintained so as to minimize sediment laden runoff to any storm drain or natural drainage system.

Miscellaneous

15. Utility or storm drain trenches that are cut through basin dikes or basin inlet dikes, shall be plugged with sandbags from top of pipe to top of dike. Utility lines shall first be encased in concrete before sandbags are placed.

16. All open utility trenches shall be blocked at the prescribed intervals from the bottom to top with a double row of sandbags prior to backfill. Utility trenches shall be blocked at the prescribed intervals with a double row of sandbags extending two sandbags from the graded surface of the street. Sandbags are to be placed with alternate header and stretcher courses. The intervals prescribed between sandbag locking shall depend on the slope of the ground surface, but not exceed the following:

Grade of the Trench	Interval
Less than 2%	As required
2% to 4%	100 feet
4% to 10%	50 feet
Over 10%	25 feet

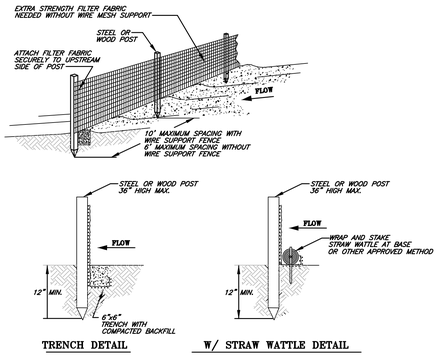
17. After utility trenches are backfilled and compacted, the surfaces over such trenches shall be mounded slightly to prevent channeling of water in the trench area. Care should be exercised to provide for cross flow at frequent intervals where trenches are not on the center line of a crowned street.

18. **Hazardous materials and wastes**, including petroleum products, asphalt products, pesticides, paints, stains, solvents, and concrete curing compounds must be properly stored and handled, as per the *Erosion and Sediment Control Field Manual, p. 97-106*.

19. Concrete mixing equipment and trucks must be cleaned in a properly constructed **Concrete Washout Area** as per the *Erosion and Sediment Control Field Manual, p. 107*. Concrete wash-out is not allowed to flow into streets, storm drains, or off of the construction site.

Erosion and Sediment Control Field Manual
Third Edition, 1999

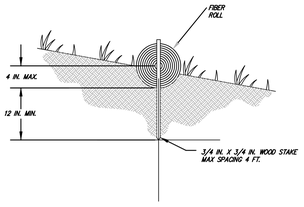
To order a copy of this Manual, contact
Friends of the San Francisco Estuary, P.O. Box 791, Oakland, CA 94604-0791,
call (510) 622-2419, or go to http://store.abag.ca.gov/construction.asp



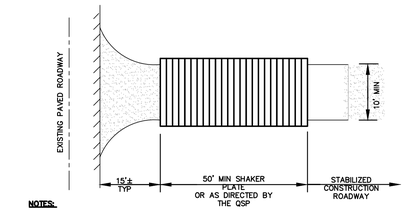
NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM RECOMMENDED STORAGE HEIGHT.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

1 / C6.2 SILT FENCE
SCALE: NTS



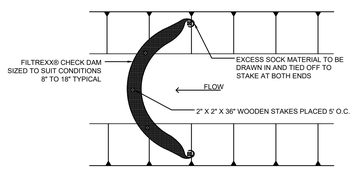
2 / C6.2 STRAW WATTLES/FIBER ROLLS
SCALE: NTS



NOTES:

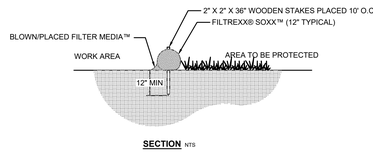
1. THE CONTRACTOR SHALL EMPLOY A MONITORING STATION TO OBSERVE AND ASSESS THE DUST AND TRACKING CONDITIONS.
2. AT THE DIRECTION OF THE QSP, THE CONTRACTOR MAY DEPLOY A STREET SWEEPER TO CONTROL TRACKING.

4 / C6.2 CONSTRUCTION ENTRANCE/EXIT
SCALE: NTS

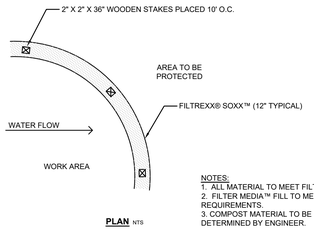


NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED™ INSTALLER.

7 / C6.2 **FILTREXX® CHECK DAM**
SCALE: NTS



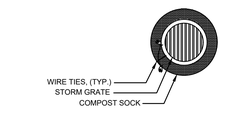
SECTION NTS



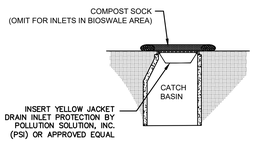
PLAN NTS

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

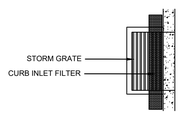
5 / C6.2 **FILTREXX® SEDIMENT CONTROL**
NTS



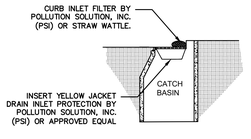
TYPICAL SITE DRAIN INLET PLAN



TYPICAL SITE DRAIN INLET SECTION

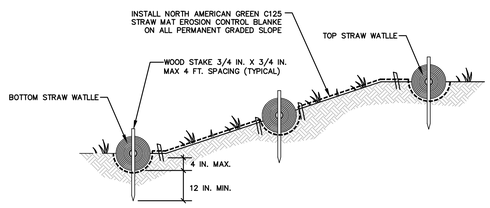


STREET DRAIN INLET PLAN



STREET DRAIN INLET SECTION

6 / C6.2 DRAIN INLET PROTECTION
SCALE: NTS



3 / C6.2 TYPICAL SLOPE EROSION CONTROL
SCALE: NTS

Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS ATIGA — No. 53588 — STATE OF CALIFORNIA

PRELIMINARY
FOR DESIGN REVIEW ONLY

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APN 018-711-34 (PART) & -35

REVISED
MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

PRELIMINARY EROSION CONTROL DETAILS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN	JOB NO. 28595	SHEET C6.3
DATE DECEMBER 13, 2021	CHECKED	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME	FILE NO. 28595	

WARE MALCOMB
4683 Chabot Dr. Suite #200
Pleasanton, CA 94588
P:925.244.6925
ARCHITECTURE CIVIL ENGINEERING
PLANNING LANDSCAPE
INTERIORS BUILDING MEASUREMENT

CIENT LOGO

PRELIMINARY EROSION CONTROL DETAILS
DATE MAY 23, 2022
REMARKS 2ND SUBMITTAL

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C6.3

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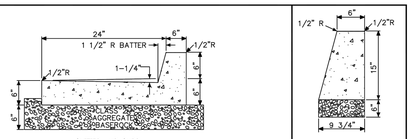
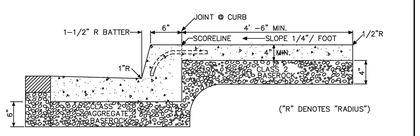


GUTTER AND CURB

CLASS B CURB



("R" DENOTES "RADIUS")

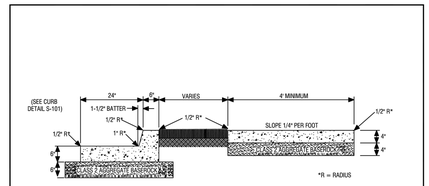
COMBINATION CURB, GUTTER & SIDEWALK

NOTES:

1. ALL CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE TO THE PROVISIONS OF SECTION 73, "CONCRETE CURBS AND SIDEWALKS" OF THE CALTRANS STANDARD SPECIFICATIONS.
2. RELATIVE COMPACTION OF NOT LESS THAN 95% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW CURBS AND GUTTERS. RELATIVE COMPACTION OF NOT LESS THAN 90% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW SIDEWALKS.
3. LIMITS OF REMOVAL OF ALL CURBS, GUTTERS, SIDEWALKS AND APPROACHES SHALL BE SAWED ALONG EXISTING JOINTS AND SCORE LINES.
4. NEW CONCRETE IMPROVEMENTS SHALL BE JOINED TO EXISTING BY DOWELLING #4 REBAR 6" INTO EXISTING CONCRETE AND 12" INTO NEW CONCRETE EVERY 2'.
5. CONCRETE WHICH HAS BEEN MARKED OR SCRATCHED SHALL BE REMOVED AND REPLACED.
6. USE 1/4" RADIUS JOINTER FOR ALL SCORELINES. LINES SHALL BE STRAIGHT, TRUE TO ALIGNMENT AND DEPTH. PLACE 1/2" SCORELINES EVERY 4', WITH EVERY OTHER SCORELINE BEING A 3/4" DEEP SCORE.
7. 3/4" DEEP SCORE RUNS CONTINUOUSLY THROUGH SIDEWALK AND CURB AND GUTTER.
8. SCORELINES FOR SIDEWALKS WIDER THAN 5' SHALL INCLUDE A 1/2" LONGTUDINAL CENTERED SCORELINE.
9. PLACE EXPANSION JOINTS EVERY 60'.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR CURB, GUTTER & SIDEWALK	DRAWN: 6/97	REV.: 12/12
DRAWN BY: P.A.C.			RESOLUTION No. 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-101	



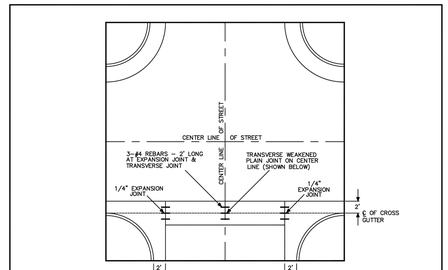
CURB & GUTTER WITH DETACHED SIDEWALK

NOTES:

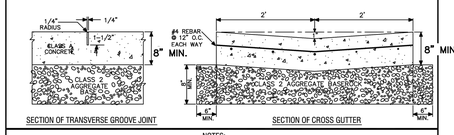
1. ALL CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE TO THE PROVISIONS OF SECTION 73, "CONCRETE CURBS AND SIDEWALKS", OF THE CALTRANS STANDARD SPECIFICATIONS.
2. RELATIVE COMPACTION OF NOT LESS THAN 95% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW CURBS AND GUTTERS. RELATIVE COMPACTION OF NOT LESS THAN 90% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW SIDEWALKS.
3. LIMITS OF REMOVAL OF ALL CURBS, GUTTERS, SIDEWALKS AND APPROACHES SHALL BE SAWED ALONG EXISTING JOINTS AND SCORE LINES.
4. CONCRETE WHICH HAS BEEN MARKED OR SCRATCHED SHALL BE REMOVED AND REPLACED.
5. SEE PUBLIC IMPROVEMENT STANDARD S-101 FOR SCORING AND JOINTING REQUIREMENTS.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR CURB, GUTTER AND SEPARATED SIDEWALK	DRAWN: 6/97	REV.: 12/12
DRAWN BY: P.A.C.			RESOLUTION No. 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-102	



PLAN OF TYPICAL INTERSECTION WITH CROSS GUTTER



SECTION OF TRANSVERSE GROOVE JOINT

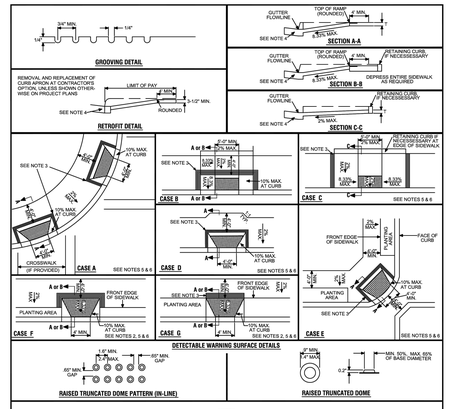
SECTION OF CROSS GUTTER

NOTES:

1. ALL CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE TO THE PROVISIONS OF SECTION 73, "CONCRETE CURBS AND SIDEWALKS", OF THE CALTRANS STANDARD SPECIFICATIONS.
2. RELATIVE COMPACTION OF NOT LESS THAN 95% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW THE CROSS GUTTER.
3. NEW CONCRETE IMPROVEMENTS SHALL BE JOINED TO EXISTING BY DOWELLING #4 REBAR 6" INTO EXISTING CONCRETE AND 12" INTO NEW CONCRETE EVERY 2'.
4. CONCRETE WHICH HAS BEEN MARKED OR SCRATCHED SHALL BE REMOVED AND REPLACED.
5. WEAKENED PLANE JOINTS CONSTRUCTED AT 20' SPACING.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT STANDARD DRAWING

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR 4' STANDARD CROSS GUTTER	DRAWN: 7/97	REV.: 12/12
DRAWN BY: P.A.C.			RESOLUTION 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-103	



NOTES:

1) IF THE DISTANCE FROM CURB TO BACK OF SIDEWALK IS TOO SHORT TO ACCOMODATE RAMP AND 4'-0" PLATFORM AS IN CASE "A", THE SIDEWALK MAY BE DEPRESSED LONGITUDINALLY AS IN CASE "B" OR "C", OR MAY BE WIDENED AS IN CASE "D".
2) FOR CASES "F" AND "G", THE LONGITUDINAL PORTION OF THE SIDEWALK MAY NEED TO BE DEPRESSED, AS IN CASE "B".
3) THE RAMP SHALL HAVE A 12" WIDE BORDER WITH 1/4" GROOVES APPROX. 3/4" ON CENTER. SEE "GROOVING DETAIL".
4) MAXIMUM SLOPES OF ADJOINING GUTTERS, THE ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP AND CONTINUOUS TO THE CURB RAMP SHALL NOT EXCEED 5% WITHIN 4'-0" OF THE TOP OR BOTTOM OF THE CURB RAMP.
5) CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND 2'-0" DEPTH OF THE CURB RAMP. DETECTABLE WARNING SURFACES SHALL CONFORM TO THE DETAILS ON THIS PLAN AND THE REQUIREMENTS IN THE SPECIAL PROVISIONS.
6) THE EDGE OF THE DETECTABLE WARNING SURFACE NEAREST THE STREET SHALL BE BETWEEN 6" AND 8" FROM THE GUTTER FLOW LINE.

ACCESSIBILITY STANDARDS & DETAILS ARE SUBJECT TO CHANGE TO COMPLY WITH THE MOST CURRENT FEDERAL REGULATIONS SET FORTH BY THE ACCESS BROAD "AMERICANS WITH DISABILITIES ACT GUIDELINES".

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR CURB RAMP	DRAWN: 9/97	REV.: 11/12
DRAWN BY: P.A.C.			RESOLUTION: 76-13 (CM)	
CHECKED BY: M.E.C.R.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-104	

PLAN
TYPE "A" DRIVEWAY WITH PLANTER STRIP AND 8' OR WIDER SIDEWALK

SECTION A-A

TYPICAL ELEVATION
TYPE "A" & "B" DRIVEWAY

PLAN
TYPE "B" DRIVEWAY

NOTES:

1) ALL CONCRETE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE TO THE PROVISIONS OF SECTION 73, "CONCRETE CURBS AND SIDEWALKS" OF THE CALTRANS STANDARD SPECIFICATIONS.
2) CURBS, GUTTERS AND SIDEWALK APPROACHES SHALL BE UNDERLAIN WITH 6" CLASS 2 AGGREGATE BASE.
3) RELATIVE COMPACTION OF NOT LESS THAN 95% SHALL BE OBTAINED FOR SUBGRADE SOILS AND CLASS 2 AGGREGATE BASE BELOW CURBS, GUTTERS AND DRIVEWAY APPROACHES.
4) THE DRIVEWAY APPROACH SHALL BE REINFORCED WITH #4 REBAR PLACED AT 12" ON CENTER EACH WAY.
5) LIMITS OF REMOVAL OF ALL CURBS, GUTTERS, SIDEWALKS AND APPROACHES SHALL BE SAWED ALONG EXISTING JOINTS AND SCORELINES.
6) CONCRETE WHICH HAS BEEN MARKED OR SCRATCHED SHALL BE REMOVED AND REPLACED.
7) SEE PUBLIC IMPROVEMENT STANDARD S-101 FOR SCORING AND JOINTING REQUIREMENTS.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR DRIVEWAY APPROACH	DRAWN: 8/11	REV.: 12/12
DRAWN BY: P.A.C.			RESOLUTION: 76-13 (CM)	
CHECKED BY: M.E.C.R.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-105	

WATER MAIN

WATER MAINS SHALL BE DUCTILE IRON PIPE, CLASS 52, CONFORMING TO ANSI/AWWA SPECIFICATION C15/A.21.51. PIPES SHALL BE COATED WITH BITUMINOUS SEAL AND CEMENT MORTAR LINING CONFORMING TO ANSI/AWWA SPECIFICATION C104/A21.4. THE COATING SHALL BE 1/16" THICK. JOINTS SHALL BE TYTON OR EQUAL RUBBER GASKET TYPE CONFORMING TO ANSI/AWWA SPECIFICATION C111/A21.11. CONTRACTOR SHALL ENCASE ALL NEW WATER MAINS WITH POLYWRAP MEETING AWWA C105-10.

SANITARY SEWER- GRAVITY MAIN

SANITARY SEWER GRAVITY MAINS SHALL BE P.V.C. PIPE, SDR-26 OR LESS.

SANITARY SEWER - FORCE MAIN

SANITARY SEWER FORCE MAINS SHALL BE C-900 CLASS 100 PVC WITH LOCATOR WIRE. THE WIRE SHALL BE A MINIMUM OF 12 GUAGE THW OR 12 GUAGE THWN, AND SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF PIPE LAID BETWEEN CLEANOUTS. THE WIRE SHALL BE SECURED TO PIPE BY TAPE WRAPPED COMPLETELY AROUND PIPE EVERY 12 FEET OR LESS. THE WIRE SHALL BE BROUGHT INTO CLEANOUT MANHOLES WITH 2 FEET OF WIRE MORE THAN IS NEEDED TO REACH THE SURFACE.

STORM SEWER

STORM SEWER MAINS SHALL BE;

- CLASS III REINFORCED CONCRETE PIPE (RCP) WITH RUBBER ISOPRENE GASKETS
- PVC SDR-26 PIPE OR LESS.
- HIGH DENSITY POLYETEHYLENE (HDPE) CORRUGATED PIPE WITH SMOOTH INTERIOR WALLS (TYPE "S"), WITH RUBBER GASKETTED, WATER-TIGHT JOINTS MEETING THE REQUIREMENTS OF ASTM 3212 (ADS N12 OR APPROVED EQUAL).

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR WATER, SANITARY SEWER & STORM SEWER PIPING	DRAWN: 12/02	REV.: 12/12
DRAWN BY: P.A.C.			RESOLUTION: 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-201	

NOTES:

1. ALL CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 90 - 2, "MINOR CONCRETE" OF THE CALTRANS STANDARD SPECIFICATIONS
2. PRECAST CONES, BARREL AND RINGS SHALL MEET ASTM C478.
3. PRE-CAST CONCRETE BASE SECTIONS ARE PROHIBITED.
4. SLURRY CEMENT BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 19, "SLURRY CEMENT BACKFILL" OF THE CALTRANS STANDARD SPECIFICATIONS.
5. FOR SANITARY SEWERS, PROVIDE DROP INLET WHERE GRADE OF ENTERING LINE IS 24" OR MORE ABOVE THE FLOWLINE OF THE SEWER MANHOLE.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR STANDARD MANHOLE	DRAWN: 11/10	REV.: 8/12
DRAWN BY: P.A.C.			RESOLUTION: 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-202	

STORM DRAIN MARKER DETAIL

NOTES:

1) THE STORM DRAIN MARKER SHALL BE CENTERED ABOVE THE STORM DRAIN CATCH BASIN AS SHOWN.

2) STAINLESS STEEL STORM DRAIN MARKER SHALL BE ALMETEK STORM DRAIN MARKER, WITH FISH READING "DRAINS TO WATERWAY".

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	CITY OF WATSONVILLE	WATER DIVISION STANDARD DRAWING STORM DRAIN MARKER INSTALLATION	DATE DRAWN: 5/10	
DRAWN BY: P.A.C.			DATE REVISED: 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-207	

PVMT TYPE	A.C. (MIN. THICK)	A.B. (MIN. THICK)
AUTOMOBILE PARKING	3.0"	9.0"
AUTO. DRIVE AISLES	3.0"	9.0"
FIRE ACCESS LANES	4.0"	14.5"

-SEE ALSO SOILS REPORT FOR NOTES REGARDING SUBGRADE PREPARATION AND IN AREAS OF FILL

1 / C7.1 TYPICAL AC PAVEMENT SECTION

SCALE: NONE PS05

811 Know what's below. Call before you dig.

PRELIMINARY FOR DESIGN REVIEW ONLY

DISCLAIMER

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APN 018-711-34 (PART) & -35

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53588 STATE OF CALIFORNIA

REVISED	
	MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

STANDARD DETAILS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC
DATE DECEMBER 13, 2021	CHECKED JFR
DESIGN	DWG NAME
JOB NO. 28595	SHEET C7.1
INDEX PAJARO 2	OF 19
FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P:925.244.9520

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

STANDARD DETAILS

REMARKS	DATE
2ND SUBMITTAL	MAY 23, 2022

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET C7.1

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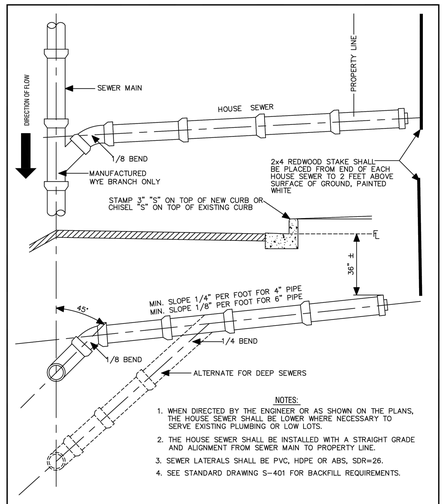
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

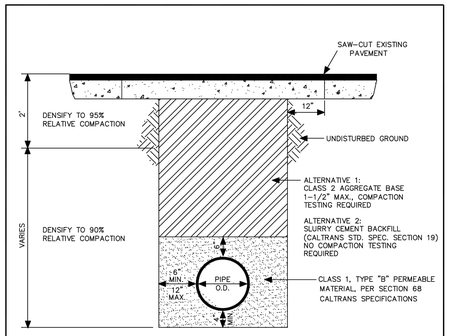


NOTES:

1. WHEN DIRECTED BY THE ENGINEER OR AS SHOWN ON THE PLANS, THE HOUSE SEWER SHALL BE LOWER WHERE NECESSARY TO SERVE EXISTING PLUMBING OR LOW LOTS.
2. THE HOUSE SEWER SHALL BE INSTALLED WITH A STRAIGHT GRADE AND ALIGNMENT FROM SEWER MAIN TO PROPERTY LINE.
3. SEWER LATERALS SHALL BE PVC, HDPE OR ABS, SDR=26.
4. SEE STANDARD DRAWING S-401 FOR BACKFILL REQUIREMENTS.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	STANDARD DRAWING FOR	DRAWN: 6/95	REV: 12/11
DRAWN BY: P.A.C.	SEWER LATERAL: NEW DEVELOPMENT	RESOLUTION: 76-13 (CM)	
CHECKED BY: T.S.	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-209a	

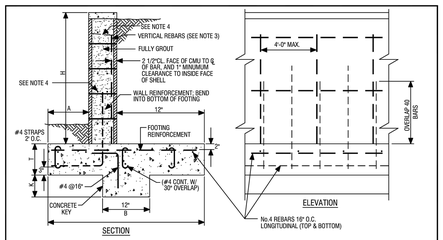


NOTES:

1. TRENCHES SHALL BE EXCAVATED IN A NEAT & WORKMANLIKE MANNER AT THE STREET SURFACE AND THE SHAPE SHALL BE RECTANGULAR.
2. SHOVEL SLICE PIPE ZONE BEDDING UNDER HAUNCHES OF PIPE. THE MINIMUM PAVE-MENT RESTORATION SHALL BE 4" OF TYPE "A" ASPHALT CONCRETE OVER THE TRENCH AREA AND 4" OF TYPE "A" ASPHALT CONCRETE OVER 12" OF CLASS 2 AGGREGATE BASE. IF THE EXISTING PAVEMENT SECTION IS THICKER THAN 4" AC OVER 12" AB, THE RESTORATION PAVEMENT SECTION SHALL BE AS DIRECTED BY THE ENGINEER.
3. A CONCRETE CAP 6" THICK AND THE WIDTH OF THE TRENCH TO PIPE SPRINGLINE SHALL BE CONSTRUCTED FOR ANY PIPE WITH LESS THAN 24" COVER. CONCRETE SHALL CONFORM TO THE PROVISIONS OF SECTION 90-2, "MINOR CONCRETE", OF THE CALTRANS STANDARD SPECIFICATIONS.
4. **WHERE TRENCHES PASS INTO BUILDING AND PAVEMENT AREAS, INCLUDE A PLUG OF LOW-PERMEABILITY CLAY SOIL, SAND-CEMENT SLURRY, OR LEAN CONCRETE.**

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	STANDARD TRENCH BACKFILL SECTION	DRAWN: 9/12	REV: 5/13
DRAWN BY: P.A.C.		RESOLUTION: 76-13 (CM)	
CHECKED BY: T.S.	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING NO. S-401	



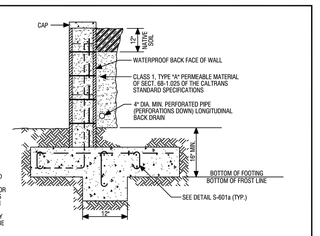
BLOCK WIDTH	H	A	B	T	WALL REINFORCEMENT	FOOTING REINFORCEMENT	K
8"	3'-4"	1'-0"	2'-0"	12"	#4 @ 24" O.C.	#4 @ 24" O.C.	12"
	4'-0"	1'-4"	2'-0"		#4 @ 24" O.C.	#4 @ 24" O.C.	15"
	4'-8"	1'-7"	2'-3"		#4 @ 16" O.C.	#4 @ 24" O.C.	16"
	5'-4"	2'-0"	2'-8"		#5 @ 8" O.C.	#4 @ 16" O.C.	18"
12"	3'-4"	0'-8"	2'-3"	12"	#4 @ 24" O.C.	#4 @ 24" O.C.	13"
	4'-0"	1'-0"	3'-0"		#4 @ 24" O.C.	#4 @ 24" O.C.	15"
	4'-8"	1'-3"	3'-3"		#4 @ 24" O.C.	#4 @ 24" O.C.	16"
	5'-4"	1'-8"	3'-8"		#4 @ 24" O.C.	#4 @ 16" O.C.	16"
	6'-0"	2'-2"	4'-2"		#4 @ 16" O.C.	#5 @ 16" O.C.	18"
	6'-8"	2'-6"	4'-6"		#5 @ 16" O.C.	#5 @ 16" O.C.	20"
	7'-4"	3'-0"	5'-0"		#5 @ 8" O.C.	#5 @ 8" O.C.	24"
	8'-0"	3'-4"	5'-6"		#8 @ 8" O.C.	#5 @ 8" O.C.	24"

NOTES:

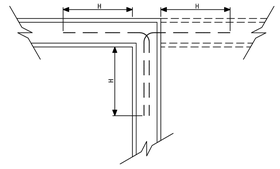
1. ALL RETAINING WALLS SHALL BE MASONRY.
2. EDGE OF ROADWAY, DRIVEWAY & FOUNDATIONS SHALL BE AT LEAST 2 x HEIGHT OF WALL FROM BACK OF WALL
3. REINFORCING BARS SHOULD HAVE STANDARD DEFORMATION AND A YIELD STRENGTH OF 40,000 PSI
4. ALTERNATE VERTICAL REINFORCING BARS MAY BE TERMINATED AT THE UPPER THIRD-POINT OF THE WALL HEIGHT
5. ALL RETAINING WALLS SHALL HAVE A HORIZONTAL BOND BEAM W/ TWO No.4 BARS EVERY 16'.
6. WEIGHT OF ASSUMED SOIL BACKFILL (GRANULAR SOIL WITH CON-SPICUOUS CLAY CONTENT) IS 100 PCF AND EQUIVALENT FLUID PRESSURE IS 45 PCF. THE WALL IS NOT DESIGNED TO BE SURCHARGED, AND THE MAXIMUM SOIL BEARING PRESSURE IS 1,000 P.S.F.
7. THE LAST 30" OF GROUT SHALL BE CONSOLIDATED BY A HIGH-FREQUENCY INTERNAL VIBRATOR WITHIN 5 MINUTES OF POURING INTO BLOCK. THE VIBRATOR SHALL NOT BE ATTACHED TO OR HELD AGAINST THE BLOCK OR REINFORCING STEEL.
8. GROUT SHALL BE PLACED IN ALL CELLS. GROUT SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
9. SEE SHEET S-601b FOR BACKFILL DETAIL.
10. MASONRY UNITS SHALL BE GRADE 'N'.
11. WET SETTING OF THE BLOCKS INTO THE CONCRETE IS FORBIDDEN
12. ALL CONCRETE FOOTINGS & KEYS SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	STANDARD DRAWING FOR STANDARD MASONRY RETAINING WALL	DRAWN: 10/97	REV: 4/13
DRAWN BY: P.A.C.		RESOLUTION: 76-13 (CM)	
CHECKED BY: P.T.	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-601a	



NOTE:
BACKFILL FOR RETAINING WALLS SHOULD BE MOISTURE CONDITIONED TO NEAR OPTIMUM (OPTIMUM + 3% OR HIGHER FOR CLAY BACKFILL), PLACED IN TWO 8" LIFTS & COMPACTED TO 90% OF THE MAXIMUM DENSITY DETERMINED IN ACCORDANCE WITH CAL IMPACT METHOD #216. HEAVY COMPACTION EQUIPMENT SHOULD NOT BE USED IMMEDIATELY ADJACENT TO THE RETAINING WALL.



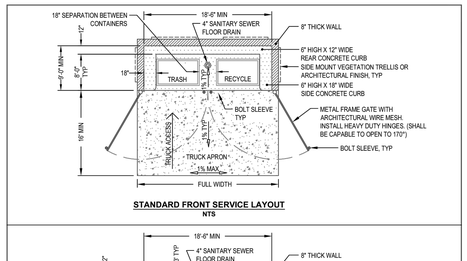
REINFORCING AT CORNERS

NOTES:

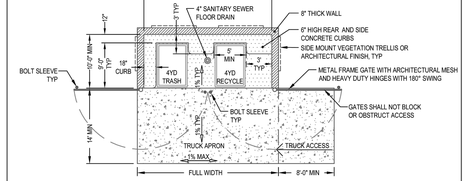
1. 8" CMU: #4 @ 16" O.C. HORIZONTAL IN BOND BEAM UNIT (CENTERED).
2. 12" CMU: (2) #4 @ 8" O.C. HORIZONTAL (ONE EA. SIDE) IN BOND BEAM UNIT.
3. REINFORCING SHALL BE CONTINUOUS AROUND CORNER FOR MINIMUM DISTANCE OF "H" (HEIGHT OF WALL).
4. CORNER REINFORCEMENT IS IN ADDITION TO REQUIRED HORIZONTAL REINFORCEMENT PER S-601a

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

NOT TO SCALE	STANDARD DRAWING FOR STANDARD MASONRY RETAINING WALL	DRAWN: 10/97	REV: 4/13
DRAWN BY: P.A.C.		RESOLUTION: 76-13 (CM)	
CHECKED BY: P.T.	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-601b	



STANDARD FRONT SERVICE LAYOUT
NTS



NON-STANDARD SIDE SERVICE LAYOUT
NTS

NOTES:

1. REFUSE AND RECYCLING ENCLOSURES SHALL SECURE PERMITS FROM THE COMMUNITY DEVELOPMENT DEPARTMENT.
2. THE APPLICANT SHALL HAVE THE ENCLOSURE DESIGNED TO COMPLY WITH LATEST EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE.
3. CONTAINERS INFORMATION IS AVAILABLE FROM THE SOLID WASTE DIVISION CUSTOMER SERVICE AT (831) 768-3133.
4. THE REFUSE ENCLOSURE SHALL BE DESIGNED TO ACCOMMODATE FRONT LOAD SERVICE.
5. NON-STANDARD SIDE LOAD SERVICE IS SUBJECTED TO STRICT REVIEW CASE-BY-CASE BASIS AND MAY ONLY BE CONSIDERED AFTER THE APPLICANT HAS DEMONSTRATED TECHNICAL INFEASIBILITY FOR FRONT LOAD SERVICE.
6. SEE DWG NO. S-602b FOR DESIGN GUIDELINES.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	SOLID WASTE DIVISION STANDARD DRAWING REFUSE ENCLOSURE LAYOUT	DRAWN: MAY 2018	REV:
DRAWN BY: TC		RESOLUTION: 98-18 (CM)	
CHECKED BY:	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO. S-602a	

GENERAL REQUIREMENTS:

1. PROVIDE A GRADING PLAN AND SHOW THE LOCATION OF THE ENCLOSURE WITH TRUCK ACCESS PATH, OVERHEAD, AND LATERAL CLEARANCES.
2. TURNING RADIUS : SHOW 14' WIDE TRUCK ACCESS PATH WITH 34' INSIDE TURNING RADIUS AND 50' OUTSIDE TURNING RADIUS.
3. VERTICAL CLEARANCE: 25 FT FROM OVERHEAD IS REQUIRED OUTSIDE OF THE TRASH ENCLOSURE WHERE THE VEHICLE LIFTS THE CONTAINER.
6. THE FINAL DIMENSIONS OF THE ENCLOSURE SHALL BE DETERMINED BY THE NUMBER OF CONTAINERS (TRASH, RECYCLE, ORGANIC) AND SIZES PROPOSED FOR THE PROJECT.
7. ENCLOSURE SHALL HAVE THE FOLLOWING DESIGN ELEMENTS:
   - EXTERIOR WALL LANDSCAPING OR ARCHITECTURAL FEATURES
   - SOLID ROOF COVER
   - 4" SANITARY SEWER FLOOR DRAIN.
   - REINFORCED CMU OR CONCRETE WALLS
   - REINFORCED CONCRETE TRUCK APRON
   - REINFORCED CONCRETE FLOOR.
   - SEPARATE OR INDOOR TALLOW CONTAINERS AND STORAGE AREA
   - NON-COMBUSTIBLE CONSTRUCTION MATERIALS

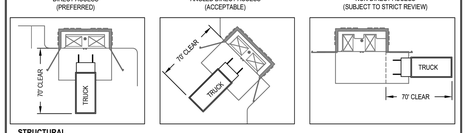
FRONT SERVICE LAYOUT (PREFERRED DESIGN)

8. TRASH ENCLOSURE DIMENSIONS: 6'-0" MINIMUM HIGH WALLS, 12' MINIMUM FRONT CEILING HEIGHT, 8' MINIMUM REAR CEILING HEIGHT,
9. PROVIDE 50 FT UNOBSTRUCTED CLEAR APPROACH MEASURED FROM THE FRONT FACE OF ENCLOSURE.

SIDE SERVICE LAYOUT (SUBJECT TO STRICT REVIEW)

10. SIDE SERVICE DESIGN MAY ONLY BE CONSIDERED AFTER THE APPLICANT HAS DEMONSTRATED TECHNICAL INFEASIBILITY FOR FRONT LOAD SERVICE.
11. THE DESIGN IS LIMITED TO 4 YD MAXIMUM SIZE CONTAINERS AS WELL AS ADDITIONAL SERVICE FEES AND OPERATIONAL REQUIREMENTS.
12. TRASH ENCLOSURE DIMENSIONS: 6'-0" MINIMUM HIGH WALLS, 10' MINIMUM FRONT CEILING HEIGHT, 8' MINIMUM REAR CEILING HEIGHT.
13. PROVIDE 70 FT UNOBSTRUCTED CLEAR APPROACH MEASURED FROM EDGE OF THE ENCLOSURE ALONG THE VEHICLE PATH.

DIAGRAM A



STRUCTURAL

14. THE ENCLOSURE STRUCTURAL SYSTEM SHALL BE DESIGNED AND STAMPED BY A LICENSED CIVIL ENGINEER OR ARCHITECT.
15. THE ENCLOSURE STRUCTURAL SYSTEM SHALL BE DESIGNED AND STAMPED BY A LICENSED CIVIL ENGINEER OR ARCHITECT.
16. ENCLOSURE FLOOR SHALL BE 6" THICK MINIMUM REINFORCED CONCRETE CAPABLE OF WITHSTANDING UP TO 20,000 POUNDS OF DIRECT FORCE.
17. TRUCK APRON SHALL BE 6" THICK MINIMUM REINFORCED CONCRETE DESIGNED TO WITH STAND FULLY LOADED REFUSE TRUCK, UP TO 30 TONS.

ARCHITECTURAL & LANDSCAPING

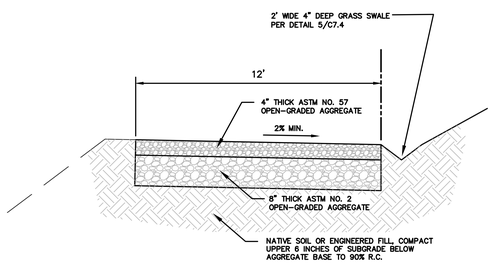
18. LANDSCAPE THE EXTERIOR SIDE OF ALL WALLS OR INCORPORATE ARCHITECTURAL ELEMENTS TO PREVENT GRAFFITI.
19. CONTACT THE COMMUNITY DEVELOPMENT DEPARTMENT, PLANNING DIVISION FOR GUIDANCE ON COLORS, MATERIALS AND ROOFING TO EXISTING AND/OR PROPOSED ARCHITECTURAL ELEMENTS OF THE PROJECT.

MANAGEMENT

20. CUSTOMER IS RESPONSIBLE FOR MAINTAINING THE ENCLOSURE.
21. AS A CONDITION OF SERVICE, PROPERTY OWNERS AND OTHER CUSTOMERS ACCEPT ALL RISK OF THE PROPERTY LOSS AND LIABILITY FOR DAMAGES OCCURRING FROM NORMAL SERVICE OPERATIONS.
22. ENCLOSURE ARE TO BE USED FOR REFUSE, RECYCLING, AND APPROVED CONTAINERS ONLY. ENCLOSURE SHALL BE KEPT FREE OF ALL LITTER, STORAGE OF OTHER MATERIALS.
23. THE APPLICANT/OWNER SHALL PROVIDE A SIGN 12"X18" SIGN THAT READ "NO HAZARDOUS WASTE DUMPING" IN RED LETTERS WITH WHITE BACKGROUND.

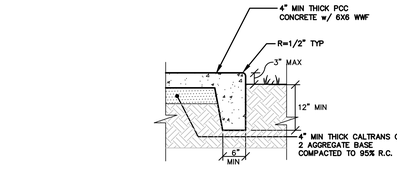
CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	SOLID WASTE DIVISION STANDARD DRAWING REFUSE ENCLOSURE DESIGN GUIDELINES	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF		RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO. S-602b	



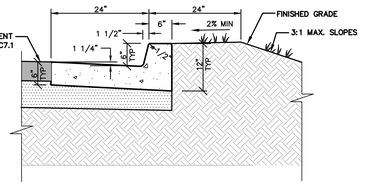
7 / C7.2 CITY ACCESS ROAD TYPICAL SECTION

SCALE: NTS



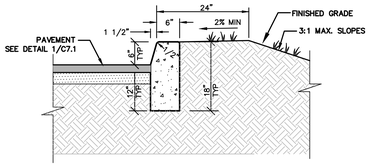
1 / C7.2 CONCRETE SIDEWALK SECTION

SCALE: 3/4" = 1'-0"



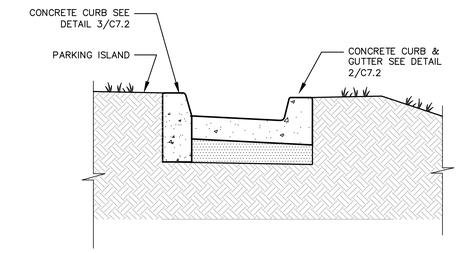
2 / C7.2 CONCRETE CURB & GUTTER

SCALE: 3/4" = 1'-0"



3 / C7.2 CONCRETE CURB

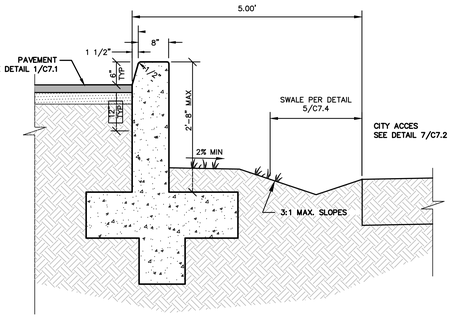
SCALE: 3/4" = 1'-0"



CONCRETE CURB/CURB & GUTTER (PARKING ISLAND ADJACENT TO CURB & GUTTER)

4 / C7.2

SCALE: 3/4" = 1'-0"



5 / C7.2 CONCRETE CURB/RETAINING WALL

SCALE: 3/4" = 1'-0"

811 Know what's below. Call before you dig.

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APN 018-711-34 (PART) & -35

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICH No. 53588 STATE OF CALIFORNIA

PRELIMINARY FOR DESIGN REVIEW ONLY

REVISED
MAY 23, 2022 2ND SUBMITTAL

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

STANDARD DETAILS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC	JOB NO. 28595	SHEET C7.2
DATE DECEMBER 13, 2021	CHECKED JFR	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME 25918_C6	FILE NO. 28595	

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING
PLANNING LANDSCAPE
INTERIORS BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.244.8520

CIENT LOGO

STANDARD DETAILS

REMARKS	DATE
2ND SUBMITTAL	MAY 23, 2022

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET C7.2

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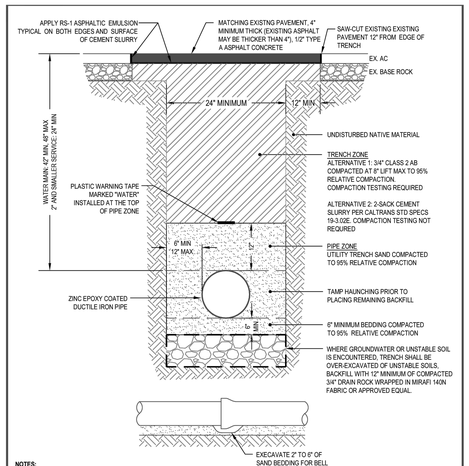
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

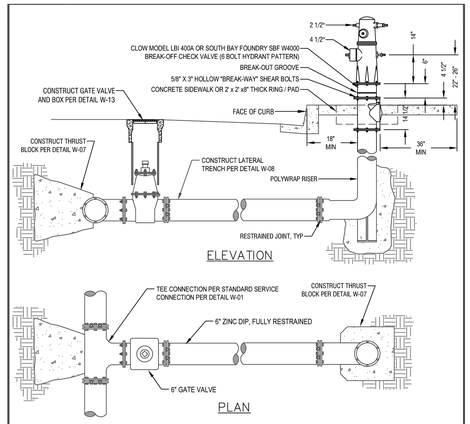


NOTES:

1. TRENCHES SHALL BE EXCAVATED IN A NEAT & WORKMANLIKE MANNER AT THE STREET SURFACE AND THE SHAPE SHALL BE RECTANGULAR.
2. THE MINIMUM PAVEMENT RESTORATION SHALL BE 4" OF TYPE "A" ASPHALT CONCRETE IF THE EXISTING PAVEMENT SECTION IS THICKER THAN 4" AC, THE RESTORATION PAVEMENT SECTION SHALL MATCH THE EXISTING PAVEMENT THICKNESS.
3. A CONCRETE CAP 6" THICK AND THE WIDTH OF THE TRENCH TO PIPE SPRINGLINE SHALL BE CONSTRUCTED FOR ANY PIPE WITH LESS THAN 24" COVER.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	STANDARD WATER TRENCH DETAIL	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-08



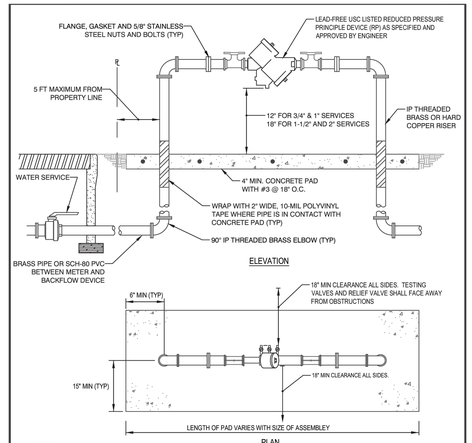
HYDRANT TYPES:		
LOCATION:	JONES	CLOW
CITY RESIDENTIAL:	J-4040	850 DI
CITY COMMERCIAL:	J-4060	860 DI

NOTES:

1. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF FIRE HYDRANT WITH THE ENGINEER.
2. ALL HYDRANTS TO BE SET TRUE AND PLUMB.
3. NO OBSTRUCTIONS SHALL BE WITHIN 36" OF FIRE HYDRANT.
4. PUBLIC HYDRANTS SHALL BE PAINTED CHROME YELLOW.
5. WITNESS HOLE MUST BE ABOVE CONCRETE SURFACE AND HAVE ADEQUATE CLEARANCE.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	NEW FIRE HYDRANT INSTALLATION	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-05

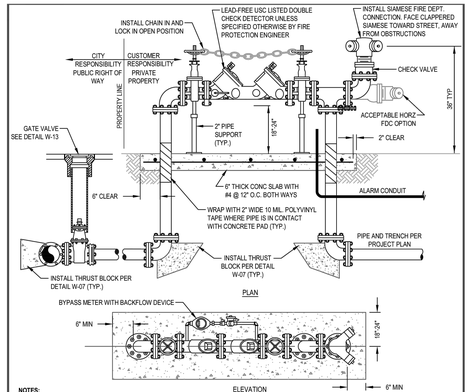


NOTES:

1. APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY SHALL BE INSTALLED SUCH THAT IT IS READILY ACCESSIBLE FOR REPAIR AND INSPECTION.
2. BRASS FITTINGS, VALVES, AND PIPE SHALL CONSIST OF BRASS ALLOY AND SHALL HAVE A MINIMUM RATED WORKING PRESSURE OF 150 PSI.
3. BRASS OR PLASTIC PLUGS SHALL BE INSTALLED ON ALL TEST PORTS.
4. ALL ABOVE GROUND PIPE, FITTINGS, AND ASSEMBLY SHALL BE PAINTED WITH TWO COATS OF ENAMEL.
5. AN ENCLOSURE OR CAGE MAY BE INSTALLED AT THE OPTION OF THE PROPERTY OWNER.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	2" AND SMALLER BACKFLOW SERVICE	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-10

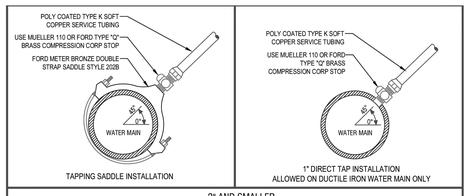


NOTES:

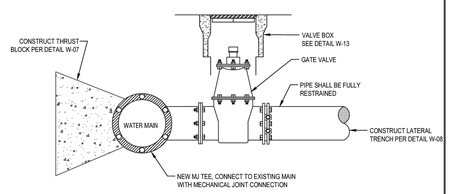
1. ASSEMBLY SHALL HAVE A MINIMUM SIDE CLEARANCE OF 18" EXCEPT THAT A MINIMUM SIDE CLEARANCE OF 24" SHALL BE PROVIDED ON THE SIDE OF THE ASSEMBLY THAT CONTAINS THE TEST COCKS AND/OR RELIEF VALVE.
2. ASSEMBLIES REQUIRE PIPE SUPPORTS UNDER EACH GATE VALVE.
3. INSTALLATION SHALL BE LOCATED ON THE PROPERTY SUCH THAT THE DETECTOR METER SHALL BE ACCESSIBLE AT ALL TIMES FOR READING & MAINTENANCE PURPOSES. LOCATION MUST BE APPROVED BY CITY WATER DIVISION PRIOR TO INSTALLATION.
4. BACKFLOW ASSEMBLY GATE VALVES SHALL BE O.S. & Y. TYPE, EQUIPED WITH TAMPER-PROOF ALARM DEVICES AND SHALL BE CHAINED AND LOCKED IN THE OPEN POSITION.
5. IF DIRECTED TO DO SO BY THE CITY OF WATSONVILLE, INSTALL PROTECTIVE 4" DIA. STEEL PIPE BOLLARDS.
6. OPENING AND CLOSING OF VALVES IS STRICTLY PROHIBITED. FIRE DEPT. APPROVAL REQUIRED.
7. ALL ABOVE GROUND PIPING SHALL BE PAINTED (COLOR TO BE SELECTED AT TIME OF INSTALLATION BY APPROPRIATE FIRE DEPARTMENT.)

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	4" AND LARGER FIRE BACKFLOW SERVICE	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-12A



2" AND SMALLER



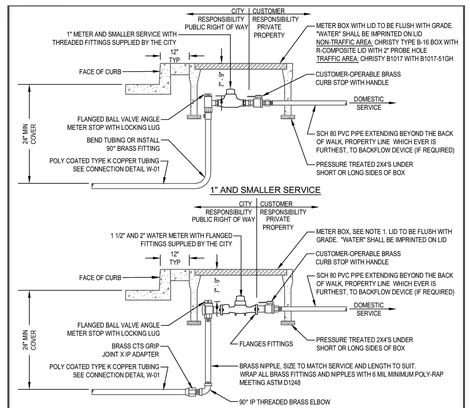
LARGER THAN 2"

NOTES:

1. ALL HOT TAP CONNECTIONS (4" AND LARGER) AND AIR TESTS SHALL BE MADE IN THE PRESENCE OF THE PUBLIC WORKS ENGINEER OR INSPECTOR.
2. ALL HOT TAP CONNECTIONS SHALL BE AT LEAST 24" AWAY FROM ANY JOINT OR FITTING AND 18" AWAY FROM ANY OTHER TAP.
3. FOR DIRECT TAP ONLY CONTRACTOR SHALL APPLY TWO LAYERS OF ADHESIVE TAPE COMPLETELY AROUND PIPE AT TAPPING LOCATION PRIOR TO TAPPING.
4. CONTRACTOR SHALL ENCASE TAPPING SADDLE, ALL FASTENERS, ALL PIPE FITTINGS, AND SERVICE LINE WITHIN WITH POLYWRAP.
5. COUPON OR "COOKIE" SHALL BE RETAINED AND DELIVERED TO THE WATER SERVICES DIVISION.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	STANDARD SERVICE CONNECTION	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-01

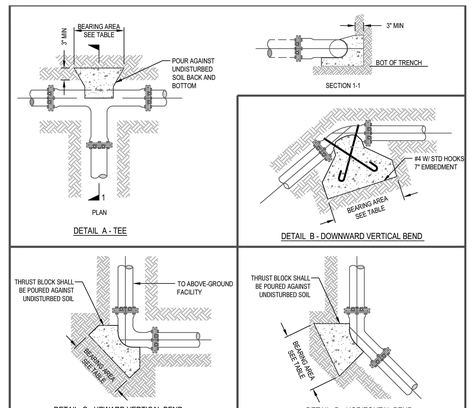


NOTES:

1. METER BOX: CHRISTY B-36 W/ FL36DFIBRELYTE LID NON TRAFFIC, B-1730 BOX W/ B1730-51GH STEEL CHECKER PLATE LID FOR TRAFFIC. ALL LIDS SHALL HAVE A PORT ACCEPTING THE WIRELESS METER READER.
2. ALL PRIVATE INSTALLATION SHALL COMPLY WITH CITY ORDINANCE WMC 6-3.4 AS AMENDED REGARDING "WATER SERVICES AND CHARGES". DOMESTIC AND FIRE SERVICE LINE SHALL BE SIZED PER CALIFORNIA PLUMBING AND FIRE CODES.
3. THE CUSTOMER SHALL INSTALL SUITABLE CONTROL VALVES ON EACH PRIVATE SERVICE LINE ON THE RISER TO EACH BUILDING OR A MAXIMUM OF 50 FEET FROM THE METER. THE VALVES SHALL CONTROL THE ENTIRE WATER SUPPLY FROM THE SURFACE.
4. ALL CORPORATION STOPS, ANGLE METER STOPS, COUPLINGS AND CONNECTIONS SHALL BE BRASS FITTINGS LEAD-FREE COMPLIANCE AND HAVE A MINIMUM WORKING PRESSURE OF 150 PSI.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	2" AND SMALLER STAND-ALONE SERVICE	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-04



REQUIRED BEARING AREA IN SQUARE FEET					
PIPE DIA	TEE - A	DOWN VERT - B	UPWARD VERT - C	HRZ BEND - D	
4"	2	2	2	2	
6"	5	4	6	4	
8"	8	7	11	7	
10"	11	10	15	10	
12"	17	16	24	16	
14"	22	23	31	23	
16"	30	30	42	30	
18"	39	35	54	35	

NOTES:

1. CONCRETE SHALL BE KEPT CLEAR OF ALL FLANGES AND LUGS.
2. ALL CONCRETE THRUST BLOCK SHALL HAVE A MINIMUM THICKNESS OF 12 INCHES.
3. BLOCKING IS BASED ON 150 PSI PRESSURE AND 1000 PSF SOIL BEARING.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT

SCALE: NTS	WATER DIVISION STANDARD DRAWING	DRAWN: MAY 2018	REV:
DRAWN BY: STAFF	STANDARD THRUST BLOCK	RESOLUTION: 98-18 (CM)	
CHECKED BY: TC	MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DWG NO.	W-07

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ARCHITECTURE PLANNING INTERIORS
CIVIL ENGINEERING LAND SURVEYING BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300 Pleasanton, CA 94588 P 925.244.9520

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

STANDARD DETAILS

REMARKS	DATE
2ND SUBMITTAL	MAY 23, 2022

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REGISTERED PROFESSIONAL ENGINEER — JOEL FRANCIS ATOCA — No. 53588 — STATE OF CALIFORNIA

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APN 018-711-34 (PART) & -35

REVISED	
	MAY 23, 2022 2ND SUBMITTAL

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CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

STANDARD DETAILS

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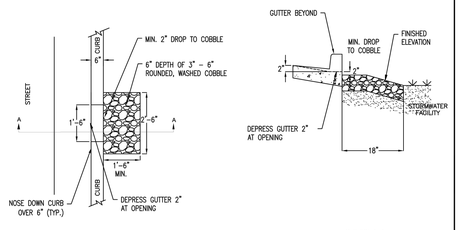
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC	JOB NO. 28595	SHEET C7.3
DATE DECEMBER 13, 2021	CHECKED JFR	INDEX PAJARO 2	OF 19
DESIGN	DWG NAME 25918_C6	FILE NO. 28595	

PA/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C7.3

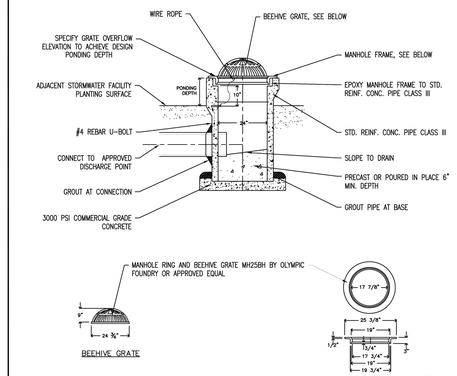
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT



NOTES

1. FOR USE WITH STORMWATER FACILITIES WITH SLOPED SIDES OR FLAT BOTTOMS.
2. WHERE INLET FLOW VELOCITY IS HIGH, EXTEND COBBLE INTO FACILITY, BUT AVOID EXCESSIVE USE.
3. CURB CUT INLET SPACING SHALL BE 20 FEET. CURB CUT INLET SPACING FOR GUTTERS WITH A LONGITUDINAL SLOPE GREATER THAN 4% MUST BE APPROVED BY ENGINEER.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT				
NOT TO SCALE	CITY OF WATSONVILLE	LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT STANDARD DETAILS	DRAWN: 4/13	REV.:
DRAWN BY: MP		CURB CUT INLET WITH GRAVEL ENERGY DISSIPATION	RESOLUTION No. 76-13 (CM)	
CHECKED BY: TS		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. LID-002	



CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT				
NOT TO SCALE	CITY OF WATSONVILLE	LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT STANDARD DETAILS	DRAWN: 4/13	REV.:
DRAWN BY: MP		OVERFLOW STRUCTURE WITH BEEHIVE GRATE	RESOLUTION No. 76-13 (CM)	
CHECKED BY: TS		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. LID-003	

TREES

Native	Scientific Name	Common Name	Planting Area	Height	Spread	Exposure	Type	Bioretention Characteristics: Plant Inundation Zone A	Plant Inundation Zone B	Small Planting Stripes (<5' wide)	Large Planting Stripes (>5' wide)	Tolerates Periodic Inundation	Tolerates Prolonged Dry Periods	Requires Good Drainage	Wind Tolerant	Notes
X	Cercis occidentalis	Western Redbud	Small	20'	20'	Full Sun	Deciduous		X	X		X	X			Small tree or large shrub, tolerates clay, winter wet, drought, flowers stronger with less.
X	Chilopsis linearis	Desert Willow	Small	25'	30'	Full Sun	Deciduous		X		X	X	X		X	Tolerates alkaline soil, sand, clay, seasonal flooding and drought, not coastal conditional
X	Platanus racemosa	California Sycamore	Large	40'-80'	40'-70'	Full Sun	Deciduous		X							Tolerates sand and clay soils, seasonal flooding, needs space to grow, avoid underground water/sewer pipes
X	Quercus agrifolia	Coast Live Oak	Medium	25'-60'	40'-70'	Full Sun-Shade	Deciduous		X		X		X	X	X	Tolerates drought and wet conditions, mature trees produce significant litter limiting understory plantings, need space to grow

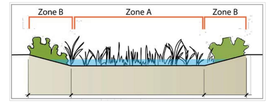
SHRUBS

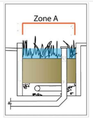
Native	Scientific Name	Common Name	Height	Spread	Exposure	Type	Bioretention Characteristics: Plant Inundation Zone A	Plant Inundation Zone B	Small Planting Stripes (<5' wide)	Large Planting Stripes (>5' wide)	Tolerates Periodic Inundation	Tolerates Prolonged Dry Periods	Requires Good Drainage	Wind Tolerant	Notes
X	Baccharis pilularis consanguinea	Coyote Brush	3'-6'	5'	Sun	Evergreen		X	X	X	X			X	Adaptable evergreen shrub, provides quick cover and bank stabilization, tolerant of coastal conditions, alkaline soil, sand, clay and seasonal wet
X	Heteromeles arbutifolia	Toyon, Christmas Berry	6'-10'	4'-5'	Sun	Evergreen		X		X	X			X	Tolerates sand, clay and serpentine soils, seasonal water with good drainage
X	Iris douglasiana	Douglas Iris	3'	1'-2'	Full Sun-Partial Shade	Grass		X	X			X			Tolerates sand, clay and serpentine soils, seasonal wet (but not soggy) soils and drought
X	Myrica californica	Pacific Wax Myrtle	15'	15'	Sun	Evergreen		X	X			X		X	Large shrub or small tree, tolerates coastal conditions, sand, clay and seasonal inundation
X	Rosa californica	California Rose	3'-6'	3'-5'	Sun-Partial Shade	Deciduous	X	X	X	X	X	X			Tolerates a wide variety of soils, seasonal flooding and some drought, spreads aggressively, avoid edges of walkways because of thorns
X	Sambucus mexicana	Mexican Elderberry	8'-12'	8'	Sun-Partial Shade	Deciduous		X		X	X	X		X	Large shrub to tree, tolerates clay, seasonal flooding and drought, good wildlife food source
X	Solidago californica	California Goldenrod	1'-4'	1'-4'	Full Sun-Partial Shade	Herbaceous Perennial		X	X	X	X	X			Tolerates poor soils, seasonal wet and drought, can spread aggressively if over irrigated

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT				
NOT TO SCALE	CITY OF WATSONVILLE	LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT STANDARD DETAILS	DRAWN: 4/13	REV.:
DRAWN BY: MP		LID RECOMMENDED PLANT LIST (TREES AND SHRUBS)	RESOLUTION No. 76-13 (CM)	
CHECKED BY: TS		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. LID-004A	

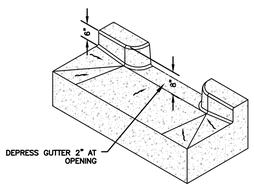
GROUNDCOVER AND VINES

Native	Scientific Name	Common Name	Height	Spread	Exposure	Type	Bioretention Characteristics: Plant Inundation Zone A	Plant Inundation Zone B	Tolerates Periodic Inundation	Tolerates Prolonged Dry Periods	Requires Good Drainage	Tolerates Mowing	Notes
	Carex divulsa	Berkeley Sedge, Grey Sedge	12"-18"	12"-18"	Full Sun-Partial Shade	Grass	X	X	X	X			Tolerates foot traffic, some drought and boggy soils
X	Carex pansa	California Meadow Sedge	6"-8"	N/A	Full Sun-Partial Shade	Grass	X	X	X		X		Good lawn substitute, tolerates wide range of growing conditions, seasonal inundation, drought, foot traffic and mowing
X	Carex praegracilis	Clustered Field Sedge	1'-4'	2'-3'	Full Sun-Partial Shade	Grass	X		X	X		X	Useful lawn substitute and bank stabilizer, good planted in masses, tolerates wide range of growing conditions, foot traffic and mowing, may look weedy when mixed with other plants
X	Carex spissa	San Diego Sedge	6"-8"	N/A	Full Sun-Partial Sun	Grass	X	X	X			X	A large grass, tolerates alkaline soil, clay, serpentine, seasonal inundation, and deer
	Chondropetalum tectorum	Small Cape Rush	2'-3'	3'-4'	Full Sun-Partial Sun	Grass	X	X	X	X		X	A tough, attractive reed-like plant, tolerates boggy or clay soils and drought once established, Chondropetalum elephantinum is a much larger species
X	Festuca rubra 'molate'	Molate Red Fescue	Up to 10"	6"-40"	Full Sun-Partial Shade	Evergreen Perennial	X	X	X			X	A tufted, spreading bunchgrass, good lawn substitute, provides erosion control, tolerates wet conditions, but looks best with regular water, tolerates drought once established
X	Juncus effusus	Soft Rush	1'-2'	1'-2'	Full Sun-Partial Shade	Grass	X		X				Tolerates poor drainage, heavy soils, needs more supplemental water than Juncus patens
X	Juncus patens	Wire Grass, Blue Rush	2'-3'	Running	Full Sun	Grass	X		X	X			Strong performance in bioretention area, tolerates poor drainage, seasonal inundation, drought, shade
X	Leymus condensatus	Canyon Prince Wild Rye	1'-2'	N/A	Partial Shade	Grass		X	X	X			tolerates drought, wet, but not soggy soils, looks best with supplemental irrigation, spreads by rhizomes
X	Muhlenbergia rigens	Deer Grass	6'-8'	6'-8'	Full Sun-Partial Shade	Evergreen Shrub		X	X	X			A large grass, tolerates sandy and clay soils, seasonal inundation, best when cut back annually to remove old thatch

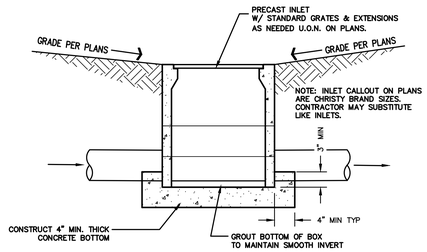




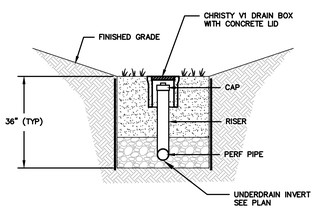
CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT				
NOT TO SCALE	CITY OF WATSONVILLE	LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT STANDARD DETAILS	DRAWN: 4/13	REV.:
DRAWN BY: MP		LID RECOMMENDED PLANT LIST (GROUNDCOVER AND VINES)	RESOLUTION No. 76-13 (CM)	
CHECKED BY: TS		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. LID-004B	



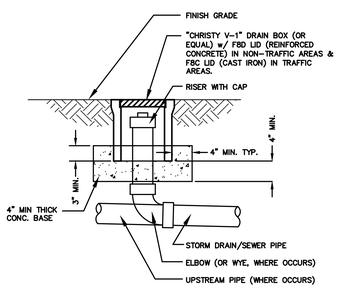
1 C7.4 CURB CUT INLET PERSPECTIVE VIEW
SCALE: NTS



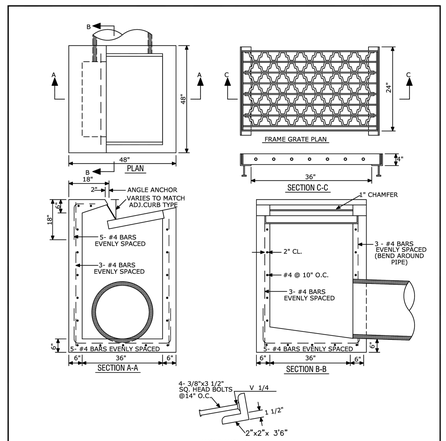
3 C7.4 TYPICAL CATCH BASIN
SCALE: NTS



2 C7.4 TYPICAL SDCO IN BIORETENTION
SCALE: 1/2" = 1'–0"

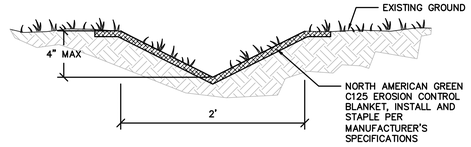


4 C7.4 CLEANOUT (SDCO/SSCO) DETAIL
SCALE: 1"=1'–0"



NOTES:
1) GRATE SHALL BE GRADE TYPE 24-10S AS DETAILED BY CALTRANS STANDARD PLAN D77B.
2) FRAME SHALL BE AS DETAILED BY CALTRANS STANDARD PLAN D77A.
3) CONCRETE SHALL CONFORM TO THE PROVISIONS OF SECTION 90-2, "MINOR CONCRETE", OF THE CALTRANS STANDARD SPECIFICATIONS.
4) PRE-CAST BASES ARE PROHIBITED.

CITY OF WATSONVILLE PUBLIC WORKS & UTILITIES DEPARTMENT				
NOT TO SCALE	CITY OF WATSONVILLE	STANDARD DRAWING FOR	DRAWN: 9/11	REV.: 5/13
DRAWN BY: P.A.C.		DROP INLET TYPE "D"	RESOLUTION: 76-13 (CM)	
CHECKED BY: T.S.		MARIA ESTHER RODRIGUEZ, CITY ENGINEER	DRAWING No. S-205	



5 C7.4 GRASS LINED SWALE
SCALE: NTS

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3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073–2094
(831) 426–3560

STANDARD LID DETAILS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED JFR	INDEX PAJARO 2	C7.4
DESIGN	DWG NAME	FILE NO. 28595	OF 19

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4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.244.6620

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STANDARD LID DETAILS

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

P.A/PM:	
DRAWN BY.:	
JOB NO.:	SNR21-0142-00

SHEET
C7.4

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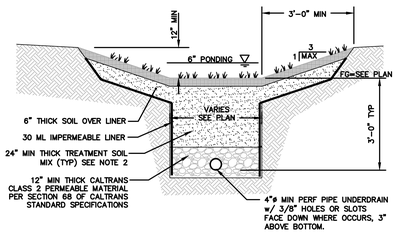
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

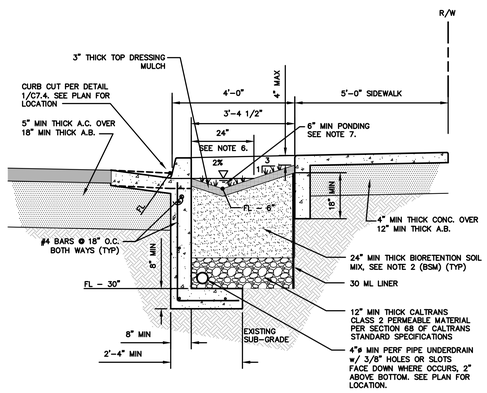


NOTES:

1. SOIL MIX SHALL BE A WELL-BLENDED MIXTURE OF MINERAL AGGREGATE AND COMPOST MEASURED ON A VOLUME BASIS.
2. SOIL MIX SHALL BE PER BASMAA SPECIFICATIONS.
3. THE SOIL MIX SHALL BE WELL BLENDED TO PRODUCE A HOMOGENEOUS MIX.
4. MINERAL AGGREGATE MIX SHALL BE ASTM C33 SAND OR APPROVED EQUAL.
5. BIO SWALE PLANTING SHALL BE PER C.O.W. STD. DWG. NO. LID-004A & LID-004B.
6. AREA SHALL BE DRAINED WITH AN OVERFLOW STRUCTURE WITH BEEHIVE GRATE PER C.O.W. STD. DWG. NO. LID-003.

1 C7.5 TYPICAL BIORETENTION SECTION IN OPEN SPACE

SCALE: 1/2" = 1'-0"



NOTES:

1. SOIL MIX SHALL BE A WELL-BLENDED MIXTURE OF MINERAL AGGREGATE AND COMPOST MEASURED ON A VOLUME BASIS.
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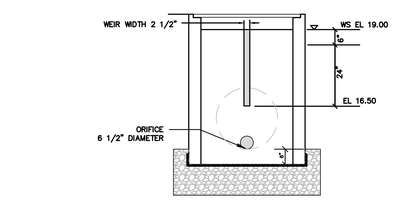
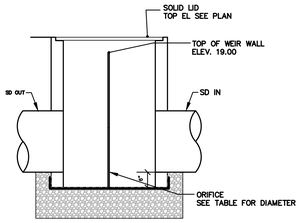
4. MINERAL AGGREGATE MIX SHALL BE ASTM C33 SAND OR APPROVED EQUAL.
5. SEE SHEET C6.1 FOR CURB, GUTTER & SIDEWALK DETAILS.
6. THESE CONDITIONS, 24" EFFECTIVE WIDTH AND 4" MIN PONDING, ARE ADEQUATE GIVEN THE CONSTRAINTS.
7. AREA SHALL BE DRAINED WITH AN OVERFLOW STRUCTURE WITH BEEHIVE GRATE PER C.O.W. STD. DWG. NO. LID-003.

2 C7.5 TYPICAL SECTION – STREET BIO-SWALE

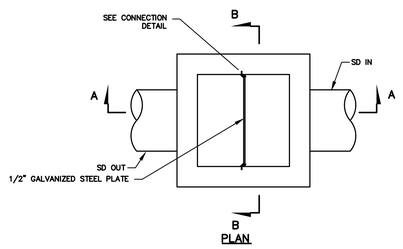
SCALE: 1/2" = 1'-0"

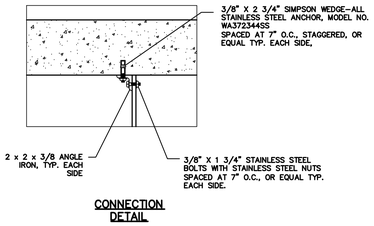


SECTION B-B



SECTION A-A

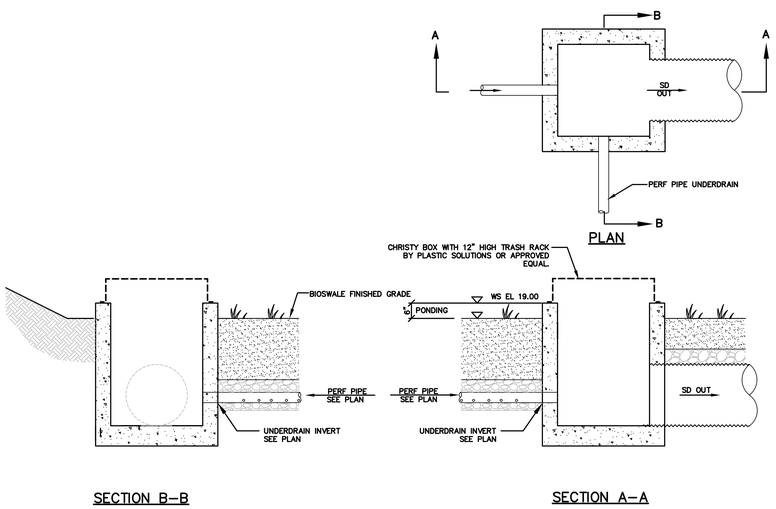




CONNECTION DETAIL

5 C7.5 OUTLET CONTROL STRUCTURE (OCB) DETAILS

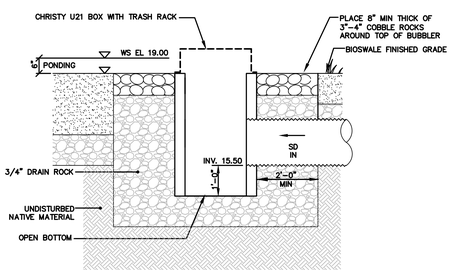
SCALE: 1/2"=1'-0"



SECTION B-B SECTION A-A

3 C7.5 DETENTION OVERFLOW STRUCTURE

SCALE: 1/2" = 1'-0"



4 C7.5 STORM DRAIN BUBBLER

SCALE: 1/2" = 1'-0"

Know what's below. Call before you dig.

REGISTERED PROFESSIONAL ENGINEER JOEL FRANCIS RICCA No. 53588 CIVIL STATE OF CALIFORNIA

PRELIMINARY FOR DESIGN REVIEW ONLY

DISCLAIMER
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APN 018-711-34 (PART) & -35

REVISED	
MAY 23, 2022 2ND SUBMITTAL	

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS AND LAND SURVEYORS
3949 RESEARCH PARK COURT, SUITE 100
SOQUEL, CA 95073-2094
(831) 426-3560

STANDARD LID DETAILS

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

SCALE AS SHOWN	DRAWN TPC	JOB NO. 28595	SHEET
DATE DECEMBER 13, 2021	CHECKED JFR	INDEX PAJARO 2	C7.5
DESIGN	DWG NAME 24735_C7.1	FILE NO. 28595	OF 19

WARE MALCOMB
ARCHITECTURE PLANNING INTERIORS
CIVIL ENGINEERING BRANDING BUILDING MEASUREMENT
4683 Chabot Dr. Suite #300
Pleasanton, CA 94588
P 925.244.9620

CIENT LOGO

OHLONE PARKWAY INDUSTRIAL
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA 95076

STANDARD LID DETAILS

DATE	REMARKS
MAY 23, 2022	2ND SUBMITTAL

PA/PM:	
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SHEET
C7.5

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BIORETENTION

MANABE OW ROAD

BIORETENTION/DETENTION BASIN

IND. BLDG.

CITY MAINT. EASEMENT

0.50FC. TYP.

1.0FC. TYP.

OHLONE PARKWAY

35'

RIGHT TURN, EXIT ONLY.
OPTIONAL RIGHT-IN
MANEUVERABILITY IF
BUILDING WERE TO BE
MULTI-TENANT

OPTIONAL RIGHT-
POCKET IF BUILD
TO BE MULTI-TEN

BIKE TRAIL

Luminaire Schedule - LED

Project: OHLONE PARKWAY WEST - WATSONVILLE

Symbol	Qty	Label	Arrangement	LLF	Luminaire Lumens	Luminaire Watts	Description	Filename
	2	SA	Single	0.900	5338	34	LEOTEK GCJ1-30J-MV-40K-3R-XX-055 S - 30' POLE + 8' ARM	GCJ1-30J-MV-40K-3R-XX-055 S.ies
	9	B1	Single	0.850	965	10.6	PBL-42-14L-200-NW-G2-3-UNV	PBL-14L-200-NW-G2-3-UNV.ies
	1	B2	Single	0.850	1055	10.6	PBL-42-14L-200-NW-G2-5-UNV	pbl-14l-200-nw-g2-5-unv.ies
	4	BB	Single	0.850	23602	219.4286	Gardco P26-80L-900-WW-G2-3 @ 24'	P26-80L-900-WW-G2-3.ies
	11	CC	Single	0.850	24482	219.4286	Gardco P26-80L-900-WW-G2-4 @ 24'	P26-80L-900-WW-G2-4.ies
	4	DD	Back-Back	0.850	25282	219.4286	GARDCO P26-80L-900-WW-G2-5W	P26-80L-900-WW-G2-5W.ies
	1	EE	Single	0.850	25282	219.4286	GARDCO P26-80L-900-WW-G2-5W	P26-80L-900-WW-G2-5W.ies
	17	FF	Single	0.850	958	19.7491	WILLIAMS 4DR-TL-L20-835-DIM-UNV-RW-OF-CS-AD-WET-CC	4DR-TL-L20-835-DIM-UNV-RW-OF-CS-AD-WET-CC_.ies
	14	W1	Single	0.850	19655	179.1	Gardco PWS-64L-900-WW-G2-4 @ 24'	PWS-64L-900-WW-G2-4.ies

Calculation Summary

Project: OHLONE PARKWAY WEST - WATSONVILLE

Description	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
AUTO PARKING AREAS	Illuminance	Fc	2.19	6.0	1.0	2.19	6.00
CANOPY 1	Illuminance	Fc	4.73	5.6	3.1	1.53	1.81
CANOPY 3	Illuminance	Fc	5.07	6.5	3.9	1.30	1.67
MAIN ENTRY AREA AND CANOPY	Illuminance	Fc	4.42	16.0	1.1	4.02	14.55
OHLONE PARKWAY	Illuminance	Fc	0.36	1.22	0.10	3.60	12.20
REAR TRUCK PARKING AND DOCKS AREAS	Illuminance	Fc	1.67	6.3	0.3	5.57	21.00
WEST TRUCK PARKING AND DRIVES	Illuminance	Fc	1.90	5.7	0.9	2.11	6.33

ALL VALUES SHOWN ARE MAINTAINED HORIZONTAL FOOTCANDLES AT GRADE

PHOTOMETRIC DATA USED AS INPUT FOR THESE CALCULATIONS IS BASED ON ESTABLISHED IES PROCEDURES AND PUBLISHED LAMP, RATINGS, FIELD PERFORMANCE WILL DEPEND ON ACTUAL LAMP, BALLAST, ELECTRICAL, AND SITE CHARACTERISTICS.

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

Associated Lighting Representatives, Inc.

ASSOCIATED LIGHTING REPRESENTATIVES, INC
7777 PARDEE LANE
P.O. BOX 2265
OAKLAND, CA 94621
PHONE: (510) 638-0158 - FAX (510) 638-2908

REPORT FOR: WARE MALCOMB
BY: APPLICATIONS ENGINEERING; RAMON ZAPATA
SALES REPRESENTATIVE: ALR; CATHY JOHNSON

AGI32 VERSION 20.1
AGI (C) 2021 LIGHTING ANALYSTS, INC.
10268 W. CENTENNIAL ROAD, SUITE 202
LITTLETON, CO 80127

Lighting Analysts Illumination engineering software
www.agi32.com

PROJECT DESCRIPTION

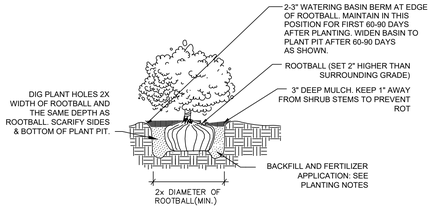
CA VENTURES - OHLONE PARKWAY WEST

CITY OF WATSONVILLE

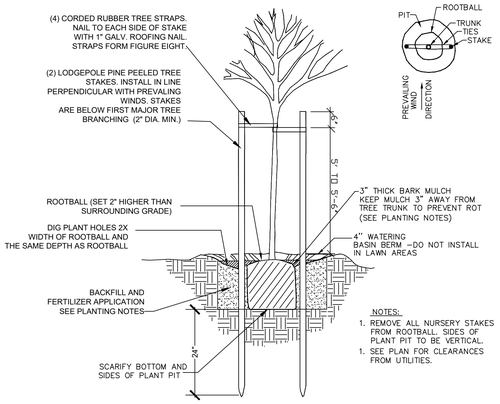
DRAWING NO. / INPUT FILE

19508GOT-R2.DWG / 19508GOT-R2.A32

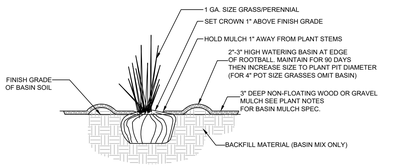
SCALE	SHEET	DATE	REV
1" = 30'	1 OF 1	05.18.2022	2



SHRUB PLANTING DETAIL



TREE PLANTING DETAIL



PLANTING GRASSES IN BIO-INFILTRATION BASIN

WATER EFFICIENT LANDSCAPE WORKSHEET - BY HYDROZONE

REFERENCE EVAPOTRANSPIRATION (ETo): 37.7

HYDROZONE #	HYDROZONE / (PLANT WATER USE)	PLANT TYPE	PLANT FACTOR (PF)	IRRIGATION METHOD	IRRIGATION EFFICIENCY (IE)	ETAF (PF / IE)	LANDSCAPE AREA (sq. ft.)	ETAF x AREA	ESTIMATED TOTAL WATER USE (ETWU)	% OF TOTAL LANDSCAPE AREA
REGULAR LANDSCAPE AREA:										
1	LOW WATER USE	SHRUBS	0.3	DRIP	0.81	0.37037037	79755	29538.88889	690442.0	72%
2	LOW WATER USE	HYDROSEED	0.3	ROTOR	0.75	0.4	29390	11756	274784.7	27%
3	MEDIUM WATER USE	TREES	0.5	BUBBLER	0.81	0.61728395	1440	888.8888889	20776.9	1%
						TOTALS:	110585	42184		100%
SPECIAL LANDSCAPE AREAS:										
	REC. AREA					1		0	0	
	POOL					1		0	0	
	WATER FEATURE 2					1		0	0	
						TOTALS:	0	0		
								ETWU TOTAL:	986.004	
								MAXIMUM ALLOWED WATER ALLOWANCE (MAWA):	1,163.166	

ETAF CALCULATIONS:

REGULAR LANDSCAPE AREAS:

TOTAL ETAF x AREA	42,184
TOTAL LANDSCAPE AREA	110,585
AVERAGE ETAF	0.38

NOTE: AVERAGE ETAF FOR REGULAR LANDSCAPE AREAS MUST BE 0.55 OR BELOW FOR RESIDENTIAL AREAS, AND 0.45 OR BELOW FOR NON-RESIDENTIAL AREAS.

ALL LANDSCAPE AREAS:

TOTAL ETAF x AREA	42,184
TOTAL LANDSCAPE AREA	110,585
SITEWIDE ETAF	0.38

PLANTING NOTES

GENERAL NOTES: The Landscape Contractor shall inspect the site and be familiar with all existing site conditions prior to submitting his bid. Contractor shall not willfully proceed with construction as shown when it is obvious that obstructions, landscape area and/or grade differences exist that may not have been known during design. such conditions shall immediately be brought to the attention of the Landscape Architect. The contractor shall assume full responsibility for all necessary revisions due to failure to give such notification. Contractor shall be responsible for making himself familiar with all underground utilities, pipes, structures and obstructions. Contractor shall take sole responsibility for all costs incurred due to damage and/or replacement of these items. Contractor shall be responsible for coordination between trades and subcontractors as required to accomplish landscape operations. The Landscape Contractor shall be responsible for any damage to existing facilities caused by or during the performance of his work. All repairs shall be made at no cost to the Owner. Planting shall be installed in conformance with all applicable local codes and ordinances by experienced workmen and a licensed Landscape Contractor who shall obtain all necessary permits and pay all required fees.

SOIL PREPARATION: The Landscape Contractor shall be responsible for finish grading and all planting area drainage. Positive drainage away from the building as per city codes shall be maintained. No low spots which hold standing water will be accepted. The Landscape Contractor shall incorporate soil preparation amendment into planting areas as noted below. Where rototilling is not possible, incorporate soil amendments into top 6 inches with hand tools. After installation of irrigation system, all planting areas are to be fine graded to within 2 inches and slightly mounded away from edges of top of planter, curb, walk, header, etc. and raked smooth with all rocks and debris over 1 inch in diameter removed.

SOIL MANAGEMENT REPORT:
A. The Contractor shall submit soil samples to the laboratory for analysis and recommendations.
1. Soil sampling shall be conducted in accordance with the laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
2. Soil analysis may include:
   a. Soil texture
   b. Infiltration rate determined by laboratory test or soil infiltration rate table
   c. pH
   d. Total soluble salts
   e. Sodium
   f. Percent organic matter
   g. Recommendations
B. Contractor shall submit soil report and recommendations to the City as part of the certificate of completion.
C. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans and if required, submitted to the City prior to application.
D. The contractor shall submit documentation verifying implementation of the soil analysis report recommendations to the City with certificate of completion.

SOIL PREPARATION AMENDMENTS AND BACKFILL MIX: (THE FOLLOWING SOIL AMENDMENT PREPARATIONS ARE FOR BID PURPOSES ONLY, CONTRACTOR TO CONDUCT SOILS FERTILITY ANALYSIS TEST AND SUBMIT RESULTS TO CITY PRIOR TO IMPLEMENTING TEST RESULTS RECOMMENDATIONS) The Landscape Contractor shall amend existing soil, by rototilling, 6 cu. yd. CCW 'Super Humus' compost and 20 lbs. organic fertilizer 'Phyta-Boost' 7-2-1 per 1,000 sq. ft . into the top 6 inches of soil in all planting areas. (or equal) Pit Planting Mix: for trees and shrubs mix 1/3 compost amendment and 2/3 amended topsoil as noted above.

TREE PLANTING: (THE FOLLOWING SOIL AMENDMENT PREPARATIONS ARE FOR BID PURPOSES ONLY, CONTRACTOR TO CONDUCT SOILS FERTILITY ANALYSIS TEST AND SUBMIT RESULTS TO CITY PRIOR TO IMPLEMENTING TEST RESULTS RECOMMENDATIONS). The trees are to be planted as per detail on plan. Trees shall typically be located a minimum of 4 feet from curbs, walks, headers, buildings, overheads, and other trees within the project. backfill shall be the 'Pit Planting Mix' as noted above. All trees shall receive organic fertilizer 'Phyta Boost' 7-1-2 -pelleted (or equal) for 15 gallon trees: 1 lb., 1/ 2 lb.for 5 gallon trees and shrubs: Mix fertilizer with backfill soil and thoroughly water trees immediately after planting.

ROOT BARRIERS: All trees planted within 5' of a paved surface shall receive a linear type root barrier 18" deep and 10' long centered on the tree trunk. (See detail)

SHRUB PLANTING: (THE FOLLOWING SOIL AMENDMENT PREPARATIONS ARE FOR BID PURPOSES ONLY, CONTRACTOR TO CONDUCT SOILS ANALYSIS TEST AND SUBMIT RESULTS TO CITY PRIOR TO IMPLEMENTING TEST RESULTS RECOMMENDATIONS). The shrubs shall be spotted as per plan and the locations approved prior to the digging of the holes. Shrub backfill shall be the 'Pit Planting Mix' as noted in 'Backfill soil mixes'. All shrubs shall receive 'Phyta-Boost 7-1-2 organic fertilizer-pelleted.(or equal) at the following rates: For 5 gallon shrubs:1/2 lb. for, 1 gallon shrubs:1/4 lb. Mix fertilizerl with backfill soil and thoroughly water shrubs immediately after planting. Do not plant any plant within 2'0" of any building wall.

MULCHING STREETSCAPES: Mulch all planting areas, having a slope less than 2:1 with a 3 inch minimum depth of recycled wood fiber, non-dyed with a PH of no higher than 5.0. and free of noxious weeds and foreign materials. Available from 'Re-User Inc.' or approved equal. Keep 1" away from stems of plants to avoid smothering and rot while still covering rootball.

MULCHING ON-SITE: Mulch all parking islands, end-caps, behind truck trailer parking stalls, and planters adjoining parking areas or pedestrian walks with 3" deep pea gravel tan-gray tones 1/ 8"-1/4" dia. Provide sample for approval prior to installation. Keep 1" away from stems of plants to avoid smothering and rot while still covering rootball.

MAINTENANCE: The Contractor shall maintain the project for 90 days (or as requested by owner) following the approval to begin the maintenance period. During the entire maintenance period, watering, cultivating, weeding, mowing, repair/tightening of stakes and ties, restoration of basins, provision of supplemental water by hand in addition to irrigation system as necessary. No pre-emergence herbicides shall be applied- hand remove weeds. Only organic fertilizers shall be applied such as those specified above. Install per manufacturer's recommendations. At the end of the 90 day maintenance period all areas are to be weed free and all plant material is to be in a healthy, thriving condition. Integrated pest management practices shall be implemented.

SUBSTITUTIONS: Requests for substitutions of plant varieties shall be made to the Landscape Architect within 15 days after signing of contract.

GUARANTEE: All construction, trees and shrubs by the Landscape Contractor and/or his subcontractors shall be guaranteed for (1) one year after beginning of maintenance period. The contractor shall replace, at no expense to the Owner, any and all landscape materials that are in an unacceptable condition for time of use, and trees or shrubs that are dead or not in a vigorous, healthy growing condition; within two weeks of notification of such condition. Replacement shall be of the same kind and size as the originally specified item and shall be replaced as originally described on the drawings. The Contractor shall not be held liable for loss of plant materials during the guarantee period due to vandalism, accidental causes or acts of neglect by others than the Contractor, his agents and employees.

CLEAN UP: At the end of each work day, at the inspection for substantial completion and before acceptance of project, clean paved areas that are dirtied or stained by construction operations, by sweeping or washing, and remove defacements and stains. Remove construction equipment, excess materials and tools. Haul from Owners property the debris resulting from construction, and dispose of legally. Remove remaining temporary protection at time of acceptance by Owner unless otherwise agreed.

FERTILIZERS: Available California Organics Fertilizers 1-800-269-5690 www.organicag.com
Compost available from Contra Costa Waste Management: www.contracostawaste.com

METAL EDGING: Install metal edging at interfaces of gravel mulch and hydroseed or firbark mulch areas. See plan for location and detail this sheet.

SPECIAL NOTES:
1.TREES TO BE KEPT TRIMMED TO 6'-0" ABOVE PAVEMENT IN PEDESTRIAN PATHWAYS AND PARKING LOTS AND 13'-0" ABOVE PAVEMENT IN TRUCK AISLES.

2. LANDSCAPE CONTRACTOR SHALL ADJUST PLANT MATERIALS AROUND ABOVE GROUND UTILITIES (IF LOCATION VARIES FROM PLANS) TO PROVIDE MAXIMUM SCREENING AND MAINTAIN REQUIRED CLEARANCES. CONTACT LANDSCAPE ARCHITECT FOR CLARIFICATION.

RECOMMENDED PLANT MATERIALS LIST

TREES:

SYMBOL	BOTANICAL NAME	COMMON NAME	WATER USE WUCOLS	SIZE	MATURE SIZE
	CINNAMOMUM CAMPHORA	CAMPHOR TREE	MED	24" BOX	30'Hx30'W
	CERCIS OCCIDENTALIS (STANDARD)	WESTERN REDBUD	LOW	24" BOX	20'Hx20'W
	LAGERSTROEMIA 'CATAWBA' (STANDARD)	STANDARD CRAPE MYRTLE	LOW	24" BOX	8'Hx10'W
	LAGERSTROEMIA 'MUSKOGEE' (STANDARD)	STANDARD CRAPE MYRTLE	LOW	24" BOX	25'Hx18'W
	MAGNOLIA GRANDIFLORA 'LITTLE GEM'	SOUTHERN MAGNOLIA	MED	24" BOX	25'Hx25'W
	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	MED	24"BOX	30'Hx40'W
	QUERCUS AGRIFOLIA	CALIFORNIA LIVE OAK	VERY LOW	24" BOX	40'Hx40'W
	ULMUS PARVIFOLIA 'ALLEE'	ALLEE CHINESE ELM	MED	24"BOX	50'Hx30'W

RECOMMENDED PLANT MATERIALS LIST

PLANTING ZONES:

SYMBOL	BOTANICAL NAME	COMMON NAME	WATER USE WUCOLS	SIZE	MATURE SIZE
STORMWATER TREATMENT BASIN:					
	CAREX DIVULSA	SEDGE	LOW	1 GA	2'Hx3'W
	JUNCUS PATENS	BLUE RUSH	LOW	1 GA	2'Hx3'W
	MUHLENBERGIA RIGENS	DEER GRASS	LOW	1 GA	4'Hx4'W
BUILDING FRONTS/ WALKWAYS:					
	ACHILLEA MILLEFOLIUM 'MOONSHINE'	MOONSHINE YARROW	LOW	5 GA	18"Hx18"W
	CALLISTEMON 'LITTLE JOHN'	DWARF BOTTLEBRUSH	LOW	5 GA	3'Hx5'W
	CEANOTHUS 'CONCHA'	WILD LILAC	LOW	5 GA	5'Hx5'W
	DIETES BICOLOR	FORTNIGHT LILY	LOW	5 GA	3'Hx3'W
	FRANGULA CALIFORNICA 'EVE CASE'	CALIFORNIA COFFEEBERRY	LOW	5 GA	4'Hx5'W
	LANTANA SPP	LANTANA	LOW	5 GA	3'Hx5'W
	LOMANDRA LONGIFOLIA 'SEA BREEZE'	DWARF MAT RUSH	LOW	5 GA	3'x3'W
	SALVIA 'GREGGII'	SAGE	LOW	5 GA	4'Hx4'W
	SALVIA NEMEROSA	PURPLE SAGE	LOW	5 GA	3'Hx3'W
	TEUCRIUM FRUTICANS	BUSH GERMANDER	LOW	5 GA	5'Hx5'W
	WESTRINGIA FRUTICOSA	COAST ROSEMARY	LOW	5 GA	5'Hx5'W
PARKING LOT AREAS:					
	CALLISTEMON 'LITTLE JOHN'	DWARF BOTTLEBRUSH	LOW	5 GA	3'Hx5'W
	COPROSMA 'KIRKII'	CREEPING COPROSMA	LOW	1 GA	2'Hx6'W
	LOMANDRA LONGIFOLIA 'SEA BREEZE'	DWARF MAT RUSH	LOW	5 GA	3'x3'W
	TEUCRIUM F. 'COMPACTA'	DWARF GERMANDER	LOW	5 GA	3'Hx3'W
INTERSECTIONS / SITE ENTRY AREAS:					
	AGAVE 'BLUE GLOW'	BLUE GLOW AGAVE	LOW	5 GA	3'Hx4'W
	BOUGAINVILLEA 'SAN DIEGO RED'	BOUGAINVILLEA	LOW	5 GA	4'Hx8'W
	BOUGAINVILLEA 'BARBARA KARST'	BOUGAINVILLEA	LOW	5 GA	4'Hx8'W
	CORYLINE SPP	CORDYLINE	LOW	5 GA	4'Hx3'W
	LANTANA MONTEVIDENSIS	TRAILING LANTANA	LOW	5 GA	3'Hx5'W
	LEUCODENDRON 'SAFARI SUNSET'	SAFARI SUNSET CONEBUSH	LOW	15 GA	5'Hx'5'W
PERIMETER FRONTAGE AREAS:					
	BOUGAINVILLEA 'SAN DIEGO RED'	BOUGAINVILLEA	LOW	5 GA	4'Hx8'W
	BOUGAINVILLEA 'BARBARA KARST'	BOUGAINVILLEA	LOW	5 GA	4'Hx8'W
	CEANOTHUS 'CONCHA'	WILD LILAC	LOW	5 GA	5'Hx5'W
	CEANOTHUS 'JOYCE COULTER'	WILD LIAC	LOW	5 GA	3'Wx6'W
	COPROSMA 'KIRKII'	CREEPING COPROSMA	LOW	1 GA	2'Hx6'W
	FRANGULA CALIFORNICA 'EVE CASE'	CALIFORNIA COFFEEBERRY	LOW	5 GA	4'Hx5'W
	HETEROMELES ARBUTIFOLIA	TOYON	LOW	5 GA	8'Hx8'W
	MYOPORUM PARVIFOLIUM	MYOPORUM 'PUTAH CREEK'	LOW	1 GA	12"Hx8'W
	PITTOSPORUM TOBIRA 'VARIEGATA'	VARIEGATED TOBIRA	LOW	5 GA	6'Hx8'W
SCREENING / BACKGROUND SHRUBS:					
	HETEROMELES ARBUTIFOLIA	TOYON	LOW	5 GA	8'Hx8'W
	PRUNUS ILIFOLIA	HOLLY-LEAF CHERRY	LOW	5 GA	12'Hx12'W
	XYLOSMA CONGESTUM	SHINY XYLOSMA	LOW	5 GA	12'Hx 12'W

GENERAL NOTES:

1. PLANS TO COMPLY WITH APPLICABLE CITY OF WATSONVILLE LANDSCAPE STANDARDS.

2. LANDSCAPE AND IRRIGATION SHALL COMPLY WITH CITY OF WATSONVILLE WATER EFFICIENTY LANDSCAPE ORDINANCE AND WATER CONSERVATION STANDARDS AS WELL AS APPLICABLE WATER CONSERVATION REQUIREMENTS OF THE STATE OF CALIFORNIA. THIS INCLUDES WATER USE CALCULATIONS AND WATER BUDGET CALCULATIONS FOR REVIEW.

3. COUNTY 'STATEMENT OF COMPLAINCE' SHALL BE SUBMITTED SIGNED BY LANDSCAPE ARCHITECT.

4. IRRIGATION TO BE A WATER CONSERVING DRIP TYPE SYSTEM WITH A WEATHER BASED 'SMART' CONTROLLER WITH RAIN SHUT OFF, MASTER VALVE AND FLOW SENSOR.

5. ALL UTILITIES INCLUDING BACKFLOW PREVENTERS, ENCLOSURES AND TRANSFORMERS SHALL BE SCREENED WITH PLANT MATERIALS 5 GALLON SIZE MINIMUM.

MULCH TYPES:
APPLY 2" DEEP RIVERWASHED GRAVEL (TAN TONES) OVER PERVIOUS WEED BARRIER IN ALL PLANTED AREAS WITHIN PROJECT, EXCEPT STORMWATER DETENTION BASINS, SITE PERIMETER AREAS AND STREET FRONTAGES.

APPLY 3" DEEP NON-DYED RECYCLED WOOD MULCH (3" SIZE MAX.) FOR SITE PERIMETER AREAS AND STREET FRONTAGES.

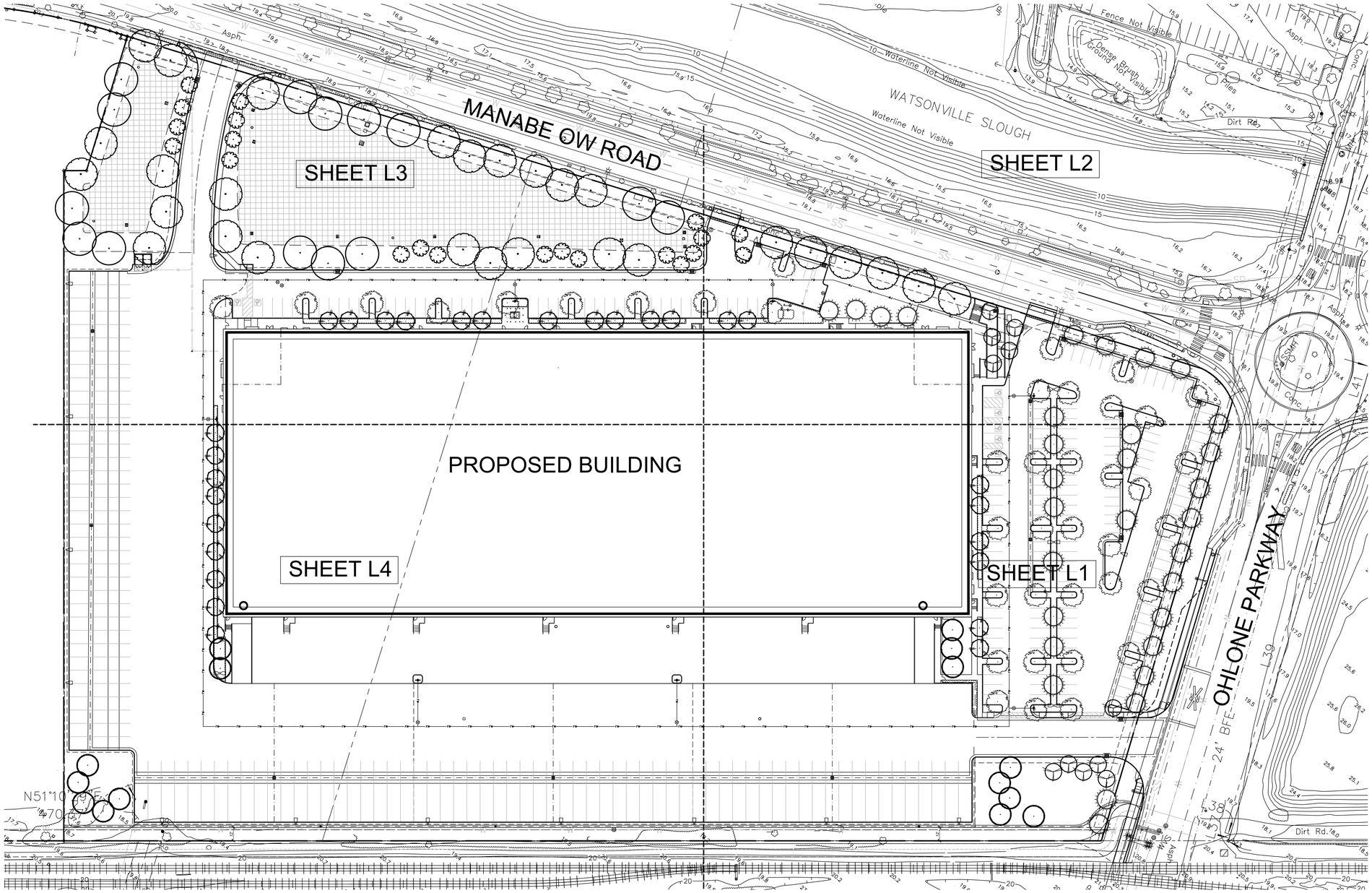
REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.5248

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

RECOMMENDED PLAN LIST, NOTES AND DETAILS

DRAWN: RS
CHECKED: RS
DATE: 4-22-22
SCALE:
JOB NO.
SHEET: L0.1
OF SHEETS



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.2161

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

OVERALL LANDSCAPE PLAN

DRAWN	RS
CHECKED	RS
DATE	4-22-22
SCALE	
JOB NO.	
SHEET	L0.2
OF	SHEETS

MATCHLINE SEE SHEET L2

MATCHLINE SEE SHEET L4

BUILDING

TRUCK LOADING DOCK AREA

MEDIUM FLOWERING ACCENT TREE
(CRAPE MYRTLE CATAWABA)

LOW ACCENT PLANTING
ALONG WALKWAYS

POLE-MOUNTED
LIGHTS IN PARKING
AREAS

LOW SPREADING PLANTING WITH
ORNAMENTAL GRASSES IN
PARKING LOT PLANTERS

SECONDARY BROADLEAF EVERGREEN
TREES (SOUTHERN MAGNOLIA)

LUSH LANDSCAPE TREATMENT ALONG
PERIMETER OF PARKING STALLS AT
SITE FRONTAGES

SECONDARY BROADLEAF EVERGREEN
TREES (SOUTHERN MAGNOLIA)

PARKING LOT CANOPY TREE
(CHINESE ELM)

OHLONE PARKWAY

LOW ACCENT PLANTING AT PROJECT
SITE ENTRY DRIVEWAYS

TALL SCREENING SHRUBS OUTSIDE
SECURITY FENCE

LARGE CANOPY SCREEN TREES
(CAMPHOR TREES)

SITE ACCENT TREES AT SITE ENTRIES
(CRAPE MYRTLES)

TRUCK TRAILER PARKING

NO PLANTING IN 10 FT. WIDE
WATER EASEMENT

CITY MAINTENANCE EASEMENT
(GRAVEL SURFACE)

12'

Dirt Rd.

SITE MAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REFER TO SHEET L0.1 FOR RECOMMENDED PLANT LIST, NOTES AND DETAILS

REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

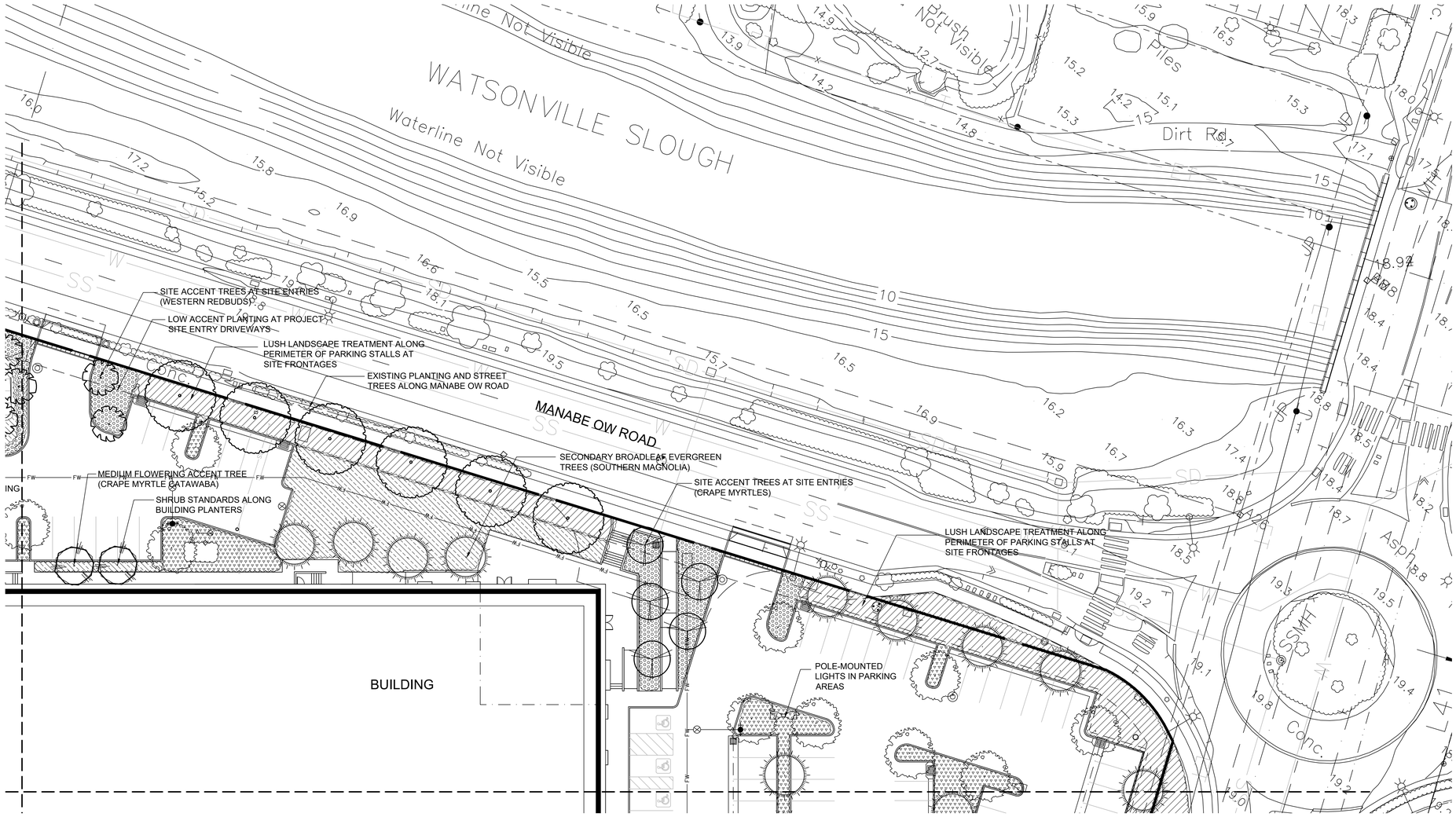
RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.5585

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

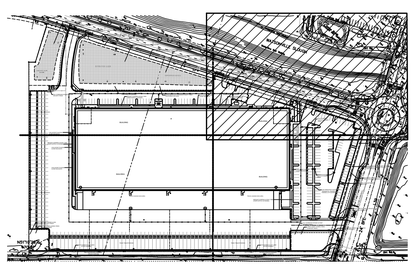
PRELIMINARY
LANDSCAPE PLAN

DRAWN: RS
CHECKED: RS
DATE: 4-22-22
SCALE:
JOB NO.
SHEET: L1
OF SHEETS

MATCHLINE SEE SHEET L3



MATCHLINE SEE SHEET L1



SITE MAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REFER TO SHEET L0.1 FOR RECOMMENDED PLANT LIST, NOTES AND DETAILS

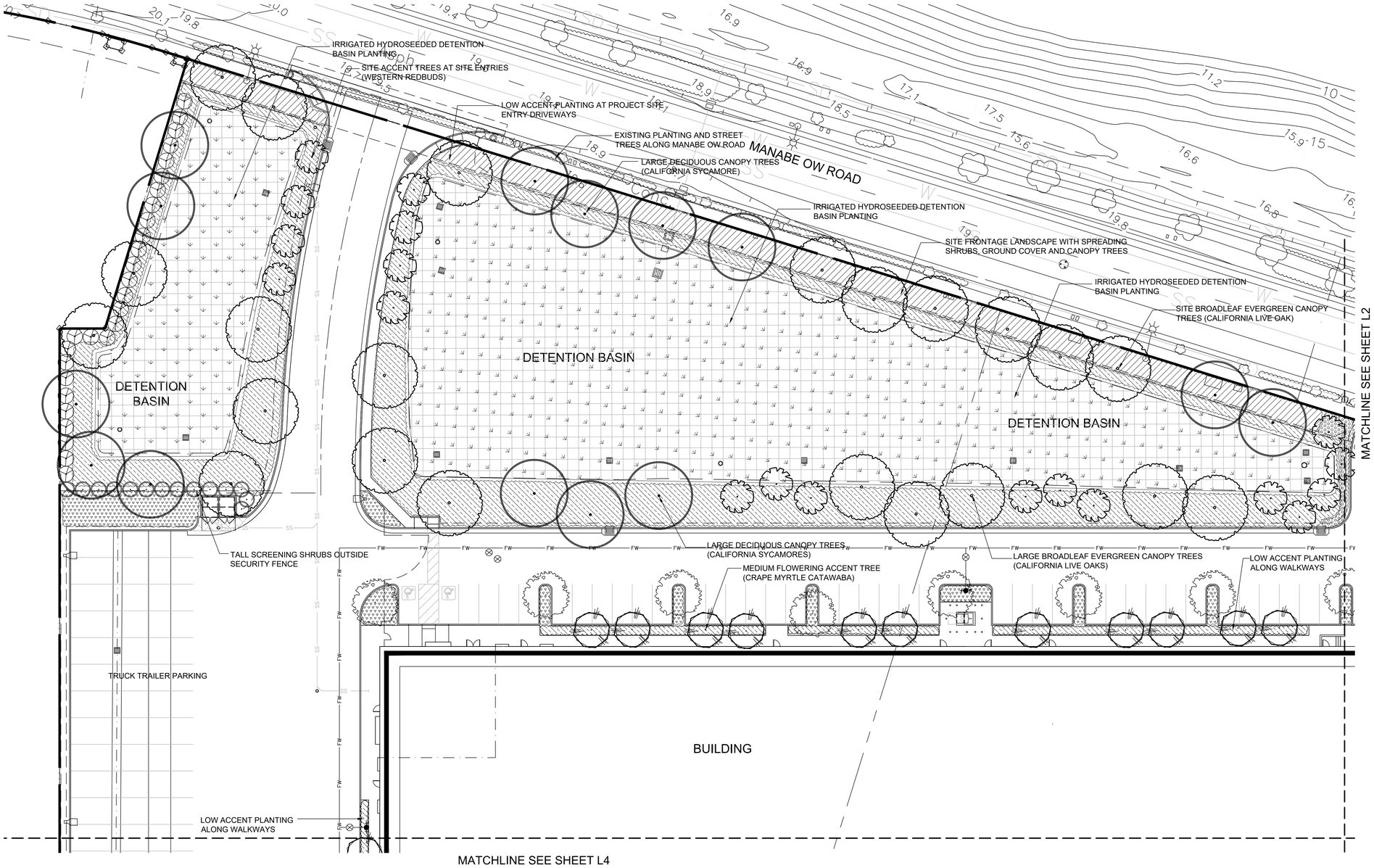
REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

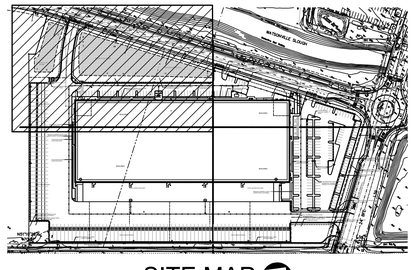
RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.2585

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

PRELIMINARY LANDSCAPE PLAN

DRAWN	RS
CHECKED	RS
DATE	4-22-22
SCALE	
JOB NO.	
SHEET	L2
OF	SHEETS





SITE MAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REFER TO SHEET L0.1 FOR RECOMMENDED PLANT LIST, NOTES AND DETAILS

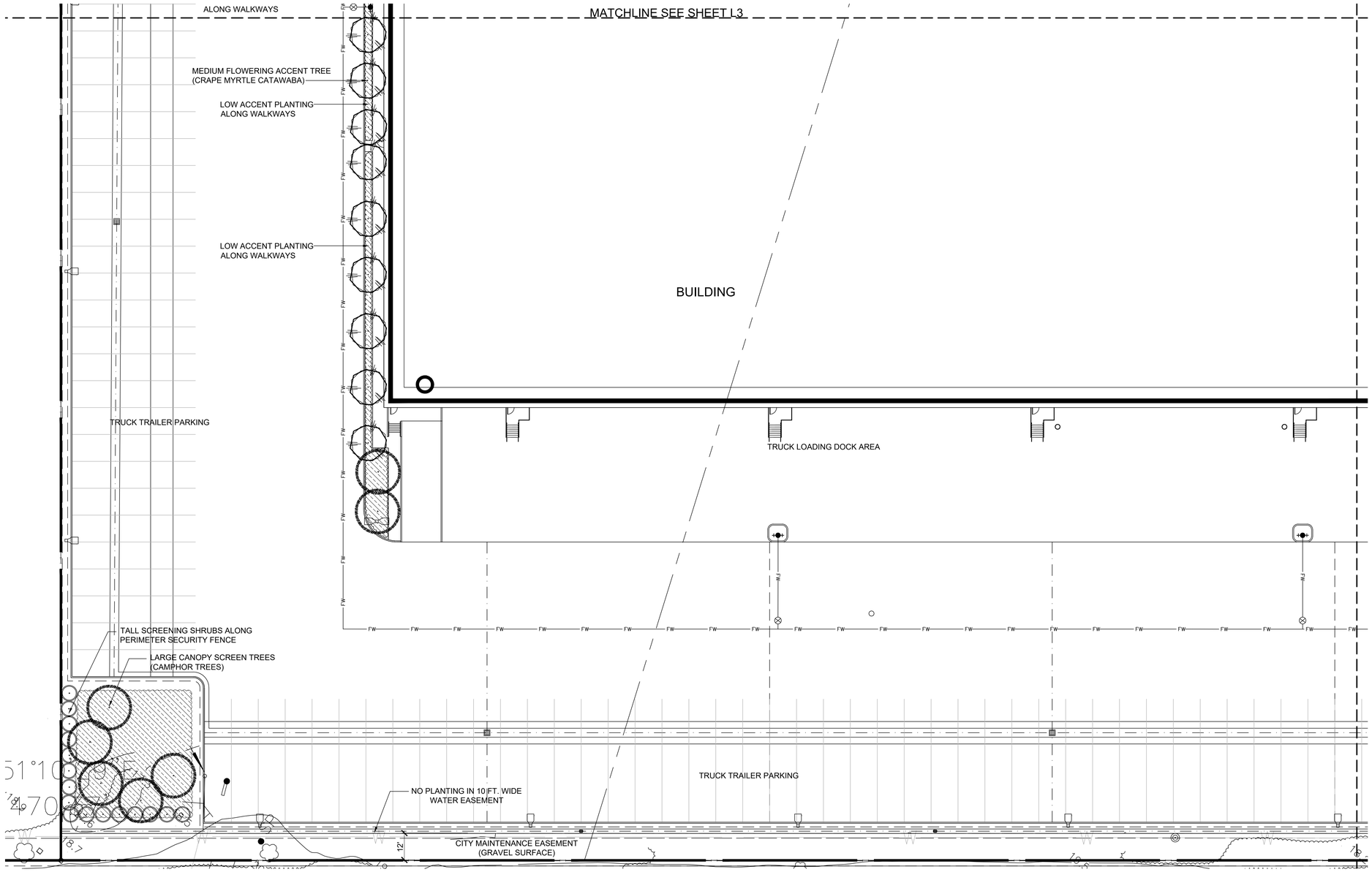
REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

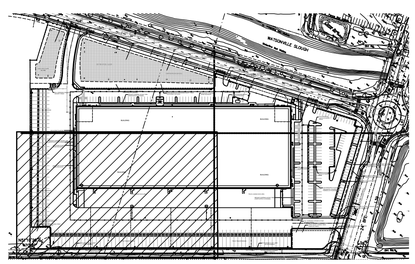
RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.2585

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

PRELIMINARY
LANDSCAPE PLAN

DRAWN	RS
CHECKED	RS
DATE	4-22-22
SCALE	
JOB NO.	
SHEET	L3
OF	SHEETS





SITE MAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REFER TO SHEET L0.1 FOR RECOMMENDED PLANT LIST, NOTES AND DETAILS

REVISIONS	BY
PLAN SUBM. #2 05-23-2022	

RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.937.2243

OHLONE PARKWAY
100 MANABE OW ROAD
WATSONVILLE, CALIFORNIA

PRELIMINARY
LANDSCAPE PLAN

DRAWN: RS
CHECKED: RS
DATE: 4-22-22
SCALE:
JOB NO.
SHEET: L4
OF SHEETS

Appendix C Photographs



Photo 1. Developed land cover within the 100 Manabe Ow Road project area. The area had been recently graded and disked.



Photo 2. *Wild Oats and Annual Brome Grassland* within the 200 Manabe Ow Road project area.



Photo 3. *Cattail Marsh* along the western edge of the 200 Manabe Ow Road project area.



Photo 4. Watsonville Slough adjacent to the 200 Manabe Ow Road project area.



Photo 5. A depression within the 200 Manabe Ow Road project area that showed signs of recent ponding, including water-stained leaves.

Appendix C: Energy Calcs

Energy Appendix: Fuel Consumption Estimations
200 Manabe Ow Road Distribution Facility Project
Watsonville, CA
Prepared by MIG, Inc. August 2022

Sheet 1: Construction and Operational Fuel Consumption Summary

Construction Fuel Consumption (Total)

Activity	Gasoline	Diesel	Electricity
On-site	-	62,627	-
Off-site	41,726	29,566	11,934
Total	41,726	92,193	11,934

Operational Fuel Consumption (Annual)

Trip Type	Gasoline	Diesel	Electricity
Employees / Visitors	14,256	37	52,606
Trucks; LHDT1/LHDT2	1,511	757	-
Trucks; MHDT	0	0	-
Trucks; HHDT	498	258,304	-
Total	16,264	259,098	52,606

Sheet 2: Construction On-site Fuel Consumption Estimations

Phase	Days	Equipment	# of Pieces	Hr/Day	Horsepower	Load Factor	Runtime (bhp-hr)	Consumption (bhp-hr/gal)[1]	Gallons of Diesel
Site Preparation	10	Rubber Tired Dozers	2	8	247	0.40	15,808	18.5	854
		Tractors/Loaders/Backhoes	2	8	97	0.37	5,742		310
Grading	48	Excavators	2	8	158	0.38	46,111		2,492
		Graders	1	8	187	0.41	29,441		1,591
		Rubber Tired Dozers	2	8	247	0.40	75,878		4,102
		Scrapers	2	8	367	0.48	135,291		7,313
		Tractors/Loaders/Backhoes	2	8	97	0.37	27,564		1,490
Building Construction	266	Cranes	1	7	231	0.29	124,735		6,742
		Forklifts	4	8	89	0.20	151,514		8,190
		Generator Sets	2	8	84	0.74	264,553		14,300
		Tractors/Loaders/Backhoes	2	6	97	0.37	114,561		6,192
		Welders	3	8	46	0.45	132,149		7,143
Paving	10	Pavers	2	8	130	0.42	8,736		472
		Paving Equipment	2	8	132	0.36	7,603		411
		Rollers	2	8	81	0.38	4,925		266
Architectural Coating	20	Air Compressors	3	6	81	0.48	13,997		757
								Total	**62,627**

[1] The Carl Moyer Program Guidelines 2017 Revisions. Table D-21. Approved by the Board April 27, 2017.

Sheet 3: Construction Off-site Fuel Consumption Estimates

Phase	Days	Number of Trips	Dist (mi)	Total VMT	Vehicle Class	Percent of Workers by Vehcile Class	Gasoline Average Fuel Economy (MPG)	Gasoline Fuel Split	Gasoline Fuel Consumption by Class (gal)	Diesel Average Fuel Economy (MPG)	Diesel Fuel Split	Diesel Fuel Consumption by Class (gal)	Electric Average Fuel Economy (Mi / KWh)	Electric Fuel Split	Electric Fuel Consumption by Class (KWh)	Hybrid Average Fuel Economy (MPG)	Hybrid Average Fuel Economy (Mi / KWh)	Hybrid Fuel Split	Hybrid Fuel Consumption by Class (gal)	Hybrid Fuel Consumption by Class (KWh)	Gasoline Fuel Consumption by Phase (gal)	Diesel Fuel Consumption by Phase (gal)	Hybrid Fuel Consumption by Phase (KWh)
Worker Trips																							
Site Preparation	10	12	10.8	1296	LDA	0.5	28.7	92.3%	21	40.0	0.9%	0	2.6	4.8%	12.0	53.9	6.8	2.0%	0	2	49	0	15
					LDT1	0.25	23.7	99.7%	14	22.7	0.1%	0	2.6	0.2%	0.2	59.3	6.2	0.0%	0	0			
					LDT2	0.25	23.0	98.9%	14	30.4	0.4%	0	2.6	0.3%	0.3	56.5	6.4	0.4%	0	0			
Grading	48	20	10.8	10368	LDA	0.5	28.7	92.3%	166	40.0	0.9%	1	2.6	4.8%	96.4	53.9	6.8	2.0%	2	15	389	2	117
					LDT1	0.25	23.7	99.7%	109	22.7	0.1%	0	2.6	0.2%	1.9	59.3	6.2	0.0%	0	0			
					LDT2	0.25	23.0	98.9%	112	30.4	0.4%	0	2.6	0.3%	2.7	56.5	6.4	0.4%	0	0			
Building Construction	266	362	10.8	1E+06	LDA	0.5	28.7	92.3%	16,698	40.0	0.9%	113	2.6	4.8%	9664.8	53.9	6.8	2.0%	194	1,546	39,036	160	11,686
					LDT1	0.25	23.7	99.7%	10,952	22.7	0.1%	14	2.6	0.2%	193.3	59.3	6.2	0.0%	2	15			
					LDT2	0.25	23.0	98.9%	11,191	30.4	0.4%	34	2.6	0.3%	266.5	56.5	6.4	0.4%	0	0			
Paving	10	16	10.8	1728	LDA	0.5	28.7	92.3%	28	40.0	0.9%	0	2.6	4.8%	16.1	53.9	6.8	2.0%	0	3	65	0	19
					LDT1	0.25	23.7	99.7%	18	22.7	0.1%	0	2.6	0.2%	0.3	59.3	6.2	0.0%	0	0			
					LDT2	0.25	23.0	98.9%	19	30.4	0.4%	0	2.6	0.3%	0.4	56.5	6.4	0.4%	0	0			
Architectural Coating	20	40	10.8	8640	LDA	0.5	28.7	92.3%	139	40.0	0.9%	1	2.6	4.8%	80.3	53.9	6.8	2.0%	2	13	324	1	97
					LDT1	0.25	23.7	99.7%	91	22.7	0.1%	0	2.6	0.2%	1.6	59.3	6.2	0.0%	0	0			
					LDT2	0.25	23.0	98.9%	93	30.4	0.4%	0	2.6	0.3%	2.2	56.5	6.4	0.4%	0	0			
Sub-Total Worker Trips Energy Consumption																					39,863	163	11,934
Vendor Trips																							
Building Construction	266	81	7	150822	MHDT	0.5	4.6	11.4%	1,863	8.5	88.6%	7,909	N/A								1,863	22,589	0
					HHDT	0.5	N/A	0.0%	N/A	5.1	100.0%	14,680											
Hauling Trips																							
Demolition	N/A	1750	20	35000	HHDT	1.0	N/A	0.0%	N/A	5.1	100.0%	6,813	N/A								0	6,813	0

Total On-Road Construction Trips Genergy Usage	*Gasoline (gal)*	*41,726*	*Diesel (gal)*	*29,566*	*Electricity (KWh)*	*11,934*

Sheet 4: Operational Fuel Consumption

Trip Type	Vehicle Class	Annual VMT	Gasoline Average Fuel Economy (MPG)	Gasoline Fuel Split	Gasoline Fuel Consumption by Class (gal)	Diesel Average Fuel Economy (MPG)	Diesel Fuel Split	Diesel Fuel Consumption by Class (gal)	Electric Average Fuel Economy (Mi / KWh)	Electric Fuel Split	Electric Fuel Consumption by Class (KWh)	Hybrid Average Fuel Economy (MPG Gas)	Hybrid Average Fuel Economy (Mi / KWh)	Hybrid Fuel Split	Hybrid Fuel Consumption by Class (gal Gas)	Hybrid Fuel Consumption by Class (KWh)
Employee / Visitor	LDA / LDT1 / LDT2	388,574	26.07	95.0%	14,159	36.97	0.7%	69	2.59	3.0%	4,485	54.24	6.72	1.3%	97	48,121
Trucks	LHDT1/LHDT2	24,971	8.98	54.3%	1,511	15.07	45.7%	757	0	0.0%	0	0	0	0.0%	0	0
	MHDT	-	4.60	11.4%	0	8.45	88.6%	0	0	0.0%	0	0	0	0.0%	0	0
	HHDT	1,328,600	3.41	0.1%	498	5.14	99.9%	258,304	0	0.0%	0	0	0	0.0%	0	0

Sub-total Resident Consumption	Gasoline	14,256	Diesel	37	Electricity	52,606
Sub-total Truck Consumption	Gasoline	2,008	Diesel	259,061	Electricity	0
Total	***Gasoline (Gal)***	***16,264***	***Diesel (Gal)***	***259,098***	***Electricity***	***52,606***

Appendix D: CAAP Consistency Checklist

Memo

To: Matt Orbach, City of Watsonville

CC: Mike Campbell and Christina Lau, MIG

From: Phil Gleason

Date: August 5, 2022

SUBJECT: City of Watsonville 2030 CAAP Consistency Checklist for the 200 Manabe Ow Distribution Facility Initial Study

This memorandum documents MIG's independent review of the proposed 200 Manabe Ow Distribution Facility Project (proposed Project) as it relates to the City of Watsonville's 2030 Climate Action and Adaptation Plan (CAAP). Attachment 1 of this memorandum contains a completed CAAP Consistency Checklist for the proposed Project. The responses provided therein reflect the most up-to-date information available at the time of its preparation. Where possible, specific references to supporting materials have been provided.

PG

2055 Junction Avenue, Suite 205 • San Jose, CA 95131 • USA • 650-327-0429 • www.migcom.com
Offices in: California • Colorado • Oregon • Texas • Washington

Attachment 1

CAAP Consistency Checklist for the 200 Manabe Ow Distribution Facility

Climate Action and Adaptation Plan Consistency Checklist for California Environmental Quality Act Analysis

Introduction

This Climate Action and Adaptation Plan (CAAP) Consistency Checklist (Checklist) is intended to guide the City of Watsonville (City) in determining if a proposed discretionary project is consistent with the CAAP, which was adopted by City Council in October 2021. The Checklist is applicable only to land development projects that require discretionary approval. The Checklist does not apply to projects that are statutorily or categorically exempt from the California Environmental Quality Act (CEQA). Through the Checklist, new development projects will be required to incorporate more sustainable design standards, attain higher levels of energy efficiency, and implement applicable reduction measures consistent with the CAAP.

The CAAP and Checklist provide a streamlined review process for projects that require review under CEQA because the CAAP is a "qualified" reduction plan pursuant to CEQA Guidelines, Section 15183.5. Consistency with the CAAP Checklist is the threshold of significance to evaluate greenhouse gas (GHG) impacts. A project that demonstrates consistency with the CAAP is considered not to have a cumulatively considerable impact related to GHG emissions, and additional project-specific GHG analysis is not required.

CAAP consistency is determined through two steps:

- **Step 1: Land Use Consistency.** Assess the project's consistency with the growth projections and land use assumptions that formed the basis of CAAP GHG emissions projections.
- **Step 2: CAAP Measures Consistency.** Review and evaluate a project's consistency with the applicable measures of the CAAP.

Projects requiring discretionary review that cannot demonstrate consistency with Steps 1 and 2 of the Checklist are required to prepare an in-depth, project-level GHG analysis as part of the CEQA document prepared for the project to determine if there are cumulative GHG impacts.

Checklist Procedures

General procedures for Checklist compliance and review are summarized below:

- The City's Community Development Department reviews development applications and makes determinations regarding environmental review requirements under CEQA. Staff will make the final determination as to whether environmental review is required.
- Staff review project information against the CAAP Checklist. The applicant will be required to provide a written explanation as necessary to demonstrate how the proposed project will implement each Checklist requirement described to the satisfaction of the City's Community Development Department.
- If the development project is found to be consistent with the CAAP Checklist, staff will provide the applicant with documentation that the project has been found to be consistent with the CAAP for the applicant's use in preparing the required CEQA documentation. The specific requirements outlined in the Checklist, along with any items the applicant agrees to in consideration of this process, shall be required as conditions of approval.

The Checklist is an administrative document that may be updated periodically by the City to comply with later amendments to the CAAP or local, state, and federal law. Any updates to the Checklist will be administered by the Community Development Department at the staff level.

CAAP Consistency Checklist

Step 1: Land Use Consistency

1a. The CAAP emissions inventory and forecast are based on anticipated population, housing, and job growth provided by the Association of Bay Area Governments (AMBAG). A project that is consistent with the City's long-range planning is assumed to be consistent with the CAAP emissions assumptions. In this step, staff shall evaluate the project's consistency with General Plan land use and zoning designations.

Is the proposed project consistent with the existing General Plan land use and zoning designations?
Yes ☒ No ☐
If "Yes," proceed to Step 2 (CAAP Measures Consistency) of the Checklist.
If "No," proceed to Question 1b below.

1b. A project may be considered consistent with CAAP GHG emissions assumptions if the project can demonstrate that it would result in an equivalent or less GHG-intensive project compared to forecasted buildout under existing designations. To demonstrate consistency, the applicant shall quantify estimated operational GHG emissions from the proposed project and estimated GHG emissions from buildout of allowable uses on the project site under existing land use designations using an acceptable land development emissions model, such as the California Emissions Estimator Model (CalEEMod). The applicant shall provide modeling outputs and a summary comparing estimate proposed project and existing designation annual GHG emissions. It is recommended that estimated GHG emissions for buildout under existing designations be based on default assumptions from CalEEMod for the proposed project's first operational year.

Does the project include a land use plan and/or zoning designation amendment that would result in an equivalent or less GHG-intensive project compared to forecasted buildout under existing designations?
Yes ☐ No ☐
If "Yes," proceed to Step 2 (CAAP Measures Consistency) of the Checklist.
If "No," the project's GHG impact is potentially significant and must be analyzed in accordance with CEQA. The applicant must prepare a separate, more detailed project-level GHG analysis to demonstrate how it would offset the increase in emissions over the existing designations. Proceed and complete a separate, project-specific GHG analysis that also incorporates Step 2 of the Checklist.

Step 2: CAAP Measures Consistency

The second step of the CAAP consistency determination is to review and evaluate a project's consistency with the applicable measures of the CAAP. The Checklist items in Step 2 are associated with specific GHG reduction measures in the CAAP.

Transportation and Land Use

1. New Pedestrian Improvements (Measure T2-A)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☒ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T2-A.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure T2-A: New Pedestrian Improvements. Require new development projects, residential and non-residential, to provide pedestrian improvements along street frontages; and strongly encourage connection to the nearest existing pedestrian facilities, such as sidewalks or trails. Developments shall also include internal pedestrian connections between all uses.	Staff should review project site plans to confirm that the project implements pedestrian improvements along street frontages and provides connections to existing pedestrian facilities and that pedestrian connections are provided on the project site where appropriate.

Would the project provide pedestrian improvements along street frontages, provide a connection to the nearest existing pedestrian facilities (e.g., sidewalks, trails), and include internal pedestrian connections between all uses?

Yes ☒ No ☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T2-A.

The project would be located at the junction of Slough Road W and Manabe Ow Road. Pedestrian walkways exist along the portions of the project site that would be adjacent to Slough Road W / Manabe Ow Road. These existing pedestrian facilities would remain under implementation of the project, and the project site would connect to them via driveways running in a west-east orientation on the northwest side of the project site, and in a north-south orientation on the eastern side of the project site. The project site would also provide decorative entry signs at these entry sites, and short- and long-term bike parking to the northeast of the building and eastern side of the building, respectively.

2. Pedestrians and Cyclist Multimodal Enhancements (Measures T2-B and T2-C)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☒ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measures T2-B and T2-C.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure T2-B: Pedestrian and Cyclist Multimodal Enhancements. Improve roadway segments, intersections, and bikeways to implement multimodal enhancements for pedestrian and cyclist comfort and safety along City-maintained public roads by improving five centerline miles of roadway segments and 100 intersections by 2030. Projects may include but not be limited to the following projects identified for Watsonville in the AMBAG 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS): • Traffic calming and greenway features on 2nd Street/Maple Avenue and 5th Street from Lincoln Street to Walker Street • Bike lane improvements to Rodriguez Street (Main Street to Riverside Drive) • Addition of sharrows to Union/Brennan (Freedom Boulevard to Riverside Drive) • Improvement to the crosswalks on Union Street/Brennan Street • Pedestrian and bicycle enhancements on Main Street (Freedom Boulevard to Riverside Drive) and Freedom Boulevard (Green Valley Road to Davis Avenue) • Exploration of implementing universal streets in the Downtown Area • Complete streets improvements to Main Street (East Beach Street to Freedom Boulevard) • Construction of pedestrian/bicycle bridge over Highway 1 • Installation of a roundabout to replace the currently signalized intersection at Main Street (Highway 152)/Freedom Boulevard with safety considerations for bike/pedestrian improvements • Freedom Boulevard reconstruction (Alta Vista Avenue to Green Valley Road) for pedestrian improvements	Staff should review the project, including any off-site improvements, against the projects identified for the City in the AMBAG 2040 MTP/SCS (or most recent adopted plan). A project would be inconsistent with this measure if it would implement modifications to public roads that would conflict with any identified AMBAG 2040 MTP/SCS project. A project that proposes modifications to a public roadway identified for enhancements should include project features that implement or facilitate future implementation of identified enhancements.

Measure T2-C: Trails and Bicycle Master Plan. New pedestrian and bicycle infrastructure may include, but not be limited to: Coastal Rail Trail Segments 17 and 18, Lee Road Trail, Pajaro Valley High School Connector Trail, Pajaro River Levee Trail, and projects identified in the AMBAG 2040 MTP/SCS. Additionally, there may be bicycle improvements for Harkins Slough Road, Green Valley Road, State Route 129, and State Route 152. Pedestrian improvements may include sidewalk infill on Harkins Slough Road and Main Street, pedestrian bridge over Highway 1 to Pajaro Valley High School, and various intersection improvements.	Staff should review the project, including any off-site improvements, against the projects identified in Measure T2-C, including the Trails and Bicycle Master Plan and AMBAG 2040 MTP/SCS. A project would be inconsistent with this measure if the project would include any components that would conflict with implementation of identified trail or bicycle corridors. A project that proposes modifications to any area identified for pedestrian or bicycle facilities should include project features that implement or facilitate future implementation of planned facilities.

Would the project be consistent with all applicable plans to improve roadway segments or intersections for pedestrian and cyclist comfort or to provide new or enhanced pedestrian and bicycle infrastructure?

Yes	☒
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measures T2-B and T2-C.

The project would not conflict with the future implementation of identified enhancements in the AMBAG 2040 MTP/SCS. No new roadway improvements near the project site are needed, in that (a) the existing intersection at Slough Road W / Manabe Ow Road has ADA compliant ramps and (b) the portions of Slough Road W and Manabe Ow Road along the project frontage have a bike lane.

3. Commute Trip Reduction Programs (Measure T5-A)

Measure Applicability	Non-Residential	
Applicable to Proposed Project	Yes	☒
	No	☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T5-A.		

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure T5-A: Commute Trip Reduction Programs. Update the City's Green Business Program to include commute trip reduction programs. Provide incentives and education to existing and future employers to participate in the program, particularly to implement commute trip	Until the City's Green Business Program has been updated in accordance with the CAAP, staff should review the project site plans to confirm that the project includes a commute trip reduction program, such as ride-sharing programs, subsidized transit, vanpool/shuttles, or

CAAP Reduction Measure	Instructions for Determining Consistency
reduction programs. The City shall track participating businesses to achieve a 20 percent participation City-wide. Commute trip reduction programs may include but not be limited to ride-sharing programs, subsidized transit, vanpool/shuttles, and alternative work schedules.	alternative work schedules. Following the Green Business Program update, staff should review the project for program consistency and compliance with all applicable requirements.

Would the project be consistent with the City's Green Business Program or, until the program is updated, include a commute trip reduction component?

Yes	☒
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T5-A.

The proposed warehouse would implement a TDM program, which would reduce VMT by approximately 15 percent, and address an additional approximately 6.9 percent of its VMT via a VMT Banking Fee. Cumulatively, the project would address approximately 21.9 percent of its VMT through TDM Measures and VMT Banking Fees. The TDM Measures proposed for the project include a rideshare program, mandatory travel behavior change program, preferential carpool parking spaces, emergency ride home program, alternative work schedule, telecommuting, and bicycle parking per code and showers / changing rooms.

4. End-of-Trip Facilities (Measure T5-B)

Measure Applicability	Non-Residential	
Applicable to Proposed Project	Yes	☒
	No	☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T5-B.		

CAAP Reduction Measure	Instructions for Determining Consistency
Measure T5-B: End-of-Trip Facilities. Update Watsonville Municipal Code, Section 14-17.113, to require new non-residential development to provide end-of-trip facilities for employee use in addition to bicycle parking. End-of-trip facilities will include bike parking, bike lockers, showers, and personal lockers to the extent feasible.	Staff should review the project site plans to confirm that the project implements all required components of Section 14-17.113 of the Watsonville Municipal Code.

Would the project provide all required end-of-trip facilities for employee use in addition to required bicycle parking?

Yes	☒
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T5-B.

The project plans include the installation of a 10 short-term bike stalls to the northeast of the building and 10 long-term bike lockers on the eastern side of the building. Further, shower facilities and an employee gym would be provided near the northeast corner of the building's first floor (ARCH Sheet A-3; April 18, 2022).

5. Active Transportation Routes to School (Measure T6-F)

Measure Applicability	Residential
Applicable to Proposed Project	Yes ☐ No ☒
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T6-F.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure T6-F: Active Transportation Routes to School. Continue to implement the Complete Streets to Schools Plan to improve active transportation routes to schools to increase use of active transportation for school commutes by 5 percent by 2030. Proposed improvements include but are not limited to new sidewalks, improved signage and street markers, sidewalk improvements, lighting improvements, and crosswalk improvements.	Staff should review project site plans, including off-site improvements, for consistency with the Complete Streets to Schools Plan. A project would be inconsistent with this measure if it would implement modifications to any school route that would conflict with identified route improvements. A project that proposes modifications to a school route identified for enhancements should include project features that implement or facilitate future implementation of identified improvements.

Would the project be consistent with the City's Complete Streets to Schools Plan to improve routes to schools to increase use of active transportation for school communities?

Yes	☒
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure T6-F.

N/A - The project involves the development of a warehouse. As such, the project would provide neither dwelling units nor school-age children.

Energy

6. Natural Gas Reduction in New Development (Measure E1-A)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☒ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E1-A.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure E1-A: Natural Gas Reduction in New Development. Require a 50 percent reduction in natural gas consumption compared to business-as-usual (BAU) in all new development through electric-only development and installation of electric or more efficient natural gas home heating and cooling systems, appliances, or water heaters. Explore implementation of an all-electric ordinance to achieve all-electric new development by 2030.	The applicant should provide documentation for staff review that demonstrates how the project would achieve a 50 percent reduction in natural gas consumption compared to business-as-usual (2019 Title 24 Building Energy Efficiency Standards), such as through electric-only development or installation of electric/more efficient natural gas home heating and cooling systems, appliances, or water heaters.

Would the project implement design features to achieve a 50 percent reduction in natural gas consumption compared to 2019 Title 24 Building Energy Efficiency Standards?

Yes ☒ No ☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E1-A.

Per information provided by the Applicant (Vicky Seidler, Ryan Companies) in their CEQA data request response, dated April 13, 2022, "Natural gas will not be brought into the site from the street. No gas fired equipment nor gas appliances in the project" (pg. 3) and unit space heating would be powered by electricity (pg. 3).

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7. 3CE Customer Participation (Measure E3-A)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☒ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E3-A.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure E3-A: 3CE Customer Participation. Increase participation in 3CE Prime, with the goal of 50 percent of all residential and non-residential customers choosing 3CE Prime by 2030. 3CE is a Community Choice Energy agency established by local communities to source clean and renewable electricity while retaining the utility provider's traditional role delivering power and maintaining electric infrastructure. 3CE's objective is to reduce GHG emissions through local control of utility scale renewable electricity generation provided at competitive rates. The 3CE Prime option provides carbon-free electricity.	The purpose of this measure is to facilitate the switch to carbon-free electricity. Projects should demonstrate a commitment to encouraging carbon-free electricity, such as installation of solar panels on site, or providing literature to future residents and tenants to encourage participation in 3CE Prime.

Would the project facilitate use of carbon-free electricity?

Yes ☒ No ☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E3-A.

Per information provided by the Applicant (Vicky Seidler, Ryan Companies) in their CEQA data request response, dated April 13, 2022, the Project would utilize 3CE Prime, and provide a 600 kW solar system on the roof of the warehouse.

_____

8. Cool Roofs for New Development (Measure E4-A)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☒ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E4-A.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure E4-A: Cool Roofs for New Development. Require installation of cool roof technology for new commercial, municipal, and multi-family residential projects to achieve at least 50 percent cool roofs in new development. A cool roof treatment, green space, or photovoltaic panels would qualify for compliance with this measure.	Staff should review the project site plans to confirm that the project implements cool roof technology on at least 50 percent of roof space, such as through the installation of cool roof treatment, green space, or photovoltaic panels, unless substantial evidence is provided that this requirement is not feasible.

Would the project install cool roof technology on at least 50 percent of new roof space?

Yes ☒ No ☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure E4-A.

As provided for on Sheet A-4 of the Design Review Submittal (dated April 18, 2022) the building would be constructed of single ply roof with reflective membrane and provide up to 35,000 square feet of space for solar panels.

_____

_____

Solid Waste

9. Divert Organic Waste (Measure SW1-A)

Measure Applicability	Residential and Non-Residential
Applicable to Proposed Project	Yes ☐ No ☐
If "Yes," complete the consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure SW1-A.	

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure SW1-A: Organic Waste Diversion. Continue to expand and promote local composting and food waste diversion programs in accordance with SB [Senate Bill] 1383 to	Applicants should provide documentation to staff that the project would implement a waste diversion component, such as implementation of a composting program or the participation in the

achieve 75 percent diversion of all organic waste by 2030.	City's food scraps (organics) collection program for businesses.

Would the project expand diversion of organic waste from regional landfill disposal?

Yes	☐
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure SW1-A.

The project would implement an organic waste diversion program as part of its solid waste service. The project's organic waste diversion program would be dependent on the volume of solid and organic waste generated by the facility and the facility's eligibility for participation in City and/or waste hauler organic waste programs. The final program would consist of either: 1) Participation in the City's food scraps collection program; or 2) Development of an on-site composting program

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Natural and Working Lands

10. Tree Planting (Measure NW1-B)

Measure Applicability	Residential and Non-Residential	
Applicable to Proposed Project	Yes	☒
	No	☐
If "Yes," complete consistency evaluation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure NW1-B.		

CAAP Reduction Measure	**Instructions for Determining Consistency**
Measure NW1-B: Tree Planting. Continue to implement the Watsonville Urban Greening Plan, with the goal of planting 300 trees per year.	Staff should review the project site plans to confirm that the project includes an increase in local greenspace through the planting of trees and implementation of landscaping that is consistent with the Watsonville Urban Greening Plan.

Would the project plant trees and implement landscaping consistent with the Watsonville Urban Greening Plan?

Yes	☒
No	☐

If "Yes," provide a brief explanation below. If "No," provide detail below on what project modifications or mitigation measures are required for compliance with Measure NW1-B.

The project's planting plan identifies 103,974 square feet of landscaped areas (Design Review Resubmittal dated April 15, 2022). The site is generally void of trees; thus, the project would increase the amount of greenspace at the site.

Step 2 Summary

Can the proposed project demonstrate consistency with all of the above Step 2 Measures (Measures 1–10)?

Yes	☒
No	☐

If "Yes," the project is found to be consistent with the CAAP. The City may provide these Checklist findings to the applicant to be incorporated into the required CEQA documentation.

If "No," staff may request additional information from the applicant to complete the Checklist or provide the specific requirements outlined above for the applicant to incorporate into the project to bring the project into consistency with the CAAP. These requirements shall be incorporated as project features or CEQA mitigation measures for project impacts related to GHG emissions.

Appendix E: Environmental Noise Assessment and Peer Review

22 July 2022

Vince Buchanan
Ryan Companies US, Inc.
4275 Executive Square, Suite 370
La Jolla, CA
vince.buchanan@ryancompanies.com

Subject: Watsonville Beverage Distribution (GBxMB), Watsonville, CA
Environmental Noise Assessment
Salter Project 21-0456

Dear Vince:

We studied expected noise associated with the proposed Beverage distribution facility (aka GBxMB) in Watsonville, CA. We compared our findings to measurements of the existing noise environment at the site and to applicable project acoustical criteria. This letter summarizes our updated analysis based on measured data and comments received from the City peer reviewer in June 2022.

SUMMARY

- During daytime hours, beverage distribution vehicular activity noise is expected to be similar to existing ambient conditions. In quiet nighttime hours, occasional beverage distribution-related vehicular activities would be audible as compared to the existing ambient noise but should not objectively increase the nighttime ambient.
- Day-night average (CNEL) noise levels from beverage distribution activities are expected to comply with community land-use compatibility guidelines.
- Nighttime hourly average noise levels are not expected to exceed the County noise standards for “stationary noise sources,” (if applicable).
- Nighttime single-event (maximum) noise levels are expected to meet the County noise standards (if applicable). Beverage distribution activity noise may be clearly audible at adjacent residential properties. Though, beverage distribution noise might not be significantly louder than certain existing noises (i.e., local traffic on Lighthouse Drive and distant traffic on Highway 1).

ACOUSTICAL GOALS – METHODOLOGY

We reviewed the City of Watsonville noise regulations. The Watsonville General Plan includes noise policies and land-use compatibility guidelines applicable to the project (listed below), in terms of CNEL[1]. The Watsonville Municipal Code did not appear to include noise regulations applicable to the project's vehicular activities. In addition to these guidelines, we assessed expected noise levels at the proposed site by comparing projected noise to the existing ambient noise levels (as described below).

2005 City of Watsonville General Plan

The Noise Element of the Watsonville General Plan (2005) states the following:

Goal 12.8 Noise Control Hazard

Evaluate new and existing land uses in the City for compatibility related to noise effects and require, as appropriate, mitigation where harmful effects can be identified and measurable improvements will result.

Policy 12.M Noise

The City shall utilize land use regulations and enforcement to ensure that noise levels in developed areas are kept at acceptable levels, and that future noise-sensitive land uses are protected from noise that is harmful.

The General Plan includes the following land-use compatibility guidelines.

Table 1 Land Use Compatibility for Community Noise Environments

	Community Noise Exposure (CNEL)			
Land Use Category	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Single Family, Duplex, Mobile Homes	50-60	55-70	70-75	75-85
Residential – Multi-family	50-65	60-70	70-75	70-85
Transient Lodging – Motel, Hotel	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85

[1] CNEL (Community Noise Equivalent Level) – A descriptor for a 24-hour A-weighted average noise level. CNEL accounts for the increased acoustical sensitivity of people to noise during the evening and nighttime hours. CNEL penalizes sound levels by 5 dB during the hours from 7 PM to 10 PM and by 10 dB during the hours from 10 PM to 7 AM. For practical purposes, the CNEL and DNL are usually interchangeable.

Local Regulation Criteria Summary

Based on the above local regulations, we have summarized the acoustical goals for noise transfer to adjacent residential areas as follows:

- Maximum day-night average noise level: CNEL 65 dB
- Maximum nighttime average noise level: Leq[2] 45 dB
- Maximum nighttime single-event noise level: Lmax[3] 65 dB

SETTING

The proposed project site is bounded by the following:

- Highway 1 to the west
- Olone Parkway to the east
- Slough Road to the North

The nearest noise-sensitive receivers are residences located about 325 feet north of Slough Road along Lighthouse Drive (highlighted in yellow below).

According to the City of Watsonville Zoning Map, the property is zoned "Industrial Park (IP)." The adjacent residences are zoned "Multiple Residential-Medium Density (RM-2)."

[2] L_{eq} – The equivalent steady-state A-weighted sound level that, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period.

[3] Max Noise Level (L_{max}) – The maximum sound level measured over the duration of a time period or event.

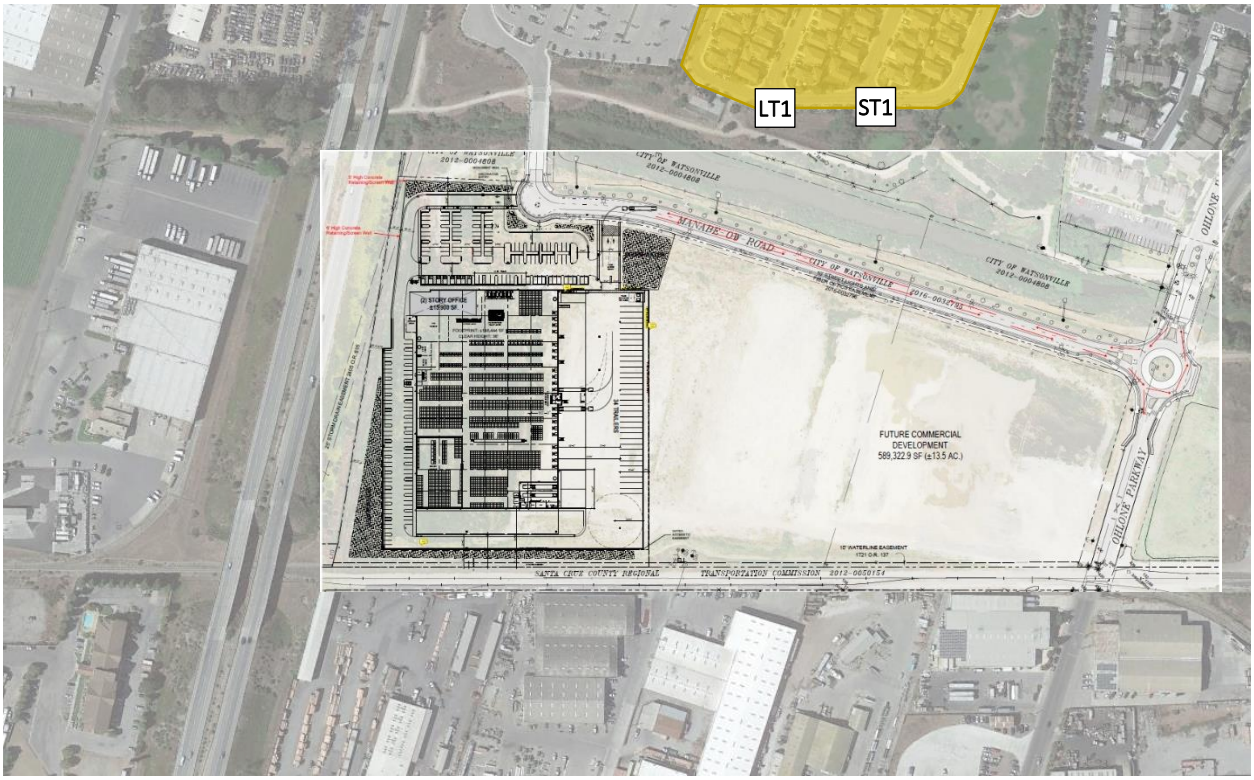


Figure 1: Site with Proposed Project Overlay and Measurement Locations (see below).

AMBIENT ACOUSTICAL MEASUREMENTS, WATSONVILLE

We visited the nearby residences on Lighthouse Drive and conducted continuous acoustical measurements from 10 October to 14 October 2021. One long-term measurement (LT-1) was conducted on site along Lighthouse Drive to determine ambient noise levels near adjacent residences. A simultaneous time-synchronized short-term spot measurement (ST-1) was also conducted at a related location. The preceding Figure shows measurement locations and results.

The primary noise source was Highway 1 traffic. Since the operating schedule of the proposed facility includes some nighttime activities (excepting truck traffic), this study focused on nighttime hourly average (L_{eq}) noise levels. Table 1 lists the hourly average noise level (L_{eq}) range at the measurement locations. Table 2 lists the range of measured typically occurring maximum noise levels (L_{max}) due to local traffic on Lighthouse Drive.

Table 1: Watsonville: Measured Typical[4] Average Ambient Noise Levels

Measurement Location (12 feet above grade, typ.)	Range of Hourly Average Ambient Noise (Hourly L_{eq}, dB[5]) Between 10 and 14 October 2021		Range of Day/Night Average Noise Levels Between 10 and 14 October 2021 (CNEL)
	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)	
LT1: Lighthouse Drive (West)	52 to 64	45 to 55	58 dB to 61 dB
ST1: Lighthouse Drive. (East)	48 to 60*	41 to 51*	53 dB to 56 dB*

* Note: These data are estimated based on a comparison between short-term measurements at these locations and the related long-term data.

[4] To estimate "typical" noise levels, the loudest 5% of data points are not included as they were generally caused by unusually loud vehicles (i.e. within 10 feet of the monitor such as garage trucks, "hot rods", vehicles parked directly beneath the monitoring equipment). These levels were confirmed by review and analysis of WAV files recorded above a trigger threshold. This method is derived from the Fundamentals and Abatement of Highway Noise for the FHWA prepared by Bolt Beranek and Neuman, 1973. This method assumes the loudest events constitute the 90th percentile of all noise events. Within, the 90th percentile the typical 95% confidence coefficient is applied to describe "typical" loud single events. This method reviews individual events as opposed to entire blocks of time. It is a statistical representation of single traffic events.

[5] Decibel (dB)--A logarithmic unit used in acoustics to describe the magnitude of a sound with respect to a reference sound level. The term "Sound Level," "Noise Level" and Sound Pressure Level" (SPL) all imply a standardized reference level near the threshold of human hearing (0 decibels). All sound levels listed in this report are A-weighted.

Table 2: Watsonville: Measured Typical Maximum Ambient Noise Levels (e.g., Single Events)

Measurement Location	Typical Maximum Ambient Noise Levels (Hourly L_{max}, dB)	
	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
L1: Lighthouse Drive	70 to 86	70 to 81

PROJECTED FUTURE BEVERAGE FACILITY NOISE ANALYSIS

Our analysis of the beverage distribution activity noise at the site is based on the following assumptions and information provided by Ryan Companies:

- The project is staffed 24 hours a day.
- The maximum number of deliveries per day will not exceed 24 trucks round trip or 48 one-way events.
- Deliveries are scheduled only during the daytime hours. Nighttime work will be contained within the warehouse and loading dock doors will be closed during times when a truck is not present.
- Future facility rooftop mechanical equipment noise is controlled to meet all applicable City y requirements.

Residential Long-Term Noise Exposure (CNEL)

Predicted long-term noise exposure includes new vehicular traffic, rooftop mechanical noise, and associated shipping noise. Tables 3 summarizes our long-term noise analysis in comparison to the acoustical criteria and measured ambient noise. This long-term analysis compares Community Noise Equivalent Levels (CNEL).

Table 3: Residential Long-Term Noise Analysis Summary, (CNEL, dB)

Nearest Residential Property Location	"Project" Calculated Beverage Facility Noise	"Existing" Ambient Noise Levels	"Existing + project" Levels	Local Criterion
Lighthouse Drive	41	58 to 61	58 to 61	65

The addition of the beverage facility would not increase the long-term noise levels at the nearby residences.

Residential Nighttime Hourly Average Noise Exposure (L_{eq})

Predicted nighttime noise would be limited to rooftop HVAC equipment. The equipment selection has not been finalized yet. For this report, we have estimated an average of 80 dB sound pressure level per unit (at three feet distance), assuming a total of four units. This equipment would generate an aggregate sound level of 86 dB at three feet. Table 4 summarizes our nighttime hourly average noise analysis in comparison to the acoustical criteria and measured ambient noise. This analysis compares nighttime hourly L_{eq} levels. Future mechanical equipment should be studied in more detail as it is selected, and the project evolves to confirm these initial assumptions.

Table 4: Residential Nighttime Average Noise Analysis Summary, First Story of Homes (L_{eq}, dB)

Nearest Residential Property Location	"Project" Calculated Beverage Facility Noise	"Existing" Ambient Noise Levels	"Existing + Project" Levels	Local Criterion
Lighthouse Drive West	40 to 42	45 to 55	46 to 55	45
Lighthouse Drive East	36 to 40	41 to 51	42 to 51	

The addition of the beverage facility could increase the minimum hourly noise levels at the nearby residences up to one decibel, but the overall maximum daytime ambient noise levels would remain unchanged. This one-decibel increase would be considered less than significant.

Predicted Residential Single-Event Maximum Noise Exposure L_{max}

We calculated single-event maximum noise levels (L_{max}) from truck movement, backup alarms, and air brakes at the nearest residential locations. Measured levels shown below were obtained from measurements at a similar logistics facility in the greater San Francisco Bay Area made within the past 10 years.

In addition to vehicular events, the facility includes regularly used rooftop mechanical equipment and an emergency engine generator, which we understand would only be used for either necessary periodic testing, or an emergency.

Table 5 summarizes calculated facility noise that would be transmitted to existing residential locations. The projected beverage distribution activity noise is compared to both maximum and average daytime (7:00 a.m. to 10:00pm) ambient noise levels since nighttime trucking vehicular events are not predicted to occur at night. The ambient measurement locations were also exposed to local daytime traffic along Lighthouse Drive in addition to distant highway traffic.

Table 5: Activity Noise Analysis Summary, Lighthouse Drive
(325 to 700 feet from nearest beverage trucking activities)

Activity	Calculated Beverage Activity Noise Levels, L_{max} (dB)	Daytime Ambient Noise Levels		Local Criterion
		L_{max} (dB)	L_{eq} (dB)	
Tug Truck Reverse Alarm	59 at 700 feet	Range 70 to 86	Range 60 to 65	65
Tug Truck Unhook Trailer	54 at 700 feet			
Tug Truck Acceleration	58 at 350 feet			
Semi-Truck Brakes	57 at 350 feet			
Semi-Truck Pass-By	55 at 325 feet	Average 72		
Warehouse Alarm	51 at 700 feet			
HVAC Equipment	39 at 700 feet			
Back Up Generator	54 at 700 feet			

Single event noise from the beverage facility would be lower than typical single event noise measured at the nearby residences.

CONCLUSION

Average daytime and nighttime noise levels generated by the proposed beverage facility activities and transmitted to adjacent residential areas are expected to be compliance with existing ambient noise levels and comply the City noise compatibility guidelines. Please let us know if you have any questions.

* * *

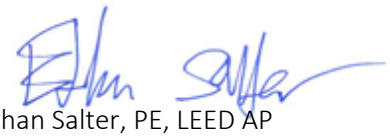
This concludes our comments on the Beverage Facility (GBxMB) in Watsonville. Should you have any questions or require additional information, please let us know.

Best,

CHARLES M. SALTER ASSOCIATES, INC.



Eric Yee
Vice President



Ethan Salter, PE, LEED AP
Vice President

APPENDIX I - Calculation Sheet

Measurement Information

Filename:	AU1_0502.RNH
Proj No.:	xx-xxxx
Proj. Name:	Watsonville GBxMB
Site No.:	
Location:	Lighthouse Drive
Height:	above grade
Distance:	from
Distance:	from
Maj. Noise Sources:	HWY 1 traffic
Pre Cal:	94
Post Cal:	94
Weather:	Clear
Notes:	Future Projections from Rooftop Equipment
Engr.:	EAY

Meter Settings

Meter Name	E-2
Meter Type	NL-32
freq. Weighting	A
Time Weighting	Slow
Ln Calc Type	Leq, 1sec
Wind Screen Correction	
Diffuse Field	
Parsed Exceedance Level	70
Meter Exceedance Level	70

Data contained in this spreadsheet is parsed from the Lp File

Traffic Noise

Activity	distance	Noise level (LEQ)	duration (Sec)	# of trucks	Adjustment for # events	SEL	Adjusted LEQ
truck pass by	350	57	3	36	15.6	77.3	41.8
truck pass by	350	57	3	8	9.0	70.8	35.2
car (AM)	350	40	3	6	7.8	52.6	17.0
car (SWING)	350	40	3	3	4.8	49.5	14.0
Car (PM)	350	40	3	15	11.8	56.5	21.0

Generator Noise

SPL ref (dB)	SPL dist ref (ft)	Noise at Residence (dB)	dist to residences (ft)
78	23	55.74944694	700

HVAC

86	3	38.64046429	700

INTERVAL REPORT

				Existing		Project						Existing + Project	
Address	Date	Time	Duration	Leq (dB)	CNEL (dB)	HVAC Equipment SPL (dB)	reference distance (ft)	Truck/Car Leq (dB) assumes 2 truck per hour in and out daytime only	HVAC Leq (dB) at residence	HVAC distance to residence (ft)	HVAC directivity	Leq (dB) with HVAC equipment and trucks	CNEL (dB) with HVAC equipment and trucks
1	14-Oct-21	12:00:00	1:00:00	58.4	61.5	86	3	35.2	38.6	700	-3	58.4	61.6
2	14-Oct-21	13:00:00	1:00:00	61.2	61.5			17	38.6	700	-3	61.2	61.6
3	14-Oct-21	14:00:00	1:00:00	62.4	61.3			35.2	38.6	700	-3	62.4	61.4
4	14-Oct-21	15:00:00	1:00:00	59.1	61.1			35.2	38.6	700	-3	59.1	61.2
5	14-Oct-21	16:00:00	1:00:00	56.7	61.1				38.6	700	-3	56.8	61.2
6	14-Oct-21	17:00:00	1:00:00	60.1	61.1				38.6	700	-3	60.1	61.2
7	14-Oct-21	18:00:00	1:00:00	60.4	60.9				38.6	700	-3	60.4	61.1
8	14-Oct-21	19:00:00	1:00:00	56.7	60.8				38.6	700	-3	56.8	61.0
9	14-Oct-21	20:00:00	1:00:00	55.2	60.8				38.6	700	-3	55.3	61.0
10	14-Oct-21	21:00:00	1:00:00	52.9	60.9				38.6	700	-3	53.1	61.0
11	14-Oct-21	22:00:00	1:00:00	53.6	60.9				38.6	700	-3	53.7	61.0
12	14-Oct-21	23:00:00	1:00:00	53.8	61.0				38.6	700	-3	53.9	61.1
13	15-Oct-21	0:00:00	1:00:00	49.3	60.8				38.6	700	-3	49.7	60.9
14	15-Oct-21	1:00:00	1:00:00	49.1	60.8				38.6	700	-3	49.5	61.0
15	15-Oct-21	2:00:00	1:00:00	49.4	60.8				38.6	700	-3	49.8	61.0
16	15-Oct-21	3:00:00	1:00:00	52.4	60.8				38.6	700	-3	52.6	60.9
17	15-Oct-21	4:00:00	1:00:00	53.1	60.7			35.2	38.6	700	-3	53.3	60.8
18	15-Oct-21	5:00:00	1:00:00	55.1	60.5			17	38.6	700	-3	55.2	60.6
19	15-Oct-21	6:00:00	1:00:00	57	60.4			35.2	38.6	700	-3	57.1	60.5
20	15-Oct-21	7:00:00	1:00:00	63.9	60.0			35.2	38.6	700	-3	63.9	60.1
21	15-Oct-21	8:00:00	1:00:00	59.6	59.6				38.6	700	-3	59.6	59.7
22	15-Oct-21	9:00:00	1:00:00	57.2	59.5				38.6	700	-3	57.3	59.6
23	15-Oct-21	10:00:00	1:00:00	56.7	59.4				38.6	700	-3	56.8	59.6
24	15-Oct-21	11:00:00	1:00:00	54.7	59.4			14	38.6	700	-3	54.8	59.6
25	15-Oct-21	12:00:00	1:00:00	53.3	59.4			35.2	38.6	700	-3	53.4	59.5
26	15-Oct-21	13:00:00	1:00:00	51.7	59.4			17	38.6	700	-3	51.9	59.5
27	15-Oct-21	14:00:00	1:00:00	57	59.4			35.2	38.6	700	-3	57.1	59.6
28	15-Oct-21	15:00:00	1:00:00	57	59.6			35.2	38.6	700	-3	57.1	59.7
29	15-Oct-21	16:00:00	1:00:00	54.1	59.7				38.6	700	-3	54.2	59.8
30	15-Oct-21	17:00:00	1:00:00	52.8	59.8				38.6	700	-3	53.0	60.0
31	15-Oct-21	18:00:00	1:00:00	55.7	59.8				38.6	700	-3	55.8	60.0
32	15-Oct-21	19:00:00	1:00:00	56.7	59.9				38.6	700	-3	56.8	60.0
33	15-Oct-21	20:00:00	1:00:00	56.6	59.8				38.6	700	-3	56.7	60.0
34	15-Oct-21	21:00:00	1:00:00	54.1	59.7				38.6	700	-3	54.2	59.9
35	15-Oct-21	22:00:00	1:00:00	54.2	59.7				38.6	700	-3	54.3	59.9
36	15-Oct-21	23:00:00	1:00:00	50.2	59.6				38.6	700	-3	50.5	59.7
37	16-Oct-21	0:00:00	1:00:00	51.1	59.5				38.6	700	-3	51.3	59.7
38	16-Oct-21	1:00:00	1:00:00	49.2	59.4				38.6	700	-3	49.6	59.6
39	16-Oct-21	2:00:00	1:00:00	48.8	59.3				38.6	700	-3	49.2	59.5
40	16-Oct-21	3:00:00	1:00:00	49.4	59.3				38.6	700	-3	49.8	59.5
41	16-Oct-21	4:00:00	1:00:00	48.9	59.2			35.2	38.6	700	-3	49.3	59.4
42	16-Oct-21	5:00:00	1:00:00	53.9	59.2			17	38.6	700	-3	54.0	59.4
43	16-Oct-21	6:00:00	1:00:00	54.5	58.8			35.2	38.6	700	-3	54.6	59.0
44	16-Oct-21	7:00:00	1:00:00	55.1	58.4			35.2	38.6	700	-3	55.2	58.6
45	16-Oct-21	8:00:00	1:00:00	55.6	58.4				38.6	700	-3	55.7	58.6
46	16-Oct-21	9:00:00	1:00:00	54.8	58.4				38.6	700	-3	54.9	58.6
47	16-Oct-21	10:00:00	1:00:00	55.5	58.4				38.6	700	-3	55.6	58.6
48	16-Oct-21	11:00:00	1:00:00	53.3	58.4			14	38.6	700	-3	53.4	58.6
49	16-Oct-21	12:00:00	1:00:00	53.8	58.5			35.2	38.6	700	-3	53.9	58.7
50	16-Oct-21	13:00:00	1:00:00	56.9	58.6			17	38.6	700	-3	57.0	58.8
51	16-Oct-21	14:00:00	1:00:00	60.8	58.6			35.2	38.6	700	-3	60.8	58.8
52	16-Oct-21	15:00:00	1:00:00	59.6	59.0			35.2	38.6	700	-3	59.6	59.1
53	16-Oct-21	16:00:00	1:00:00	59.9	59.4				38.6	700	-3	59.9	59.6
54	16-Oct-21	17:00:00	1:00:00	55.7	59.5				38.6	700	-3	55.8	59.6
55	16-Oct-21	18:00:00	1:00:00	56.2	59.6				38.6	700	-3	56.3	59.8
56	16-Oct-21	19:00:00	1:00:00	55.8	59.8				38.6	700	-3	55.9	59.9
57	16-Oct-21	20:00:00	1:00:00	55.2	59.8				38.6	700	-3	55.3	59.9
58	16-Oct-21	21:00:00	1:00:00	54.4	59.7				38.6	700	-3	54.5	59.9
59	16-Oct-21	22:00:00	1:00:00	52.4	59.7				38.6	700	-3	52.6	59.9
60	16-Oct-21	23:00:00	1:00:00	49.8	59.7				38.6	700	-3	50.1	59.9
61	17-Oct-21	0:00:00	1:00:00	48.5	59.7				38.6	700	-3	48.9	59.8
62	17-Oct-21	1:00:00	1:00:00	46.3	59.6				38.6	700	-3	47.0	59.8
63	17-Oct-21	2:00:00	1:00:00	48	59.6				38.6	700	-3	48.5	59.7
64	17-Oct-21	3:00:00	1:00:00	47.4	59.8				38.6	700	-3	47.9	59.9
65	17-Oct-21	4:00:00	1:00:00	46.8	59.8			35.2	38.6	700	-3	47.4	59.9
66	17-Oct-21	5:00:00	1:00:00	48.7	59.9			17	38.6	700	-3	49.1	60.0
67	17-Oct-21	6:00:00	1:00:00	51.1	60.0			35.2	38.6	700	-3	51.3	60.2
68	17-Oct-21	7:00:00	1:00:00	51.3	61.0			35.2	38.6	700	-3	51.5	61.1
69	17-Oct-21	8:00:00	1:00:00	55.4	61.0				38.6	700	-3	55.5	61.1
70	17-Oct-21	9:00:00	1:00:00	56	61.0				38.6	700	-3	56.1	61.1
71	17-Oct-21	10:00:00	1:00:00	56.6	61.0				38.6	700	-3	56.7	61.1
72	17-Oct-21	11:00:00	1:00:00	57.5	61.0			14	38.6	700	-3	57.6	61.1
73	17-Oct-21	12:00:00	1:00:00	57	61.1			35.2	38.6	700	-3	57.1	61.2
74	17-Oct-21	13:00:00	1:00:00	59.1				17	38.6	700	-3	59.1	
75	17-Oct-21	14:00:00	1:00:00	64				35.2	38.6	700	-3	64.0	
76	17-Oct-21	15:00:00	1:00:00	64.6				35.2	38.6	700	-3	64.6	
77	17-Oct-21	16:00:00	1:00:00	61.2					38.6	700	-3	61.2	
78	17-Oct-21	17:00:00	1:00:00	60.6					38.6	700	-3	60.6	
79	17-Oct-21	18:00:00	1:00:00	61					38.6	700	-3	61.0	
80	17-Oct-21	19:00:00	1:00:00	55.7					38.6	700	-3	55.8	
81	17-Oct-21	20:00:00	1:00:00	54.5					38.6	700	-3	54.6	
82	17-Oct-21	21:00:00	1:00:00	53.7					38.6	700	-3	53.8	
83	17-Oct-21	22:00:00	1:00:00	52.3					38.6	700	-3	52.5	
84	17-Oct-21	23:00:00	1:00:00	48.8					38.6	700	-3	49.2	
85	18-Oct-21	0:00:00	1:00:00	45.6					38.6	700	-3	46.4	
86	18-Oct-21	1:00:00	1:00:00	44.9					38.6	700	-3	45.8	
87	18-Oct-21	2:00:00	1:00:00	51.9					38.6	700	-3	52.1	
88	18-Oct-21	3:00:00	1:00:00	48.5					38.6	700	-3	48.9	
89	18-Oct-21	4:00:00	1:00:00	49.6				35.2	38.6	700	-3	49.9	
90	18-Oct-21	5:00:00	1:00:00	51.8				17	38.6	700	-3	52.0	
91	18-Oct-21	6:00:00	1:00:00	58.5				35.2	38.6	700	-3	58.5	
92	18-Oct-21	7:00:00	1:00:00	58.5				35.2	38.6	700	-3	58.5	
93	18-Oct-21	8:00:00	1:00:00	55.2					38.6	700	-3	55.3	
94	18-Oct-21	9:00:00	1:00:00	54.6					38.6	700	-3	54.7	
95	18-Oct-21	10:00:00	1:00:00	55.9					38.6	700	-3	56.0	
96	18-Oct-21	11:00:00	0:16:23	61.1				14	38.6	700	-3	61.1	

2055 JUNCTION AVENUE, STE. 205
SAN JOSE, CA 95131
650.327.0429
WWW.MIGCOM.COM

Peer Review

To: Matt Orbach, Principal Planner

CC: Mike Campbell and Christina Lau, MIG

From: Chris Dugan

Date: August 5, 2022

Project: 200 Manabe Ow Road Distribution Facility Project

Subject: 2nd Peer Review of Applicant's Environmental Noise Assessment

---

MIG, Inc. (MIG) has reviewed the revised Environmental Noise Assessment (ENA) provided by Charles M. Salter Associates, Inc. for the 200 Manabe-Ow Warehouse Distribution Facility project (Charles M. Salter Associates, Inc. 2022a and 2022b). The revised report responds to most of MIG's comments and concerns, as identified in MIG's June 10, 2022 memorandum (MIG, 2022). In general, MIG concurs with the revised report's findings that the proposed project would not result in significant noise and vibration impacts; however, the following, potential issues remain:

- Page 1, Summary: The 4th bullet refers to compliance with County standards; however, the revised ENA removes the discussion of County standards. The ENA could be revised to remove this bullet.
- Page 5, Ambient Acoustical Measurements, refers to acoustical measurements made between the 10th and 14th of October, 2021; however, Appendix I indicates the measurements were made between the 14th and 18th of October. The ENA could be revised for internal consistency.
- Page 6, Predicted Future Beverage Facility Noise Analysis, indicates the noise analysis is based on 48 one-way truck trips. This assumption is inconsistent with the July 2022Transportation Impact Study prepared Kimley Horn. Table 4 of this study shows the project would generate 91 one way truck trips. The ENA could be revised to be consistent with the transportation study, or a statement added to address how noise levels would change with additional truck trips. MIG notes the additional truck trips are unlikely to change the findings of the ENA.
- Page 8, Table 5 indicates tug trucks were evaluated for the L_{max} impact analysis; however, per Appendix I, this noise source does not appear to be included in the CNEL impact analysis. The ENA should address all sources of on-site noise as part of the CNEL impact analysis.
- Appendix I "Project" noise information is unclear. The table indicates truck/car L_{eq} assumes 2 trucks per hour in and out daytime only, yet truck/car noise is generally assigned between the hours of 11:00 AM and 3 PM (daytime period) and 4 AM and 8 AM (including some nighttime period). The analysis, therefore, does not appear consistent with report assumptions.

References

The following references were used to prepare this memorandum:

Charles M. Salter Associates, Inc. (Salter Associates). 2022a. *Watsonville Beverage Distribution (GBxMB), Watsonville, CA Environmental Noise Assessment*. Prepared for Victoria Seidler, Ryan Companies US, Inc. March 23, 2022.

Charles M. Salter Associates, Inc. (Salter Associates). 2022b. *Watsonville Beverage Distribution (GBxMB), Watsonville, CA Environmental Noise Assessment*. Prepared for Vince Buchanon, Ryan Companies US, Inc. July 22, 2022.

Kimley Horn. 2022. *Transportation Impact Study Manabe Ow Road Distribution Center*. Prepared for Ryan Companies US, Inc. July 2022.

MIG, Inc. 2022. *Peer Review of Applicant's Environmental Noise Assessment.* Memo to Matt Orbach, City of Watsonville, from Chris Dugan and Phil Gleason, MIG, Inc. June 10, 2022.

***

This peer review was performed by MIG under contract with the City of Watsonville. The MIG review team had no communications with the Project Applicant or the preparer of the subject report. The comments provided herein reflect the expert opinion and independent judgment of the MIG review team.



Chris Dugan
Director of Air Quality, Greenhouse Gas, and Noise Services

Appendix F: Traffic Impact Study and Peer Review

TRANSPORTATION IMPACT STUDY

Manabe Ow Road Distribution Center

PREPARED FOR:

RYAN COMPANIES US, INC.

JULY 2022 | DRAFT FINAL

Prepared By:

Kimley»Horn

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APPENDIX

A – EXISTING TRAFFIC COUNT DATA
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C – LEVEL OF SERVICE AND VEHICLE QUEUING CALCULATION SHEETS
D – IMPROVEMENT OUTPUTS
E – ICE OUTPUTS
F – SIDRA OUTPUTS

EXECUTIVE SUMMARY

The following traffic impact study (TIS) has been prepared to determine potential Vehicle Miles Traveled (VMT) impacts and/or Level of Service (LOS) deficiencies associated with the Manabe Ow Road Distribution Center ("Project"), a 156,961 square-foot industrial and warehouse distribution building. The proposed project would be located in the Manabe-Ow Business Park Specific Plan Area located in Watsonville, California. The Project site is located on the western most lot on the west side of Ohlone Parkway and to the south of Manabe Ow Road. The project proposes two unsignalized driveways on Manabe Ow Road.

This TIS addresses the Project's VMT and LOS effects in order to assist the City of Watsonville ("City") with planning and the identification of conditions of approval, and to mitigate the Project's VMT impacts or improve identified LOS deficiencies, if necessary.

TRIP GENERATION

The Project's proposed trip generation was developed from site specific information provided by the User; site capacity, employees required to operate the facility, shift structures, delivery schedules and anticipated line-haul delivery truck delivery schedules. Since the Project proposes a unique warehouse and distribution operation, the use is not accurately reflected in the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 10th Edition*.

Based on the site specific information, the Project is expected to generate 465 daily Passenger Car Equivalent (PCE) trips, a total of 66 AM peak hour PCE trips (45 inbound and 21 outbound), and 47 PM peak hour PCE trips (27 inbound and 20 outbound). A Passenger Car Equivalent (PCE) of 3.0 was used for trips associated with a line-haul truck.

PROJECT IMPACTS AND DEFICIENCIES

The following summarizes the transportation impacts, project deficiencies, and intersection deficiencies related to the proposed project and the study area. Transportation impacts are based on vehicle miles traveled and not intersection level of service. Intersection level of service deficiencies without the project and under project conditions were also identified and summarized.

VEHICLE MILES TRAVELED (VMT)

Per the City of Watsonville Draft VMT analysis guidelines, the threshold for employment-based VMT uses is set at 15 percent below the regional average. Note that for the purposes of this analysis, the region is defined as Santa Cruz County. Therefore, if the project VMT were to exceed the 15 percent below the regional average VMT, this would be considered a significant transportation impact.

Impact Analysis and Results

The Project produced 1,133 daily VMT. When combined with the number of jobs expected to be produced by the Project (75 jobs), the Project is estimated to produce 15.1 daily VMT per employee. Based on the threshold shown, the Project is expected to be in excess of the regional threshold. The Project does exceed the threshold of significance for VMT/employee and as a result the project is determined to have a significant transportation impact.

Potential Mitigation

The project has prepared a transportation demand management (TDM) program to reduce the project's VMT. In addition, the project would pay into the City's VMT Bank Program to further reduce the project's VMT impact to less than significant.

TDM Program

This program recommends TDM measures that would individually reduce the project's VMT and trips, with the goal of obtaining a 21.9 percent VMT reduction to make the Project's VMT significant impact less than significant. It should be noted, however, that a maximum 15 percent VMT reduction can be achieved by the TDM program per the County's VMT guidelines. Therefore, this TDM program aims to achieve the maximum 15 percent VMT reduction, with the remaining 6.9 percent VMT reduction coming from the VMT Bank Program, as discussed after this section.

For the TDM program, the following TDM measures are being proposed:

1. Rideshare Program
2. Mandatory Travel Behavior Change Program
3. Preferential Carpool Parking Spaces
4. Emergency Ride Home Program
5. Alternative Work Schedule
6. Telecommuting
7. Bicycle Parking per Code and Showers/Changing Rooms

Based on the proposed TDM measures, the project would be able to achieve the maximum 15 percent VMT reduction allowed per the County's VMT guidelines.

VMT Bank Program

The Watsonville VMT Mitigation Banking Fee Program is a programmatic approach to respond to the need for feasible VMT mitigation programs. Programmatic approaches that rely on collectively funding larger projects allow a project to obtain an amount of mitigation commensurate with their impact, include only a single payment without the complexity of ongoing management, and do not require on-going mitigation monitoring. Programmatic approaches can also provide a public benefit in terms of funding transportation improvements that would not otherwise be constructed, resulting in improvements to congestion, GHG emissions, increased transportation choices, and additional opportunities for active transportation.

The VMT Mitigation Banking Fee Program calculates the cost per VMT reduction as $1,524.21. Therefore, to achieve the 6.9 percent VMT reduction needed after implementation of the TDM program, the project would be responsible to pay $114,315.42. This is calculated as 6.9 percent being equivalent to a 1.0 VMT per employee reduction. Since there are 75 employees and each employee needs to reduce by 1.0 VMT at a cost of $1,524.21 per VMT the calculation is as follows:

VMT Banking Fee = 75 employees x 1.0 VMT per employee x $1,524.21 per VMT

Therefore, the combination of the TDM program and payment of the VMT Banking Fee Program would result in a less than significant VMT impact.

PROJECT AND INTERSECTION DEFICIENCIES

Although intersection level of service and queuing are not considered for CEQA impact, each of these transportation measures were evaluated for transportation operational deficiencies. The development of the proposed project and resulting traffic generation would result in the following LOS operations deficiencies. It should be noted that no queuing deficiencies were identified.

Table E-1: Project and Intersection Deficiencies

Int #	Intersection Name	Scenario	Intersection Deficiency	Project Deficiency	Improvement	Fair Share %
1	Harkins Slough Road/ NB Hwy 1 off-ramp	Background AM Background Plus Project AM Cumulative AM Cumulative Plus Project AM	X		Signalize or install a roundabout	3.6%
2	Main Street/ S Green Valley Road	Cumulative PM Cumulative Plus Project PM	X		Change NB and SB approaches to remove shared through/left lanes, remove split phasing, and optimize splits	0.8%
3	Main Street/ Ohlone Parkway	Existing PM Existing Plus Project PM Background PM Background Plus Project PM Cumulative AM Cumulative PM Cumulative Plus Project AM Cumulative Plus Project PM	X		Change SB to be SBL and shared through/right lane, remove split phasing for NB/SB, and optimize splits	1.8%
4	Main Street/ E Riverside Drive	Cumulative PM Cumulative Plus Project PM	X		Optimize splits	2.0%
5	Ohlone Parkway/ Loma Vista Way	Cumulative AM Cumulative PM Cumulative Plus Project AM Cumulative Plus Project PM	X		Install a Roundabout	100%[A]
6	Ohlone Parkway/ Lighthouse Drive	Cumulative PM Cumulative Plus Project PM	X		Install a Roundabout	0%[B]
8	Walker Street/ W Beach Street	Existing PM Existing Plus Project PM Background PM Background Plus Project PM Cumulative AM Cumulative PM Cumulative Plus Project AM Cumulative Plus Project PM	X		Signalize	2.8%

Int #	Intersection Name	Scenario	Intersection Deficiency	Project Deficiency	Improvement	Fair Share %
9	SB Hwy 1 ramps/ W Riverside Drive	Cumulative AM Cumulative PM Cumulative Plus Project AM Cumulative Plus Project PM	X		Signalize or install a roundabout	14.8%
10	NB Hwy1 ramps/ W Riverside Drive	Existing AM Existing PM Existing Plus Project AM Existing Plus Project PM Background AM Background PM Background Plus Project AM Background Plus Project PM Cumulative AM Cumulative PM Cumulative Plus Project AM Cumulative Plus Project PM	X	X	Signalize or install a roundabout	5.2%

[A] This project will construct the roundabout.

[B] The adjacent project at 100 Manabe Ow Road will construct the roundabout.

Project Deficiencies and Improvements

As shown in **Table E-1**, the project only results in one project deficiency. The intersection of NB Highway 1 ramps/W Riverside Drive will have an LOS deficiency in the Cumulative Plus Project for both the AM and PM peak hours.

Since these deficiencies are in the Cumulative plus Project condition, the project shall contribute its fair share of the cost of these improvements. The applicant shall evaluate the timing and need, in coordination with Caltrans and the City of Watsonville, to signalize the intersection or install a roundabout. The project shall contribute its fair share of the cost of these improvements. The project's fair share contribution for this intersection improvement is calculated to be 5.2 percent.

Intersection Deficiencies and Improvements

The remainder of locations are noted as intersection deficiencies. In cases when a study intersection operates at an unacceptable LOS, even without the project traffic added, an intersection roadway improvement was identified to improve the intersection back to an acceptable level of service. These roadway improvements are identified in this report to inform the City of potential solutions for the intersections and when they would need to be implemented. **Per the City, the project is required to pay its fair share for these deficiencies identified in the Manabe-Ow Business Park Specific Plan EIR instead of paying its traffic impact fee (TIF) contribution.**

1. INTRODUCTION

The following traffic impact study (TIS) has been prepared to determine potential Vehicle Miles Traveled (VMT) impacts and/or Level of Service (LOS) deficiencies associated with the Manabe Ow Road Distribution Center ("Project"), a 156,961 square-foot industrial and warehouse distribution building. The proposed project will be located in the Manabe-Ow Business Park Specific Plan Area located in Watsonville, California. The Project site is located on the western most lot on the west side of Ohlone Parkway and to the south of Manabe Ow Road. The project proposes two unsignalized driveways on Manabe Ow Road.

Figure 1 illustrates the location of the project site in relation to the adjacent roadway network. The project proposes two (2) unsignalized access driveways on Manabe Ow Road. The site plan is presented in **Figure 2**.

This TIS addresses the Project's VMT and LOS effects in order to assist the City of Watsonville ("City") with planning and the identification of conditions of approval, and to mitigate the Project's VMT impacts or improve identified LOS deficiencies, if necessary.

STUDY METHODOLOGY

With the passage of SB 743, Vehicle Miles Travelled (VMT) has become an important indicator for determining if a new development will result in a "significant transportation impact" under the California Environmental Quality Act (CEQA). This report summarizes the VMT analysis and resultant findings for the proposed development.

VEHICLE MILES TRAVELED (VMT)

Based on the land use information provided, for the purposes of SB 743 analysis and the determination of transportation related significant impacts, the Industrial land use was analyzed.

While the City of Watsonville has a VMT tool that can generally be used to determine the impact of a project, this requires a similar land use to be already constructed in the same Traffic Analysis Zone (TAZ) of the Project. However, because there are no industrial uses within the Project's TAZ, the Santa Cruz County Travel Demand Model (SCC TDM) was used for this analysis. For employment-based uses, the SCC TDM is used as the principal tool to determine VMT while the City of Watsonville's draft VMT guidelines were used as the basis for the analysis methodology. The SCC TDM's base year was used for this analysis and is representative of 2019 conditions.

Per the City of Watsonville Draft VMT analysis guidelines, the threshold for employment-based VMT uses is set at 15 percent below the regional average. Note that for the purposes of this analysis, the region is defined as Santa Cruz County. Therefore, if the project VMT were to exceed the 15 percent below the regional average VMT, this would be considered a significant transportation impact.



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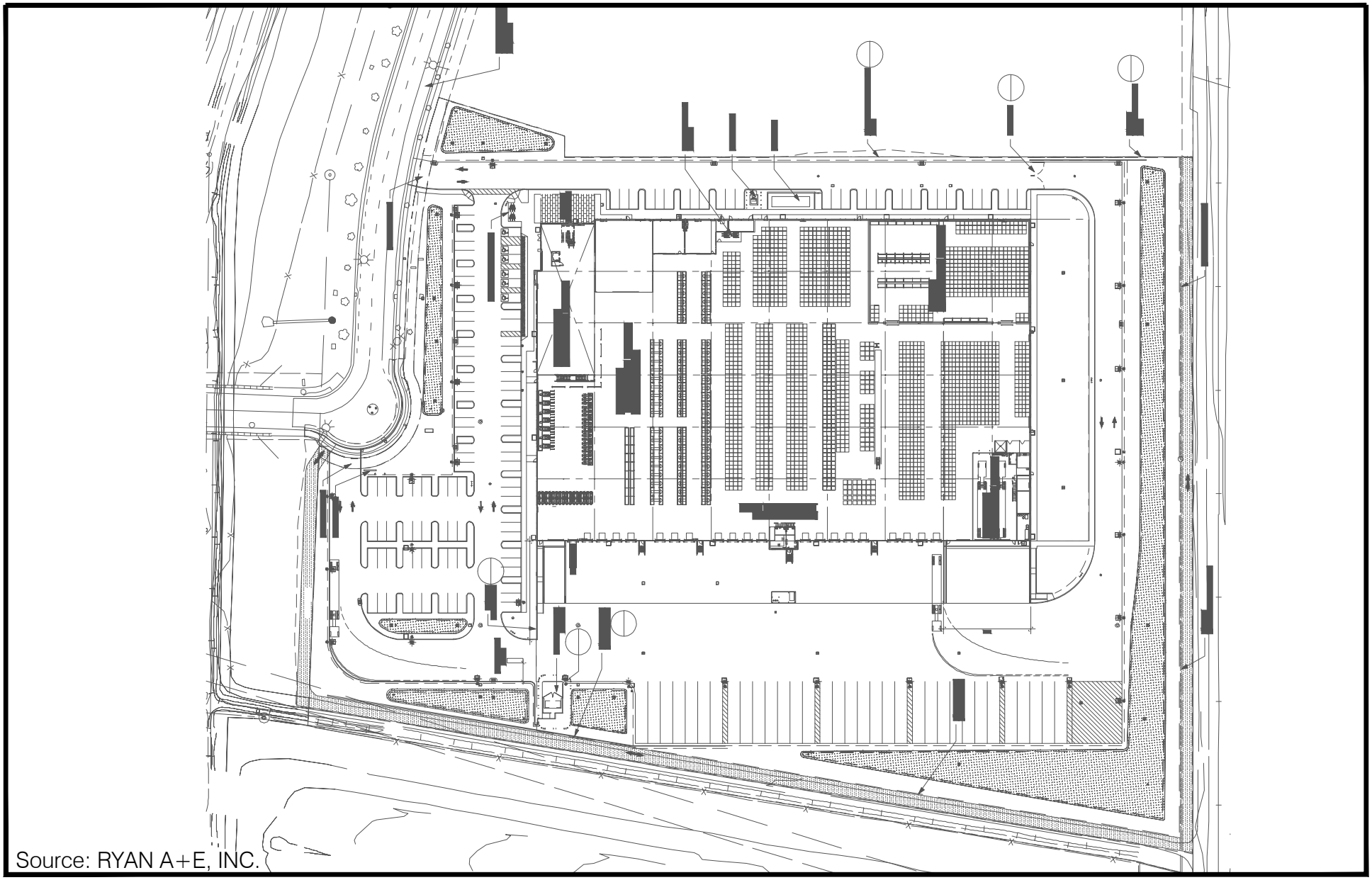
FIGURE 1
PROJECT LOCATION AND STUDY INTERSECTIONS



Source: RYAN A+E, INC.

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FIGURE 2
SITE PLAN

SUPPLEMENTAL TRAFFIC OPERATIONS ANALYSIS

A supplemental traffic operations analysis was conducted to evaluate the Project's effect on LOS operations within the project's vicinity.

Study Area

The Project would generate new vehicular trips that would increase traffic volumes on the nearby street network. To assess changes in traffic conditions associated with the proposed project, the intersections in **Table 1** were evaluated. **Figure 1** illustrates the location of each intersection relative to the project site. The two (2) project driveways are also included as study intersections.

Table 1: Study Intersections

#	Intersection
1	Harkins Slough Road/NB Highway 1 off-ramp
2	Main Street/S Green Valley Road
3	Main Street/Ohlone Parkway
4	Main Street/E Riverside Drive
5	Ohlone Parkway/Loma Vista Drive
6	Ohlone Parkway/Lighthouse Drive
7	Ohlone Parkway/W Beach Street
8	Walker Street/W Beach Street
9	SB Highway 1 ramps/W Riverside Drive
10	NB Highway 1 ramps/W Riverside Drive
11	Manabe Ow Road/West Project Driveway
12	Manabe Ow Road/East Project Driveway

Analysis Scenarios

Five (5) scenarios were analyzed as part of the supplemental traffic operations analysis, listed below:

- Existing conditions – Based on current traffic counts (i.e. 2021) adjusted to account for the impact of COVID-19 and existing roadway geometry and traffic control.
- Existing plus project traffic conditions – Based on Existing conditions plus the traffic generated by the Project.
- Background conditions – Based on current traffic counts and the addition of traffic from pending and approved projects, and specifically including the adjacent warehouse distribution center project. This scenario represents the opening day conditions for the project. The roadway geometry and traffic control were updated to include any roadway improvements to be completed by the opening year.
- Background plus project traffic conditions – Based on Background conditions plus the traffic generated by the Project.
- Cumulative conditions without the project – Based on future year traffic forecasts from the Santa Cruz County (County) travel demand model and the addition of the adjacent warehouse distribution center project. Future roadway geometry and traffic control were based on City roadway improvements that have been fully programmed and funded.

- Cumulative conditions plus project – Based on Cumulative without project volumes and traffic generated by the Project. Includes roadway improvements anticipated to be in place during the Cumulative year.

Intersection Level of Service

The LOS of an intersection is a qualitative measure used to describe operational conditions. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for this study were determined using methods defined in the *Highway Capacity Manual, 6th Edition* (HCM 6) within the *Synchro 10* traffic analysis software.

The HCM includes procedures for analyzing side-street stop-controlled (SSSC), all-way stop-controlled (AWSC), and signalized intersections. The SSSC procedure defines LOS as the highest delay of each minor street movement or major street left turns. Conversely, the AWSC and signalized intersection procedures define LOS as a function of average control delay for the entire intersection. **Table 2** relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

The City of Watsonville does not specify intersection project impact criteria; therefore, impacts were considered project deficiencies if:

- The addition of project traffic causes an intersection to:
  - Operate at LOS E or F overall for a signalized or AWSC intersection or the worst-case movement for a SSSC intersection, or
  - Adds five seconds of delay to an intersection already operating at LOS E or F under the comparable No Project scenario

Table 2: Intersection Level of Service Definitions

Level of Service	Description	Signalized (Avg. control delay per vehicle sec/veh.)	Unsignalized (Avg. control delay per vehicle sec/veh.)
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	≤ 10	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	> 10 – 20	> 10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	> 20 – 35	> 15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays July be more than one cycle during peak hours.	> 35 – 55	> 25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	> 55 – 80	> 35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50

Sources: Transportation Research Board, Highway Capacity Manual 2016, National Research Council, 2016.

The following assumptions were included in the analysis:

- Peak-hour factor (PHF) based on the existing traffic data was used for the Existing (2021), Background, and Cumulative (2040) scenarios.
- Traffic signal timing assumptions for Existing (2021) conditions were based on existing signal phasing and traffic volumes.
- Percent of heavy vehicles (PHV) based on a default value of 2 percent.

Vehicle Queuing

Queues that exceed the turn pocket length can create potentially hazardous conditions by blocking or disrupting through traffic in adjacent travel lanes. The effect of vehicle queuing was analyzed by reporting the 95th percentile queues for turning movements where the project would add substantial number of trips. The 95th percentile queue length represents a condition where 95 percent of the time during the peak hour, traffic queues will be less than or equal to the queue length determine by the analysis. This is referred to as the "95th percentile queue", which is not typical of what an average driver would experience as the 95th percentile queue will rarely be exceeded. For signalized intersections, the 95th percentile queue length was determined based on queue length calculation within the *Synchro 10* traffic analysis software. For unsignalized intersections, the 95th percentile queue length was determined using HCM 6 methodology.

2. EXISTING (2021) CONDITIONS

This chapter describes the existing conditions of the roadway network, traffic volumes, transit service, pedestrian facilities, and bicycle facilities within the vicinity of the project site.

ROADWAY NETWORK

In the City of Watsonville 2005 General Plan, roadways within the study area are designated as freeway, major arterial, minor arterial, collector, industrial street, parkway, or local road. This section provides a description of the specific roadways included in this study.

FREEWAYS

Highway 1 is a north-south freeway spanning from Orange County to Mendocino County. Within the study area, Highway 1 is a four-lane freeway divided with a median. The posted speed limit is 65 mph.

ARTERIALS

Harkins Slough Road is a four-lane roadway from Green Valley Road to Bayview Drive and a two-lane from Bayview Drive to the Watsonville Slough. It becomes Walker Street from the Watsonville Slough to Front Street. The roadway provides access to the commercial and residential areas near Highway 1. The posted speed limit is 30 mph.

S Green Valley Road is a four-lane north-south major arterial between Harkins Slough Road and City Limits. The roadway serves commercial land uses and is divided by a median between Harkins Slough Road and Main Street. The posted speed limit is 45 mph north of Main Street and 30 mph south of Main Street.

Riverside Drive is an east-west major arterial providing access to industrial, commercial, and residential uses within the study area. Riverside Drive spans from Lee Rd to the west and Highway 101 to the east. Riverside Drive is a four-lane roadway east of the Highway 1 northbound ramp intersection and two-lane roadway west of the Highway 1 southbound ramp intersection. Between Lee Road and Sakata Lane, the posted speed limit of 45 mph. Between Sakata Lane and Blackburn Street, the posted speed limit is 25 mph. Between Blackburn Street and Highway 101, the posted speed limit is 45 mph.

W Beach Street is an east-west major arterial providing access to industrial and residential uses within the study area. The roadway connects to Palm Beach State Park to the west and Hushbeck Avenue to the east. W Beach Street has four lanes west of Harvest Drive and two lanes east of Harvest Drive. The posted speed limit for W. Beach Street from West of Lee Road to Industrial Road is 45 mph. The posted speed limit for Beach Street from Industrial Road to Walker Street is 30 mph. The posted speed limit on E. Beach Street from Walker Street to Hushbeck Avenue is 25 mph.

Walker Street is a two-lane north-south minor arterial spanning from Harkins Slough Road to the Pajaro River. The street provides access to industrial and residential uses within the study area. The posted speed limit of 30 mph.

COLLECTORS

Ohlone Parkway is a four-lane, north-south minor arterial from Main Street to Harkins Slough Road and a two-lane, north-south minor arterial from Main Street to W Beach Street. Ohlone Parkway provides access

to industrial, commercial, and residential land uses. Within the study area, the posted speed limit along is 35 mph.

LOCAL STREETS

Loma Vista Drive is a two-lane east-west local street. Loma Vista Drive connects to Paseo Drive to the west and Paradiso Court to the east. The roadway serves residential land uses. The posted speed limit is 25 mph.

Lighthouse Drive is a two-lane east-west local street. Lighthouse Drive connects to Paseo Drive to the west and Santa Victoria Avenue to the east. The roadway serves residential land uses. The posted speed limit is 25 mph.

Manabe Ow Road is a two-lane east-west local street. The roadway serves industrial land uses. There is no posted speed limit; therefore, the speed limit is assumed to be 25 mph.

TRUCK ROUTES

The following roadway segments are truck routes as stated in Section 4-10 of the City's Municipal Code:

- Riverside Drive along State Route 129 in its entirety
- West Beach Street between Walker Street to Lee Road
- Industrial Road in its entirety
- Walker Street between Riverside Drive (Highway 129) to Ford Street
- Kearney Street from Walker Street east to Gardner Court and west on Kearney Extension from Walker Street in its entirety
- Ford Street from Walker Street westerly in its entirety
- West Lake Avenue from Walker Street east to Gardner Court
- Harvest Drive in its entirety
- Lee Road between the northern City limit boundary and the southern City limit boundary
- Ohlone Parkway (between West Beach Street and Slough Road West)
- Slough Road West from Ohlone Parkway to its western limit and portion of Business Park Road North that is north of Slough Road West and within Assessor Parcel Numbers 018-711-24 and 018-711-28.

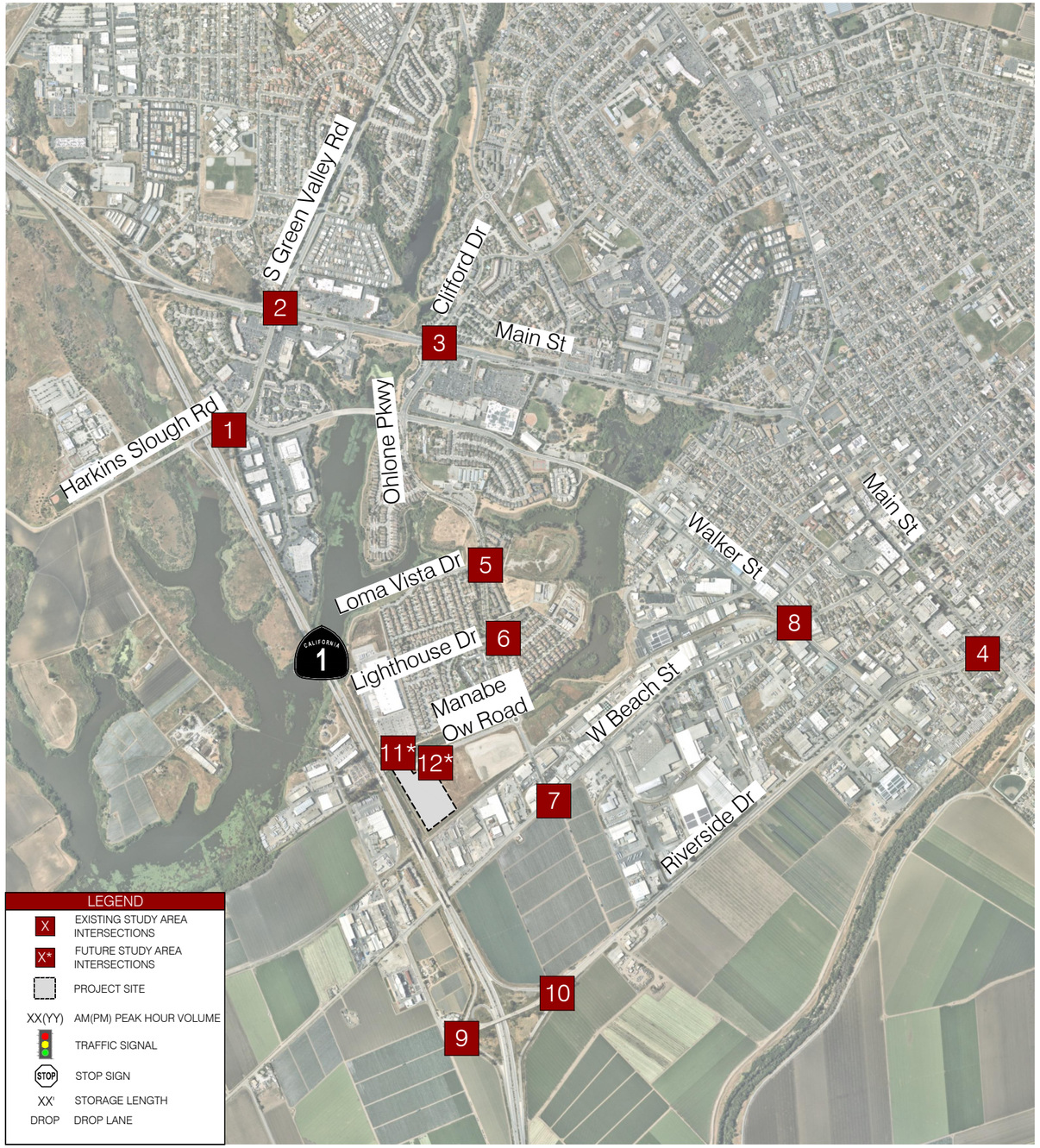
STUDY INTERSECTION LANE CONFIGURATION AND TRAFFIC CONTROL

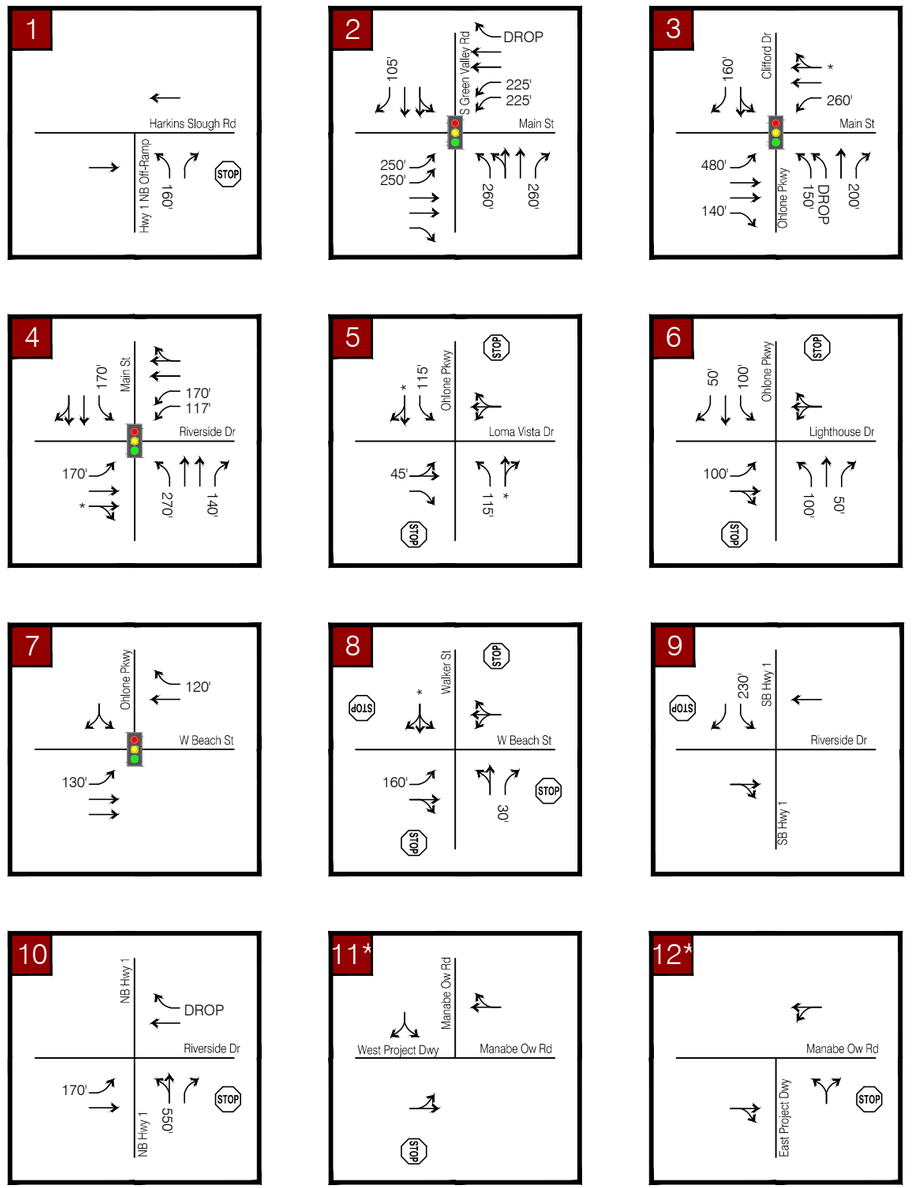
The existing intersection lane configuration and traffic controls, as of October 2021, are illustrated in **Figure 3**.

PEAK-HOUR TURNING MOVEMENT VOLUMES

Intersection turning movement volumes for the study intersections were collected on Thursday, August 19, 2021, which is after local schools returned from summer break. Volumes were collected between 7:00 AM – 9:00 AM to capture the AM peak periods, and between 4:00 PM – 6:00 PM for the PM peak periods. Traffic volumes collected were adjusted to account for the disruption caused by the novel coronavirus (COVID-19).

To determine if the 2021 counts collected were impacted by COVID-19, the 2021 counts were compared to historical counts collected from 2019, 2018, and 2008 at certain intersections where historical data was available. In general, 2021 volumes were shown to be lower than the 2019 and 2018 counts. Therefore, the 2019 or 2018 volume for each location provided was used to be conservative as a Pre-COVID volume. For the intersections where there were no 2019 or 2018 volumes, a "COVID-adjustment factor" was calculated by averaging the difference in volumes between 2021 and 2018 counts at the same intersections and comparing the difference to 2021 volumes. Based on this comparison, the August 2021 volumes were increased by an annual growth of 0.8 percent for the AM peak hour and 3.5 percent for the PM peak hour. Adjusted Existing (2021) peak hour turning movement volumes are shown in **Figure 4**. Existing traffic volume data sheets are provided in **Appendix A**.





* STRIPED AS SHARED-THROUGH RIGHT TURN LANE, ANALYZED AS SEPARATE DE FACTO RIGHT TURN LANE

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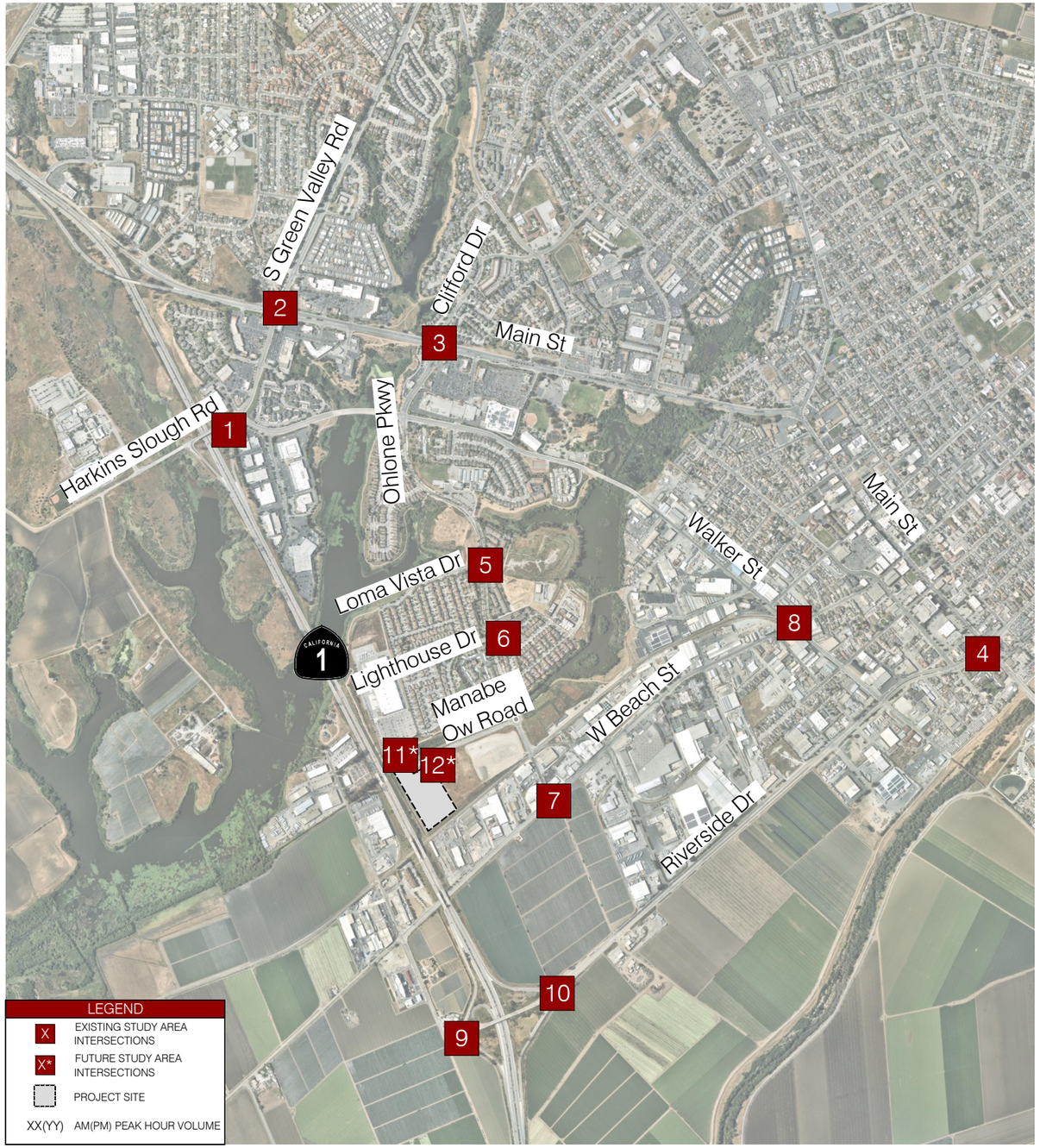
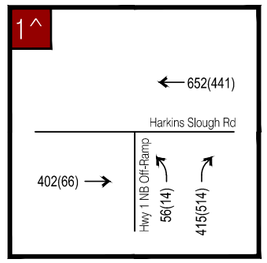
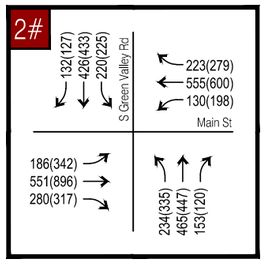
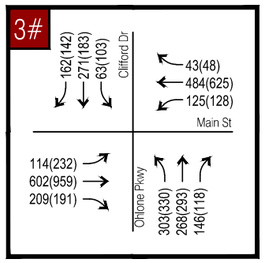
FIGURE 3
EXISTING LANE GEOMETRY AND TRAFFIC CONTROL

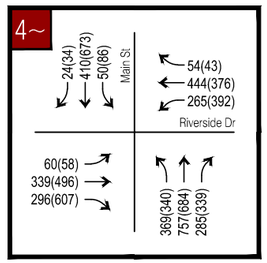
Manabe Ow Road TIA

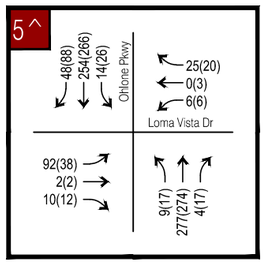


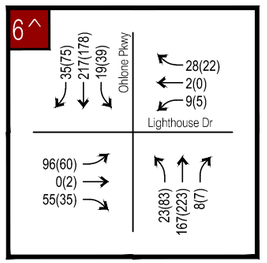


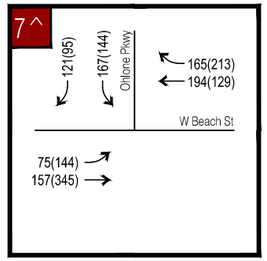


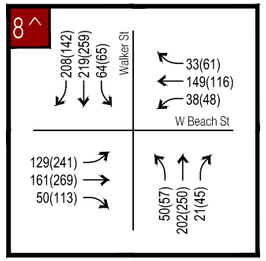


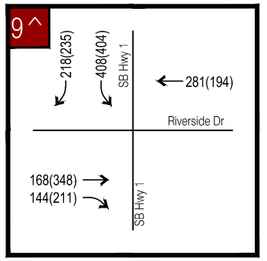


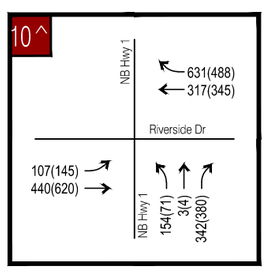


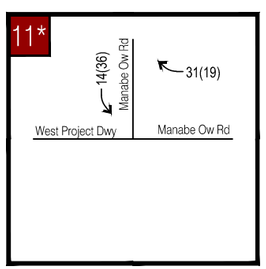


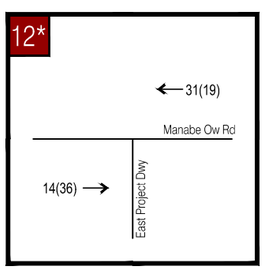












^ = 2021 ADJUSTED VOLUMES

~ = 2019 VOLUMES

= 2018 VOLUMES

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FIGURE 4

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

BICYCLE FACILITIES

Figure 5 illustrates existing and proposed bicycle facilities in the study area. Class I bicycle facilities are bike paths/trails, Class II bicycle facilities are defined as bike lanes, and Class III bicycle facilities are bike routes.

Within the project study area, there are Class I, II, and III bicycle facilities along the following corridors:

- Class I bike paths:
    - Ohlone Parkway from Harkins Slough Road to Manabe Ow Road
    - Pennsylvania Drive from S Green Valley Road and Clifford Avenue
    - Main Street from Pennsylvania Drive and Freedom Boulevard
- Class II bike lanes:
    - W Beach Street from Highway 1 to Walker Street
    - Walker Street from Harkins Slough Road to Riverside Drive
    - Rodriguez Street from Main Street to Riverside Drive
    - Freedom Boulevard from Main Street to Sudden Street
    - S Green Valley Road from Harkins Slough Road to Holohan Road
    - Airport Boulevard from Highway 1 to Green Valley Road
- Class III bike routes:
    - Main Street from Holm Road to Pennsylvania Drive
    - W Beach Street from San Andreas Road to Highway 1
    - Auto Center Drive from Main Street to Freedom Boulevard
    - Freedom Boulevard from Sudden Street to Airport Boulevard
    - Riverside Drive from Walker Street to Bronte Avenue

In addition to existing facilities, there are future proposed bike facilities in the City's Trails & Bicycle Master Plan on Ohlone Parkway from Manabe Ow Road to W Beach Street and Riverside Drive from Lee Road to Walker Street. **Figure 6** illustrates existing and proposed trail facilities in the study area, including the Monterey Bay Sanctuary Scenic Trail Network. Within the city limits, the Monterey Bay Sanctuary Scenic Trail is proposed to run along W Beach Street, the Santa Cruz County Coastal Rail, and Walker Street.

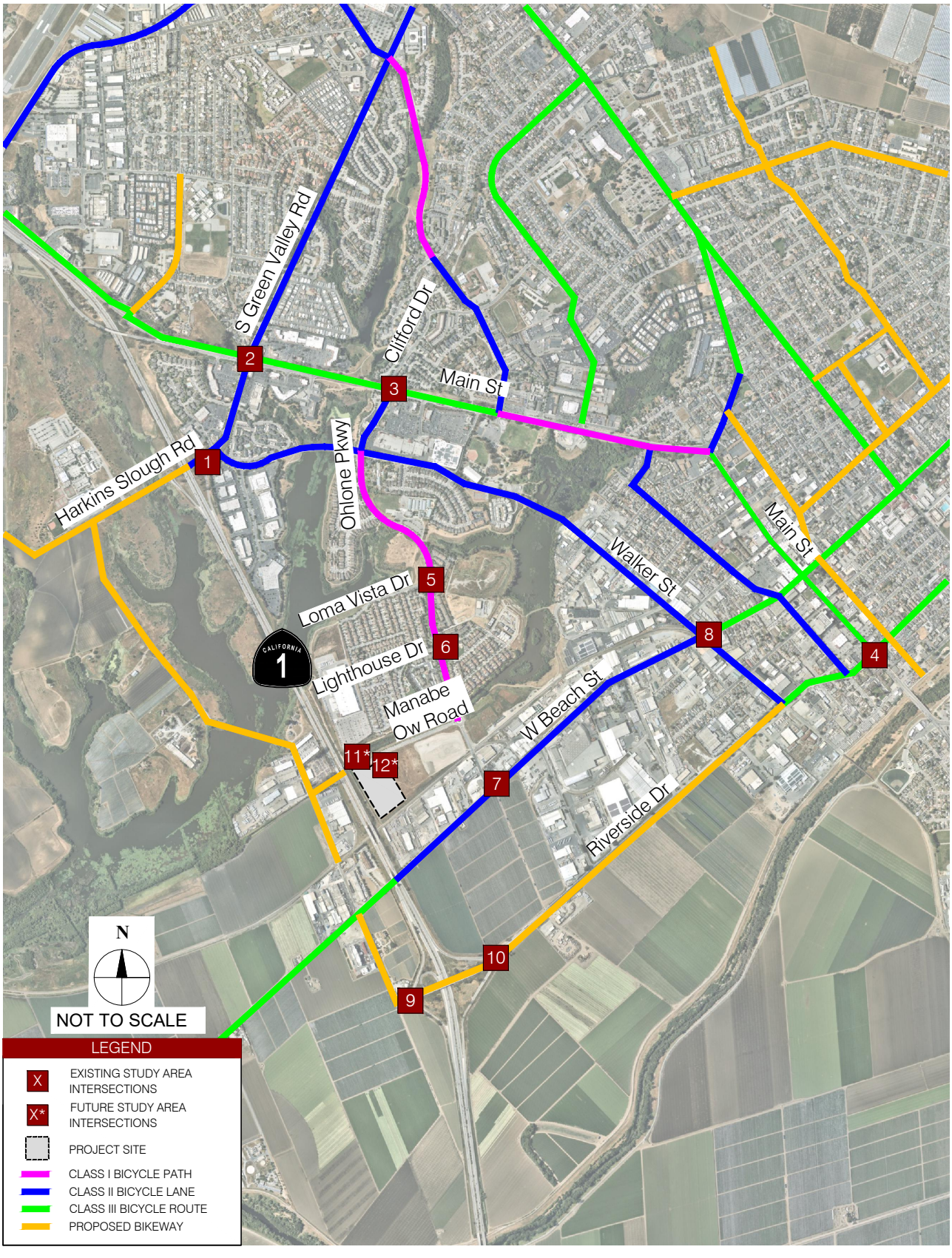

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FIGURE 5
EXISTING AND PROPOSED BICYCLE FACILITIES

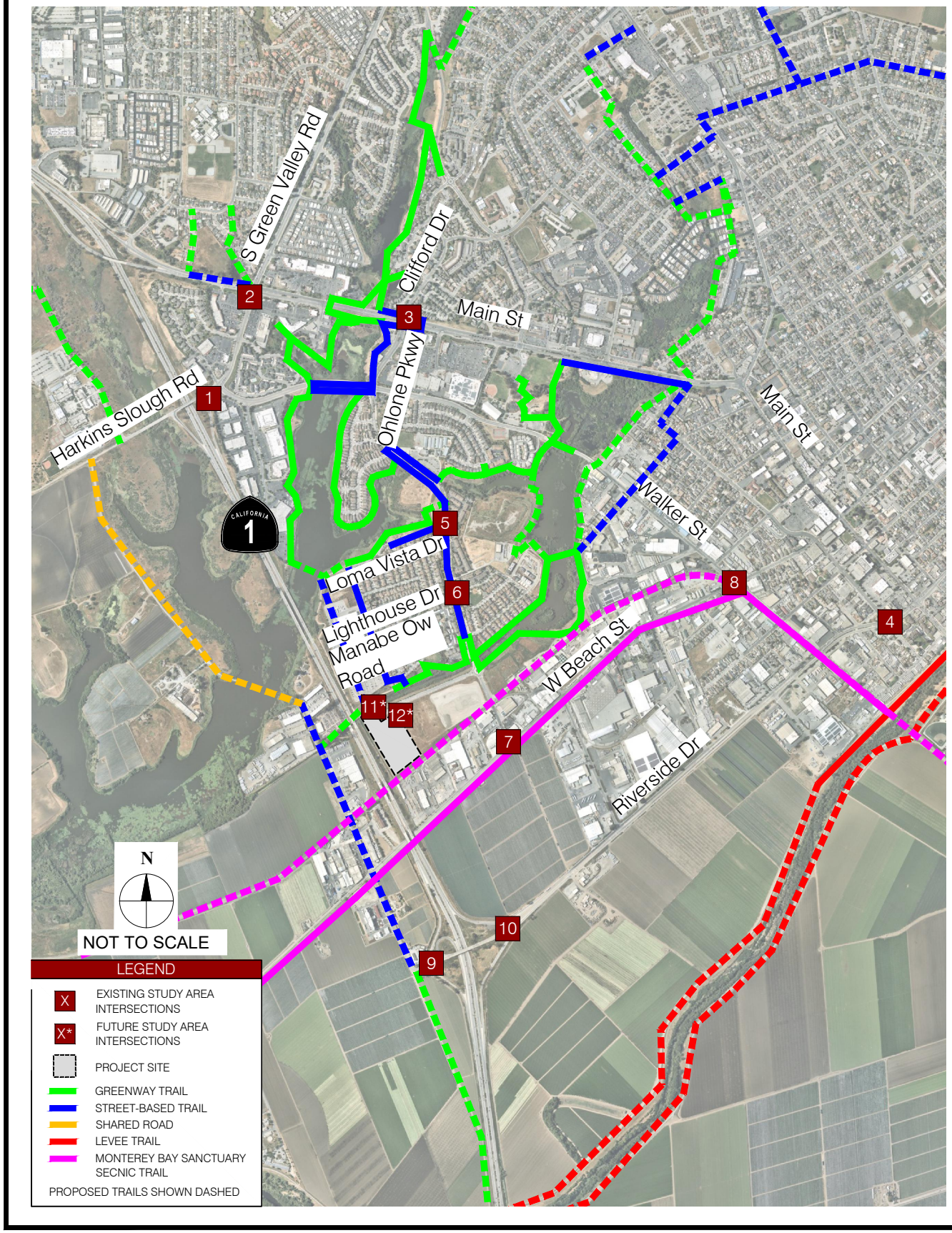

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FIGURE 6
EXISTING AND PROPOSED TRAILS

TRANSIT FACILITIES

Santa Cruz Metro provides transit services in the study area. **Figure 8** illustrates the existing transit services within the study area and are described in this section. **Table 3** provides a summary of the existing transit service in the study area.

Table 3: Existing Transit Service

Route	Description	Weekdays		Weekends	
		Operating Hours	Headway[1] (minutes)	Operating Hours	Headway[1] (minutes)
69W	Capitola/Cabrillo	6:37 AM – 10:35 PM	60	7:50 AM – 7:45 PM	20-30
69A	Capitola/Airport	6:20 AM – 7:05 PM	60	7:50 AM – 7:45 PM	20-30
71	Soquel/Freedom	5:40 AM – 12:45 AM	30	5:58 AM – 12:45 AM	40-65
91X	Cabrillo Express	5:55 AM – 5:17 PM	30-60	-	-
72	Green Valley - Hospital	6:45 AM – 6:40 PM	60	-	-
72W	Green Valley- Corralitos	-	-	9:25 AM – 6:27 PM	120
74S	PVHS/Hospital	7:00 AM – 8:02 AM 3:05 PM – 4:00 PM	-	-	-
75	Green Valley - Wheelock	5:15 AM – 7:15 PM	60	6:05 AM – 6:45 PM	70
79	East Lake/Crestview	7:25 AM – 6:00 PM	60	8:30 AM – 5:06 PM	240

Notes:
[1] Headways are defined as the time between transit vehicles on the same route.

Route 69W (Capitola/Cabrillo) operates between the Santa Cruz Metro Center to the Watsonville Transit Center. Route 69W operates on weekdays between 6:37 AM and 10:35 PM on 60-minute headways and on weekends between 7:50 AM and 7:45 PM on 20- to 30- minute headways. The route runs along Airport Boulevard, Freedom Boulevard, and E Beach Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W. Lake Avenue.

Route 69A (Capitola/Airport) operates between the Santa Cruz Metro Center to the Watsonville Transit Center. Route 69A operates on weekdays between 6:20 AM and 7:05 PM on 60-minute headways and on weekends between 7:50 AM and 7:45 PM on 20- to 30- minute headways. The route runs along Main Street and Rodriguez Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 71 (Soquel/Freedom) operates between Santa Cruz Metro Center to the Watsonville Transit Center. Route 71 operates on weekdays between 5:40 AM and 12:45 AM of the next day on 30-minutes headways, and on weekends between 5:58 AM and 12:45 AM of the next day on 40- to 65-minute headways. The route runs along Freedom Boulevard, Main Street, and Clifford Avenue in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 91X (Cabrillo Express) operates between Santa Cruz Metro Center to the Watsonville Transit Center. On weekdays, Route 91X operates between 5:55 AM and 5:17 PM on 30- to 60-minute headways. There is no weekend service. The route runs along Main Street and Rodriguez Street in Watsonville. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 72 (Green Valley - Hospital) operates on a loop to and from the Watsonville Transit Center. This route services the Watsonville Community Hospital. The route runs along Main Street, Green Valley Road, Airport Boulevard, Amesti Road, and Pioneer Road. On weekdays, Route 72 operates between 6:45 AM and 6:45 PM on 60-minute headways. There is no weekend service. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 72W (Green Valley- Corralitos) operates between Browns Valley and Corralitos to the Watsonville Transit Center. There is no weekday service. On weekends, Route 72W operates between 9:25 AM and 6:27 PM on 70-minute headways. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 74S (PVHS/Hospital) operates on a loop to and from the Watsonville Transit Center. This route services Pajaro High School and the Watsonville Community Hospital. On weekdays, Route 74S operates twice, one loop from 7:00 AM to 8:02 AM and one loop from 3:05 PM to 3:00 PM. The nearest bus stop to the project site is at the intersection of Ohlone Parkway and Bree Lane.

Route 75 (Green Valley - Wheelock) operates between the Watsonville Transit Center and Wheelock and Monte Vista Schools. On weekdays, Route 75 operates between 5:15 AM and 7:15 PM on 60-minute headways. On weekends, the route operates between 6:05 AM to 6:45 PM on 70-minute headways. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

Route 79 (East Lake/Crestview) operates on a loop to and from the Watsonville Transit Center. This route services Watsonville High School, East Lake Shopping Center, and Crestview Center. On weekdays, Route 79 operates between 7:25 AM and 6:00 PM on 60-minute headways. On weekends, the route operates between 8:30 AM and 5:06 PM. The nearest bus stop to the project site is the Watsonville Transit Center located at the intersection of Rodriguez Street and W Lake Avenue.

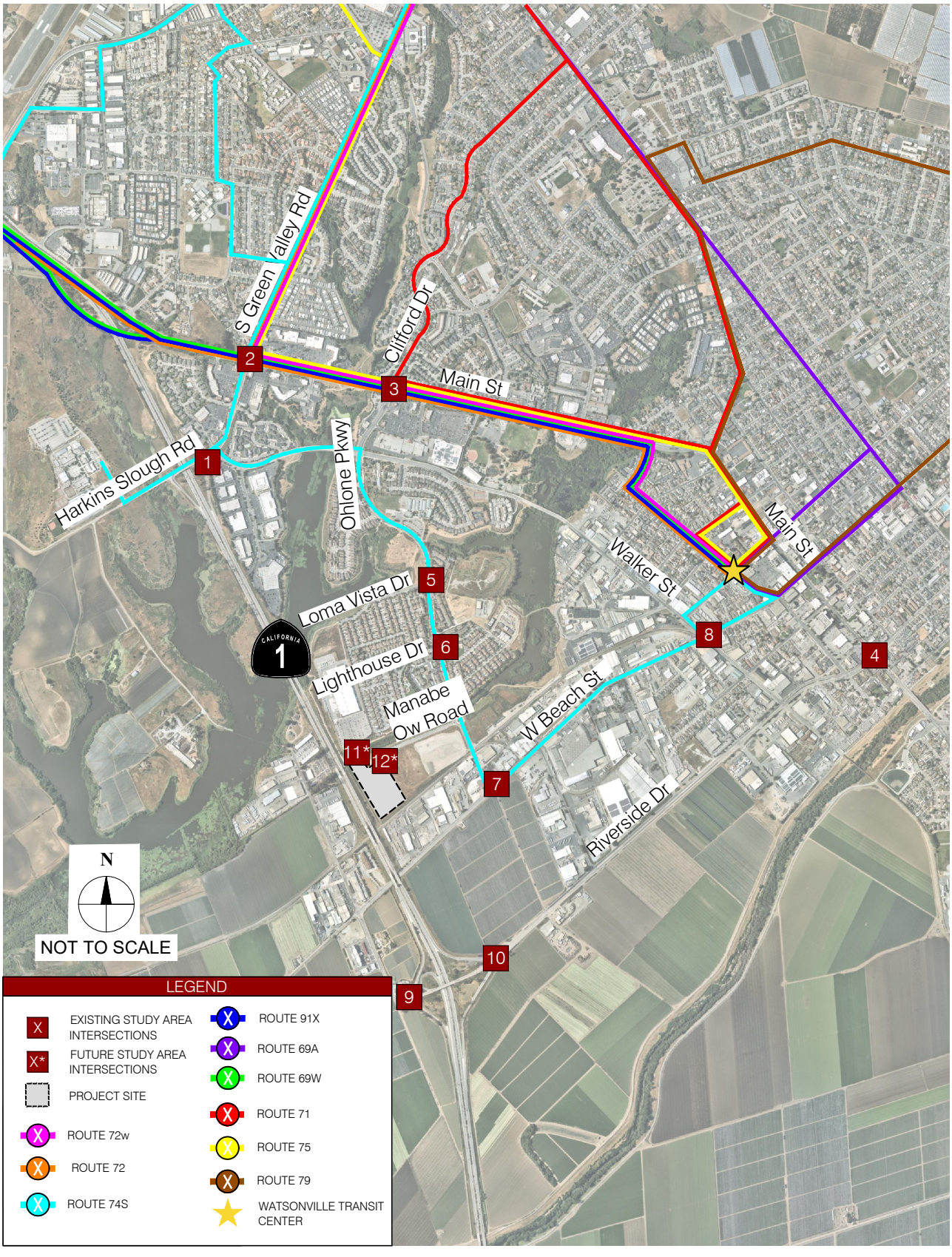

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FIGURE 7
TRANSIT FACILITIES

3. PROJECT DESCRIPTION

This chapter presents a description of the proposed site use, trip generation, trip distribution, and trip assignment.

PROPOSED SITE USE AND OPERATIONS

The proposed project consists of a 156,961 square-foot industrial and warehouse distribution building. The proposed project will be located on an existing 24.9-acre vacant lot located in Watsonville, California. The Project proposes a delivery station which is a "last mile" connection between the user's fulfillment centers and their customers, enabling a faster and more efficient means of shipping. The site will generate 48 daily truck trips. Eight trucks will leave the site at 4:30 AM, 6:00 AM, and 7:30 AM and arrive back at the site at 12:30 PM, 2:00 PM, and 3:30 PM. The trucks accessing the project site are classified as Class 6 and Class 8 vehicles under the Federal Highway Administration's (FHWA) 13 Vehicle Category Classification criteria. There are no delivery vans proposed for this site. The project proposes two (2) unsignalized access driveways along Manabe Ow Road. The site plan for the project is shown in **Figure 2**.

TRIP GENERATION

The Project's proposed trip generation was developed from site specific information provided by the user (shown in **Appendix B**); site capacity, employees required to operate the facility, shift structures, delivery schedules and anticipated line-haul delivery truck delivery schedules. Since the Project proposes a unique warehouse and distribution operation, the use is not accurately reflected in the Institute of *Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*.

Based on the site specific information, it is estimated that at most, nine sales employees, five administrative employees, and ten supervisors would arrive within the AM peak hour, totaling to 24 inbound employees. During the PM peak hour, 15 warehouse employees will arrive, and five administrative employees will depart from the site. Initially, truck trips were based on the anticipated line-haul delivery truck schedules provided. However, to be more conservative, the estimated truck trip generation from the ITE Trip Generation Manual, 11th Edition was used. This project would be most similar to ITE Land Use 156 (High-Cube Parcel Hub). The Project is expected to generate 465 daily Passenger Car Equivalent (PCE) trips, a total of 66 AM peak hour PCE trips (45 inbound and 21 outbound), and 47 PM peak hour PCE trips (27 inbound and 20 outbound). **Table 4** shows the anticipated daily traffic, AM/PM peak hour traffic generated. A Passenger Car Equivalent (PCE) of 3.0 was used for trips associated with a line-haul truck.

Table 4: Project Trip Generation

Vehicle Type	Daily	AM (7:00-8:00)			PM (5:00-6:00)		
		In	Out	Total	In	Out	Total
Passenger Car	192	24	0	24	15	5	20
Truck	91	7	7	14	4	5	9
Truck (PCE)	273	21	21	42	12	15	27
Total (PCE)	**465**	**45**	**21**	**66**	**27**	**20**	**47**

PCE= Passenger Car Equivalent

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

The Project's trip distribution was based on the County's travel demand model. A select zone analysis was completed for the project site's traffic analysis zone (TAZ) to determine the project's trip distribution. **Figure 8** shows the resulting general project traffic distribution assumed for the LOS analysis for the Existing plus Project, Background plus Project, and Cumulative plus Project scenarios. The external trip distribution refers to the percentage of trips that are representative of the origins and destinations. These percentages total to 100 percent. The internal trip distributions shown refer to specific percentages within the roadway network to inform the reader. These internal trip distributions due not affect the 100 percent total for the external trip distribution.

Based on the assumed trip distribution, the volumes generated by the project were assigned to the street network. Trip assignment to the project driveways was based on vehicle type for each respective driveway. It was assumed that trucks were assigned to the West Project Driveway and passenger cars and delivery vehicles were assigned to the East Project Driveway. All trucks were assigned along the following truck routes:

- Riverside Drive along State Route 129 between Lee Road and Main Street
- West Beach Street between Walker Street to Lee Road
- Industrial Road in its entirety
- Walker Street between Riverside Drive (Highway 129) to Ford Street
- Kearney Street from Walker Street east to Gardner Court and west on Kearney Extension from Walker Street in its entirety
- Ford Street from Walker Street westerly in its entirety
- West Lake Avenue from Walker Street east to Gardner Court
- Harvest Drive in its entirety
- Lee Road between the northern City limit boundary and the southern City limit boundary
- Ohlone Parkway (between West Beach Street and Slough Road West)
- Slough Road West from Ohlone Parkway to its western limit and portion of Business Park Road North that is north of Slough Road West and within Assessor Parcel Numbers 018-711-24 and 018-711-28.

The trucks accessing the project site are classified as Class 6 and Class 8 vehicles under the Federal Highway Administration's (FHWA) 13 Vehicle Category Classification criteria. It is recommended that truck route signs be placed at the intersection of Manabe Ow Road and Ohlone Parkway to direct truck traffic towards West Beach Street. Reyes will also prepare a communication plan to ensure that truck drivers are aware of the established truck routes, with an emphasis on avoiding the segment on Ohlone Parkway between Harkins Slough Road and Manabe Ow Road. If possible, truck GPS systems can also be programmed to avoid non-truck routes. **Figure 9** shows the truck routes.

Figure 10 presents the project passenger car peak hour trip assignment. **Figure 11** presents the project truck peak hour trip assignment. **Figure 12** presents the total project peak hour trip assignment.

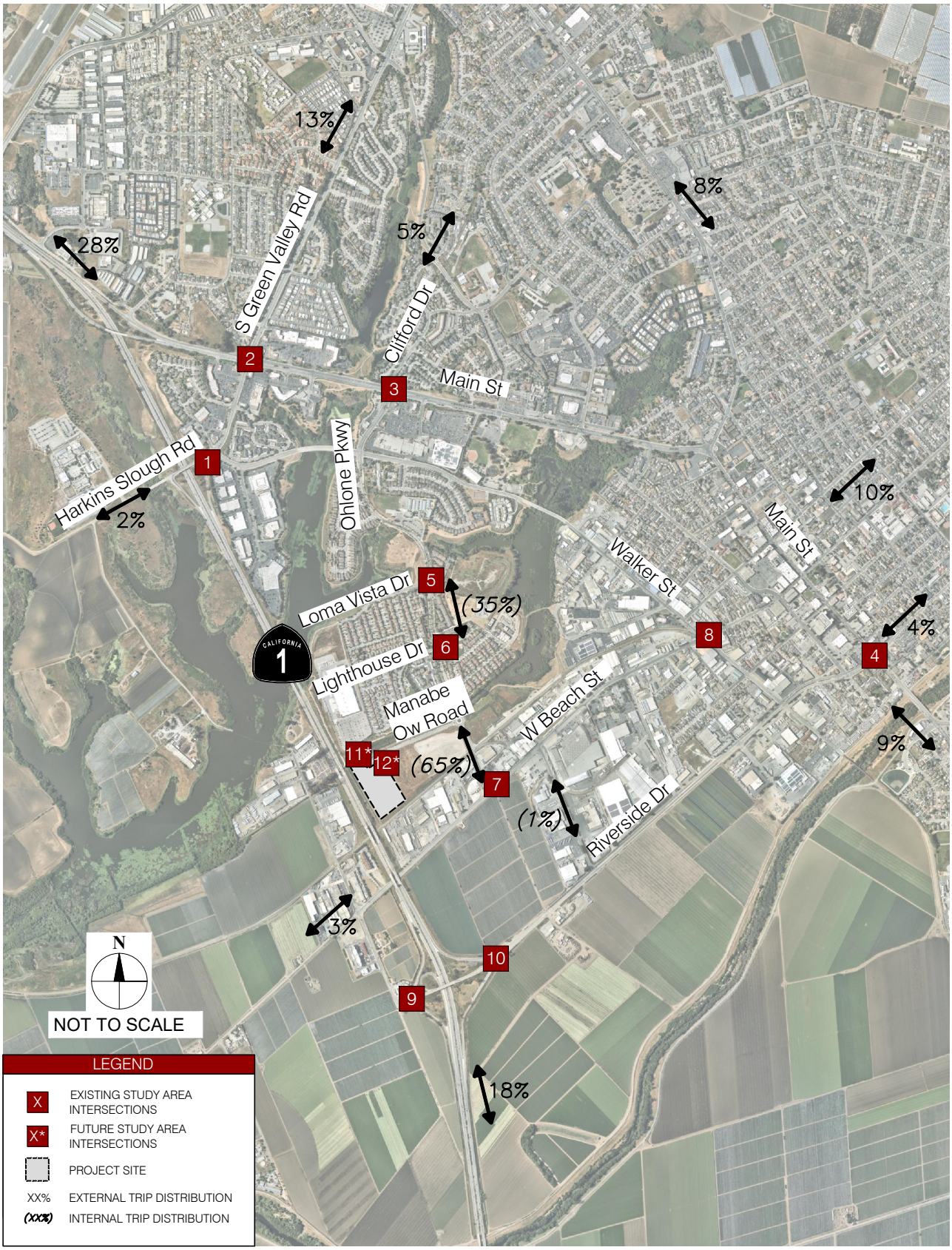

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FIGURE 8
PROJECT TRIP DISTRIBUTION

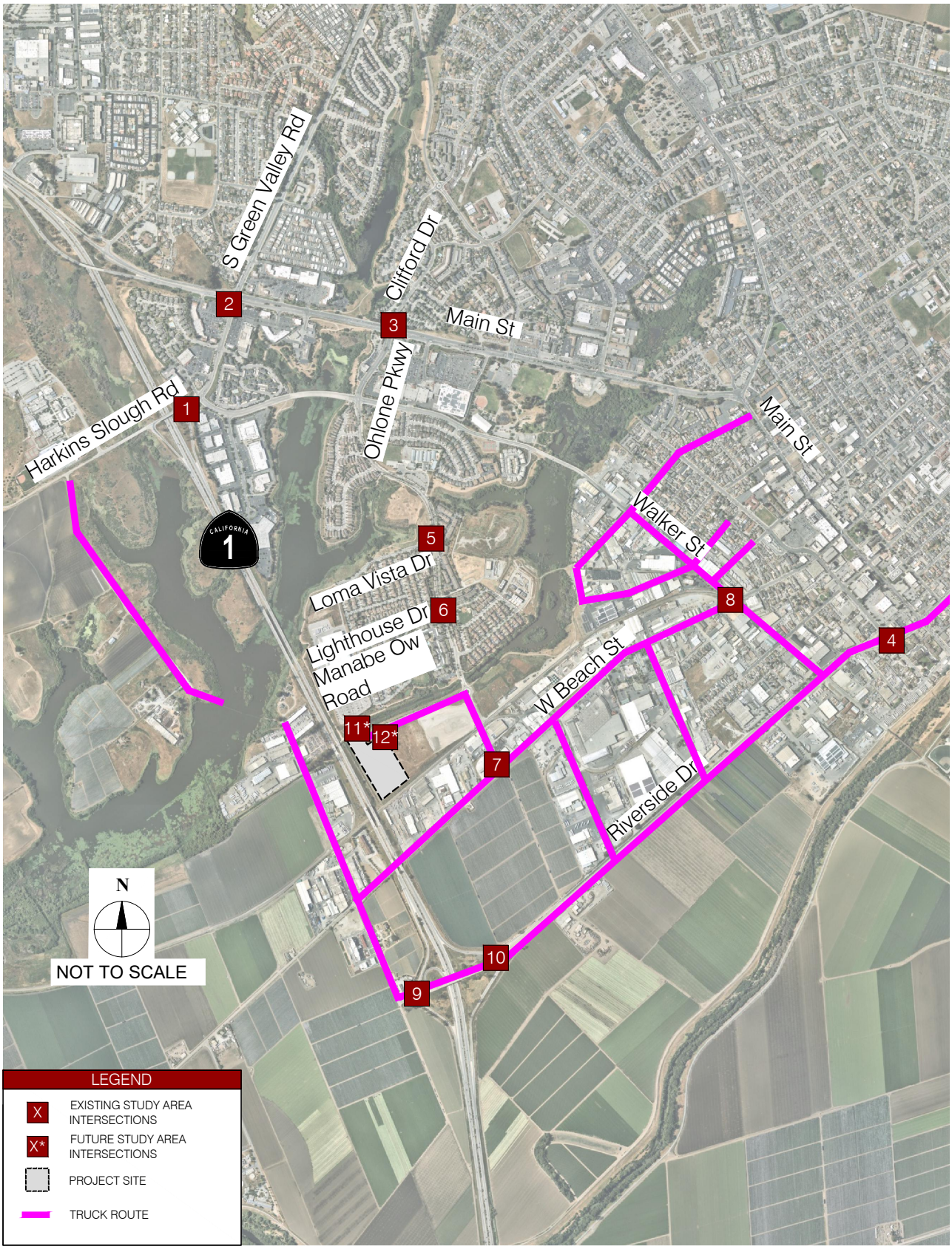

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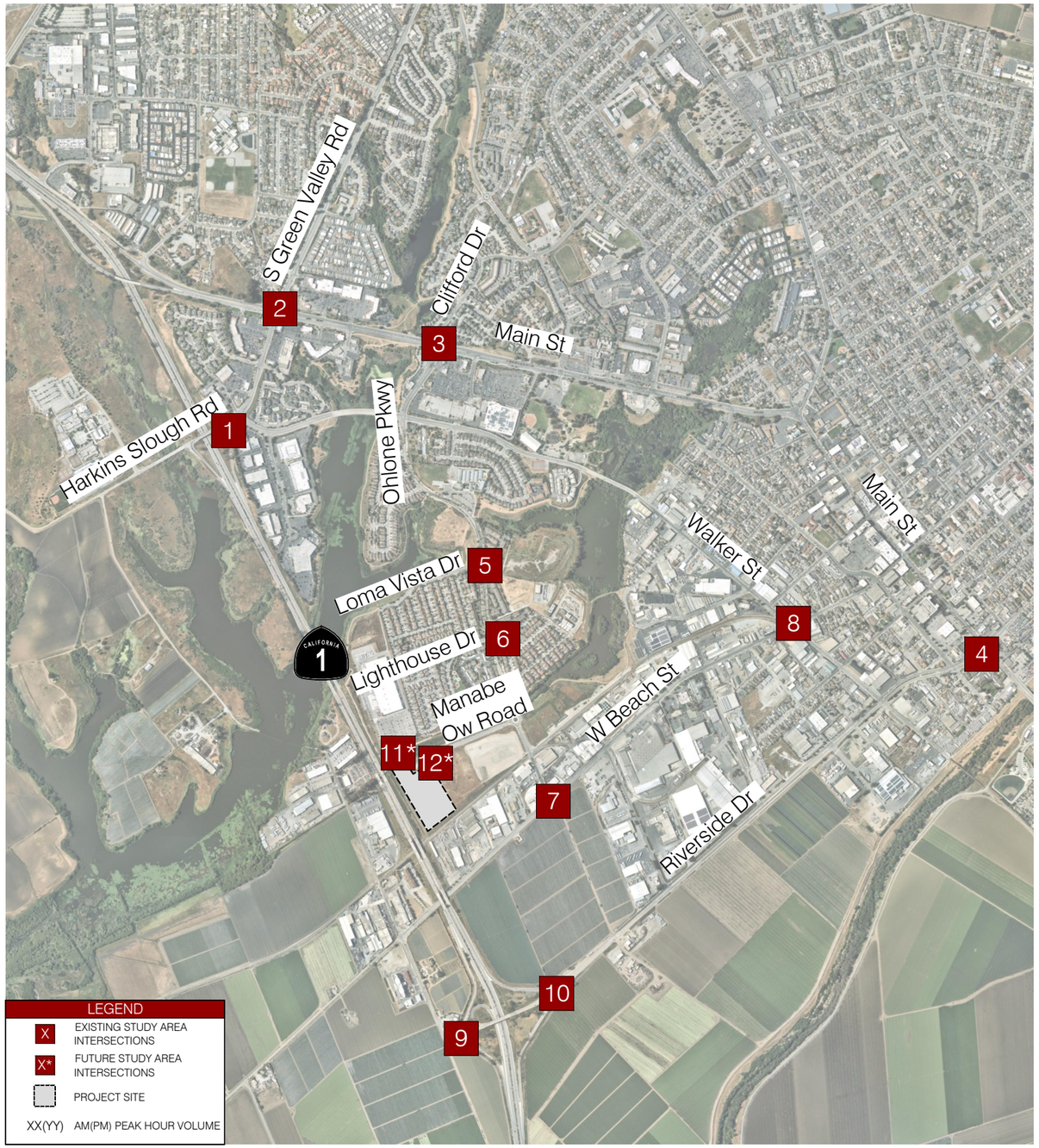
FIGURE 9
TRUCK ROUTES



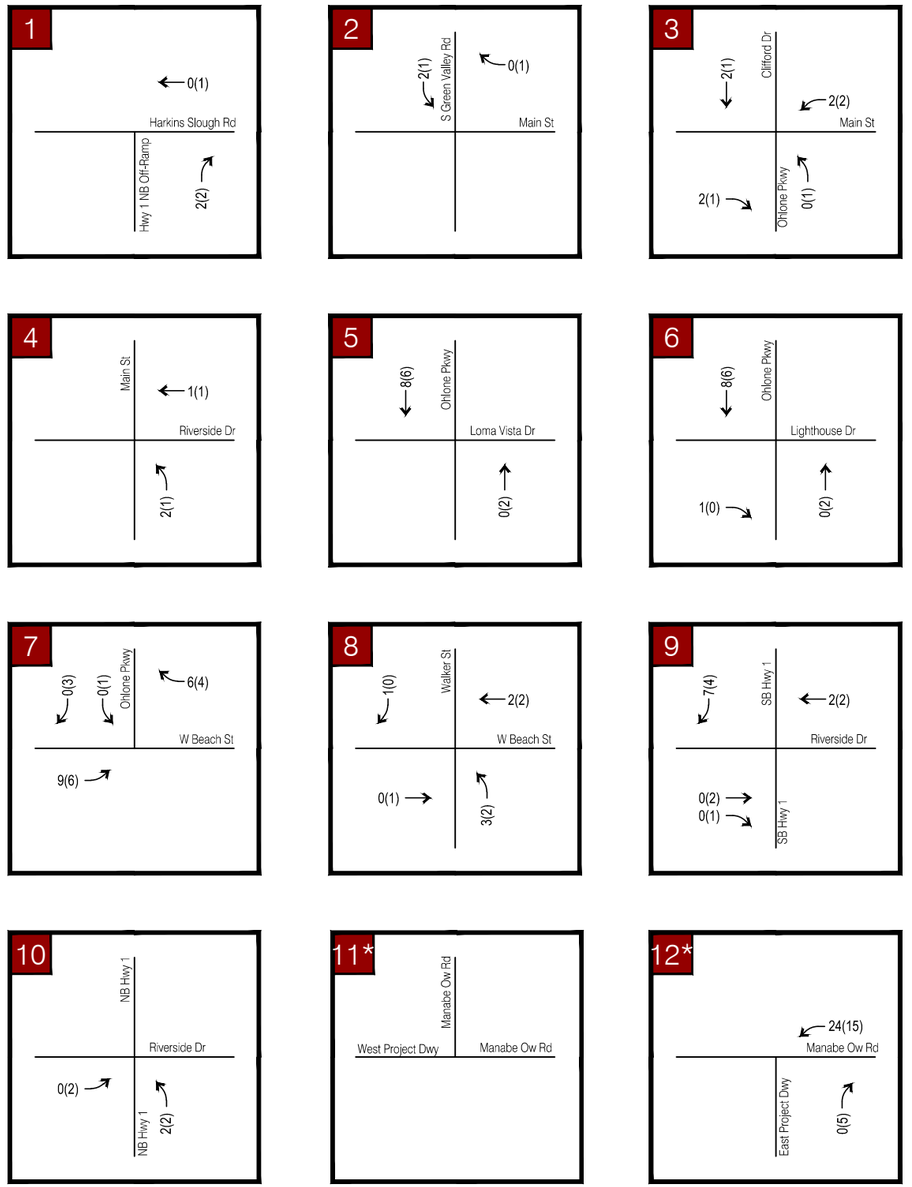


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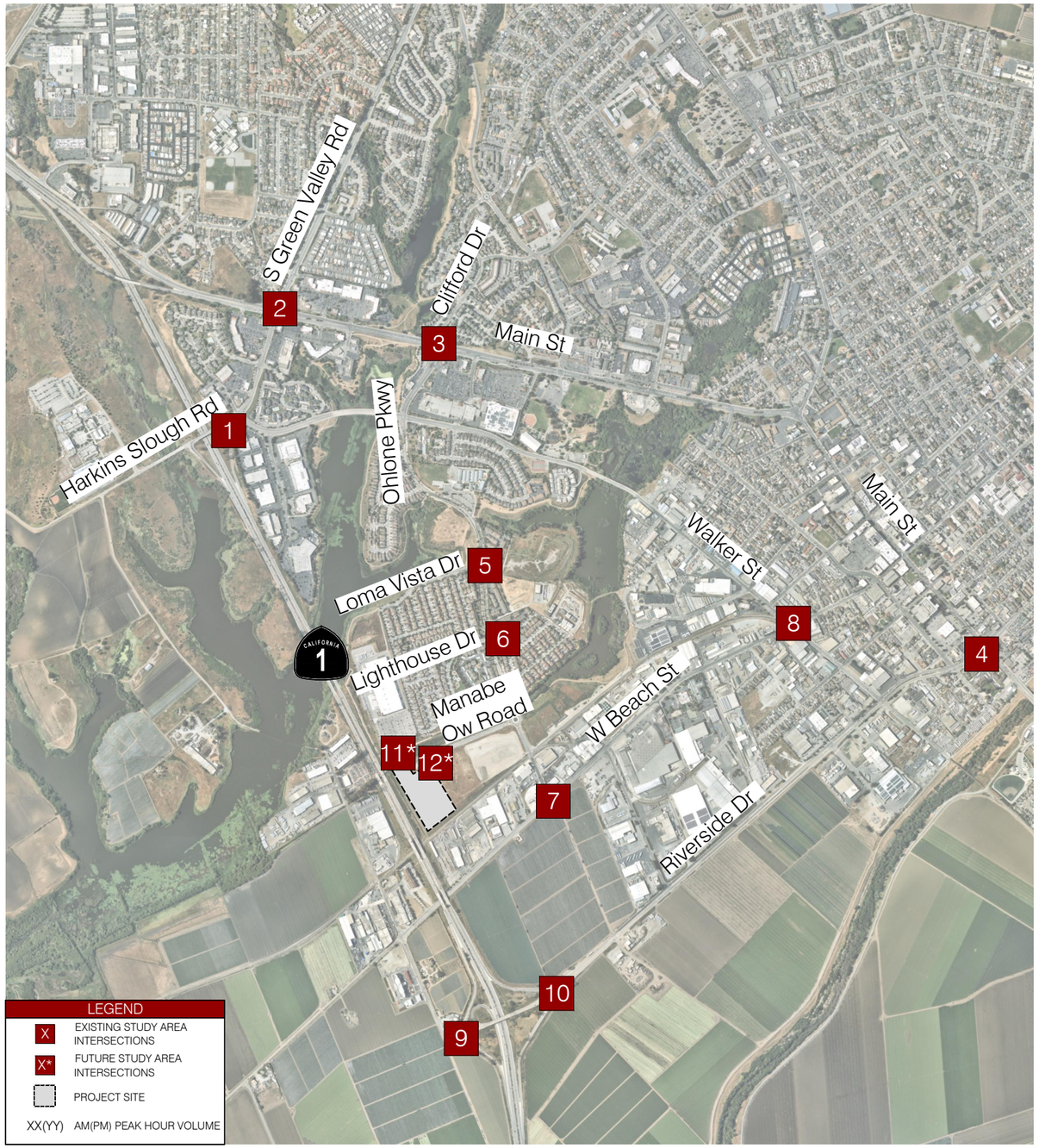
FIGURE 10

PROJECT PASSENGER CAR PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA



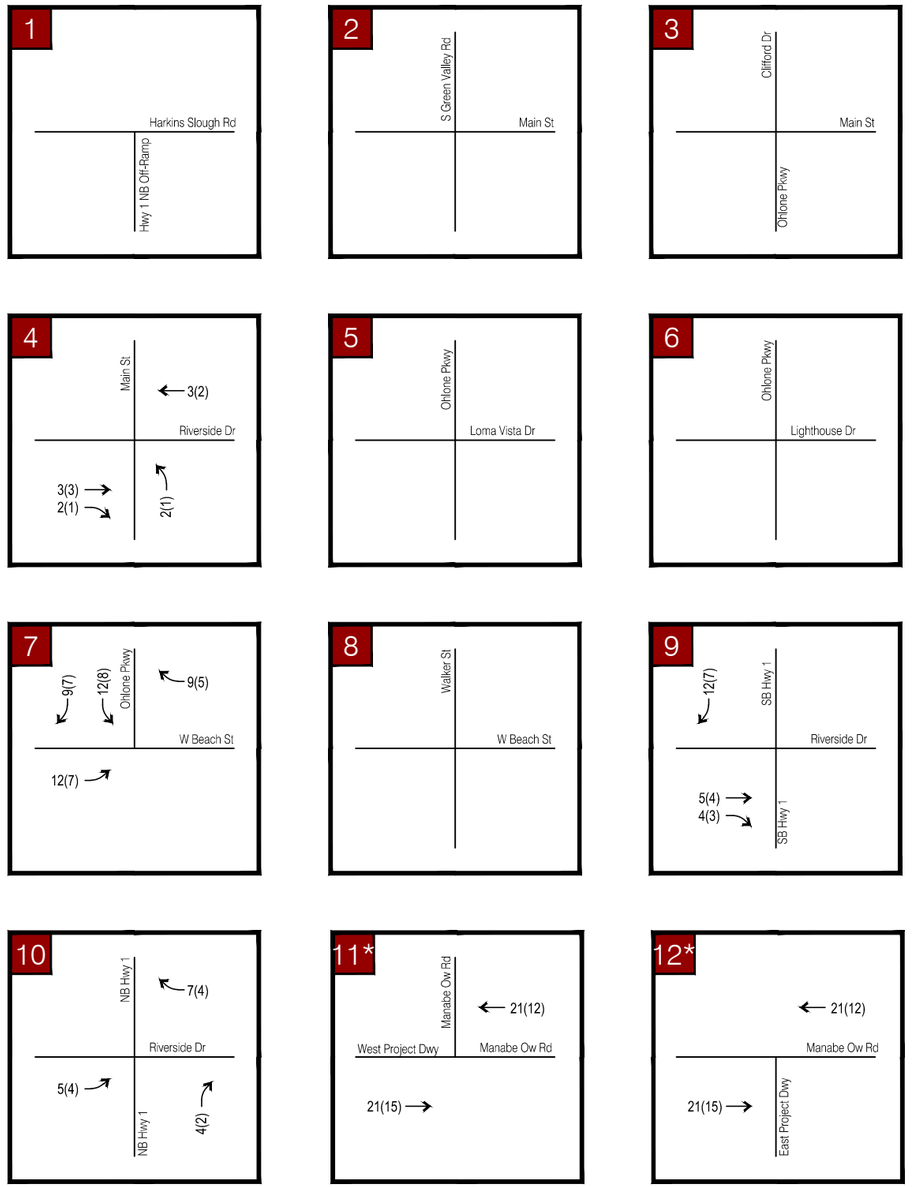


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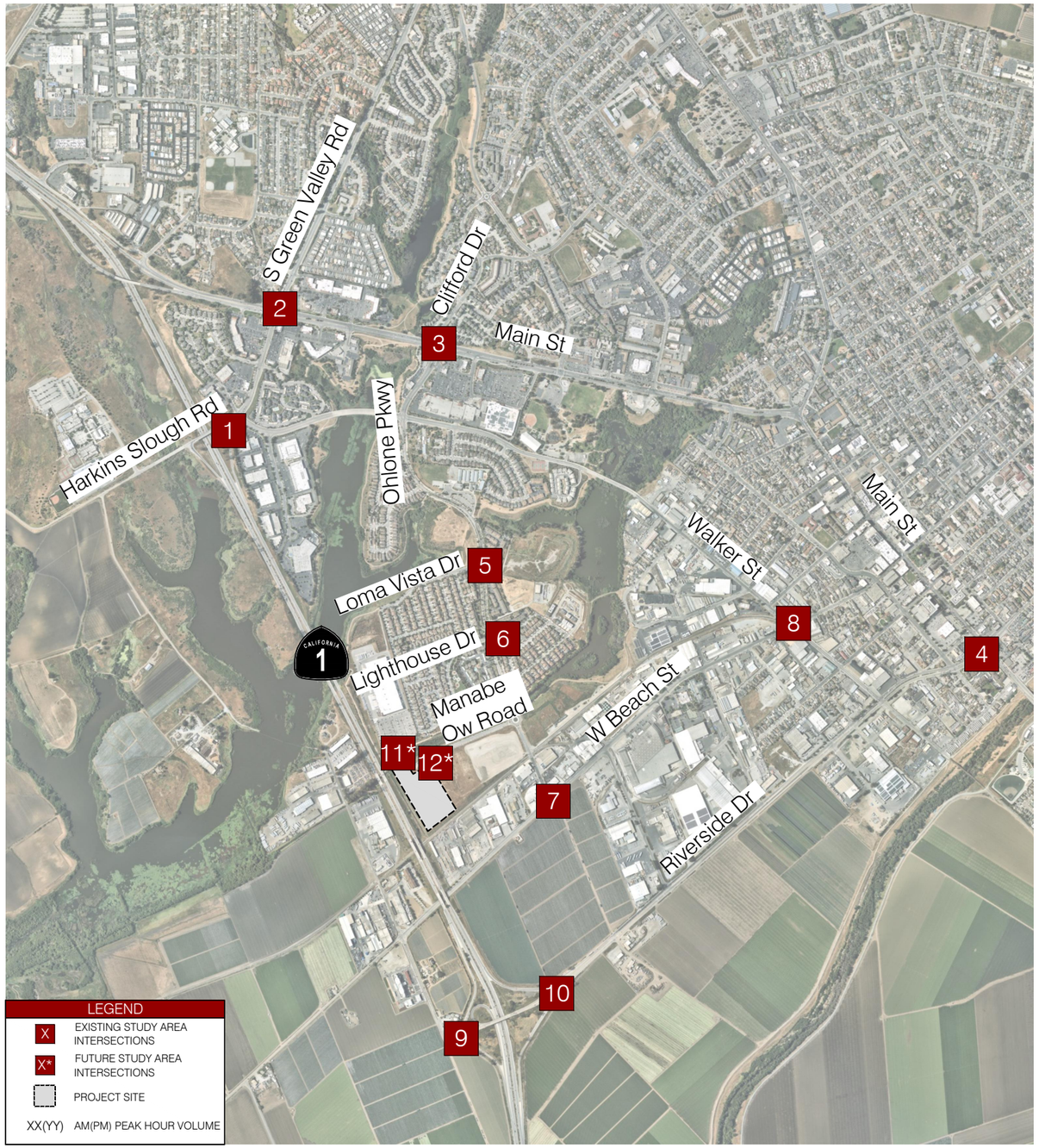
FIGURE 11

PROJECT TRUCK PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA



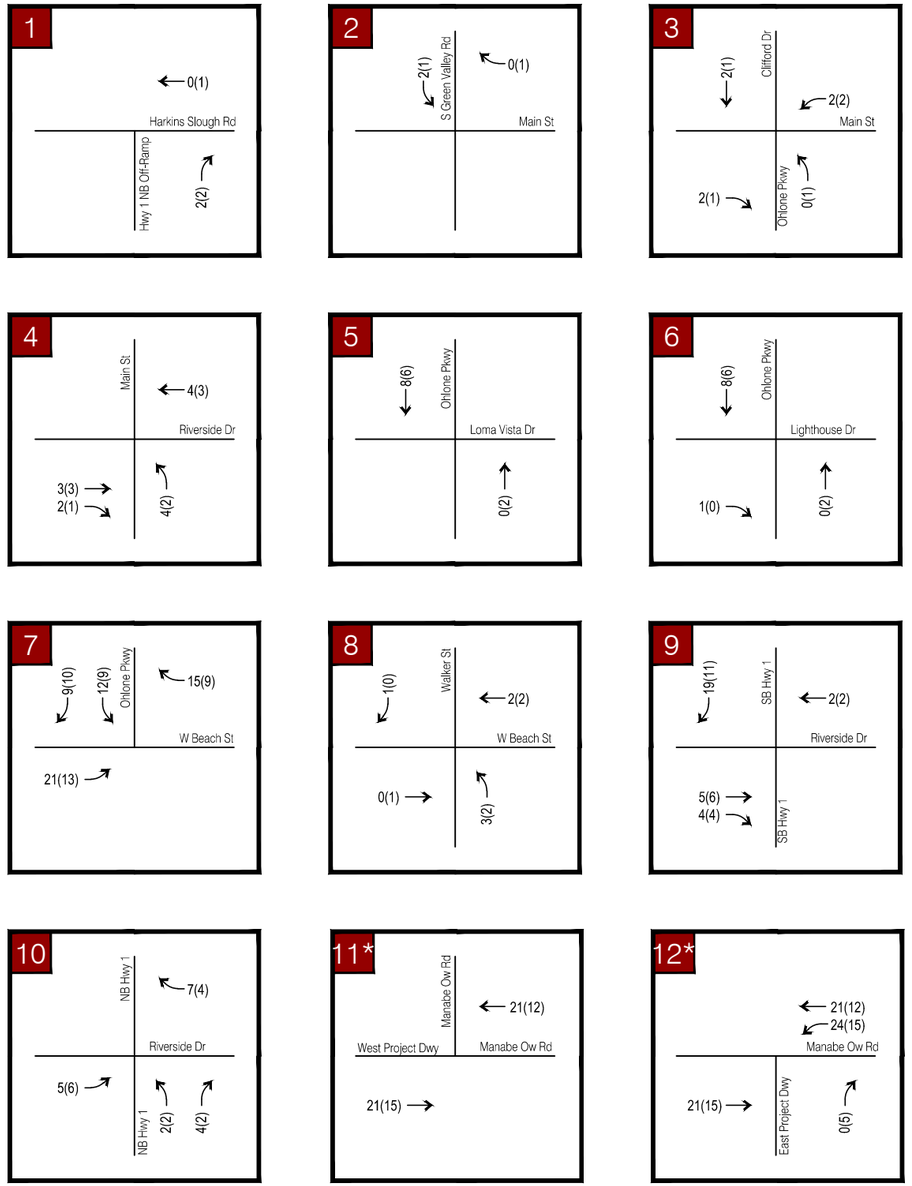


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FIGURE 12

TOTAL PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

4. VEHICLE MILES TRAVELED (VMT)

This chapter summarizes the Project's Vehicle Miles Traveled (VMT) requirements.

VMT METHODOLOGY

The City of Watsonville has prepared Draft VMT analysis guidelines for determining VMT impacts. While the City of Watsonville has a VMT tool that can generally be used to determine the impact of a project, this requires a similar land use to be already constructed in the same TAZ of the Project. However, because there are no industrial uses within the Project's TAZ, the Santa Cruz County Travel Demand Model was used for this analysis. For employment-based uses, the SCC Travel Demand Model is used as the principal tool to determine VMT while the City of Watsonville's draft VMT guidelines were used as the basis for the analysis methodology. The SCC TDM's base year was used for this analysis and is representative of 2019 conditions.

Per the City of Watsonville Draft VMT analysis guidelines, the threshold for employment-based VMT uses is set at 15 percent below the regional average. Note that for the purposes of this analysis, the region is defined as Santa Cruz County. Therefore, if the project VMT were to exceed the 15 percent below the regional average VMT, this would be considered a significant transportation impact.

VMT ANALYSIS

To determine the amount of VMT associated with the project, first the number of jobs for the Project needed to be determined. As the SCC TDM only represents non-residential land uses as number of jobs, 75 employees for the Project were used based on applicant information.

In order to calculate the VMT per Employee produced by the Project, only home-based work trips attracted to the Project's TAZ were multiplied by each individual trip length to obtain the total home-based work VMT. The external VMT for the non-residential land uses was determined by multiplying the calibrated external trip distance by TAZ determined using big data (Teralytics[1]) by the total external-internal (X-I) home-based-work trips for that TAZ. The share of industrial employee VMT was then calculated by dividing the trips generated by industrial employees by the total trips generated by employees in the Project's TAZ. Thus, the total industrial home-base work VMT was calculated. The objective of the VMT analysis is to reduce VMT for commuting to work, returning home or using retail services within the neighborhood by encouraging alternative modes of travel such as walking, bicycling, transit or carpool. VMT analysis is not intended to evaluate how goods and products are shipped and moved in the marketplace. Even though one particular project may generate a significant amount of truck trips, the number of truck trips and resulting VMT for an

[1] The Teralytics data is origin-destination data collected using cell phone towers to triangulate location for trips that either start or end in Santa Cruz County collected in October 2019. This data is collected by Teralytics and provided using a census tract to identify the trip's origin and destination. An excel spreadsheet that was used to calculate the initial trip distances has been provided to the City. These trips were aggregated by TAZ to determine a trip distance for model internal-external and external-internal trips. These distances were subsequently factored using only trips internal to Santa Cruz County. The final, factored trips were then multiplied by the respective external trips by TAZ to determine an external VMT that was then added to the VMT calculated using internal-internal trips.

individual project, is incidental when compared to the total VMT generated by residential and office uses. Therefore, the VMT analysis did not account for truck trips.

As shown in **Table 5**, the Project produced 1,133 daily VMT. When combined with the number of jobs expected to be produced by the Project (75 jobs), the Project is estimated to produce 15.1 daily VMT per employee. Based on the regional threshold of 11.8 VMT per employee shown, the Project is expected to be in excess of the regional threshold.

Table 5: Vehicle Miles Traveled (VMT) by Land Use

Land Use Type	Total VMT	VMT/Employee (Jobs: 75)	Regional Threshold
Fulfillment Center	1,133	15.1	11.8

Based on the results of this analysis, the following finding is made:

- The Project exceeds the threshold of significance for VMT/employee and as a result the project is determined to have a significant transportation impact.

POTENTIAL MITIGATION

The project has prepared a transportation demand management (TDM) program to reduce the project's VMT. In addition, the project would pay into the City's VMT Bank Program to further reduce the project's VMT impact to less than significant.

TDM Program

This program recommends TDM measures that would individually reduce the project's VMT and trips, with the goal of obtaining a 21.9 percent VMT reduction to make the Project's VMT significant impact less than significant. It should be noted, however, that a maximum 15 percent VMT reduction can be achieved by the TDM program per the County's VMT guidelines. Therefore, this TDM program aims to achieve the maximum 15 percent VMT reduction, with the remaining 6.9 percent VMT reduction coming from the VMT Bank Program, as discussed after this section.

For the TDM program, the following TDM measures are being proposed:

1. Rideshare Program
2. Mandatory Travel Behavior Change Program
3. Preferential Carpool Parking Spaces
4. Emergency Ride Home Program
5. Alternative Work Schedule
6. Telecommuting
7. Bicycle Parking per Code and Showers/Changing Rooms

Based on the proposed TDM measures, the project would be able to achieve the maximum 15 percent VMT reduction allowed per the County's VMT guidelines.

VMT Bank Program

The Watsonville VMT Mitigation Banking Fee Program is a programmatic approach to respond to the need for feasible VMT mitigation programs. Programmatic approaches that rely on collectively funding larger

projects allow a project to obtain an amount of mitigation commensurate with their impact, include only a single payment without the complexity of ongoing management, and do not require on-going mitigation monitoring. Programmatic approaches can also provide a public benefit in terms of funding transportation improvements that would not otherwise be constructed, resulting in improvements to congestion, GHG emissions, increased transportation choices, and additional opportunities for active transportation.

The VMT Mitigation Banking Fee Program calculates the cost per VMT reduction as $1,524.21. Therefore, to achieve the 6.9 percent VMT reduction needed after implementation of the TDM program, the project would be responsible to pay $114,315.42. This is calculated as 6.9 percent being equivalent to a 1.0 VMT per employee reduction (1,133 Total VMT / 75 employees x 6.9% = 1.0 VMT per employee). Since there are 75 employees and each employee needs to reduce by 1.0 VMT at a cost of $1,524.21 per VMT the calculation is as follows:

VMT Banking Fee = 75 employees x 1.0 VMT per employee x $1,524.21 per VMT

Therefore, the combination of the TDM program and payment of the VMT Banking Fee Program would result in a less than significant VMT impact.

5. SUPPLEMENTAL TRAFFIC OPERATIONAL ANALYSIS

This chapter discusses the supplemental traffic operational analysis to determine the effects of the proposed project on the transportation system, including LOS and vehicle queuing analyses.

EXISTING (2021) CONDITIONS ANALYSIS

Existing (2021) conditions analysis is based on traffic counts (including a COVID-adjustment factor) shown in **Figure 4** as well as existing roadway geometry, and traffic controls, shown in **Figure 3**, as of October 2021. **Table 6** displays the intersection LOS analysis results under Existing (2021) Conditions. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #3 – Main Street/Ohlone Parkway (PM peak hour)
- #8 – Walker Street/W Beach Street (PM peak hour)
- #10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Appendix C contains the intersection LOS calculation worksheets.

EXISTING (2021) PLUS PROJECT CONDITIONS ANALYSIS

LANE GEOMETRY AND CONTROL

Existing (2021) Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

The Project is estimated to generate 465 daily Passenger Car Equivalent (PCE) trips, a total of 66 AM peak hour PCE trips (45 inbound and 21 outbound), and 47 PM peak hour PCE trips (27 inbound and 20 outbound). Existing (2021) Plus Project volumes were determined by adding the total project traffic, **Figure 12** to the Existing (2021) Conditions volume, **Figure 4**. Existing Plus Project peak hour volumes are shown in **Figure 13**.

INTERSECTION LEVEL OF SERVICE

Table 6 displays the intersection LOS analysis results under Existing (2021) Plus Project Conditions. Traffic operations were evaluated at the study intersections under existing conditions plus traffic generated by the project. Intersections that operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five (5) seconds. The following intersections operate unacceptably, but each are not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

- #3 – Main Street/Ohlone Parkway (PM peak hour)
- #8 – Walker Street/W Beach Street (PM peak hour)
- #10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Appendix C contains the intersection LOS calculation worksheets.

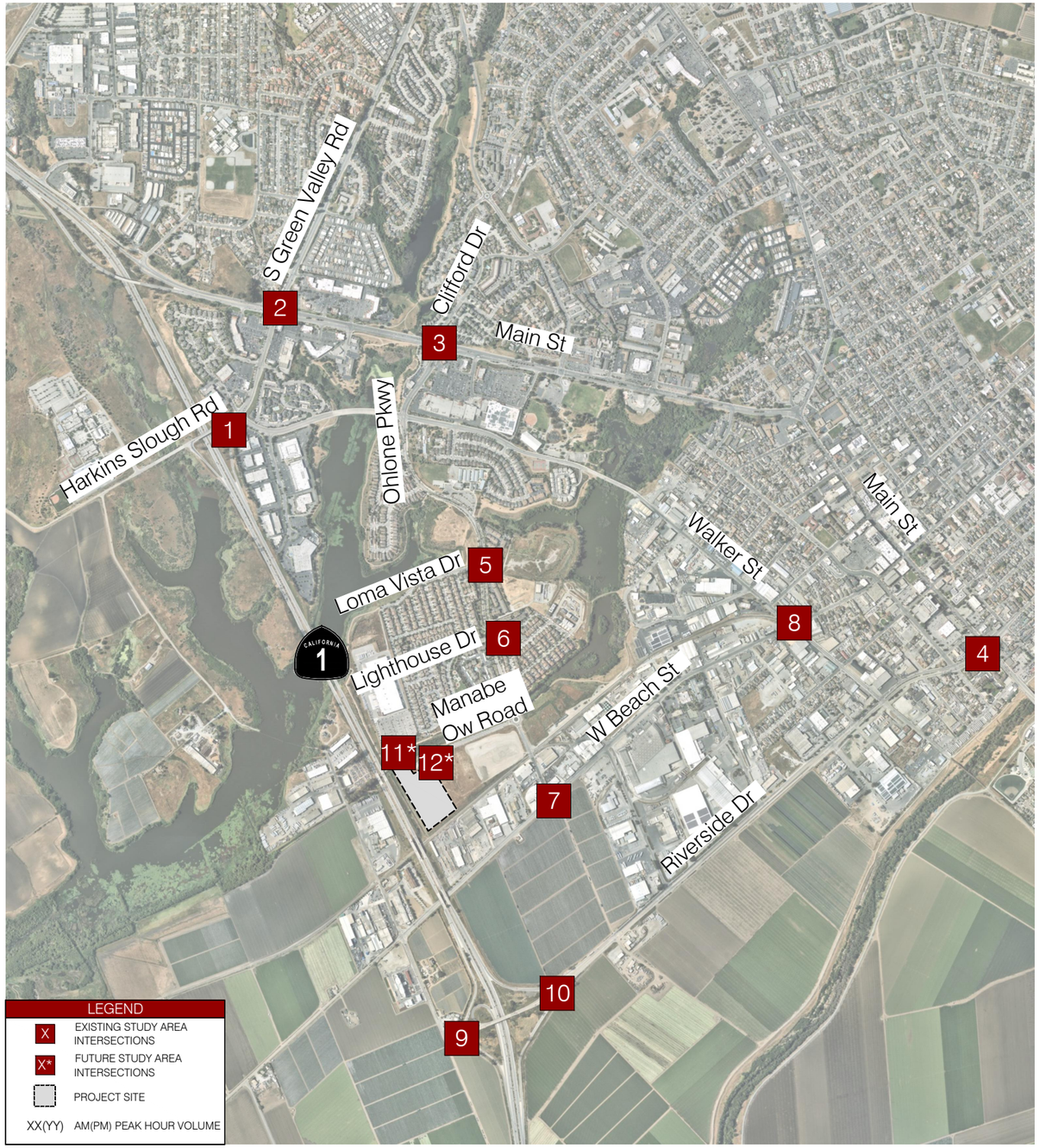
Table 6: Existing and Existing Plus Project Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Existing				Existing Plus Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	Delay Var (sec)	LOS	Delay[2] (sec)	Delay Var (sec)
1	Harkins Slough Road/NB Hwy 1 off-ramp	D	Caltrans	SSSC	B	10.5	A	7.2	B	10.6	0.1	A	7.2	0.0
	Worst Approach				D	33.9	B	14.1	D	34.2	0.3	B	14.1	0.0
2	Main Street/S Green Valley Road	D	Caltrans	Signal	D	49.1	D	51.7	D	49.1	0.0	D	51.8	0.1
3	Main Street/Ohlone Parkway	D	Caltrans	Signal	D	51.0	**E**	**60.4**	D	51.5	0.5	**E**	**60.4**	**0.0**
4	Main Street/E Riverside Drive	D	Caltrans	Signal	D	38.8	D	45.8	D	39.2	0.4	D	45.8	0.0
5	Ohlone Parkway/Loma Vista Way	D	City	SSSC	A	3.8	A	2.0	A	3.7	-0.1	A	2.0	0.0
	Worst Approach				C	21.2	C	16.4	C	21.6	0.4	C	16.5	0.1
6	Ohlone Parkway/Lighthouse Drive	D	City	SSSC	A	4.7	A	4.0	A	4.7	0.0	A	3.9	-0.1
	Worst Approach				C	15.3	C	16.5	C	15.4	0.1	C	16.8	0.3
7	Ohlone Parkway/W Beach Street	D	City	Signal	B	14.3	B	12.6	B	14.8	0.5	B	13.1	0.5
8	Walker Street/W Beach Street	D	City	AWSC	C	19.6	**E**	**36.3**	C	19.8	0.2	**E**	**37.0**	**0.7**
9	SB Hwy 1 ramps/W Riverside Drive	D	Caltrans	SSSC	B	14.2	C	15.0	B	14.5	0.3	C	15.3	0.3
	Worst Approach				C	24.4	D	27.7	C	24.7	0.3	D	28.3	0.6
10	NB Hwy1 ramps/W Riverside Drive	D	Caltrans	SSSC	A	8.0	A	4.2	A	8.6	0.6	A	4.6	0.4
	Worst Approach				**E**	**46.2**	**F**	**50.3**	**E**	**49.7**	**3.5**	**F**	**53.7**	**3.4**
11	Manabe Ow Road/West Project Dwy	D	City	SSSC	Future Intersection				A	0.0	-	A	0.0	-
	Worst Approach								A	0.0	-	A	0.0	-
12	Manabe Ow Road/East Project Dwy	D	City	SSSC	Future Intersection				A	1.6	-	A	1.5	-
	Worst Approach								A	2.3	-	A	8.6	-

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

1 SSSC = Side Street Stop Control; AWSC = All Way Stop Control

2 The average control delay is reported for signalized and AWSC intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.



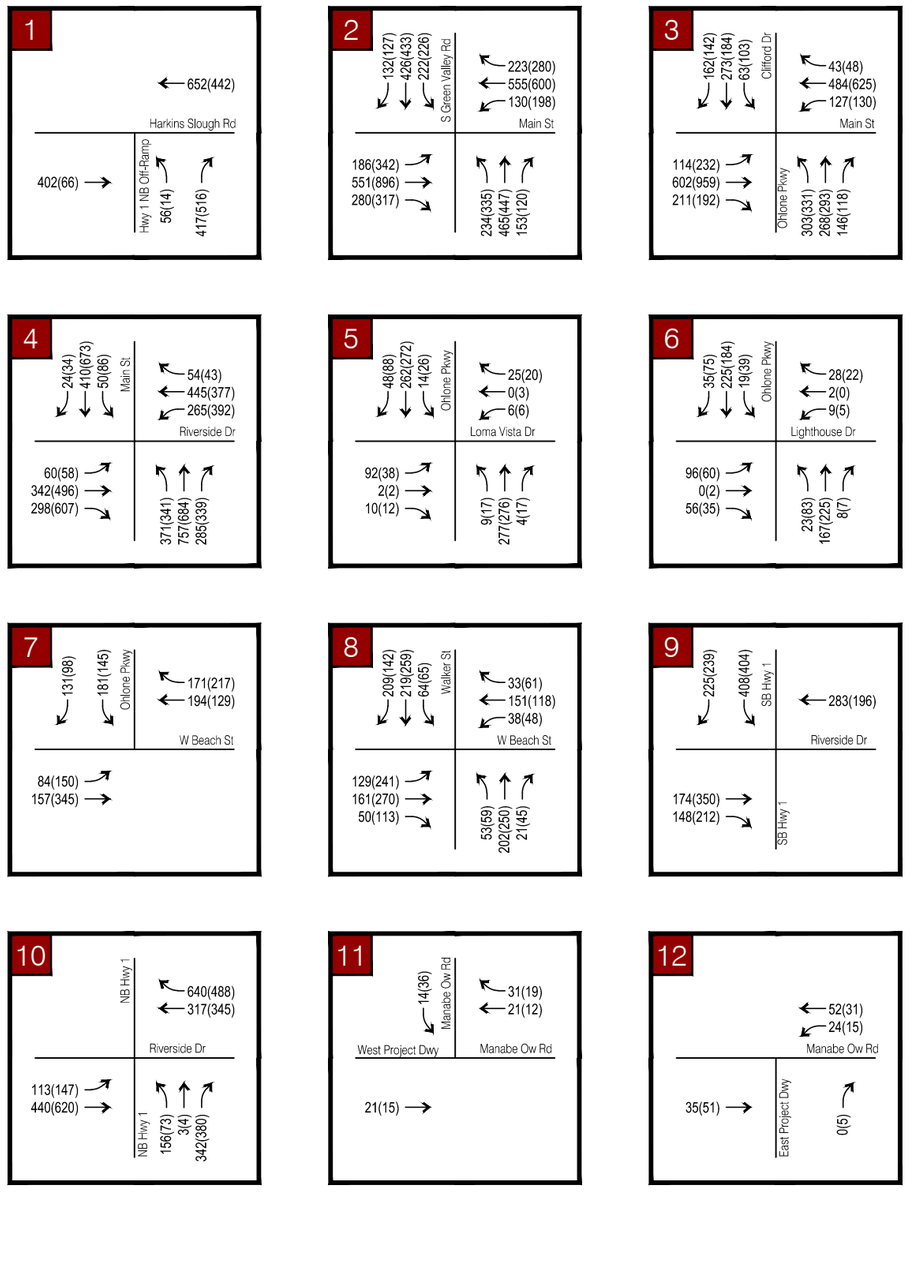


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FIGURE 13

EXISTING PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

BACKGROUND CONDITIONS ANALYSIS

Background Conditions analysis is based on traffic volumes from approved projects or projects currently under construction and added to existing volumes. The traffic volumes from pending and approved projects were based on the traffic studies if available. If unavailable, ITE trip generation and trip distribution from studies with similar land uses were used to estimate traffic volumes. Trip estimates and assignments were completed by Kimley-Horn. It should be noted that the adjacent warehousing distribution center at 100 Manabe Ow Road is one of the pending projects included in this scenario. **Figure 14** shows the location of all pending and approved projects, as provided by the City. **Figure 15** shows the volumes generated from the pending and approved projects. Background volumes are shown in **Figure 16**. Existing roadway geometry, and traffic controls, shown in **Figure 3**, were assumed for Background Conditions. **Table 7** displays the intersection LOS analysis results under Background Conditions. All study intersections function within acceptable LOS standards under this analysis scenario, except for the following intersections:

- #1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)
- #3 – Main Street/Ohlone Parkway (PM peak hour)
- #8 – Walker Street/W Beach Street (PM peak hour)
- #10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Appendix C contains the intersection LOS calculation worksheets.

BACKGROUND PLUS PROJECT CONDITIONS ANALYSIS

LANE GEOMETRY AND CONTROL

Background Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

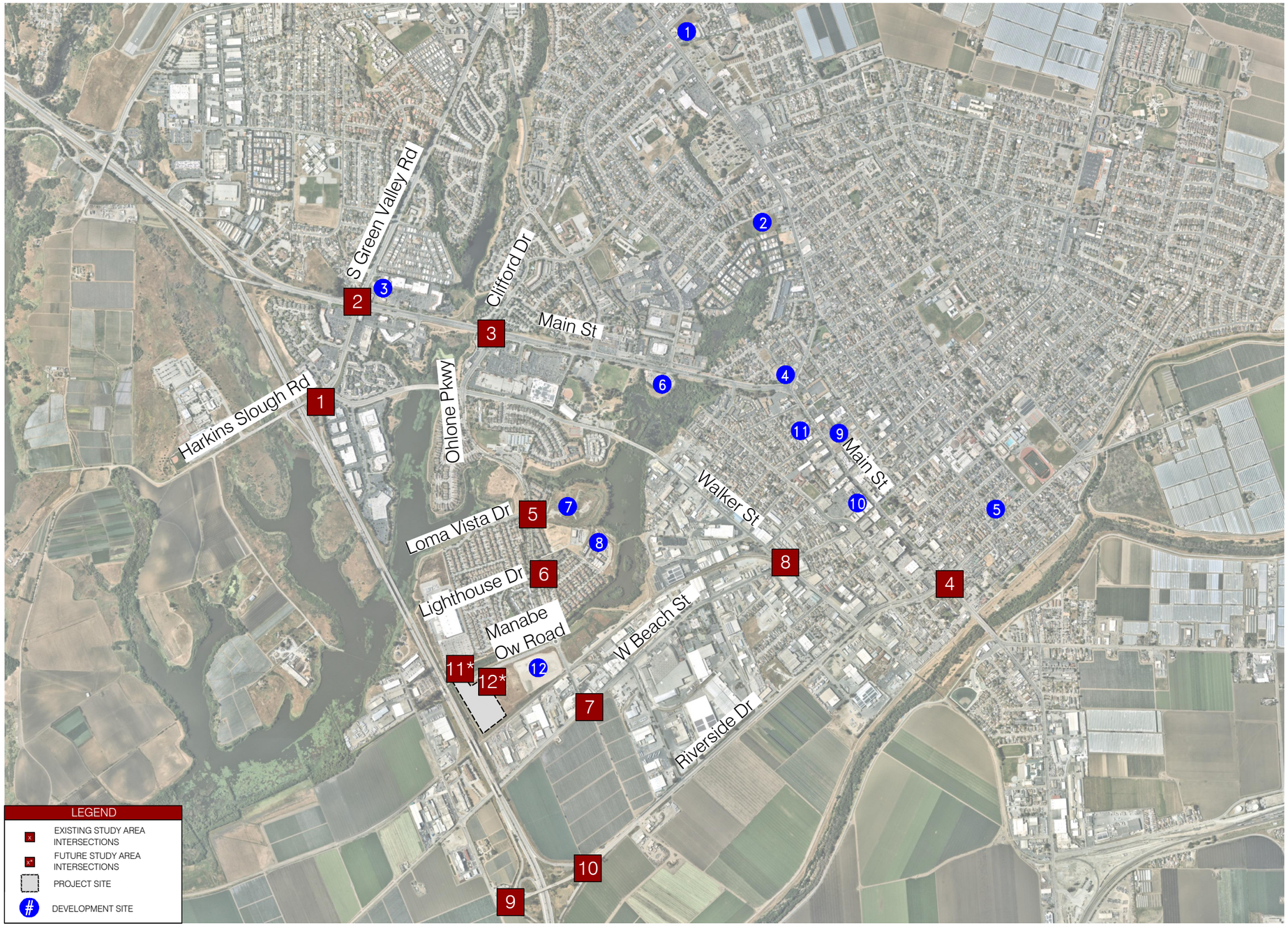
Background Plus Project volumes were determined by adding the total project traffic to the Background Conditions volume. Background Plus Project peak hour volumes are shown in **Figure 17**.

INTERSECTION LEVEL OF SERVICE

Table 7 displays the intersection LOS analysis results under Background Plus Project Conditions. Traffic operations were evaluated at the study intersections under Background conditions plus traffic generated by the project. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five (5) seconds. The following intersections operate unacceptably, but each are not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

- #1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)
- #3 – Main Street/Ohlone Parkway (PM peak hour)
- #8 – Walker Street/W Beach Street (PM peak hour)
- #10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Appendix C contains the intersection LOS calculation worksheets.



APPROVED DEVELOPMENTS

1. 1482 FREEDOM BOUELVARD
2. 139–161 MILES LANE
3. 1992 MAIN STREET
4. 1 WESTERN DRIVE
5. 230 RIVERSIDE DRIVE
6. 975 MAIN STREET
7. 525 ERRINGTON ROAD
8. 1759 SANTA VICTORIA AVENUE
9. 558 MAIN STREET
10. 407 MAIN STREET
11. 625 MAIN STREET
12. 100 MANABE OW

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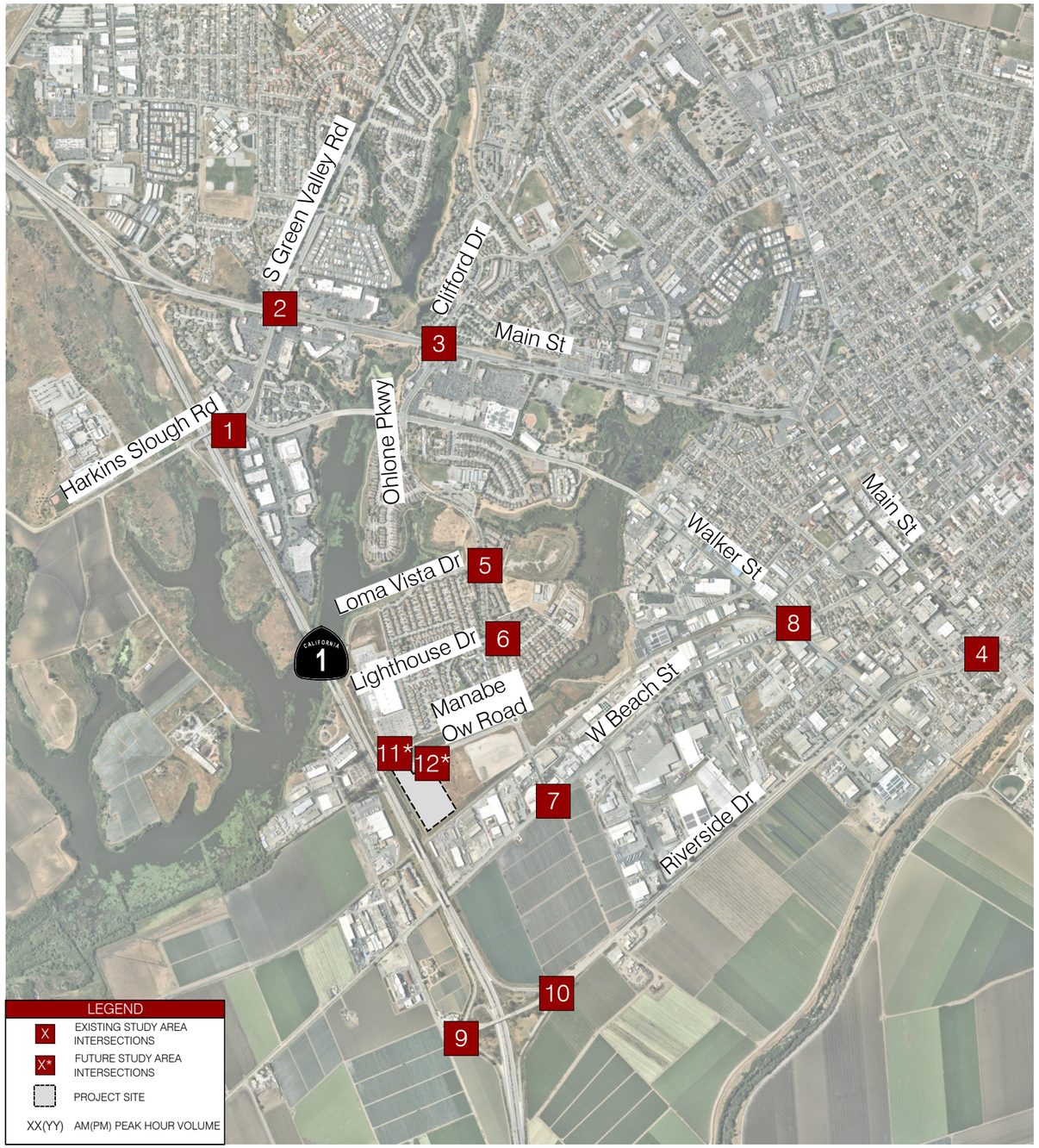
FIGURE 14
PENDING AND APPROVED PROJECT LOCATIONS

Manabe Ow Road TIA



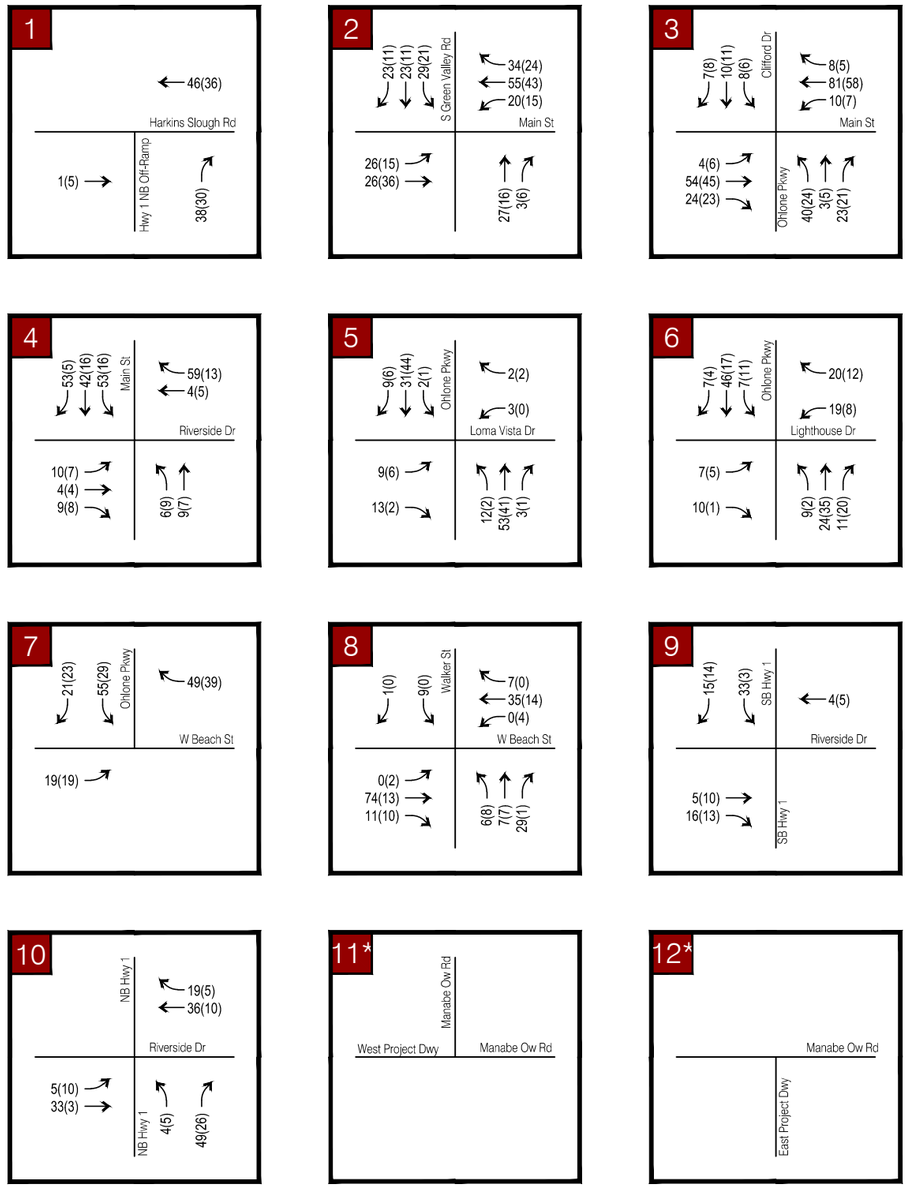


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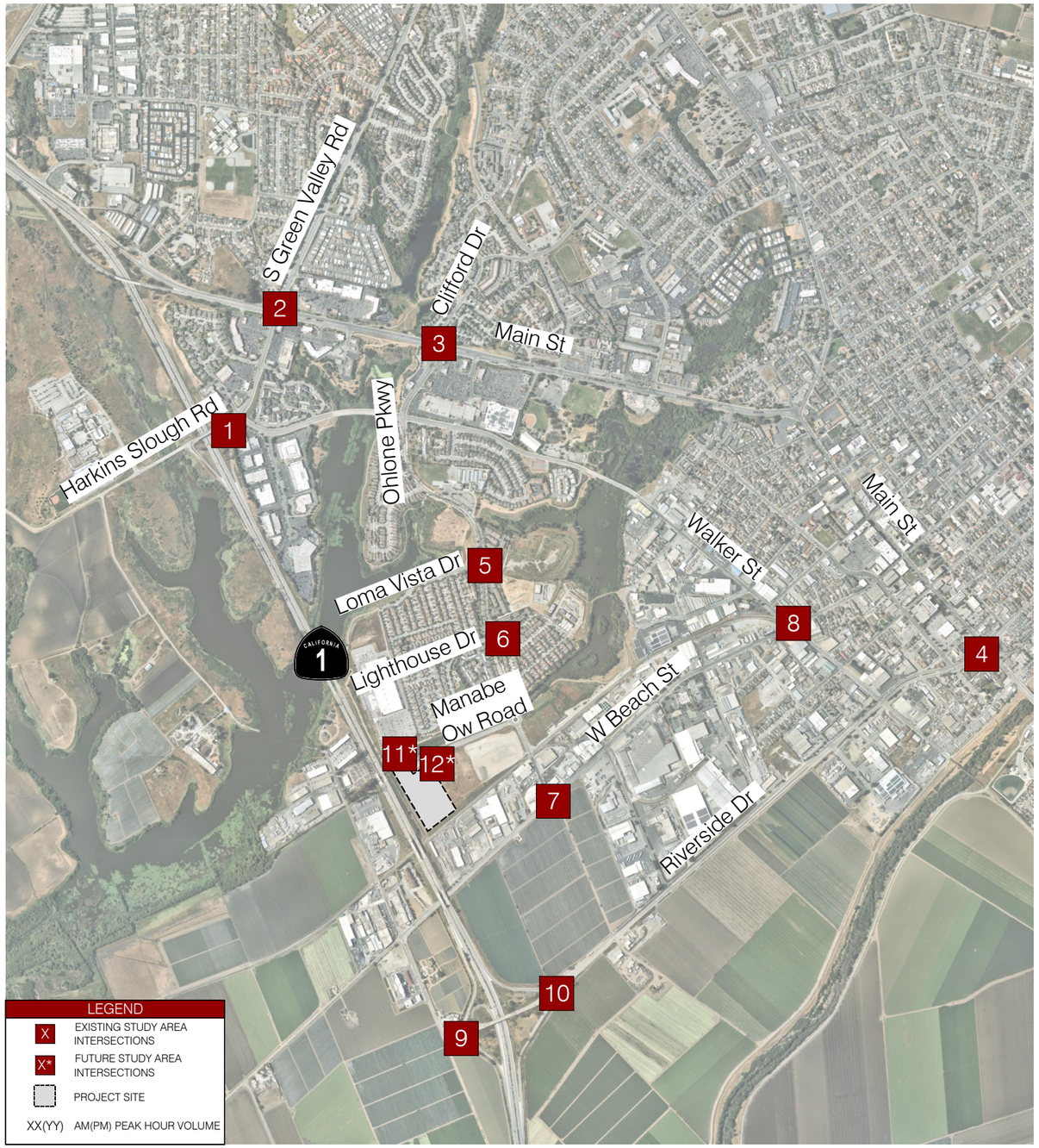
FIGURE 15

PENDING AND APPROVED PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA



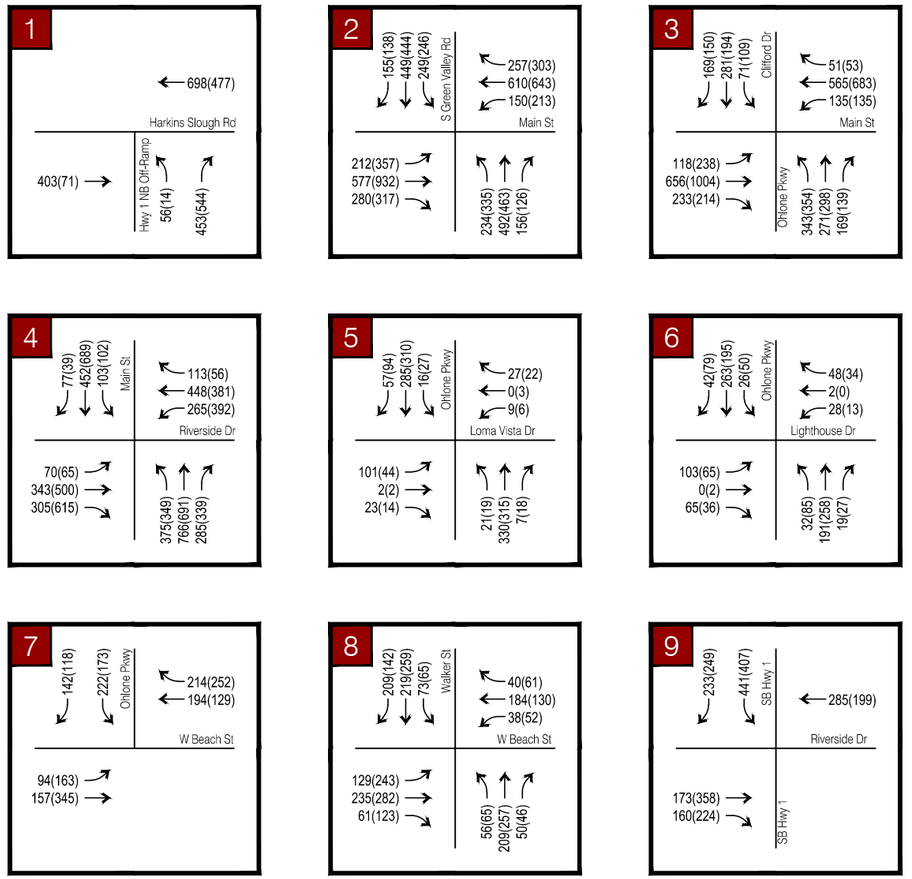


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FIGURE 16

BACKGROUND PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

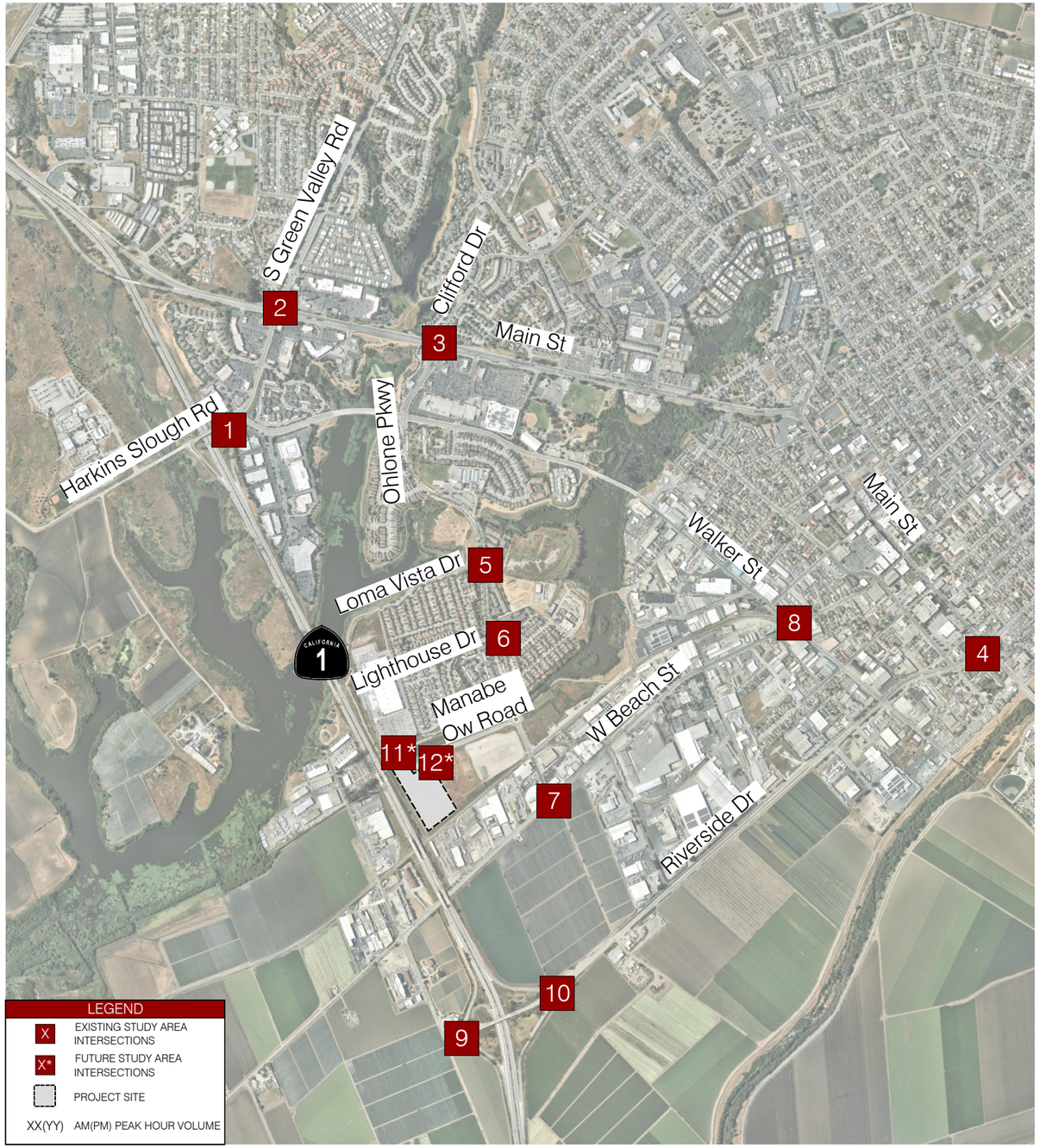
Table 7: Background and Background Plus Project Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Background				Background Plus Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	Delay Var (sec)	LOS	Delay[2] (sec)	Delay Var (sec)
1	Harkins Slough Road/NB Hwy 1 off-ramp	D	Caltrans	SSSC	B	13.7	A	7.6	B	13.9	0.2	A	7.7	0.1
	Worst Approach				**E**	**43.2**	C	15.1	**E**	**43.7**	**0.5**	C	15.2	0.1
2	Main Street/S Green Valley Road	D	Caltrans	Signal	D	51.1	D	54.2	D	51.1	0.0	D	54.2	0.0
3	Main Street/Ohlone Parkway	D	Caltrans	Signal	D	54.1	**E**	**66.2**	D	54.5	0.4	**E**	**66.2**	**0.0**
4	Main Street/E Riverside Drive	D	Caltrans	Signal	D	40.9	D	46.7	D	41.2	0.3	D	46.8	0.1
5	Ohlone Parkway/Loma Vista Way	D	City	SSSC	A	5.0	A	2.2	A	5.0	0.0	A	2.2	0.0
	Worst Approach				D	28.1	C	19.0	D	28.7	0.6	C	19.3	0.3
6	Ohlone Parkway/Lighthouse Drive	D	City	SSSC	A	6.0	A	4.5	A	6.0	0.0	A	4.5	0.0
	Worst Approach				C	19.7	C	20.1	C	19.9	0.2	C	20.4	0.3
7	Ohlone Parkway/W Beach Street	D	City	Signal	B	15.6	B	13.8	B	16.8	1.2	B	14.3	0.5
8	Walker Street/W Beach Street	D	City	AWSC	D	28.7	**E**	**44.8**	D	29.2	0.5	**E**	**44.5**	**-0.3**
9	SB Hwy 1 ramps/W Riverside Drive	D	Caltrans	SSSC	C	17.7	C	16.0	C	18.1	0.4	C	16.4	0.4
	Worst Approach				D	29.9	D	30.2	D	30.3	0.4	D	30.9	0.7
10	NB Hwy1 ramps/W Riverside Drive	D	Caltrans	SSSC	A	10.4	A	5.0	B	11.2	0.8	A	5.4	0.4
	Worst Approach				**F**	**65.0**	**F**	**58.9**	**F**	**69.9**	**4.9**	**F**	**62.8**	**3.9**
11	Manabe Ow Road/West Project Dwy	D	City	SSSC	Future Intersection				A	0.0	-	A	0.0	-
	Worst Approach								A	0.0	-	A	0.0	-
12	Manabe Ow Road/East Project Dwy	D	City	SSSC	Future Intersection				A	1.6	-	A	1.5	-
	Worst Approach								A	2.3	-	A	8.6	-

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

1 SSSC = Side Street Stop Control; AWSC = All Way Stop Control

2 The average control delay is reported for signalized and AWSC intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.



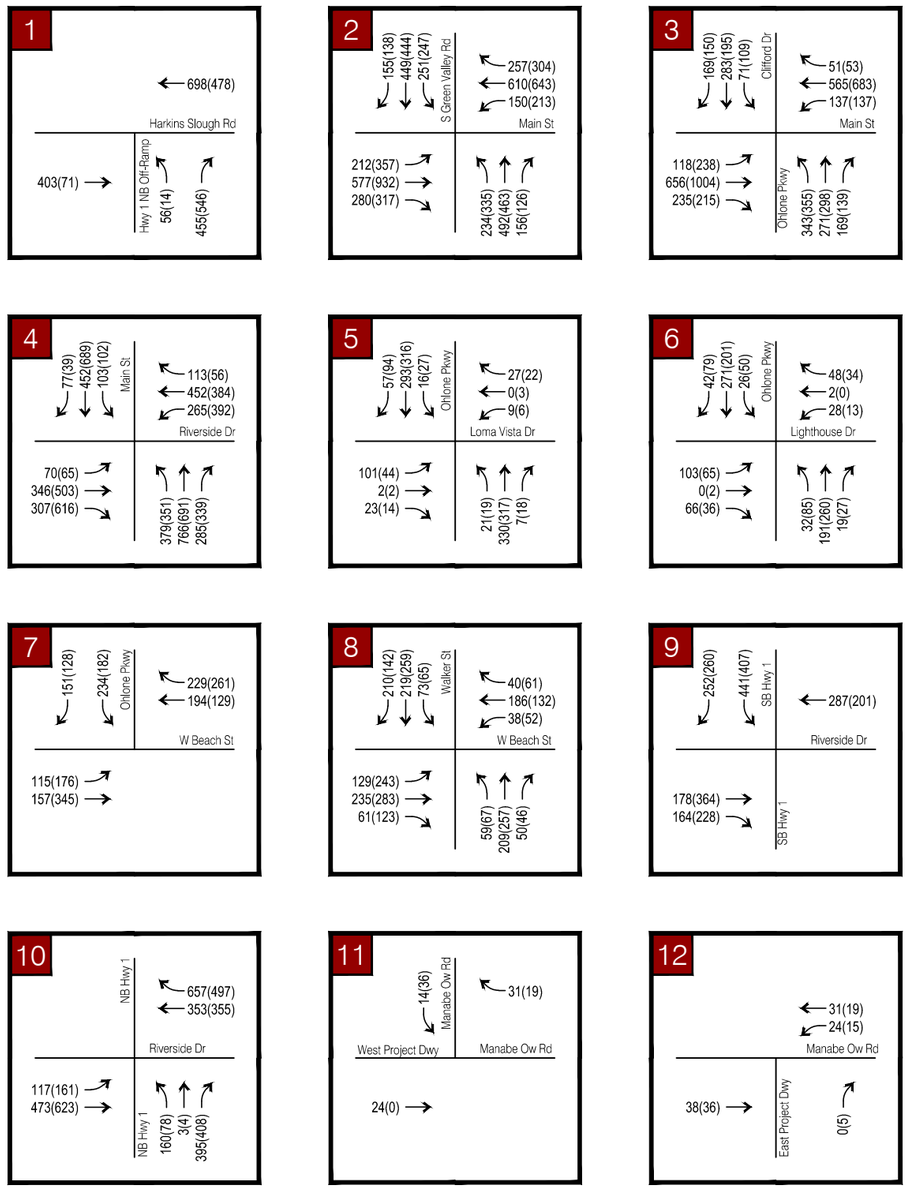


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FIGURE 17

BACKGROUND PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

CUMULATIVE (2040) CONDITIONS ANALYSIS

The Cumulative scenario represents the study area in the year 2040.

LANE GEOMETRY AND CONTROL

Cumulative (2040) conditions are assumed to be the same as Existing (2021) conditions since no roadway improvements were identified by the City. **Figure 3** illustrates the intersection geometry and traffic control assumed for the Cumulative (2040) analysis.

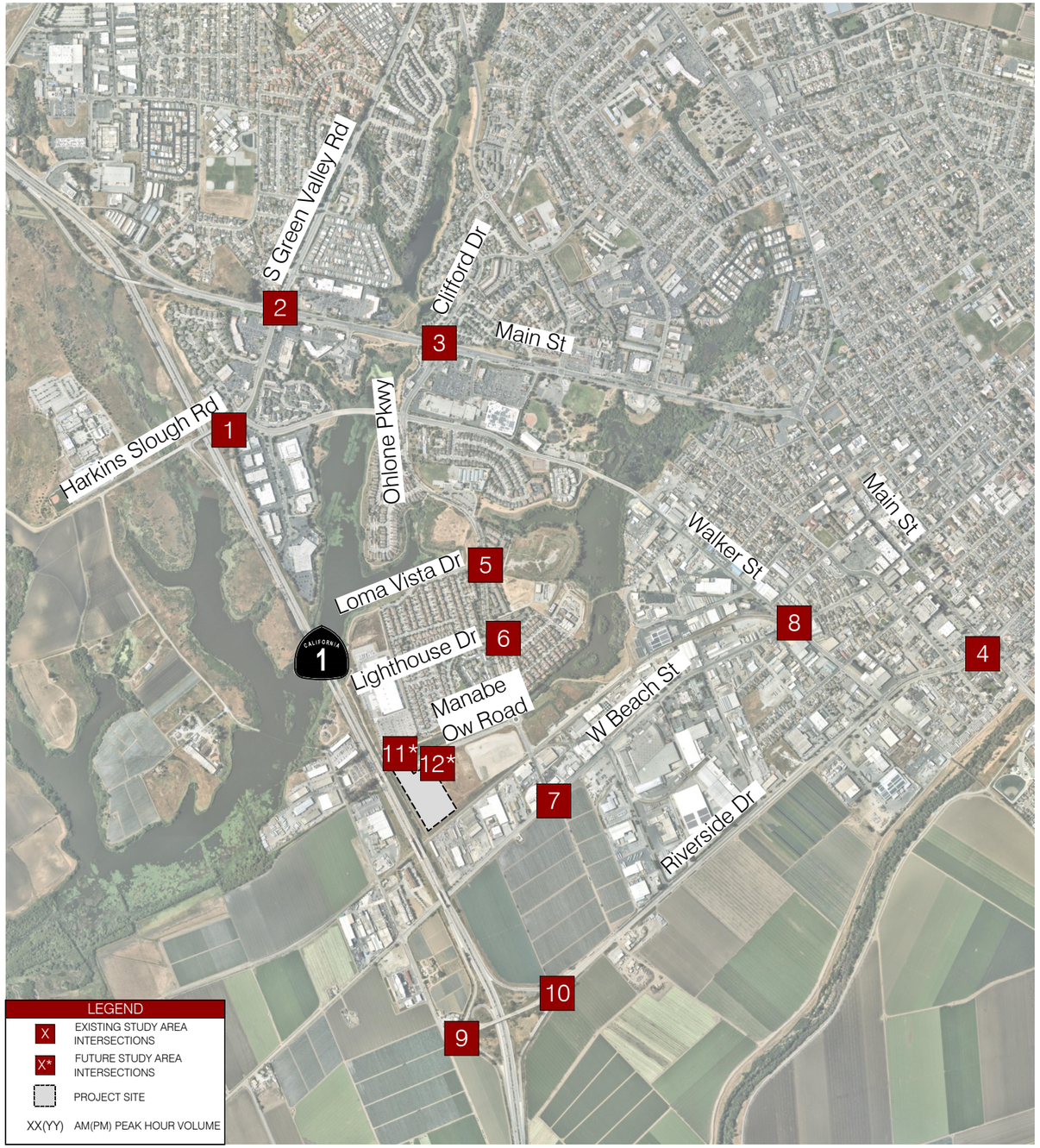
TRAFFIC VOLUMES

To account for future development and growth within the County, the Cumulative (2040) traffic volumes were developed by determining a growth rate from the Santa Cruz County Travel Demand Model. Existing and future year model outputs were generated for the roadway links in the study area. These link volumes were then used to determine an annual growth rate that was applied to the Existing (2021) volumes. The volumes were reviewed to ensure that there would be no decrease in volumes from Existing to the Cumulative year. For locations where the volumes would decrease, they were conservatively assumed to equal the Existing volume and rounded up to the nearest 10 vehicles. In addition, the pending adjacent warehousing distribution center project at 100 Manabe Ow Road was manually added to the Cumulative scenario. Cumulative (2040) peak hour volumes are presented in **Figure 18.**

INTERSECTION LEVEL OF SERVICE

Table 8 displays the intersection LOS analysis results under Cumulative (2040) Conditions. All study intersections except intersection #7 are expected to operate at unacceptable levels.

Appendix C contains the intersection LOS calculation worksheets.



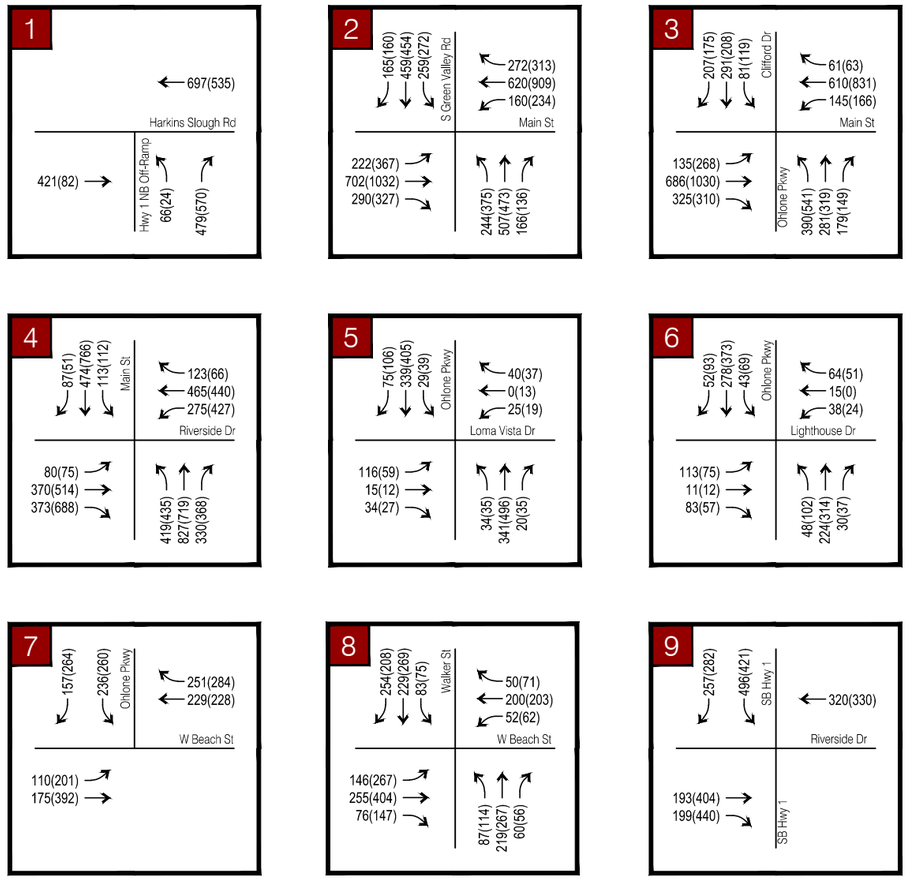


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FIGURE 18

CUMULATIVE (2040) PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

Table 8: Cumulative and Cumulative Plus Project Level of Service Summary

#	Intersection	LOS Criteria	Jurisdiction	Control[1]	Cumulative				Cumulative Plus Project					
					AM Peak		PM Peak		AM Peak			PM Peak		
					LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	LOS	Delay[2] (sec)	Delay Var (sec)	LOS	Delay[2] (sec)	Delay Var (sec)
1	Harkins Slough Road/NB Hwy 1 off-ramp	D	Caltrans	SSSC	C	19.0	A	8.0	C	19.4	0.4	A	8.1	0.1
	Worst Approach				**F**	**58.1**	C	16.3	**F**	**59.0**	**0.9**	C	16.4	0.1
2	Main Street/S Green Valley Road	D	Caltrans	Signal	D	54.8	**E**	**74.8**	D	54.8	0.0	**E**	**74.9**	**0.1**
3	Main Street/Ohlone Parkway	D	Caltrans	Signal	**E**	**58.6**	**E**	**72.1**	**E**	**59.0**	**0.4**	**E**	**72.2**	**0.1**
4	Main Street/E Riverside Drive	D	Caltrans	Signal	D	45.9	**E**	**61.9**	D	46.4	0.5	**E**	**62.1**	**0.2**
5	Ohlone Parkway/Loma Vista Way	D	City	SSSC	B	11.2	A	6.2	B	11.6	0.4	A	6.3	0.1
	Worst Approach				**F**	**61.7**	**F**	**53.3**	**F**	**64.2**	**2.5**	**F**	**54.8**	**1.5**
6	Ohlone Parkway/Lighthouse Drive	D	City	SSSC	B	10.1	A	8.3	B	10.3	0.2	A	8.4	0.1
	Worst Approach				D	32.5	**E**	**45.4**	D	33.5	1.0	**E**	**46.6**	**1.2**
7	Ohlone Parkway/W Beach Street	D	City	Signal	B	16.9	C	25.5	B	18.5	1.6	C	28.7	3.2
8	Walker Street/W Beach Street	D	City	AWSC	**E**	**49.9**	**F**	**116.7**	**F**	**51.2**	**1.3**	**F**	**118.3**	**1.6**
9	SB Hwy 1 ramps/W Riverside Drive	D	Caltrans	SSSC	D	33.7	D	35.1	D	34.6	0.9	D	36.4	1.3
	Worst Approach				**F**	**56.8**	**F**	**73.9**	**F**	**58.0**	**1.2**	**F**	**76.3**	**2.4**
10	NB Hwy1 ramps/W Riverside Drive	D	Caltrans	SSSC	**F**	**73.6**	**F**	**53.5**	**F**	**77.8**	**4.2**	**F**	**58.6**	**5.1**
	Worst Approach				**F**	**390.0**	**F**	**563.3**	**F**	**411.1**	**21.1**	**F**	**612.5**	**49.2**
11	Manabe Ow Road/West Project Dwy	D	City	SSSC	Future Intersection				A	0.0	-	A	0.0	-
	Worst Approach								A	0.0	-	A	0.0	-
12	Manabe Ow Road/East Project Dwy	D	City	SSSC	Future Intersection				A	1.6	-	A	1.5	-
	Worst Approach								A	2.3	-	A	8.6	-

Note: Intersections that are operating below acceptable levels are shown in **BOLD**. Project caused deficiencies are shaded.

1 SSSC = Side Street Stop Control; AWSC = All Way Stop Control

2 The average control delay is reported for signalized and AWSC intersections. The average control delay and the delay for the worst approach is reported for SSSC intersections.

CUMULATIVE (2040) PLUS PROJECT CONDITIONS ANALYSIS

LANE GEOMETRY AND CONTROL

The Cumulative (2040) Plus Project conditions assumed existing lane geometry as illustrated in **Figure 3**.

TRAFFIC VOLUMES

Cumulative Plus Project volumes were determined by adding the total project traffic to the Cumulative Conditions volume. Cumulative Plus Project peak hour volumes are shown in **Figure 19**.

INTERSECTION LEVEL OF SERVICE

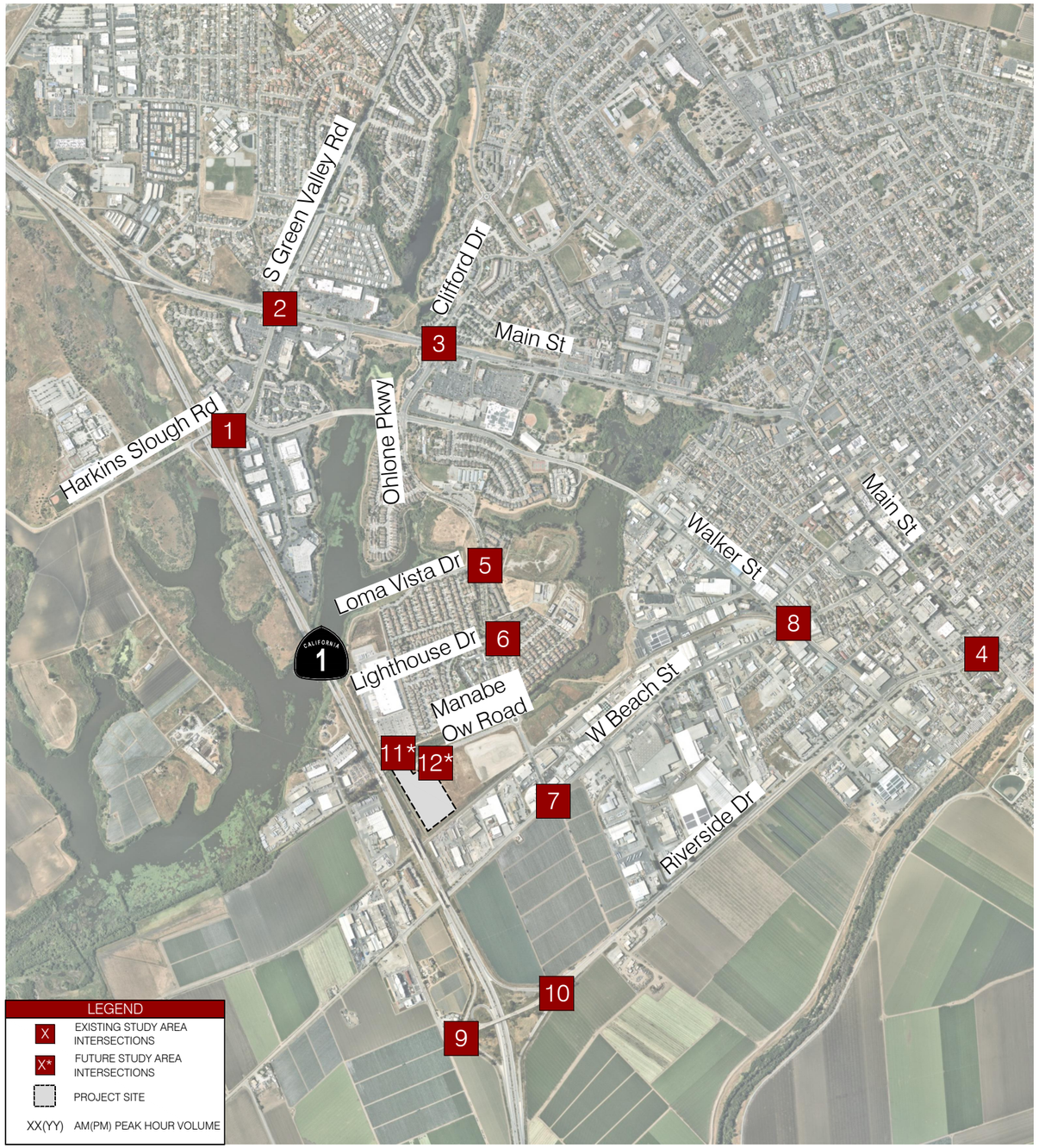
Table 8 displays the intersection LOS analysis results under Cumulative (2040) Plus Project Conditions. Intersections operate unacceptably but are not considered a project deficiency if the intersection is operating unacceptably without the project and the increase in delay is less than five (5) seconds. The following intersections operate unacceptably, but each are not considered a project deficiency because the project adds fewer than five (5) seconds of delay:

- #1 – Harkins Slough Road/NB Hwy 1 off-ramp (AM peak hour)
- #2 – Main Street/S Green Valley Road (PM peak hour)
- #3 – Main Street/Ohlone Parkway (AM and PM peak hours)
- #4 – Main Street/E Riverside Drive (PM peak hour)
- #5 – Ohlone Parkway/Loma Vista Way (AM and PM peak hours)
- #6 – Ohlone Parkway/Lighthouse Drive (PM peak hour)
- #8 – Walker Street/W Beach Street (AM and PM peak hours)
- #9 – SB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

The following intersection operates unacceptably without the project and the increase in delay is more than five (5) seconds. Therefore, it is considered a project deficiency:

- #10 – NB Highway 1 ramps/W Riverside Drive (AM and PM peak hours)

Appendix C contains the intersection LOS calculation worksheets.



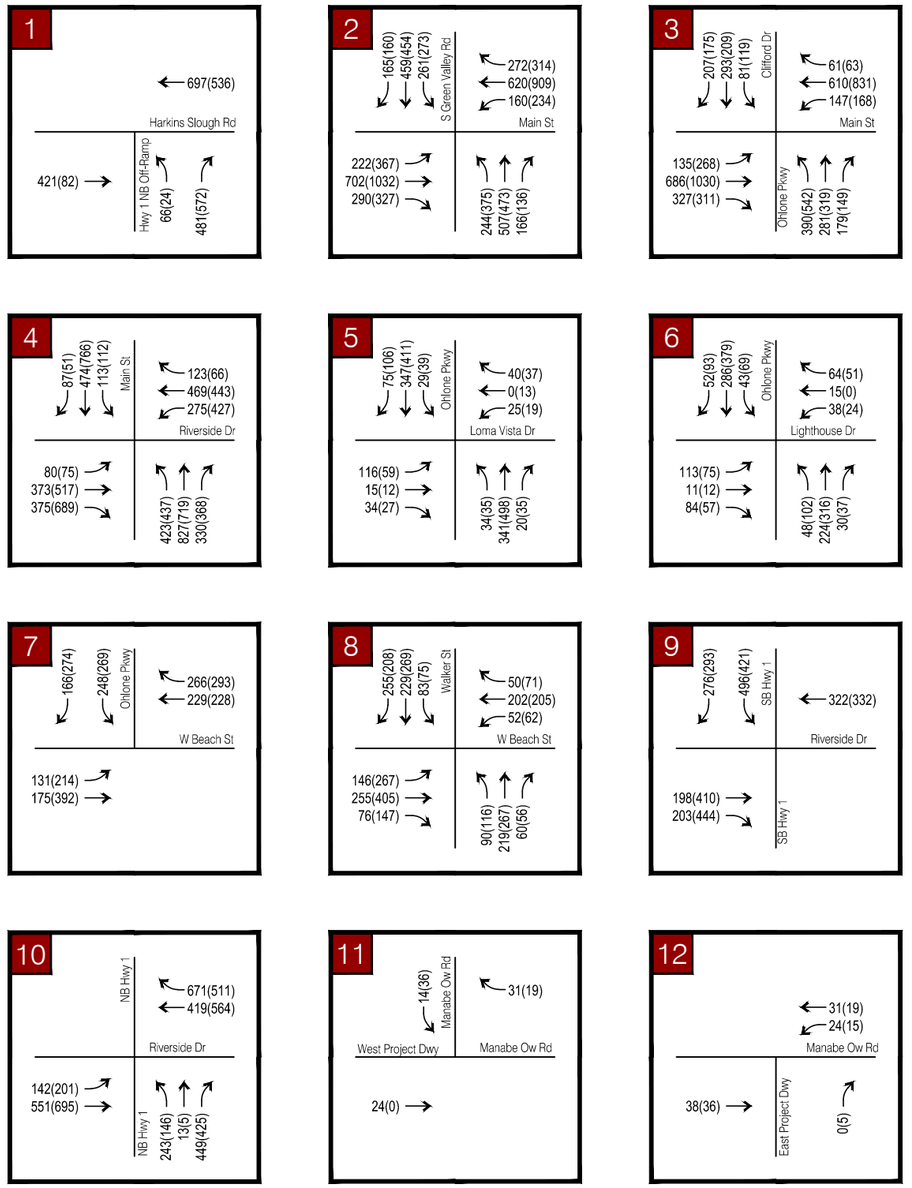


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FIGURE 19

CUMULATIVE (2040) PLUS PROJECT PEAK HOUR TURNING MOVEMENT VOLUMES

Manabe Ow Road TIA

VEHICLE QUEUING

Vehicle queuing that exceeds a turn pocket length can create potentially hazardous conditions by blocking or disrupting through traffic in adjacent travel lanes. The effect of vehicle queuing was analyzed by reporting the 95th percentile queues for turning movements where the project would adda significant number of trips to existing or proposed turn pockets. The 95th percentile is defined as the queue length that has only a 5 percent probability of being exceeded during the analysis time period. The following movements were evaluated:

- Intersection #3 – Main Street/Ohlone Parkway (eastbound right and westbound left)
- Intersection #4 – Main Street/E Riverside Drive (eastbound right and northbound left)
- Intersection #7– Ohlone Parkway/W Beach Street (eastbound left and westbound right)
- Intersection #10 – NB Hwy 1 ramps/W Riverside Drive (eastbound left and northbound left)

The 95th percentile queue lengths are summarized in **Table 9**. All queue lengths are either contained within the available storage or the project does not increase the queue by more than one vehicle length (i.e. 25 feet or more); therefore, there are no queuing deficiencies related to the project's traffic. The queuing analysis does not show the need for any left-turn or right-turn storage lanes at the proposed entrances to the project site from adjacent public streets. Queuing analysis calculation sheets are provided in **Appendix C**.

Table 9: Vehicle Queuing Analysis

#	Intersection	Control	Movement	Storage Length (ft)	Existing		Existing Plus Project		Background		Background Plus Project		Cumulative		Cumulative Plus Project	
					AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
3	Main Street/Ohlone Parkway	Signal	EBR	140	94	121	95	123	116	**141**	115	**140**	**164**	**215**	**166**	**215**
			WBL	260	166	190	170	192	179	205	180	205	219	**265**	222	**272**
4	Main Street/E Riverside Drive	Signal	EBR	100	**153**	**512**	**154**	**512**	**159**	**537**	**161**	**539**	**214**	**744**	**215**	**747**
			NBL	300	**483**	**452**	**493**	**455**	**498**	**470**	**506**	**473**	**579**	**631**	**585**	**634**
7	Ohlone Parkway/W Beach Street	Signal	EBL	130	62	97	75	102	74	112	87	120	87	**150**	101	**159**
			WBR	120	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
10	NB Hwy 1 ramps/W Riverside Drive	SSSC	EBL	170	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
			NBL	550	108	63	115	65	140	73	148	78	470	345	485	358

Note: NBL=northbound left, NBR=northbound right, SBL=southbound left, SBR=southbound right, EBL=eastbound left, EBR=eastbound right, WBL=westbound left, WBR=westbound right
Queue lengths greater than queue storage are **bolded**. Queue lengths less than 25 feet are reported as <25.

6. SITE ACCESS

This section discusses site access, site circulation, pedestrian facilities, bicycle facilities, transit recommendations, and sight distance analysis for the project.

The project proposes two (2) unsignalized access driveways: one (1) full access driveway for primarily heavy vehicles on Manabe Ow Road, towards the western portion of the project site and one (1) full access driveway primarily for passenger vehicles and delivery vans on Manabe Ow Road, towards the eastern portion of the project site (see **Figure 2** for site plan). The following summarizes the project access locations:

- Manabe Ow Road & West Project Driveway – Truck Access
  - Full access driveway
  - Stop-controlled eastbound movement for project driveway
- Manabe Ow Road & East Project Driveway – Passenger Vehicle and Delivery Vehicle Access
  - Full access driveway
  - Stop-controlled northbound movement for project driveway

Appendix C contains the queuing worksheets for the Project's driveways. These AM/PM Peak Hour worksheets are the results of the Cumulative (2040) Plus Project Conditions and show that the proposed driveway throats are a sufficient length to accommodate the project queues during the site's peak hours. For the west project driveway, the throat depth was measured as 50 feet, which is the distance from the adjacent roadway to the first internal drive aisle to the south of the project driveway. As shown, the estimated outbound vehicle queue is less than 25 feet, or less than one vehicle. This is less than the throat depth of 50 feet, and therefore it is not anticipated inbound vehicles for this driveway would be blocked from making a westbound left turn into the internal drive aisle and potentially result in inbound vehicles extending onto Manabe Ow Road. For the east project driveway, the throat depth was measured as 150 feet, which is the distance from the adjacent roadway to the first parking space on the east side of the project driveway. As shown, the estimated outbound vehicle queue is less than 25 feet, or less than one vehicle. This is less than the throat depth of 150 feet, and therefore it is not anticipated that any parked vehicles along the eastern side of the project site would be blocked by the outbound vehicles.

SITE CIRCULATION

Internal circulation paths for each vehicle type are described below. For passenger vehicles, it is planned for these vehicles to use the parking spaces on the northern and eastern sides of the project site, which is the closest to the east project driveway. Passenger vehicles can park in these parking spaces and walk to the building's front entrance along the northern and eastern side of the proposed building. For delivery vans, it is planned for these vehicles to use the parking spaces on the northern and eastern edge of the project site. Access to these parking spaces would be through the east project driveway. For trucks, it is planned for these vehicles to use the trailer parking spaces on the western edge of the project site and the loading docks on the west side of the project building. Access to these parking spaces and loading docks would be through the west project driveway.

PEDESTRIAN FACILITIES

There are currently paved sidewalks along the southern side of Manabe Ow Road, adjacent to the project site. This existing sidewalk provides access for the employees and visitors of the project to access the Class I trail to the north of the Watsonville Slough, as well as the nearby residential and park uses along Ohlone Parkway. Along Ohlone Parkway to the south of Manabe Ow Road, the existing paved sidewalks on both sides terminate approximately 140 feet to the south of West Slough Road. However, it is not anticipated that many pedestrians would access the project site from Ohlone Parkway to the south. Rather, pedestrians would likely be coming and going to the north on Ohlone Parkway, where the nearest bus stops are located. In addition, there are retail uses to the north along Main Street (approximately 1.25 miles walking distance) that would be accessed by Ohlone Parkway to the north.

Within the project site, there is a sidewalk proposed along the east project driveway that provides pedestrians access from Manabe Ow Road to the project building's northeast corner. On-site sidewalks are proposed along the northern building frontage, eastern building frontage, and southern building frontage for pedestrian access. There are no proposed walkways along the western side of the project building where the truck loading dock bays and truck trailer parking is proposed. Since it is not anticipated that many pedestrians would need access on this side of the site, no pedestrian improvements are needed.

Since there are sufficient pedestrian facilities adjacent to the project along Manabe Ow Road and to nearby complimentary uses, no off-site pedestrian facilities are recommended to be constructed by the project.

BICYCLE FACILITIES

There are many existing bicycle facilities within the study area that provide access to the project site. A Class II bicycle lane exists in each direction along Manabe Ow Road between the project driveways and the roundabout at Manabe Ow Road and Ohlone Parkway. At this intersection, the Class II bike lane transitions to a shared Class III bicycle route in which bicyclists share the roadway with motorists. Along Ohlone Parkway, to the north of W Slough Road, there exists a Class I bicycle path to Harkins Slough Road. Bicyclists can use these bicycle facilities to access the retail uses along Main Street to the north, as well as the bus stops on Ohlone Parkway.

Within the project site, bicyclists can share the drive aisles with motorists. There are ten (10) long-term bicycle lockers located on the east side and ten (10) short-term bicycle parking stalls located on the northeast corner of the project building.

Since there are sufficient bicycle facilities adjacent to the project along Manabe Ow Road and to nearby complimentary uses, no off-site bicycle facilities are recommended to be constructed by the project.

TRANSIT

The Project area is currently served by Santa Cruz Metro. The project site is approximately 2,000-2,500 feet in walking distance to the nearest transit stop along Ohlone Parkway and Bree Lane (southbound bus route) and Ohlone Parkway and Lighthouse Drive (northbound bus route). This bus stop on serves Route 74S, which is for Pajaro High School and the Watsonville Community Hospital. The other nearest bus stop for the project is located at the intersection of Main Street and Ohlone Parkway, which is approximately 1.3 miles to the north of the project site. This bus stop is outside of a typical walking distance (i.e. 0.5 miles). The Watsonville Transit Center is located approximately 1.5 miles from the project site to the east. This transit center is also outside of a typical walking distance and there are also gaps within the pedestrian network to access the Watsonville Transit Center to the south and to the east.

Based on the distances of the nearest bus stop and the Watsonville Transit Center, it is unlikely that many of the employees and visitors to the project would use transit. In addition, according to the United States Census Bureau for the five-year average reported in 2019, approximately 1.1 percent of workers 16 years and over use public transportation to commute. Therefore, given a total of 465 daily trips, only one (1) percent or five (5) employee trips would use transit even if it were easily accessible, which is minimal. This, however, does not account for any incentives provided by the project to use transit.

Since there is expected to be minimal transit usage by the project even if it were easily accessible (i.e. one percent or five employee trips), it would not be economical to request transit access to the project site and construct a new bus stop. If the demand for transit were needed for this project in the future, the project could work with Santa Cruz Metro to provide additional bus service at the existing nearby bus stops on Ohlone Parkway.

SIGHT DISTANCE

A sight distance analysis for each project driveway was conducted to determine if vehicles, vans, and trucks exiting each driveway would have adequate sight distance to observe conflicting traffic along the major roadways adjacent to the project site. Intersection sight distance for the project driveways were evaluated following methodology from the American Association of State Highway and Transportation Officials (AAHSTO), *A Policy on Geometric Design of Highway and Street, 7th Edition*[2]. Sight distance for each project driveway was determined based the proposed project site plan and the following AASHTO intersection sight distance criteria formula:

$$\text{Intersection Sight Distance} = 1.47 \times V_{major} \times t_g$$

Where V_{major} is the design speed of the major road and t_g is the time gap for the vehicle to exit the project driveway and enter the major road. No spot speed study was conducted; posted speed limits and design speeds were used to determine sight distance.

Intersection #11 – Manabe Ow Road / West Project Driveway

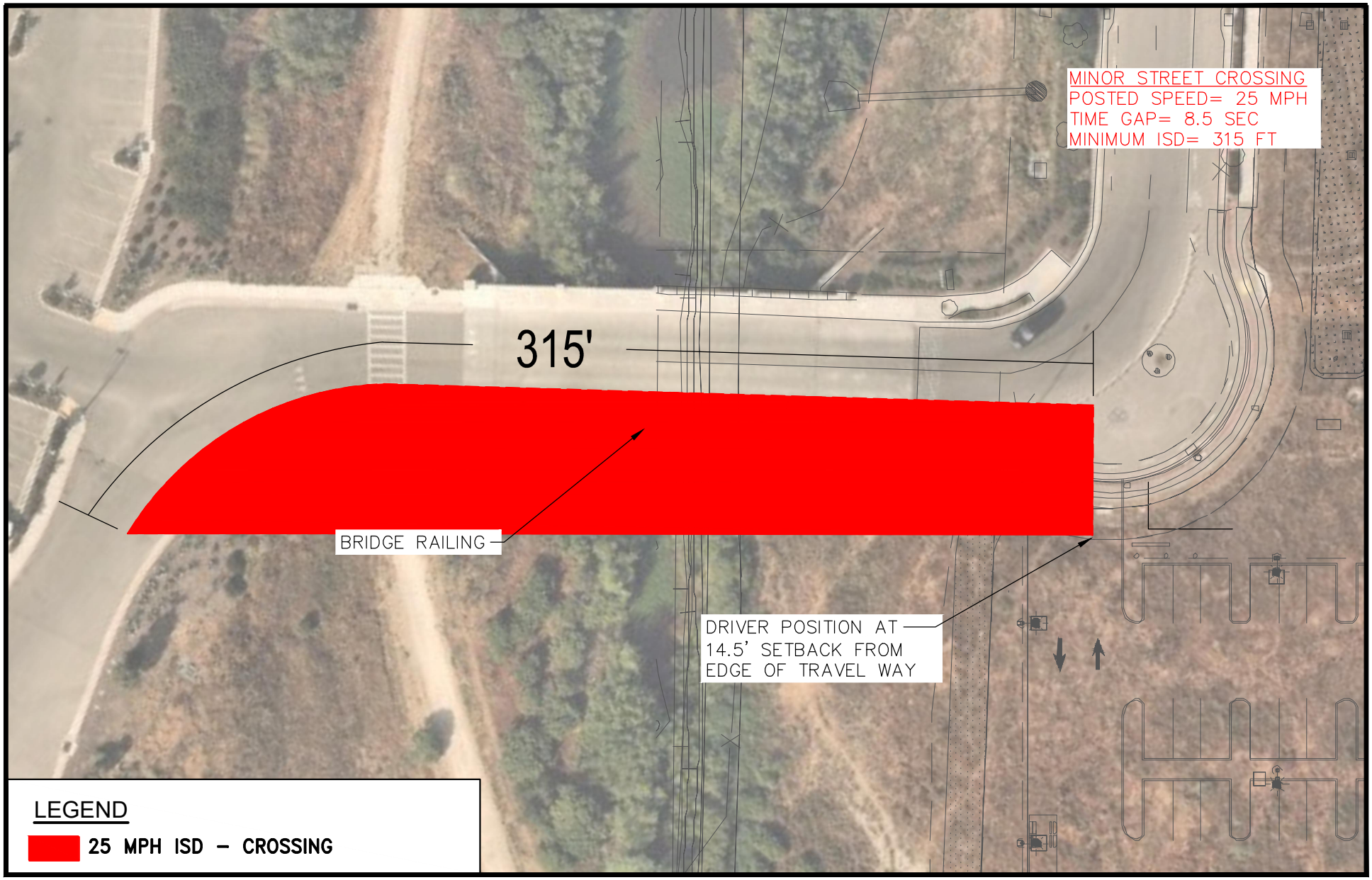
The West Project Driveway provides access primarily to trucks to the site. The time gap for a single-unit truck to make a through movement onto Manabe Ow Road is 8.5 seconds. It was assumed that no vehicles would be making a left turn exiting the project driveway since that only leads to the FedEx building. With a 25 mph posted speed limit along Manabe Ow Road, the sight distance criteria for trucks making a right-turn is 315 feet. As shown in the **Figure 20**, the sight triangles at the West Project Driveway should be clear of obstructions for a truck exiting the driveway to observe oncoming eastbound vehicles along Manabe Ow Road.

Intersection #12 – Manabe Ow Road / East Project Driveway

The East Project Driveway provides access primarily to passenger vehicles and delivery vans to the site. With an assumption that vans would require the same time gap as passenger cars, the time gap for a vehicle to make a left-turn and right-turn onto Manabe Ow Road is 7.5 seconds and 6.5 seconds, respectively. With a 25 mph posted speed limit along Manabe Ow Road, the sight distance criteria for passenger vehicles and vans making a left-turn is 280 feet and making a right-turn is 240 feet. As shown

[2] *A Policy on Geometric Design of Highway and Street, 7th Edition,* American Association of State Highway and Transportation Officials (AAHSTO), 2018.

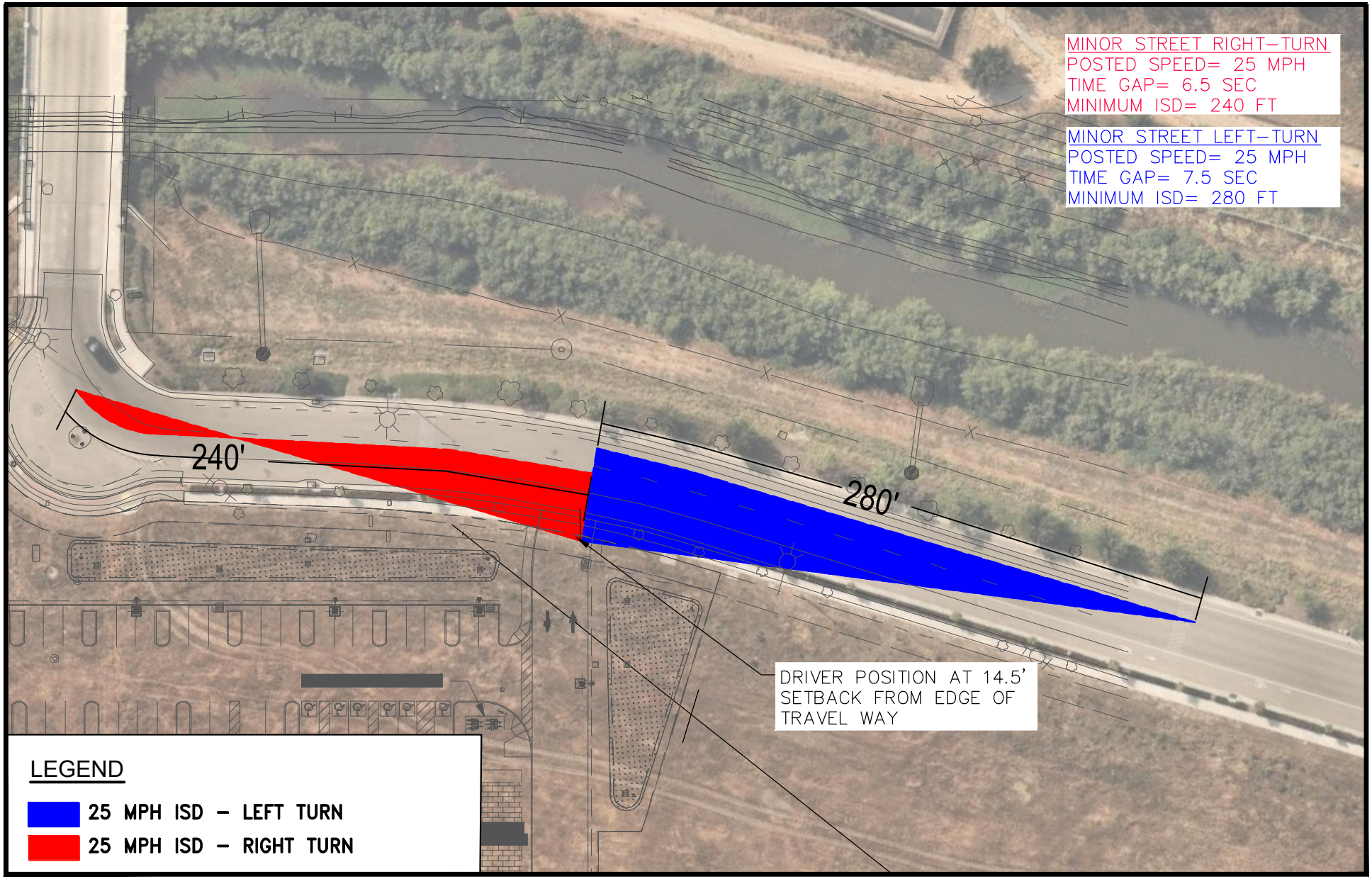
in the **Figure 21**, the sight triangle at the East Project Driveway should be clear of obstructions for a passenger vehicle/van exiting the driveway to observe oncoming westbound vehicles along Manabe Ow Road. To observe oncoming eastbound vehicles, it is recommended that the shrubbery on the south side of Manabe Ow Road be kept to an appropriate height in which drivers will be able to see over them.



Kimley»Horn

NOT TO SCALE

FIGURE 20
WEST PROJECT DRIVEWAY (TRUCK USE) SIGHT DISTANCE



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NOT TO SCALE

FIGURE 21

EAST PROJECT DRIVEWAY (PASSENGER CAR USE) SIGHT DISTANCE

7. PARKING

This chapter summarizes the Project's parking requirements.

WATSONVILLE PARKING REQUIREMENTS

Parking requirements for land uses within the City of Watsonville are provided in Chapter 14-17 of the Watsonville Municipal Code. This section includes parking requirements for vehicles and bicycles.

VEHICLE PARKING REQUIRED

Required parking for vehicles is based on land use. For office and wholesaling with stock (with warehousing), parking shall be provided at the following rates:

- Office: 0 to 20,000 square feet floor area, 1 space for each 300 square feet floor area, plus 1 space for each 500 square feet floor area in excess of 20,000 square feet
- Wholesaling with stock (with warehousing): 5 spaces, plus 1 space for each employee on the shift with the maximum number of personnel

Assuming the project would include a maximum number of 35 warehouse employees on-site (Delivery – Group A (8), Delivery – Group B (8), Delivery – Group C (8), Warehouse – Day (6), Warehouse – Swing (3), and Admin (2)), for a total of 35 people and a 156,961-gross square foot delivery station building which includes 15,900 square feet of office space, a minimum of 93 vehicle parking spaces (53 spaces for office + 40 spaces for warehousing) would be required.

The site plan provided by the project applicant includes a breakdown of vehicle parking provided:

- Vehicle parking spaces = 93 parking spaces
- Truck docks = 20 stalls
- Truck trailer stalls = 33 trailer spaces

The project provides vehicle parking equal to the required vehicle parking by the City.

BICYCLE PARKING REQUIRED

Required parking for bicycles is based on the number of required vehicle parking spaces. Bicycle parking is to be provided at five (5) percent of the vehicle parking required. This results in five (5) required bicycle parking spaces. Each bicycle parking space shall be no less than six (6) feet long by two (2) feet wide and shall have a parking rack capable of supporting bicycles of various sizes in a vertical position. Parking spaces shall be clustered in lots not to exceed 10 spaces each.

The project is proposing 10 short-term bicycle rack parking spaces and 10 long-term bicycle lockers on-site. Therefore, the project provides excess bicycle parking than required by the City.

8. CONCLUSIONS AND RECOMMENDATIONS SUMMARY

This section summarizes the results and recommendations of this TIS and subsequent project frontage and access recommendations.

PROJECT RECOMMENDATIONS

OFF-SITE ROADWAY IMPROVEMENTS

The project does not propose any off-site roadway improvements associated with the project design. However, the City has requested that roadway improvements be added to the west project driveway to slow down existing vehicles that use this intersection and so they do not cut through the intersection. The City has recommended that a traffic circle or traffic mound be added to reduce existing vehicle speeds. The project applicant will work with the City to resolve this request.

Other recommended roadway improvements to improve roadway deficiencies are discussed later.

PEDESTRIAN FACILITIES

Sidewalks existing along the project frontage on Manabe Ow Road. Therefore, no off-site pedestrian facilities are proposed.

BICYCLE FACILITIES

Class II bicycle facilities existing along the project frontage and on Manabe Ow Road. Therefore, no off-site bicycle facilities are proposed. The project is proposing to include 10 long-term bicycle parking spaces and 10 short-term bicycle parking spaces on-site.

PARKING REQUIREMENTS

The project is proposing to provide 93 vehicle parking spaces, which meets the parking required by the City of 93 parking spaces. The project provides vehicle parking equal to the required vehicle parking by the City.

PROJECT DRIVEWAYS

The development of the proposed Project will require the construction of the following driveways:

- Manabe Ow Road & West Project Driveway – Truck Access
  - Full access driveway
  - Stop-controlled eastbound movement for project driveway
- Manabe Ow Road & East Project Driveway – Passenger Vehicle and Delivery Vehicle Access
  - Full access driveway
  - Stop-controlled northbound movement for project driveway

PROJECT IMPACTS AND MITIGATIONS

As discussed previously in the Section 4, the project VMT/employee (i.e. 15.1) is expected to exceed the threshold of significance for VMT/employee (i.e. 11.8) and as a result the project is determined to have a significant transportation impact.

POTENTIAL MITIGATION

The project has prepared a transportation demand management (TDM) program to reduce the project's VMT. In addition, the project would pay into the City's VMT Bank Program to further reduce the project's VMT impact to less than significant.

TDM Program

This program recommends TDM measures that would individually reduce the project's VMT and trips, with the goal of obtaining a 21.9 percent VMT reduction to make the Project's VMT significant impact less than significant. It should be noted, however, that a maximum 15 percent VMT reduction can be achieved by the TDM program per the County's VMT guidelines. Therefore, this TDM program aims to achieve the maximum 15 percent VMT reduction, with the remaining 6.9 percent VMT reduction coming from the VMT Bank Program, as discussed after this section.

For the TDM program, the following TDM measures are being proposed:

1. Rideshare Program
2. Mandatory Travel Behavior Change Program
3. Preferential Carpool Parking Spaces
4. Emergency Ride Home Program
5. Alternative Work Schedule
6. Telecommuting
7. Bicycle Parking per Code and Showers/Changing Rooms

Table 10 provides a brief description of each proposed TDM measure and also the individual percent VMT reduction for each measure based on the VMT tool. Based on the proposed TDM measures, the project would be able to achieve the maximum 15 percent VMT reduction allowed per the County's VMT guidelines.

VMT Bank Program

The Watsonville VMT Mitigation Banking Fee Program is a programmatic approach to respond to the need for feasible VMT mitigation programs. Programmatic approaches that rely on collectively funding larger projects allow a project to obtain an amount of mitigation commensurate with their impact, include only a single payment without the complexity of ongoing management, and do not require on-going mitigation monitoring. Programmatic approaches can also provide a public benefit in terms of funding transportation improvements that would not otherwise be constructed, resulting in improvements to congestion, GHG emissions, increased transportation choices, and additional opportunities for active transportation.

The VMT Mitigation Banking Fee Program calculates the cost per VMT reduction as $1,524.21. Therefore, to achieve the 6.9 percent VMT reduction needed after implementation of the TDM program, the project would be responsible to pay $114,315.42. This is calculated as 6.9 percent being equivalent to a 1.0 VMT per employee reduction. Since there are 75 employees and each employee needs to reduce by 1.0 VMT at a cost of $1,524.21 per VMT the calculation is as follows:

VMT Banking Fee = 75 employees x 1.0 VMT per employee x $1,524.21 per VMT

Therefore, the combination of the TDM program and payment of the VMT Banking Fee Program would result in a less than significant VMT impact.

Table 10: Proposed TDM Measure Summary

#	TDM Measure	Description	VMT Reduction (%)
1	Rideshare Program	The project applicant will provide ride-share matching services, designated preferred parking for ride-share participants, adequate passenger loading/unloading and waiting areas for ride-share vehicles, and a website or message board to connect riders and coordinate rides. This measure would encourage employees to increase vehicle occupancy.	5%
2	Mandatory Travel Behavior Change Program	The project will implement a travel behavior change program that targets individuals' attitudes, goals, and travel behaviors, educating participants on the impacts of their travel choices and the opportunities to alter their habits. This will include a website that allows employees to research other modes of transportation for commuting and the use of marketing and promotional tools to educate and inform travelers about site-specific transportation options and the effects of the travel choices with passive educational and promotional materials.	1%
3	Preferential Carpool/Vanpool Parking Spaces	The project will provide reserved carpool/vanpool spaces near the building entrance to encourage these modes of transportation.	1%
4	Emergency Ride Home (EHR) Program	The project will provide an occasional subsidized ride to commuters who use alternative modes. This emergency ride home is for people if they need to go home in the middle of the day due to an emergency or stay late and need a ride at a time when transit services are not available. The project is planning to use Ecology Action to provide this service.	4%
5	Alternative Work Schedule	The project would implement an alternative work schedule (e.g. 9/80 schedule or 80 hours in two weeks while working 9 days). This measure would allow employees to work one less day every two weeks, thereby reducing daily vehicle trips and emissions.	1%
6	Telecommuting	The project would implement telecommuting for a portion of its employees (i.e. sales and leadership/supervisors). By telecommuting, daily vehicle trips to work and emissions would be reduced.	2%
7	Bicycle Parking per Code and Showers/Changing Rooms	The project would implement short- and long-term bicycle parking on-site in excess of the required number of spaces to support safe and comfortable bicycle travel. In addition, the project would provide on-site bicycle repair tools and spaces to use them to support on-going use of bicycles for transportation.	2%
		Total	**16% (Max 15%)**

PROJECT DEFICIENCIES

In cases when the project traffic worsens an intersection from an acceptable LOS to an unacceptable LOS or if the project traffic increases the intersection delay by five (5) or more seconds for an intersection that is already operating unacceptably without the project, this is considered a project deficiency. For each project deficiency, improvements have been identified to improve the intersection to an acceptable LOS or to better than pre-project conditions.

Based on the results of the traffic analysis, the following intersection project deficiency is noted:

- Intersection #10 – NB Highway 1 ramps/W Riverside Drive (Cumulative Plus Project AM and PM peak hours)

There are no intersection project queuing deficiencies identified. For the project deficiency, the following Project Improvements were identified and recommended:

PROJECT LOS DEFICIENCY: NB HIGHWAY 1 RAMPS/W RIVERSIDE DRIVE (INTERSECTION #10)

The intersection of NB Highway 1 ramps/W Riverside Drive will have an LOS deficiency in the Cumulative Plus Project for both the AM and PM peak hours.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 411.1 seconds in the AM peak hour and an unacceptable LOS F with a delay of 612.5 seconds in the PM peak hour. The intersection operates at an unacceptable LOS F without the project in the AM and PM peak hours, and the project increases the delay by 21.1 seconds and 49.2 seconds in the AM and PM peak hours, respectively. Since each peak hour increase is more than five (5) seconds, this is a project deficiency.

Deficiency Improvement. Since these deficiencies are in the Cumulative plus Project condition, the project shall contribute its fair share of the cost of these improvements. The applicant shall evaluate the timing and need, in coordination with Caltrans and the City of Watsonville, to signalize the intersection or install a roundabout. The City shall confirm that these improvements are implemented in a time sufficient to improve the project deficiency. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour and an acceptable LOS C in the PM peak hour in the Cumulative Plus Project condition. It should be noted that the intersection meets the peak hour signal warrant for this intersection in the Cumulative plus Project condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative Plus Project condition. Traffic signal control analysis sheets can be found in **Appendix D**. Roundabout analysis sheets can be found in **Appendix F**.

Fair Share Costs

Since the intersection operates unacceptably without the project traffic added and the improvements improve the intersection to an acceptable LOS, the project is responsible to pay its fair share contribution of the improvement costs. The project's fair share contribution for this intersection improvement is calculated to be 5.2 percent.

Intersection Control Evaluation (ICE)

It should be noted that this intersection is operated by Caltrans. Per the Caltrans Intersection Control Evaluation (ICE) Traffic Operations Policy Directive 13-02, an analysis to consider and determine the best intersection control at an impacted Caltrans intersection must be performed during the transportation planning or project initiation process. Therefore, a planning level analysis was completed for the intersection of NB Highway 1 ramps/W Riverside Drive to determine the optimal intersection control in the Cumulative Plus Project conditions. The potential options are:

1) Side-street stop-control (Existing)
2) All-way stop-control
3) Roundabout
4) Traffic Signal

The intersection currently operates as side-street stop-control and therefore can be found in **Appendix C**. All-way stop-control analysis sheets can be found in **Appendix E.** Roundabout analysis sheets can be found in **Appendix F.** Traffic signal control was analyzed as part of the deficiency improvements, and therefore can be found in **Appendix D**.

Side-Street Stop Controlled Intersection

The side-street stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at a LOS F in the AM and PM peak hours.

All-Way Stop Controlled Intersection

The all-way stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at a LOS F in the AM and PM peak hours.

Roundabout

A one-lane roundabout was considered for traffic control. The roundabout would require at a minimum a 100-foot inscribed diameter for a one-lane roundabout, and a minimum 150-foot inscribed diameter for a two-lane roundabout, per Federal Highway Administration (FHWA)[3] standards. These diameters were selected to accommodate a WB-50 vehicle (i.e., a truck). The intersection of NB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed roundabout was analyzed with the Cumulative Plus Project AM and PM peak hour volumes. The roundabout was modeled in SIDRA software, which is typical of the industry standard. The intersection would operate at an acceptable LOS A in the AM and PM peak hours.

Traffic Signal

A traffic signal was considered for traffic control. The intersection of NB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed traffic signal was analyzed with the Cumulative Plus Project AM and PM peak hour volumes. The traffic signal was modeled in Synchro software using the same methodology as the signalized

[3] Roundabouts: An informational Guide, Federal Highway Administration, 2000.

intersection methodology for other intersections. The intersection would operate at an acceptable LOS B with 12.4 seconds of delay in the AM peak hour and an acceptable LOS C with 20.6 seconds of delay in the PM peak hour. Analysis sheets are shown in **Appendix C**.

Conclusions

The ICE compared multiple potential traffic controls for the intersection of NB Highway 1 ramps/W Riverside Drive. **Table 11** summarizes the parameters considered for each traffic control at the intersection.

Table 11: Intersection Control Comparison Summary – Intersection #10

Intersection	Traffic Control	Meets ROW	Meets LOS	Meets All Requirements
NB Hwy 1 ramps/ W Riverside Drive	SSSC	Yes	No	No
	AWSC	Yes	No	No
	RAB (1 Lane)	**Yes**	**Yes**	**Yes**
	Signal	**Yes**	**Yes**	**Yes**

Notes:
SSSC – Side-street stop-controlled
AWSC – All-way stop-controlled
RAB – Roundabout
ROW – Right-of-way
Traffic controls **bolded** meet all the requirements.

For the intersection of NB Highway 1 ramps/W Riverside Drive, there are two feasible options for the future traffic control at this intersection, a roundabout and a traffic signal. Prior to implementation of either traffic control, a more comprehensive ICE will be prepared by the City. This ICE should include the impact of eastbound vehicular queues from the downstream signal at Green Valley Road/Harkins Slough Road intersection due to the short distance between the two intersections.

INTERSECTION DEFICIENCIES

In cases when a study intersection operates at an unacceptable LOS, even without the project traffic added, an intersection roadway improvement was identified to improve the intersection back to an acceptable level of service. These roadway improvements are identified in this report to inform the City of potential solutions for the intersections and when they would need to be implemented. **The project is not required or has no responsibility to implement or pay for these intersection deficiencies. However, the project will be required to pay fair share contributions toward the traffic improvement projects identified in the Manabe-Ow Business Park Specific Plan Environmental Impact Report Mitigation Measures, which includes many of these intersections shown as intersection deficiencies.**

Based on the results of the traffic analysis, the following intersections operate unacceptably during the identified scenarios and peak hours:

- #1 – Harkins Slough Road/NB Hwy 1 off-ramp
  - Background AM peak hour
  - Background plus Project AM peak hour
  - Cumulative AM peak hour
  - Cumulative plus Project AM peak hour

- #2 – Main Street/S Green Valley Road
    - Cumulative PM peak hour
    - Cumulative plus Project PM peak hour
- #3 – Main Street/Ohlone Parkway
    - Existing PM peak hour
    - Existing plus Project PM peak hour
    - Background PM peak hour
    - Background plus Project PM peak hour
    - Cumulative AM and PM peak hours
    - Cumulative plus Project AM and PM peak hours
- #4 – Main Street/E Riverside Drive
    - Cumulative PM peak hour
    - Cumulative plus Project PM peak hour
- #5 – Ohlone Parkway/Loma Vista Way
    - Cumulative AM and PM peak hours
    - Cumulative plus Project AM and PM peak hours
- #6 – Ohlone Parkway/Lighthouse Drive
    - Cumulative PM peak hour
    - Cumulative plus Project PM peak hour
- #8 – Walker Street/W Beach Street
    - Existing PM peak hour
    - Existing plus Project PM peak hour
    - Background PM peak hour
    - Background plus Project PM peak hour
    - Cumulative AM and PM peak hours
    - Cumulative plus Project AM and PM peak hours
- #9 – SB Highway 1 ramps/W Riverside Drive
    - Cumulative AM and PM peak hours
    - Cumulative plus Project AM and PM peak hours
- #10 – NB Highway 1 ramps/W Riverside Drive
    - Existing AM and PM peak hours
    - Existing plus Project AM and PM peak hours
    - Background AM and PM peak hours
    - Background plus Project AM and PM peak hours
    - Cumulative AM and PM peak hours
    - Cumulative plus Project AM and PM peak hours

Traffic signal control analysis sheets can be found in **Appendix D**. Roundabout analysis sheets can be found in **Appendix F**. For the intersection deficiencies noted above, the following Intersection Improvements were identified and recommended:

INTERSECTION LOS DEFICIENCY: HARKINS SLOUGH ROAD/NB HIGHWAY 1 OFF-RAMP (INTERSECTION #1)

The intersection of Harkins Slough Road/NB Highway 1 Off-ramp will operate at an unacceptable LOS in the Background, Background plus Project, Cumulative, and Cumulative plus Project conditions for the AM peak hour. The following describes the recommended intersection improvement to improve the intersection LOS to an acceptable LOS.

Background

In the Background conditions, the intersection of Harkins Slough Road/NB Highway 1 Off-ramp will operate at an unacceptable LOS E with a delay of 43.2 seconds for the worst approach in the AM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Background condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Background condition.

Background Plus Project

In the Background Plus Project conditions, the intersection of Harkins Slough Road/NB Highway 1 Off-ramp will operate at an unacceptable LOS E with a delay of 43.7 seconds for the worst approach in the AM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Background Plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Background Plus Project condition.

Cumulative

In the Cumulative conditions, the intersection of Harkins Slough Road/NB Highway 1 Off-ramp will operate at an unacceptable LOS F with a delay of 58.1 seconds for the worst approach in the AM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Cumulative condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour in the Cumulative condition.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of Harkins Slough Road/NB Highway 1 Off-ramp will operate at an unacceptable LOS F with a delay of 59.0 seconds for the worst approach in the AM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM peak hour in the Cumulative Plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the

intersection level of service to an acceptable LOS B in the AM peak hour in the Cumulative Plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 3.6 percent, which is for the AM peak hour only because the intersection was only identified to operate deficiently in the AM peak hour in this study and in the previous EIR.

Intersection Control Evaluation (ICE)

It should be noted that this intersection is operated by Caltrans. Per the Caltrans Intersection Control Evaluation (ICE) Traffic Operations Policy Directive 13-02, an analysis to consider and determine the best intersection control at an impacted Caltrans intersection must be performed during the transportation planning or project initiation process. Therefore, a planning level analysis was completed for the intersection of Harkins Slough Road/NB Highway 1 Off-ramp to determine the optimal intersection control. The potential options are:

1) Side-street stop-control (Existing)
2) All-way stop-control
3) Roundabout
4) Traffic Signal

The intersection currently operates as side-street stop-control and therefore those analysis sheets can be found in **Appendix C**. All-way stop-control analysis sheets can be found in **Appendix E.** Roundabout analysis sheets can be found in **Appendix F.** Traffic signal control was analyzed as part of the deficiency improvements, and therefore can be found in **Appendix D**.

Side-Street Stop Controlled Intersection

The side-street stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS E for the worst approach in the Background and Background plus Project conditions in the AM peak hour. The intersection operates at an unacceptable LOS F for the worst approach in the Cumulative and Cumulative plus Project conditions in the AM peak hour.

All-Way Stop Controlled Intersection

The all-way stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS F in the Background and Background plus Project conditions in the AM peak hour. The intersection operates at an unacceptable LOS F in the Cumulative and Cumulative plus Project conditions in the AM peak hour.

Roundabout

A one-lane roundabout was considered for traffic control. The roundabout would require at a minimum a 100-foot inscribed diameter for a one-lane roundabout, and a minimum 150-foot inscribed diameter for a two-lane roundabout, per FHWA[4] standards. These diameters were selected to accommodate a WB-50

[4] Roundabouts: An informational Guide, Federal Highway Administration, 2000.

vehicle (i.e., a truck). The intersection of Harkins Slough Road/NB Highway 1 Off-ramp appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed roundabout was modeled in SIDRA software, which is typical of the industry standard. The intersection operates at an acceptable LOS A in the Background and Background plus Project conditions in the AM peak hour. The intersection operates at an acceptable LOS B in the Cumulative and Cumulative plus Project conditions in the AM peak hour.

Traffic Signal

A traffic signal was considered for traffic control. The intersection of Harkins Slough Road/NB Highway 1 Off-ramp appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed traffic signal was modeled in Synchro software using the same methodology as the signalized intersection methodology for other intersections. The intersection operates at an acceptable LOS A in the Background and Background plus Project conditions in the AM peak hour. The intersection operates at an acceptable LOS A in the Cumulative and Cumulative plus Project conditions in the AM peak hour. Analysis sheets are shown in **Appendix C**.

Conclusions

The ICE compared multiple potential traffic controls for the intersection of Harkins Slough Road/NB Highway 1 Off-ramp. **Table 12** summarizes the parameters considered for each traffic control at the intersection.

Table 12: Intersection Control Comparison Summary – Intersection #1

Intersection	Traffic Control	Meets ROW	Meets LOS	Meets All Requirements
Harkins Slough Road/ NB Highway 1 Off-ramp	SSSC	Yes	No	No
	AWSC	Yes	No	No
	RAB (1 Lane)	**Yes**	**Yes**	**Yes**
	Signal	**Yes**	**Yes**	**Yes**

Notes:
SSSC – Side-street stop-controlled
AWSC – All-way stop-controlled
RAB – Roundabout
ROW – Right-of-way
Traffic controls **bolded** meet all the requirements.

For the intersection of Harkins Slough Road/NB Highway 1 Off-ramp, there are two feasible options for the future traffic control at this intersection, a roundabout and a traffic signal. Prior to implementation of either traffic control, a more comprehensive ICE will be prepared by the City.

INTERSECTION LOS DEFICIENCY: MAIN STREET/S GREEN VALLEY ROAD (INTERSECTION #2)

The intersection of Main Street/S Green Valley Road will operate at an unacceptable LOS in the Cumulative and Cumulative plus Project conditions for the PM peak hour. The following describes the recommended intersection improvements to improve the intersection LOS to an acceptable LOS.

Cumulative

In the Cumulative conditions, the intersection of Main Street/S Green Valley Road will operate at an unacceptable LOS E with a delay of 74.8 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be modified to the following:

- Remove the shared through/left turn lanes for the northbound and southbound approaches
- Remove split phasing and add protected left turn phasing for the northbound and southbound approaches
- Optimize the signal timing splits

These recommended improvements at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of Main Street/S Green Valley Road will operate at an unacceptable LOS E with a delay of 74.9 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be modified to the following:

- Remove the shared through/left turn lanes for the northbound and southbound approaches
- Remove split phasing and add protected left turn phasing for the northbound and southbound approaches
- Optimize the signal timing splits

These recommended improvements at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 0.8 percent, which is the higher percentage for the AM or PM peak hours because the intersection was identified to operate deficiently in both the AM and PM peak hours in the previous EIR.

INTERSECTION LOS DEFICIENCY: MAIN STREET/OHLONE PARKWAY (INTERSECTION #3)

The intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E in the Existing, Existing plus Project, Background, Background plus Project, Cumulative, and Cumulative plus Project conditions for the PM peak hour. In addition, the intersection operates at an unacceptable LOS E in the AM peak hour in the Cumulative and Cumulative plus Project conditions. The following describes the recommended intersection improvement to improve the intersection LOS to an acceptable LOS.

Existing

In the Existing conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 60.4 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Existing condition.

Existing Plus Project

In the Existing plus Project conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 60.4 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Existing plus Project condition.

Background

In the Background conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 66.2 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Background condition.

Background Plus Project

In the Background plus Project conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 66.2 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Background plus Project condition.

Cumulative

In the Cumulative conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 58.6 seconds in the AM peak hour and an unacceptable LOS E with a delay of 72.1 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be modified to the following:

- Restripe the southbound approach to be a left turn lane and a shared through/right turn lane

- Remove split phasing and add lead-lag protected left turn phasing for the northbound and southbound approaches
- Optimize the signal timing splits

This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of Main Street/Ohlone Parkway will operate at an unacceptable LOS E with a delay of 59.0 seconds in the AM peak hour and an unacceptable LOS E with a delay of 72.2 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be modified to the following:

- Restripe the southbound approach to be a left turn lane and a shared through/right turn lane
- Remove split phasing and add lead-lag protected left turn phasing for the northbound and southbound approaches
- Optimize the signal timing splits

This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 1.8 percent, which is the higher percentage for the AM or PM peak hours because the intersection was identified to operate deficiently in both the AM and PM peak hours in this study.

INTERSECTION LOS DEFICIENCY: MAIN STREET/E RIVERSIDE DRIVE (INTERSECTION #4)

The intersection of Main Street/E Riverside Drive will operate at an unacceptable LOS in the Cumulative and Cumulative plus Project conditions for the PM peak hour. The following describes the recommended intersection improvements to improve the intersection LOS to an acceptable LOS.

Cumulative

In the Cumulative conditions, the intersection of Main Street/E Riverside Drive will operate at an unacceptable LOS E with a delay of 61.9 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of Main Street/E Riverside Drive will operate at an unacceptable LOS E with a delay of 62.1 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection signal timing splits be optimized. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS D in the AM and PM peak hours in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 2.0 percent, which is for the PM peak hour only because the intersection was only identified to operate deficiently in the PM peak hour in this study and in the previous EIR.

INTERSECTION LOS DEFICIENCY: OHLONE PARKWAY/LOMA VISTA WAY (INTERSECTION #5)

The intersection of Ohlone Parkway/Loma Vista Way will operate at an unacceptable LOS in the Cumulative and Cumulative plus Project conditions for the AM and PM peak hours. The following describes the recommended intersection improvements to improve the intersection LOS to an acceptable LOS.

Cumulative

In the Cumulative conditions, the intersection of Ohlone Parkway/Loma Vista Way will operate at an unacceptable LOS F with a delay of 61.7 seconds in the AM peak hour and with a delay of 53.3 seconds in the PM peak hour for the worst approach.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that a roundabout be installed at this intersection. It should be noted that this intersection does not meet the peak hour signal warrant for any scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of Ohlone Parkway/Loma Vista Way will operate at an unacceptable LOS F with a delay of 64.2 seconds in the AM peak hour and with a delay of 54.8 seconds in the PM peak hour for the worst approach.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that a roundabout be installed at this intersection. It should be noted that this intersection does not meet the peak hour signal warrant for any scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative plus Project condition.

Trigger Analysis

Since this intersection was previously identified for mitigation, a trigger analysis was completed to estimate when the intersection would likely transition from an acceptable LOS to an unacceptable LOS. The recommended roundabout for this intersection could then be implemented to improve the intersection LOS.

To determine when the intersection would fail operationally, the traffic volumes for the intersection were grown annually based on the volumes from the Background and Cumulative conditions. This was completed for both the without and with Project volumes added. Without and with the project volumes added, it is anticipated that the intersection of Ohlone Parkway/Loma Vista Way would fail in year 2029. The project will be responsible for constructing this roundabout.

INTERSECTION LOS DEFICIENCY: OHLONE PARKWAY/LIGHTHOUSE DRIVE (INTERSECTION #6)

The intersection of Ohlone Parkway/Lighthouse Drive will operate at an unacceptable LOS in the Cumulative and Cumulative plus Project conditions for the PM peak hour. The following describes the recommended intersection improvements to improve the intersection LOS to an acceptable LOS.

Cumulative

In the Cumulative conditions, the intersection of Ohlone Parkway/Lighthouse Drive will operate at an unacceptable LOS E with a delay of 45.4 seconds in the PM peak hour for the worst approach.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that a roundabout be installed at this intersection. It should be noted that this intersection does not meet the peak hour signal warrant for any scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative Plus Project conditions, the intersection of Ohlone Parkway/Lighthouse Drive will operate at an unacceptable LOS E with a delay of 46.6 seconds in the PM peak hour for the worst approach.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that a roundabout be installed at this intersection. It should be noted that this intersection does not meet the peak hour signal warrant for any scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative plus Project condition. The 100 Manabe Ow project will be responsible for constructing this roundabout.

INTERSECTION LOS DEFICIENCY: WALKER STREET/W BEACH STREET (INTERSECTION #8)

The intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E or F in the Existing, Existing plus Project, Background, Background plus Project, Cumulative, and Cumulative plus Project conditions for the PM peak hour. In addition, the intersection operates at an unacceptable LOS E in the AM peak hour in the Cumulative and Cumulative plus Project conditions. The following describes the recommended intersection improvement to improve the intersection LOS to an acceptable LOS.

Existing

In the Existing conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E with a delay of 36.3 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour and an acceptable LOS C in the PM peak hour in the Existing condition.

Existing Plus Project

In the Existing plus Project conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E with a delay of 37.0 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour and an acceptable LOS C in the PM peak hour in the Existing plus Project condition.

Background

In the Background conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E with a delay of 44.8 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour and an acceptable LOS C in the PM peak hour in the Background condition.

Background Plus Project

In the Background plus Project conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E with a delay of 44.5 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS B in the AM peak hour and an acceptable LOS C in the PM peak hour in the Background plus Project condition.

Cumulative

In the Cumulative conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS E with a delay of 49.9 seconds in the AM peak hour and an unacceptable LOS F with a delay of 116.7 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS C in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of Walker Street/E Beach Street will operate at an unacceptable LOS F with a delay of 51.2 seconds in the AM peak hour and an unacceptable LOS F with a delay of 118.3 seconds in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized, and exclusive left-turn lanes be added to the northbound and southbound approaches. It should be noted that this intersection meets the peak hour signal warrant during this scenario. This recommended improvement at the intersection would improve the intersection level of service to an acceptable LOS C in the AM and PM peak hours in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 2.8 percent, which is the higher percentage for the AM or PM peak hours because the intersection was identified to operate deficiently in both the AM and PM peak hours in this study and the previous EIR.

INTERSECTION LOS DEFICIENCY: SB HIGHWAY 1 RAMPS/W RIVERSIDE DRIVE (INTERSECTION #9)

The intersection of SB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS in the Cumulative and Cumulative plus Project conditions for the AM and PM peak hours. The following describes the recommended intersection improvement to improve the intersection LOS to an acceptable LOS.

Cumulative

In the Cumulative conditions, the intersection of SB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 56.8 seconds for the worst approach in the AM peak hour and a delay of 73.9 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level

of service to an acceptable LOS C in the AM peak hour and acceptable LOS B in the PM peak hour in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of SB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 58.0 seconds for the worst approach in the AM peak hour and a delay of 76.3 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS C in the AM peak hour and acceptable LOS B in the PM peak hour in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 14.8 percent, which is the higher percentage for the AM or PM peak hours because the intersection was identified to operate deficiently in both the AM and PM peak hours in this study and the previous EIR.

Intersection Control Evaluation (ICE)

It should be noted that this intersection is operated by Caltrans. Per the Caltrans Intersection Control Evaluation (ICE) Traffic Operations Policy Directive 13-02, an analysis to consider and determine the best intersection control at an impacted Caltrans intersection must be performed during the transportation planning or project initiation process. Therefore, a planning level analysis was completed for the intersection of SB Highway 1 ramps/W Riverside Drive to determine the optimal intersection control. The potential options are:

1) Side-street stop-control (Existing)
2) All-way stop-control
3) Roundabout
4) Traffic Signal

The intersection currently operates as side-street stop-control and therefore those analysis sheets can be found in **Appendix C**. All-way stop-control analysis sheets can be found in **Appendix E.** Roundabout analysis sheets can be found in **Appendix F.** Traffic signal control was analyzed as part of the deficiency improvements, and therefore can be found in **Appendix D**.

Side-Street Stop Controlled Intersection

The side-street stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS F for the worst approach in the Cumulative and Cumulative plus Project conditions in the AM and PM peak hours.

All-Way Stop Controlled Intersection

The all-way stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS E and F in the Cumulative and Cumulative plus Project conditions in the AM and PM peak hours.

Roundabout

A one-lane roundabout was considered for traffic control. The roundabout would require at a minimum a 100-foot inscribed diameter for a one-lane roundabout, and a minimum 150-foot inscribed diameter for a two-lane roundabout, per FHWA[5] standards. These diameters were selected to accommodate a WB-50 vehicle (i.e., a truck). The intersection of SB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed roundabout was modeled in SIDRA software, which is typical of the industry standard. The intersection operates at an acceptable LOS B and C in the Cumulative and Cumulative plus Project conditions in the AM and PM peak hours.

Traffic Signal

A traffic signal was considered for traffic control. The intersection of SB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed traffic signal was modeled in Synchro software using the same methodology as the signalized intersection methodology for other intersections. The intersection operates at an acceptable LOS A in the Cumulative and Cumulative plus Project conditions in the AM and PM peak hours. Analysis sheets are shown in **Appendix C**.

Conclusions

The ICE compared multiple potential traffic controls for the intersection of SB Highway 1 ramps/W Riverside Drive. **Table 13** summarizes the parameters considered for each traffic control at the intersection.

Table 13: Intersection Control Comparison Summary – Intersection #9

Intersection	Traffic Control	Meets ROW	Meets LOS	Meets All Requirements
SB Highway 1 ramps/ W Riverside Drive	SSSC	Yes	No	No
	AWSC	Yes	No	No
	RAB (1 Lane)	**Yes**	**Yes**	**Yes**
	Signal	**Yes**	**Yes**	**Yes**

Notes:
SSSC – Side-street stop-controlled
AWSC – All-way stop-controlled
RAB – Roundabout
ROW – Right-of-way
Traffic controls **bolded** meet all the requirements.

[5] Roundabouts: An informational Guide, Federal Highway Administration, 2000.

For the intersection of SB Highway 1 ramps/W Riverside Drive, there are two feasible options for the future traffic control at this intersection, a roundabout and a traffic signal. Prior to implementation of either traffic control, a more comprehensive ICE will be prepared by the City.

INTERSECTION LOS DEFICIENCY: NB HIGHWAY 1 RAMPS/W RIVERSIDE DRIVE (INTERSECTION #10)

The intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS in the Existing, Existing plus Project, Background, Background plus Project, Cumulative, and Cumulative plus Project conditions for the AM and PM peak hours. The following describes the recommended intersection improvement to improve the intersection LOS to an acceptable LOS.

Existing

In the Existing conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS E with a delay of 46.2 seconds for the worst approach in the AM peak hour and an unacceptable LOS F with a delay of 50.3 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B in the AM and PM peak hours in the Existing condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Existing condition.

Existing Plus Project

In the Existing plus Project conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS E with a delay of 49.7 seconds for the worst approach in the AM peak hour and an unacceptable LOS F with a delay of 53.7 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B in the AM and PM peak hours in the Existing plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Existing plus Project condition.

Background

In the Background conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 65.0 seconds for the worst approach in the AM peak hour and a delay of 58.9 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B in the AM and PM peak hours in the Background condition. It should be noted that the intersection meets the peak hour signal warrant during

this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Background condition.

Background Plus Project

In the Background plus Project conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 69.9 seconds for the worst approach in the AM peak hour and a delay of 62.8 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B in the AM and PM peak hours in the Background plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Background plus Project condition.

Cumulative

In the Cumulative conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 390.0 seconds for the worst approach in the AM peak hour and a delay of 563.3 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B and C in the AM and PM peak hours in the Cumulative condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative condition.

Cumulative Plus Project

In the Cumulative plus Project conditions, the intersection of NB Highway 1 ramps/W Riverside Drive will operate at an unacceptable LOS F with a delay of 411.1 seconds for the worst approach in the AM peak hour and a delay of 612.5 seconds for the worst approach in the PM peak hour.

Recommended Intersection Improvement. To improve the intersection to an acceptable LOS, it is recommended that the intersection be signalized or to install a roundabout. Signalizing the intersection would improve the intersection level of service to an acceptable LOS B and C in the AM and PM peak hours in the Cumulative plus Project condition. It should be noted that the intersection meets the peak hour signal warrant during this condition. Alternatively, installing a roundabout at the intersection would improve the intersection level of service to an acceptable LOS A in the AM and PM peak hours in the Cumulative plus Project condition.

Fair Share Costs

The project's fair share contribution for the intersection improvement is calculated to be 5.2 percent, which is the higher percentage for the AM or PM peak hours because the intersection was identified to operate deficiently in both the AM and PM peak hours in this study.

Intersection Control Evaluation (ICE)

It should be noted that this intersection is operated by Caltrans. Per the Caltrans Intersection Control Evaluation (ICE) Traffic Operations Policy Directive 13-02, an analysis to consider and determine the best intersection control at an impacted Caltrans intersection must be performed during the transportation planning or project initiation process. Therefore, a planning level analysis was completed for the intersection of NB Highway 1 ramps/W Riverside Drive to determine the optimal intersection control. The potential options are:

1) Side-street stop-control (Existing)
2) All-way stop-control
3) Roundabout
4) Traffic Signal

The intersection currently operates as side-street stop-control and therefore those analysis sheets can be found in **Appendix C**. All-way stop-control analysis sheets can be found in **Appendix E.** Roundabout analysis sheets can be found in **Appendix F.** Traffic signal control was analyzed as part of the deficiency improvements, and therefore can be found in **Appendix D**.

Side-Street Stop Controlled Intersection

The side-street stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS E or LOS F for the worst approach in the AM and PM peak hours for all scenarios.

All-Way Stop Controlled Intersection

The all-way stop-controlled operation does not operate acceptably considering the LOS D threshold. The intersection operates at an unacceptable LOS F in the AM and PM peak hours for all scenarios.

Roundabout

A one-lane roundabout was considered for traffic control. The roundabout would require at a minimum a 100-foot inscribed diameter for a one-lane roundabout, and a minimum 150-foot inscribed diameter for a two-lane roundabout, per FHWA[6] standards. These diameters were selected to accommodate a WB-50 vehicle (i.e., a truck). The intersection of NB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

The proposed roundabout was modeled in SIDRA software, which is typical of the industry standard. The intersection operates at an acceptable LOS A in the AM and PM peak hours for all scenarios.

Traffic Signal

A traffic signal was considered for traffic control. The intersection of NB Highway 1 ramps/W Riverside Drive appears to have sufficient right-of-way and therefore, this traffic control would be feasible.

[6] Roundabouts: An informational Guide, Federal Highway Administration, 2000.

The proposed traffic signal was modeled in Synchro software using the same methodology as the signalized intersection methodology for other intersections. The intersection operates at an acceptable LOS B and C in the AM and PM peak hours for all scenarios. Analysis sheets are shown in **Appendix C**.

Conclusions

The ICE compared multiple potential traffic controls for the intersection of NB Highway 1 ramps/W Riverside Drive. **Table 14** summarizes the parameters considered for each traffic control at the intersection.

Table 14: Intersection Control Comparison Summary – Intersection #10

Intersection	Traffic Control	Meets ROW	Meets LOS	Meets All Requirements
NB Highway 1 ramps/ W Riverside Drive	SSSC	Yes	No	No
	AWSC	Yes	No	No
	RAB (1 Lane)	**Yes**	**Yes**	**Yes**
	Signal	**Yes**	**Yes**	**Yes**

Notes:
SSSC – Side-street stop-controlled
AWSC – All-way stop-controlled
RAB – Roundabout
ROW – Right-of-way
Traffic controls **bolded** meet all the requirements.

For the intersection of NB Highway 1 ramps/W Riverside Drive, there are two feasible options for the future traffic control at this intersection, a roundabout and a traffic signal. Prior to implementation of either traffic control, a more comprehensive ICE will be prepared by the City.

APPENDIX

A – EXISTING TRAFFIC VOLUME DATA SHEETS

B – USER ESTIMATED TRIP GENERATION

C – LEVEL OF SERVICE AND VEHICLE QUEUING CALCULATION SHEETS

D – IMPROVEMENT OUTPUTS

E – ICE OUTPUTS

F – SIDRA OUTPUTS

A – Existing Traffic Volume Data Sheets

AM																			
	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1	2021	1	54	0	405	0	0	0	0	0	0	392	0	0	0	637	0	0	1489
Main Street/S Green Valley Road	2021	2	219	484	178	1	190	423	127	0	170	532	214	10	147	616	204	4	3521
Main Street/Ohlone Parkway	2021	3	242	252	121	0	45	233	171	0	146	605	166	1	108	572	32	2	2699
Main Street/E Riverside Drive	2021	4	377	753	317	0	42	328	45	0	58	366	276	4	265	461	52	0	3348
Ohlone Parkway/Loma Vista	2021	5	6	270	3	1	13	248	46	0	89	1	9	0	5	0	24	0	720
Ohlone Parkway/Lighthouse Drive	2021	6	18	163	7	3	16	212	34	1	93	0	53	0	8	1	27	0	642
Ohlone Parkway/W Beach Street	2021	7	0	0	0	0	163	0	118	0	73	153	0	0	0	189	161	0	864
Walker Street/W Beach Street	2021	8	48	197	20	0	62	214	203	0	126	157	48	0	37	145	32	0	1297
SB Hwy 1 ramps/W Riverside Drive	2021	9	0	0	0	0	396	1	213	0	0	164	140	0	2	274	0	0	1199
NB Hwy 1 ramps/W Riverside Drive	2021	10	150	2	334	0	0	0	0	0	104	430	0	0	0	309	616	0	1955

	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1		1																	
Main Street/S Green Valley Road	2019	2	234	465	153	0	220	426	132	0	172	551	280	14	129	555	223	1	3557
Main Street/Ohlone Parkway	2019	3	303	268	146	0	63	271	162	0	114	602	209	0	124	484	43	1	2793
Main Street/E Riverside Drive	2018	4	369	757	285	0	50	410	24	0	56	339	296	4	264	444	54	1	3357
Ohlone Parkway/Loma Vista	2008	5	1	277	3	0	10	251	46	0	84	1	6	0	10	0	37	0	731
Ohlone Parkway/Lighthouse Drive	2008	6	25	128	3	0	15	217	34	0	126	0	70	0	9	0	25	0	658
Ohlone Parkway/W Beach Street	2008	7	0	0	0	0	149	0	120	0	40	199	0	0	0	185	88	0	788
Walker Street/W Beach Street		8																	
SB Hwy 1 ramps/W Riverside Drive	2008	9	0	0	0	0	393	0	260	0	0	132	149	0	0	228	0	0	1171
NB Hwy 1 ramps/W Riverside Drive	2008	10	96	0	202	0	0	0	0	0	88	437	0	0	0	354	667	0	1854

Average AM COVID Factor	0.76%

EXISTING ADJ COUNTS	AM																		
	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1	2021 Adj	1	56	0	415	0	0	0	0	0	0	402	0	0	0	652	0	0	1524
Main Street/S Green Valley Road	2019	2	234	465	153	0	220	426	132	0	172	551	280	14	129	555	223	1	3557
Main Street/Ohlone Parkway	2019	3	303	268	146	0	63	271	162	0	114	602	209	0	124	484	43	1	2793
Main Street/E Riverside Drive	2018	4	369	757	285	0	50	410	24	0	56	339	296	4	264	444	54	1	3357
Ohlone Parkway/Loma Vista	2021 Adj	5	7	277	4	2	14	254	48	0	92	2	10	0	6	0	25	0	737
Ohlone Parkway/Lighthouse Drive	2021 Adj	6	19	167	8	4	17	217	35	2	96	0	55	0	9	2	28	0	657
Ohlone Parkway/W Beach Street	2021 Adj	7	0	0	0	0	167	0	121	0	75	157	0	0	0	194	165	0	884
Walker Street/W Beach Street	2021 Adj	8	50	202	21	0	64	219	208	0	129	161	50	0	38	149	33	0	1327
SB Hwy 1 ramps/W Riverside Drive	2021 Adj	9	0	0	0	0	406	2	218	0	0	168	144	0	3	281	0	0	1227
NB Hwy 1 ramps/W Riverside Drive	2021 Adj	10	154	3	342	0	0	0	0	0	107	440	0	0	0	317	631	0	2001

										PM									
	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1	2021	1	12	0	464	0	0	0	0	0	0	59	0	0	0	398	0	0	934
Main Street/S Green Valley Road	2021	2	203	401	115	2	217	366	110	0	299	823	270	10	164	586	220	6	3794
Main Street/Ohlone Parkway	2021	3	272	339	129	0	104	168	123	0	203	903	213	2	113	543	45	4	3164
Main Street/E Riverside Drive	2021	4	314	771	303	0	83	720	25	0	56	416	573	2	330	340	46	1	3984
Ohlone Parkway/Loma Vista	2021	5	13	247	15	1	23	240	79	0	34	1	10	0	5	2	18	0	693
Ohlone Parkway/Lighthouse Drive	2021	6	64	201	6	10	33	160	67	1	54	1	31	0	4	0	19	0	657
Ohlone Parkway/W Beach Street	2021	7	0	0	0	0	130	0	85	0	130	311	0	0	0	116	192	0	971
Walker Street/W Beach Street	2021	8	51	225	40	0	58	233	128	0	217	242	102	0	43	104	55	0	1506
SB Hwy 1 ramps/W Riverside Drive	2021	9	0	0	0	0	364	2	212	0	0	314	190	0	1	175	0	0	1267
NB Hwy 1 ramps/W Riverside Drive	2021	10	64	3	343	0	0	0	0	0	129	559	0	1	0	311	440	0	1860

	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1		1																	
Main Street/S Green Valley Road	2019	2	329	447	120	6	225	433	127	0	323	896	317	19	190	600	279	8	4321
Main Street/Ohlone Parkway	2019	3	330	293	118	0	103	183	142	0	231	959	191	1	127	625	48	1	3355
Main Street/E Riverside Drive	2018	4	340	684	339	0	86	673	34	0	55	496	607	3	391	376	43	1	4132
Ohlone Parkway/Loma Vista	2008	5	6	243	8	0	34	203	85	0	52	2	7	0	7	4	26	0	682
Ohlone Parkway/Lighthouse Drive	2008	6	77	182	5	0	23	140	55	0	49	5	33	0	9	0	23	0	607
Ohlone Parkway/W Beach Street	2008	7	0	0	0	0	80	0	69	0	136	317	0	0	0	94	168	0	871
Walker Street/W Beach Street		8																	
SB Hwy 1 ramps/W Riverside Drive	2008	9	0	0	0	0	405	0	138	0	0	253	156	0	0	187	0	0	1148
NB Hwy 1 ramps/W Riverside Drive	2008	10	100	0	239	0	0	0	0	0	141	517	0	0	0	363	476	0	1846

Average PM COVID Factor	3.46%

EXISTING ADJ COUNTS	PM																		
	Year	INTID	NBL	NBT	NBR	NBU	SBL	SBT	SBR	SBU	EBL	EBT	EBR	EBU	WBL	WBT	WBR	WBU	Total
Harkins Slough Rd/NB Hwy 1	2021 Adj	1	14	0	514	0	0	0	0	0	0	66	0	0	0	441	0	0	1035
Main Street/S Green Valley Road	2019	2	329	447	120	6	225	433	127	0	323	896	317	19	190	600	279	8	4321
Main Street/Ohlone Parkway	2019	3	330	293	118	0	103	183	142	0	231	959	191	1	127	625	48	1	3355
Main Street/E Riverside Drive	2018	4	340	684	339	0	86	673	34	0	55	496	607	3	391	376	43	1	4132
Ohlone Parkway/Loma Vista	2021 Adj	5	15	274	17	2	26	266	88	0	38	2	12	0	6	3	20	0	768
Ohlone Parkway/Lighthouse Drive	2021 Adj	6	71	223	7	12	37	178	75	2	60	2	35	0	5	0	22	0	728
Ohlone Parkway/W Beach Street	2021 Adj	7	0	0	0	0	144	0	95	0	144	345	0	0	0	129	213	0	1076
Walker Street/W Beach Street	2021 Adj	8	57	250	45	0	65	259	142	0	241	269	113	0	48	116	61	0	1669
SB Hwy 1 ramps/W Riverside Drive	2021 Adj	9	0	0	0	0	404	3	235	0	0	348	211	0	2	194	0	0	1404
NB Hwy 1 ramps/W Riverside Drive	2021 Adj	10	71	4	380	0	0	0	0	0	143	620	0	2	0	345	488	0	2061

National Data & Surveying Services Intersection Turning Movement Count

Location: Harkins Slough Rd & NB Hwy 1 Off Ramp
City: Watsonville
Control: 1-Way Stop(WB)

Project ID: 21-090069-001
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Harkins Slough Rd				Harkins Slough Rd				NB Hwy 1 Off Ramp				NB Hwy 1 Off Ramp				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	35	0	0	0	122	0	0	0	0	0	0	15	0	64	0	236
7:15 AM	0	100	0	0	0	238	0	0	0	0	0	0	14	0	86	0	438
7:30 AM	0	96	0	0	0	167	0	0	0	0	0	0	19	0	97	0	379
7:45 AM	0	88	0	0	0	140	0	0	0	0	0	0	17	0	116	0	361
8:00 AM	0	108	0	0	0	92	0	0	0	0	0	0	4	0	106	0	310
8:15 AM	0	17	0	0	0	77	0	0	0	0	0	0	1	0	81	0	176
8:30 AM	0	10	0	0	0	77	0	0	0	0	0	0	0	0	88	0	175
8:45 AM	0	8	0	0	0	54	0	0	0	0	0	0	5	0	73	0	140
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	462	0	0	0	967	0	0	0	0	0	0	75	0	711	0	2215
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					9.54%	0.00%	90.46%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	392	0	0	0	637	0	0	0	0	0	0	54	0	405	0	1488
PEAK HR FACTOR :	0.000	0.907	0.000	0.000	0.000	0.669	0.000	0.000	0.000	0.000	0.000	0.000	0.711	0.000	0.873	0.000	0.849
		0.907				0.669								0.863			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	15	0	0	0	115	0	0	0	0	0	0	4	0	131	0	265
4:15 PM	0	17	0	0	0	92	0	0	0	0	0	0	3	0	104	0	216
4:30 PM	0	13	0	0	0	90	0	0	0	0	0	0	3	0	113	0	219
4:45 PM	0	14	0	0	0	101	0	0	0	0	0	0	2	0	116	0	233
5:00 PM	0	20	0	0	0	123	0	0	0	0	0	0	0	0	89	0	232
5:15 PM	0	20	0	0	0	102	0	0	0	0	0	0	0	0	72	0	194
5:30 PM	0	26	0	0	0	84	0	0	0	0	0	0	1	0	99	0	210
5:45 PM	0	32	0	0	0	115	0	0	0	0	0	0	3	0	93	0	243
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	157	0	0	0	822	0	0	0	0	0	0	16	0	817	0	1812
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					1.92%	0.00%	98.08%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	59	0	0	0	398	0	0	0	0	0	0	12	0	464	0	933
PEAK HR FACTOR :	0.000	0.868	0.000	0.000	0.000	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.885	0.000	0.880
		0.868				0.865								0.881			

National Data & Surveying Services Intersection Turning Movement Count

Location: Harkins Slough Rd & NB Hwy 1 Off Ramp
City: Watsonville
Control: 1-Way Stop(WB)

Project ID: 21-090069-001
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Harkins Slough Rd				Harkins Slough Rd				NB Hwy 1 Off Ramp				NB Hwy 1 Off Ramp				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	8
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%									
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	8
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400
						0.400											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%													
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
		0.250															

National Data & Surveying Services Intersection Turning Movement Count

Location: Harkins Slough Rd & NB Hwy 1 Off Ramp **Project ID:** 21-090069-001
City: Watsonville **Date:** 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Harkins Slough Rd		Harkins Slough Rd		NB Hwy 1 Off Ramp		NB Hwy 1 Off Ramp		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	1	0	1	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	0	1	0	1	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	100.00%	0.00%	100.00%			
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	1	0	1	0	1	0	0	3
PEAK HR FACTOR :		0.250		0.250		0.250			0.375
	0.250		0.250		0.250				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	2	0	0	0	2
4:30 PM	0	0	0	4	0	4	0	0	8
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	4	2	4	0	0	10
APPROACH %'s :			0.00%	100.00%	33.33%	66.67%			
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	4	2	4	0	0	10
PEAK HR FACTOR :				0.250	0.250	0.250			0.313
			0.250		0.375				

Prepared by National Data & Surveying Services

Harkins Slough Rd & NB Hwy 1 Off Ramp

Peak Hour Turning Movement Count

ID: 21-090069-001
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

CONTROL: 1-Way Stop(WB)

	AM	NOON	PM
TEV	1488	0	933
PHF	0.85		0.88

Harkins Slough Rd — SOUTHBOUND

	Left	Thru	Right	U-Turn		
AM	0	637	0	0	797	AM
NOON	0	0	0	0	0	NOON
PM	0	398	0	0	523	PM

NB Hwy 1 Off Ramp

	Left	Thru	Right
AM	0	0	0
NOON	0	0	0
PM	0	0	0

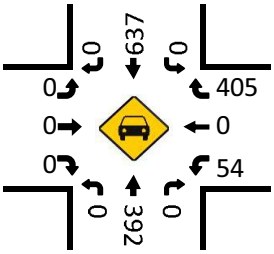
NB Hwy 1 Off Ramp

	Left	Thru	Right
PM	464	0	405
NOON	0	0	0
AM	12	0	54

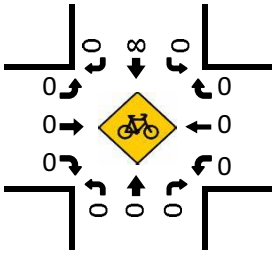
Harkins Slough Rd — NORTHBOUND

	Left	Thru	Right	U-Turn		
PM	410	0	0	59	0	PM
NOON	0	0	0	0	0	NOON
AM	691	0	0	392	0	AM

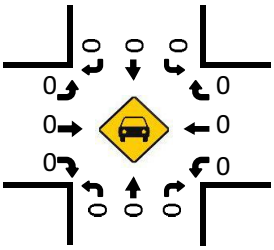
Totals (AM)



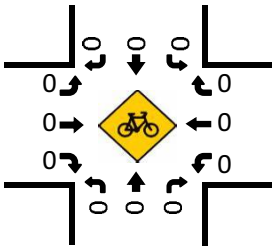
Total Bikes (AM)



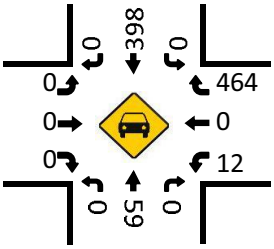
Totals (NOON)



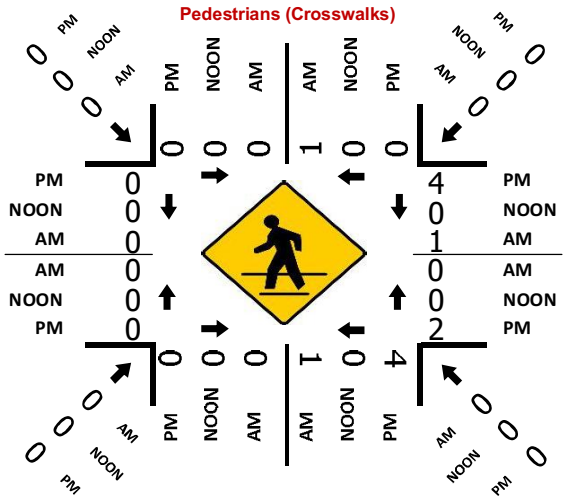
Total Bikes (NOON)



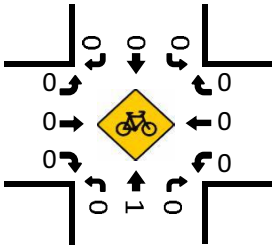
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-001
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Harkins Slough Rd Southbound				NB Hwy 1 Off Ramp Westbound				Harkins Slough Rd Northbound				NB Hwy 1 Off Ramp Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	236
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	674
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1053
7:00 AM	0	122	0	0	15	0	64	0	0	35	0	0	0	0	0	0	1414
7:15 AM	U	238	U	U	14	U	96	U	U	100	U	U	U	U	U	U	1488
7:30 AM	U	167	0	0	19	0	97	0	0	36	0	0	0	0	0	0	1226
7:45 AM	U	140	U	U	17	U	116	U	U	38	U	U	U	U	U	U	1022
8:00 AM	0	92	0	0	4	0	106	0	0	108	0	0	0	0	0	0	801
8:15 AM	U	77	U	U	1	U	81	U	U	17	U	U	U	U	U	U	491
8:30 AM	0	77	0	0	0	0	88	0	0	10	0	0	0	0	0	0	315
8:45 AM	U	54	U	U	5	U	73	U	U	8	U	U	U	U	U	U	140
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	265
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	481
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	700
4:00 PM	0	115	0	0	4	0	131	0	0	15	0	0	0	0	0	0	933
4:15 PM	U	82	U	U	3	U	104	U	U	17	U	U	U	U	U	U	800
4:30 PM	0	80	0	0	3	0	113	0	0	13	0	0	0	0	0	0	878
4:45 PM	U	101	U	U	2	U	116	U	U	14	U	U	U	U	U	U	869
5:00 PM	0	123	0	0	0	0	89	0	0	20	0	0	0	0	0	0	879
5:15 PM	U	102	U	U	U	U	72	U	U	20	U	U	U	U	U	U	647
5:30 PM	0	84	0	0	1	0	99	0	0	26	0	0	0	0	0	0	453
5:45 PM	U	115	U	U	3	U	93	U	U	32	U	U	U	U	U	U	243
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-001
Date : 8/19/2021

All Vehicles & Uturns

	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	122	0	0	122	15	0	64	0	79	0	35	0	0	35	0	0	0	0	0	236	0
7:15	0	238	0	0	238	14	0	86	0	100	0	100	0	0	100	0	0	0	0	0	438	0
7:30	0	167	0	0	167	19	0	97	0	116	0	96	0	0	96	0	0	0	0	0	379	0
7:45	0	140	0	0	140	17	0	116	0	133	0	88	0	0	88	0	0	0	0	0	361	0
Total	0	667	0	0	667	65	0	363	0	428	0	319	0	0	319	0	0	0	0	0	1414	0
8:00	0	92	0	0	92	4	0	106	0	110	0	108	0	0	108	0	0	0	0	0	310	0
8:15	0	77	0	0	77	1	0	81	0	82	0	17	0	0	17	0	0	0	0	0	176	0
8:30	0	77	0	0	77	0	0	88	0	88	0	10	0	0	10	0	0	0	0	0	175	0
8:45	0	54	0	0	54	5	0	73	0	78	0	8	0	0	8	0	0	0	0	0	140	0
Total	0	300	0	0	300	10	0	348	0	358	0	143	0	0	143	0	0	0	0	0	801	0
16:00	0	115	0	0	115	4	0	131	0	135	0	15	0	0	15	0	0	0	0	0	265	0
16:15	0	92	0	0	92	3	0	104	0	107	0	17	0	0	17	0	0	0	0	0	216	0
16:30	0	90	0	0	90	3	0	113	0	116	0	13	0	0	13	0	0	0	0	0	219	0
16:45	0	101	0	0	101	2	0	116	0	118	0	14	0	0	14	0	0	0	0	0	233	0
Total	0	398	0	0	398	12	0	464	0	476	0	59	0	0	59	0	0	0	0	0	933	0
17:00	0	123	0	0	123	0	0	89	0	89	0	20	0	0	20	0	0	0	0	0	232	0
17:15	0	102	0	0	102	0	0	72	0	72	0	20	0	0	20	0	0	0	0	0	194	0
17:30	0	84	0	0	84	1	0	99	0	100	0	26	0	0	26	0	0	0	0	0	210	0
17:45	0	115	0	0	115	3	0	93	0	96	0	32	0	0	32	0	0	0	0	0	243	0
Total	0	424	0	0	424	4	0	353	0	357	0	98	0	0	98	0	0	0	0	0	879	0
Grand Total	0	1789	0	0	1789	91	0	1528	0	1619	0	619	0	0	619	0	0	0	0	0	4027	0
Apprch %	0.0%	100.0%	0.0%	0.0%		5.6%	0.0%	94.4%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	44.4%	0.0%	0.0%	44.4%	2.3%	0.0%	37.9%	0.0%	40.2%	0.0%	15.4%	0.0%	0.0%	15.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	238	0	0	238	14	0	86	0	100	0	100	0	0	100	0	0	0	0	0	438
7:30	0	167	0	0	167	19	0	97	0	116	0	96	0	0	96	0	0	0	0	0	379
7:45	0	140	0	0	140	17	0	116	0	133	0	88	0	0	88	0	0	0	0	0	361
8:00	0	92	0	0	92	4	0	106	0	110	0	108	0	0	108	0	0	0	0	0	310
Total Volume	0	637	0	0	637	54	0	405	0	459	0	392	0	0	392	0	0	0	0	0	1488
% App Total	0.0%	100.0%	0.0%	0.0%		11.8%	0.0%	88.2%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.669	.000	.000	.669	.711	.000	.873	.000	.863	.000	.907	.000	.000	.907	.000	.000	.000	.000	.000	.849

PM PEAK HOUR	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	115	0	0	115	4	0	131	0	135	0	15	0	0	15	0	0	0	0	0	265
16:15	0	92	0	0	92	3	0	104	0	107	0	17	0	0	17	0	0	0	0	0	216
16:30	0	90	0	0	90	3	0	113	0	116	0	13	0	0	13	0	0	0	0	0	219
16:45	0	101	0	0	101	2	0	116	0	118	0	14	0	0	14	0	0	0	0	0	233
Total Volume	0	398	0	0	398	12	0	464	0	476	0	59	0	0	59	0	0	0	0	0	933
% App Total	0.0%	100.0%	0.0%	0.0%		2.5%	0.0%	97.5%	0.0%		0.0%	100.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.865	.000	.000	.865	.750	.000	.885	.000	.881	.000	.868	.000	.000	.868	.000	.000	.000	.000	.000	.880

File Name: 21-090069-001
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Harkins Slough Rd Southbound				NB Hwy 1 Off Ramp Westbound				Harkins Slough Rd Northbound				NB Hwy 1 Off Ramp Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-001
Date : 8/19/2021

All Bikes and Peds

	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	2	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2	2
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	5	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1
Total	0	7	0	1	7	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	7	3
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
16:30	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	8
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	6	0	0	1	0	4	1	0	0	0	0	0	1	10
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	0
Grand Total	0	8	0	1	8	0	0	0	7	0	0	3	0	5	3	0	0	0	0	0	11	13
Apprch %	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	72.7%	0.0%		72.7%	0.0%	0.0%	0.0%		0.0%	0.0%	27.3%	0.0%		27.3%	0.0%	0.0%	0.0%		0.0%	100.0%	

AM PEAK HOUR	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	2	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	5	0	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	8	0	1	8	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	8
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.400	.000		.400	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.400

PM PEAK HOUR	Harkins Slough Rd Southbound					NB Hwy 1 Off Ramp Westbound					Harkins Slough Rd Northbound					NB Hwy 1 Off Ramp Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	6	0	0	1	0	4	1	0	0	0	0	0	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.000	.000	.000		.000	.250

National Data & Surveying Services Intersection Turning Movement Count

Location: S Green Valley Rd & Main St
City: Watsonville
Control: Signalized

Project ID: 21-090069-002
Date: 8/19/2021

Data - Totals

NS/EW Streets:	S Green Valley Rd				S Green Valley Rd				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	2.5	0	0	0.5	1.5	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	82	71	13	0	19	85	51	0	13	61	43	0	17	229	22	0	706
7:15 AM	66	98	38	0	31	152	49	0	39	112	55	1	53	203	29	0	926
7:30 AM	50	112	51	0	38	106	26	0	44	144	72	2	54	164	44	1	908
7:45 AM	49	126	55	0	62	86	23	0	56	178	44	5	24	132	66	1	907
8:00 AM	54	148	34	1	59	79	29	0	31	98	43	2	16	117	65	2	778
8:15 AM	35	79	16	1	67	92	24	0	49	126	38	2	20	111	43	1	704
8:30 AM	37	68	19	0	44	72	34	0	29	112	41	2	17	125	39	0	639
8:45 AM	30	54	14	0	43	58	32	0	41	146	30	2	18	110	44	0	622
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	403	756	240	2	363	730	268	0	302	977	366	16	219	1191	352	5	6190
APPROACH %'s :	28.77%	53.96%	17.13%	0.14%	26.67%	53.64%	19.69%	0.00%	18.18%	58.82%	22.03%	0.96%	12.39%	67.40%	19.92%	0.28%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	219	484	178	1	190	423	127	0	170	532	214	10	147	616	204	4	3519
PEAK HR FACTOR :	0.830	0.818	0.809	0.250	0.766	0.696	0.648	0.000	0.759	0.747	0.743	0.500	0.681	0.759	0.773	0.500	0.950
	0.930				0.797				0.818				0.852				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	2.5	0	0	0.5	1.5	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	51	137	21	2	59	109	35	0	59	210	56	3	38	139	53	1	973
4:15 PM	56	94	27	0	53	108	34	0	64	216	59	4	51	131	53	1	951
4:30 PM	61	117	38	1	51	70	22	0	88	217	70	4	39	156	52	0	986
4:45 PM	39	84	24	1	53	91	25	0	57	181	60	1	34	149	53	3	855
5:00 PM	47	106	26	0	60	97	29	0	90	209	81	1	40	150	62	2	1000
5:15 PM	41	80	24	1	62	84	32	0	73	178	58	5	46	170	77	5	936
5:30 PM	44	85	23	2	54	68	19	0	61	205	73	3	26	117	41	1	822
5:45 PM	39	89	28	1	51	105	11	0	74	193	59	2	41	154	56	5	908
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	378	792	211	8	443	732	207	0	566	1609	516	23	315	1166	447	18	7431
APPROACH %'s :	27.21%	57.02%	15.19%	0.58%	32.05%	52.97%	14.98%	0.00%	20.85%	59.29%	19.01%	0.85%	16.19%	59.92%	22.97%	0.92%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	203	401	115	2	217	366	110	0	299	823	270	10	164	586	220	6	3792
PEAK HR FACTOR :	0.832	0.857	0.757	0.500	0.904	0.847	0.809	0.000	0.831	0.948	0.833	0.625	0.804	0.939	0.887	0.500	0.948
	0.831				0.888				0.920				0.961				

National Data & Surveying Services Intersection Turning Movement Count

Location: S Green Valley Rd & Main St
City: Watsonville
Control: Signalized

Project ID: 21-090069-002
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	S Green Valley Rd				S Green Valley Rd				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	2.5	0	0	0.5	1.5	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	5
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	8	0	0	0	0	0	0	0	1	1	0	10
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%					0.00%	50.00%	50.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	8	0	0	0	0	0	0	0	1	0	0	9
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.450
					0.500								0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1.5	2.5	0	0	0.5	1.5	1	0	2	2	1	0	2	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	3
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	1	0	2	1	1	0	0	1	0	0	0	0	1	0	10
APPROACH %'s :	0.00%	75.00%	25.00%	0.00%	50.00%	25.00%	25.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.250				0.250				0.250							

National Data & Surveying Services Intersection Turning Movement Count

Location: S Green Valley Rd & Main St
City: Watsonville
Project ID: 21-090069-002
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	S Green Valley Rd		S Green Valley Rd		Main St		Main St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	2	0	0	0	1	0	9	12
7:15 AM	0	8	0	3	0	2	0	36	49
7:30 AM	0	9	1	1	1	5	4	39	60
7:45 AM	0	2	0	2	3	1	2	11	21
8:00 AM	0	0	0	0	0	0	0	2	2
8:15 AM	0	0	0	1	0	1	0	3	5
8:30 AM	0	1	0	0	0	0	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	22	1	7	4	10	6	101	151
APPROACH %'s :	0.00%	100.00%	12.50%	87.50%	28.57%	71.43%	5.61%	94.39%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	19	1	6	4	8	6	88	132
PEAK HR FACTOR :		0.528	0.250	0.500	0.333	0.400	0.375	0.564	0.550
	0.528		0.583		0.500		0.547		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	1	1	0	1	1	1	5
4:15 PM	0	0	0	1	0	0	0	0	1
4:30 PM	0	0	0	1	2	4	2	0	9
4:45 PM	1	2	1	0	3	2	1	0	10
5:00 PM	0	0	4	0	0	1	1	0	6
5:15 PM	0	0	1	1	1	1	0	0	4
5:30 PM	0	0	0	0	0	0	1	0	1
5:45 PM	1	0	0	0	0	0	2	0	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	2	7	4	6	9	8	1	39
APPROACH %'s :	50.00%	50.00%	63.64%	36.36%	40.00%	60.00%	88.89%	11.11%	
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	1	2	5	2	5	7	4	0	26
PEAK HR FACTOR :	0.250	0.250	0.313	0.500	0.417	0.438	0.500		0.650
	0.250		0.438		0.500		0.500		

Prepared by National Data & Surveying Services

S Green Valley Rd & Main St

Peak Hour Turning Movement Count

ID: 21-090069-002
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	3519	0	3792
PHF	0.95		0.95

S Green Valley Rd — SOUTHBOUND

AM	127	423	190	0	858	AM
NOON	0	0	0	0	0	NOON
PM	110	366	217	0	920	PM
	1	1.5	0.5	0		

Main St — WESTBOUND

AM	NOON	PM	
972	0	909	
10	0	10	0
170	0	299	2
532	0	823	2
214	0	270	1
AM	NOON	PM	

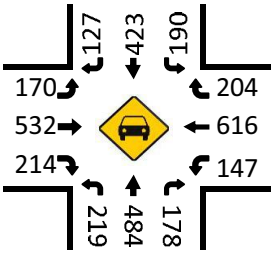
Main St — EASTBOUND

PM	NOON	AM	
220	0	204	1
586	0	616	2
164	0	147	2
6	0	4	0
1161	0	904	
PM	NOON	AM	

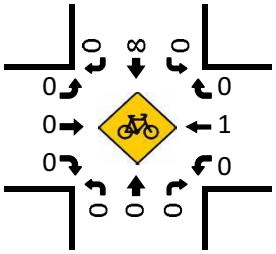
S Green Valley Rd — NORTHBOUND

	0	1.5	2.5	0		
PM	802	2	203	401	115	PM
NOON	0	0	0	0	0	NOON
AM	785	1	219	484	178	AM

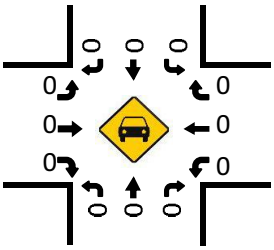
Totals (AM)



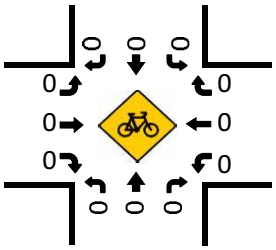
Total Bikes (AM)



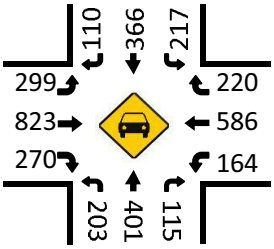
Totals (NOON)



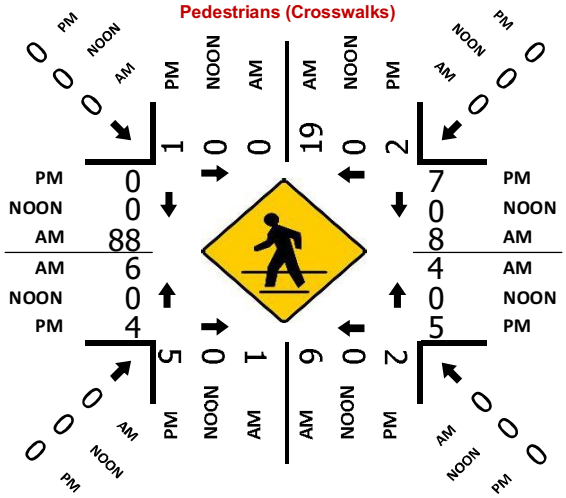
Total Bikes (NOON)



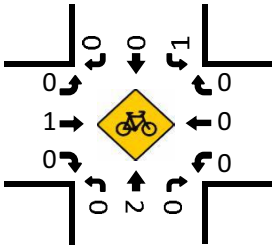
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-002
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	S Green Valley Rd Southbound				Main St Westbound				S Green Valley Rd Northbound				Main St Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	706
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1631
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2536
7:00 AM	19	85	51	0	17	229	22	0	82	71	13	0	13	61	43	0	3437
7:15 AM	31	152	49	U	53	203	29	U	66	98	38	U	39	112	55	1	3604
7:30 AM	38	106	26	0	54	164	44	1	50	112	51	0	44	144	72	2	3279
7:45 AM	62	86	23	U	24	132	66	1	49	126	55	U	56	178	44	5	3011
8:00 AM	59	79	29	0	16	117	65	2	54	148	34	1	31	98	43	2	2730
8:15 AM	67	92	24	U	20	111	43	1	35	79	16	1	49	126	38	2	1967
8:30 AM	44	72	34	0	17	126	39	0	37	68	19	0	29	112	41	2	1257
8:45 AM	43	58	32	U	18	110	44	U	30	54	14	U	41	146	30	2	620
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	867
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1913
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2894
4:00 PM	59	109	35	0	38	139	53	1	51	137	21	2	59	210	56	3	3744
4:15 PM	53	108	34	U	51	131	53	1	56	94	27	U	64	216	58	4	3774
4:30 PM	51	70	22	0	39	156	52	0	61	117	38	1	88	217	70	4	3753
4:45 PM	53	91	25	U	34	149	53	3	39	84	24	1	57	181	60	1	3688
5:00 PM	60	97	29	0	40	150	62	2	47	106	26	0	90	209	81	1	3638
5:15 PM	62	94	32	U	46	170	77	5	41	80	24	1	73	178	58	5	3541
5:30 PM	54	68	19	0	26	117	41	1	44	85	23	2	61	205	73	3	1716
5:45 PM	51	105	11	U	41	154	56	5	39	89	28	1	74	193	58	2	900
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-002
Date : 8/19/2021

All Vehicles & Uturns

	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	19	85	51	0	155	17	229	22	0	268	82	71	13	0	166	13	61	43	0	117	706	0
7:15	31	152	49	0	232	53	203	29	0	285	66	98	38	0	202	39	112	55	1	207	926	1
7:30	38	106	26	0	170	54	164	44	1	263	50	112	51	0	213	44	144	72	2	262	908	3
7:45	62	86	23	0	171	24	132	66	1	223	49	126	55	0	230	56	178	44	5	283	907	6
Total	150	429	149	0	728	148	728	161	2	1039	247	407	157	0	811	152	495	214	8	869	3447	10
8:00	59	79	29	0	167	16	117	65	2	200	54	148	34	1	237	31	98	43	2	174	778	5
8:15	67	92	24	0	183	20	111	43	1	175	35	79	16	1	131	49	126	38	2	215	704	4
8:30	44	72	34	0	150	17	125	39	0	181	37	68	19	0	124	29	112	41	2	184	639	2
8:45	43	58	32	0	133	18	110	44	0	172	30	54	14	0	98	41	146	30	2	219	622	2
Total	213	301	119	0	633	71	463	191	3	728	156	349	83	2	590	150	482	152	8	792	2743	13
16:00	59	109	35	0	203	38	139	53	1	231	51	137	21	2	211	59	210	56	3	328	973	6
16:15	53	108	34	0	195	51	131	53	1	236	56	94	27	0	177	64	216	59	4	343	951	5
16:30	51	70	22	0	143	39	156	52	0	247	61	117	38	1	217	88	217	70	4	379	986	5
16:45	53	91	25	0	169	34	149	53	3	239	39	84	24	1	148	57	181	60	1	299	855	5
Total	216	378	116	0	710	162	575	211	5	953	207	432	110	4	753	268	824	245	12	1349	3765	21
17:00	60	97	29	0	186	40	150	62	2	254	47	106	26	0	179	90	209	81	1	381	1000	3
17:15	62	84	32	0	178	46	170	77	5	298	41	80	24	1	146	73	178	58	5	314	936	11
17:30	54	68	19	0	141	26	117	41	1	185	44	85	23	2	154	61	205	73	3	342	822	6
17:45	51	105	11	0	167	41	154	56	5	256	39	89	28	1	157	74	193	59	2	328	908	8
Total	227	354	91	0	672	153	591	236	13	993	171	360	101	4	636	298	785	271	11	1365	3666	28
Grand Total	806	1462	475	0	2743	534	2357	799	23	3713	781	1548	451	10	2790	868	2586	882	39	4375	13621	72
Apprch %	29.4%	53.3%	17.3%	0.0%		14.4%	63.5%	21.5%	0.6%		28.0%	55.5%	16.2%	0.4%		19.8%	59.1%	20.2%	0.9%			
Total %	5.9%	10.7%	3.5%	0.0%	20.1%	3.9%	17.3%	5.9%	0.2%	27.3%	5.7%	11.4%	3.3%	0.1%	20.5%	6.4%	19.0%	6.5%	0.3%	32.1%	100.0%	

AM PEAK HOUR	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	31	152	49	0	232	53	203	29	0	285	66	98	38	0	202	39	112	55	1	207	926
7:30	38	106	26	0	170	54	164	44	1	263	50	112	51	0	213	44	144	72	2	262	908
7:45	62	86	23	0	171	24	132	66	1	223	49	126	55	0	230	56	178	44	5	283	907
8:00	59	79	29	0	167	16	117	65	2	200	54	148	34	1	237	31	98	43	2	174	778
Total Volume	190	423	127	0	740	147	616	204	4	971	219	484	178	1	882	170	532	214	10	926	3519
% App Total	25.7%	57.2%	17.2%	0.0%		15.1%	63.4%	21.0%	0.4%		24.8%	54.9%	20.2%	0.1%		18.4%	57.5%	23.1%	1.1%		
PHF	.766	.696	.648	.000	.797	.681	.759	.773	.500	.852	.830	.818	.809	.250	.930	.759	.747	.743	.500	.818	.950

PM PEAK HOUR	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	53	108	34	0	195	51	131	53	1	236	56	94	27	0	177	64	216	59	4	343	951
16:30	51	70	22	0	143	39	156	52	0	247	61	117	38	1	217	88	217	70	4	379	986
16:45	53	91	25	0	169	34	149	53	3	239	39	84	24	1	148	57	181	60	1	299	855
17:00	60	97	29	0	186	40	150	62	2	254	47	106	26	0	179	90	209	81	1	381	1000
Total Volume	217	366	110	0	693	164	586	220	6	976	203	401	115	2	721	299	823	270	10	1402	3792
% App Total	31.3%	52.8%	15.9%	0.0%		16.8%	60.0%	22.5%	0.6%		28.2%	55.6%	16.0%	0.3%		21.3%	58.7%	19.3%	0.7%		
PHF	.904	.847	.809	.000	.888	.804	.939	.887	.500	.961	.832	.857	.757	.500	.831	.831	.948	.833	.625	.920	.948

File Name: 21-090069-002
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	S Green Valley Rd Southbound				Main St Westbound				S Green Valley Rd Northbound				Main St Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	9	3
7:15 AM	U	1	U	8	U	U	U	2	U	U	U	3	U	U	U	36	4
7:30 AM	U	2	U	9	U	U	U	6	U	U	U	2	U	U	U	43	3
7:45 AM	U	4	U	2	U	1	U	4	U	U	U	2	U	U	U	13	7
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
8:15 AM	U	U	U	U	U	U	U	1	U	U	U	1	U	U	U	3	1
8:30 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	1
8:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	3
4:00 PM	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	5
4:15 PM	1	U	U	U	U	U	U	U	U	U	U	1	U	U	U	U	4
4:30 PM	0	0	0	0	0	0	0	6	0	0	0	1	0	1	0	2	3
4:45 PM	U	U	U	3	U	U	U	5	U	2	U	1	U	U	U	1	5
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	1	5
5:15 PM	U	U	U	U	U	U	U	2	U	U	U	2	U	U	U	U	5
5:30 PM	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	5
5:45 PM	U	1	U	1	U	U	U	U	U	1	U	U	U	U	U	2	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-002
Date : 8/19/2021

All Bikes and Peds

	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	9	0	0	12
7:15	0	1	0	8	1	0	0	0	2	0	0	0	0	3	0	0	0	0	36	0	1	49
7:30	0	2	0	9	2	0	0	0	6	0	0	0	0	2	0	0	0	0	43	0	2	60
7:45	0	4	0	2	4	0	1	0	4	1	0	0	0	2	0	0	0	0	13	0	5	21
Total	0	7	0	21	7	0	1	0	13	1	0	0	0	7	0	0	0	0	101	0	8	142
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2
8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3	0	0	5
8:30	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	2
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	6	0	2	9
16:00	0	0	0	0	0	0	0	0	1	0	0	0	1	2	1	0	0	0	2	0	1	5
16:15	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
16:30	0	0	0	0	0	0	0	0	6	0	0	0	0	1	0	0	1	0	2	1	1	9
16:45	0	0	0	3	0	0	0	0	5	0	0	2	0	1	2	0	0	0	1	0	2	10
Total	1	0	0	3	1	0	0	0	12	0	0	2	1	5	3	0	1	0	5	1	5	25
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	1	0	0	6
17:15	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	4
17:30	1	0	1	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	3	1
17:45	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	2	3
Total	1	1	1	1	3	0	0	1	3	1	0	1	0	6	1	0	0	0	4	0	5	14
Grand Total	2	9	1	26	12	0	1	2	29	3	0	3	1	19	4	0	1	0	116	1	20	190
Apprch %	16.7%	75.0%	8.3%			0.0%	33.3%	66.7%			0.0%	75.0%	25.0%			0.0%	100.0%	0.0%				
Total %	10.0%	45.0%	5.0%		60.0%	0.0%	5.0%	10.0%		15.0%	0.0%	15.0%	5.0%		20.0%	0.0%	5.0%	0.0%		5.0%	100.0%	

AM PEAK HOUR	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	1	0	8	1	0	0	0	2	0	0	0	0	3	0	0	0	0	36	0	1
7:30	0	2	0	9	2	0	0	0	6	0	0	0	0	2	0	0	0	0	43	0	2
7:45	0	4	0	2	4	0	1	0	4	1	0	0	0	2	0	0	0	0	13	0	5
8:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
Total Volume	0	8	0	19	8	0	1	0	12	1	0	0	0	7	0	0	0	0	94	0	9
% App Total	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.250	.000		.250	.000	.000	.000		.000	.000	.000	.000		.000	.450

PM PEAK HOUR	S Green Valley Rd Southbound					Main St Westbound					S Green Valley Rd Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
16:30	0	0	0	0	0	0	0	0	6	0	0	0	0	1	0	0	1	0	2	1	1
16:45	0	0	0	3	0	0	0	0	5	0	0	2	0	1	2	0	0	0	1	0	2
17:00	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	1	0	0
Total Volume	1	0	0	3	1	0	0	0	12	0	0	2	0	7	2	0	1	0	4	1	4
% App Total	100.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.000	.000	.000		.000	.000	.250	.000		.250	.000	.250	.000		.250	.500

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Main St
City: Watsonville
Control: Signalized

Project ID: 21-090069-003
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	0.5	0.5	1	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	52	26	20	0	11	34	73	0	8	79	14	0	19	172	3	0	511
7:15 AM	60	50	22	0	3	68	61	0	24	112	27	1	18	169	8	0	623
7:30 AM	51	51	36	0	8	64	46	0	31	154	38	0	34	137	7	0	657
7:45 AM	71	69	31	0	17	51	22	0	48	174	54	0	31	144	8	2	722
8:00 AM	60	82	32	0	17	50	42	0	43	165	47	0	25	122	9	0	694
8:15 AM	57	68	13	0	18	48	34	0	15	125	34	0	20	112	8	0	552
8:30 AM	50	51	18	0	27	36	24	0	19	133	45	0	17	110	5	0	535
8:45 AM	49	34	16	0	17	23	34	0	17	148	34	0	22	110	10	1	515
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	450	431	188	0	118	374	336	0	205	1090	293	1	186	1076	58	3	4809
APPROACH %'s :	42.10%	40.32%	17.59%	0.00%	14.25%	45.17%	40.58%	0.00%	12.90%	68.60%	18.44%	0.06%	14.06%	81.33%	4.38%	0.23%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	242	252	121	0	45	233	171	0	146	605	166	1	108	572	32	2	2696
PEAK HR FACTOR :	0.852	0.768	0.840	0.000	0.662	0.857	0.701	0.000	0.760	0.869	0.769	0.250	0.794	0.846	0.889	0.250	0.934
	0.884				0.850				0.832				0.915				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	0.5	0.5	1	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	71	93	36	0	27	36	29	0	59	233	56	1	25	127	16	2	811
4:15 PM	58	81	37	0	24	51	33	0	52	229	62	0	26	129	11	1	794
4:30 PM	61	85	25	0	28	31	34	0	42	243	48	1	34	150	11	1	794
4:45 PM	82	80	31	0	25	50	27	0	50	198	47	0	28	137	7	0	762
5:00 PM	90	89	30	0	28	36	26	0	53	212	45	0	36	155	10	0	810
5:15 PM	62	64	26	0	31	41	27	0	45	224	58	0	26	168	13	0	785
5:30 PM	80	67	36	0	24	37	23	0	59	209	43	0	26	125	10	0	739
5:45 PM	72	64	26	0	22	51	28	0	49	198	47	0	29	148	9	0	743
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	576	623	247	0	209	333	227	0	409	1746	406	2	230	1139	87	4	6238
APPROACH %'s :	39.83%	43.08%	17.08%	0.00%	27.18%	43.30%	29.52%	0.00%	15.96%	68.12%	15.84%	0.08%	15.75%	78.01%	5.96%	0.27%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	272	339	129	0	104	168	123	0	203	903	213	2	113	543	45	4	3161
PEAK HR FACTOR :	0.829	0.911	0.872	0.000	0.929	0.824	0.904	0.000	0.860	0.929	0.859	0.500	0.831	0.905	0.703	0.500	0.974
	0.925				0.914				0.946				0.899				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Main St
City: Watsonville
Control: Signalized

Project ID: 21-090069-003
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	0.5	0.5	1	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4
7:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	0	0	1	2	0	0	0	2	1	0	0	4	1	0	13
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	80.00%	20.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	0	0	0	1	1	0	0	0	1	1	0	0	3	1	0	10
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.375	0.250	0.000	0.625
	0.250				0.250				0.500				0.500				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	1	1	0	0.5	0.5	1	0	1	2	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2
4:15 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	0	4
4:30 PM	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	4
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	3	0	0	6	2	0	0	4	5	0	0	1	2	1	0	24
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	75.00%	25.00%	0.00%	0.00%	44.44%	55.56%	0.00%	0.00%	25.00%	50.00%	25.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	1	5	0	0	1	1	1	0	11
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.625	0.000	0.000	0.250	0.250	0.250	0.000	0.688
	0.250				0.250				0.500				0.375				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Main St
City: Watsonville
Project ID: 21-090069-003
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Ohlone Pkwy		Ohlone Pkwy		Main St		Main St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	1	0	1	0	2	0	0	4
7:15 AM	1	3	0	3	2	5	0	0	14
7:30 AM	2	1	0	0	1	1	0	0	5
7:45 AM	2	0	0	1	1	3	0	0	7
8:00 AM	1	0	0	0	0	3	0	0	4
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	4	1	1	0	0	6
8:45 AM	2	0	0	0	1	1	0	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	8	5	0	9	6	16	0	0	44
APPROACH %'s :	61.54%	38.46%	0.00%	100.00%	27.27%	72.73%			
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	6	4	0	4	4	12	0	0	30
PEAK HR FACTOR :	0.750	0.333		0.333	0.500	0.600			0.536
	0.625		0.333		0.571				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	1	0	0	3	3	2	0	3	12
4:15 PM	4	5	0	0	2	7	0	0	18
4:30 PM	0	1	2	0	1	1	0	2	7
4:45 PM	2	0	0	5	1	1	0	0	9
5:00 PM	0	3	1	0	0	0	0	0	4
5:15 PM	0	0	2	0	0	2	0	0	4
5:30 PM	0	0	3	0	5	0	0	0	8
5:45 PM	0	1	0	0	0	5	0	0	6
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	7	10	8	8	12	18	0	5	68
APPROACH %'s :	41.18%	58.82%	50.00%	50.00%	40.00%	60.00%	0.00%	100.00%	
PEAK HR :	**04:00 PM - 05:00 PM**								TOTAL
PEAK HR VOL :	7	6	2	8	7	11	0	5	46
PEAK HR FACTOR :	0.438	0.300	0.250	0.400	0.583	0.393		0.417	0.639
	0.361		0.500		0.500		0.417		

Prepared by National Data & Surveying Services

Ohlone Pkwy & Main St

Peak Hour Turning Movement Count

ID: 21-090069-003
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS

AM: 07:15 AM - 08:15 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 7:00 AM - 09:00 AM
NOON: NONE
PM: 4:00 PM - 06:00 PM

SOUTHBOUND (Ohlone Pkwy)

AM	171	233	45	0	430	AM
NOON	0	0	0	0	0	NOON
PM	123	168	104	0	587	PM
	1	0.5	0.5	0		

Main St (Southbound approach)

AM	NOON	PM	
986	0	940	
1	0	2	0
146	0	203	1
605	0	903	2
166	0	213	1

Main St (Northbound approach)

PM	NOON	AM	
45	0	32	0
543	0	572	3
113	0	108	1
4	0	2	0
1140	0	773	

CONTROL: Signalized

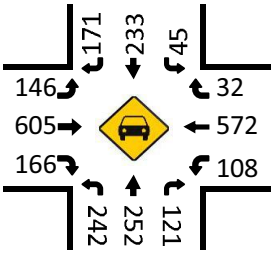
TEV	2696 AM	0 NOON	3161 PM
PHF	0.93		0.97

0	2	1	1	

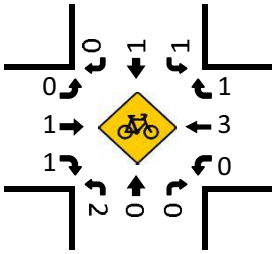
NORTHBOUND (Ohlone Pkwy)

PM	494	0	272	339	129	PM
NOON	0	0	0	0	0	NOON
AM	507	0	242	252	121	AM

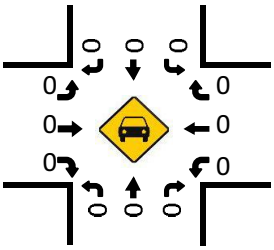
Totals (AM)



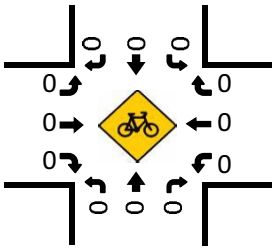
Total Bikes (AM)



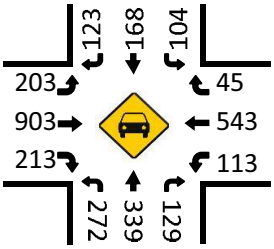
Totals (NOON)



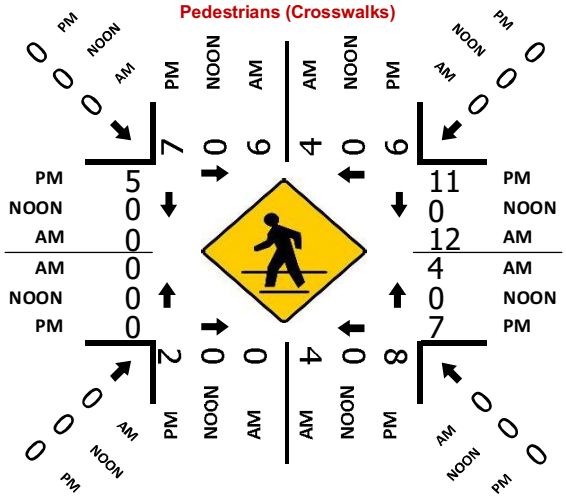
Total Bikes (NOON)



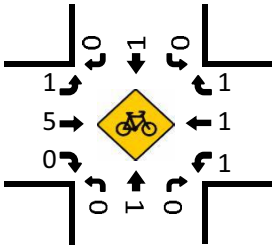
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-003
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Main St Westbound				Ohlone Pkwy Northbound				Main St Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	511
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1133
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1790
7:00 AM	11	34	73	0	19	172	3	0	52	26	20	0	8	79	14	0	2510
7:15 AM	3	68	61	U	18	169	8	U	60	50	22	U	24	112	27	1	2655
7:30 AM	8	64	46	0	34	137	7	0	51	51	36	0	31	154	38	0	2623
7:45 AM	17	51	22	U	31	144	8	2	71	69	31	U	48	174	54	U	2501
8:00 AM	17	50	42	0	25	122	9	0	60	82	32	0	43	165	47	0	2295
8:15 AM	18	48	34	U	20	112	8	U	57	68	13	U	15	125	34	U	1801
8:30 AM	27	36	24	0	17	110	5	0	50	51	18	0	19	133	45	0	1049
8:45 AM	17	23	34	U	22	110	10	1	49	34	16	U	17	148	34	U	514
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	988
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1821
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2689
4:00 PM	27	36	29	0	25	127	16	2	71	93	36	0	59	233	56	1	3155
4:15 PM	24	51	33	U	26	129	11	1	58	81	37	U	52	229	62	U	3157
4:30 PM	28	31	34	0	34	150	11	1	61	85	25	0	42	243	48	1	3149
4:45 PM	25	50	27	U	28	137	7	U	82	80	31	U	50	198	47	U	3086
5:00 PM	28	36	26	0	36	155	10	0	90	89	30	0	53	212	45	0	3077
5:15 PM	31	41	27	U	26	168	13	U	62	64	26	U	45	224	56	U	2897
5:30 PM	24	37	23	0	26	125	10	0	80	67	36	0	59	209	43	0	1482
5:45 PM	22	51	28	U	29	148	9	U	72	64	26	U	49	198	47	U	743
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-003
Date : 8/19/2021

All Vehicles & Uturns

	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	11	34	73	0	118	19	172	3	0	194	52	26	20	0	98	8	79	14	0	101	511	0
7:15	3	68	61	0	132	18	169	8	0	195	60	50	22	0	132	24	112	27	1	164	623	1
7:30	8	64	46	0	118	34	137	7	0	178	51	51	36	0	138	31	154	38	0	223	657	0
7:45	17	51	22	0	90	31	144	8	2	185	71	69	31	0	171	48	174	54	0	276	722	2
Total	39	217	202	0	458	102	622	26	2	752	234	196	109	0	539	111	519	133	1	764	2513	3
8:00	17	50	42	0	109	25	122	9	0	156	60	82	32	0	174	43	165	47	0	255	694	0
8:15	18	48	34	0	100	20	112	8	0	140	57	68	13	0	138	15	125	34	0	174	552	0
8:30	27	36	24	0	87	17	110	5	0	132	50	51	18	0	119	19	133	45	0	197	535	0
8:45	17	23	34	0	74	22	110	10	1	143	49	34	16	0	99	17	148	34	0	199	515	1
Total	79	157	134	0	370	84	454	32	1	571	216	235	79	0	530	94	571	160	0	825	2296	1
16:00	27	36	29	0	92	25	127	16	2	170	71	93	36	0	200	59	233	56	1	349	811	3
16:15	24	51	33	0	108	26	129	11	1	167	58	81	37	0	176	52	229	62	0	343	794	1
16:30	28	31	34	0	93	34	150	11	1	196	61	85	25	0	171	42	243	48	1	334	794	2
16:45	25	50	27	0	102	28	137	7	0	172	82	80	31	0	193	50	198	47	0	295	762	0
Total	104	168	123	0	395	113	543	45	4	705	272	339	129	0	740	203	903	213	2	1321	3161	6
17:00	28	36	26	0	90	36	155	10	0	201	90	89	30	0	209	53	212	45	0	310	810	0
17:15	31	41	27	0	99	26	168	13	0	207	62	64	26	0	152	45	224	58	0	327	785	0
17:30	24	37	23	0	84	26	125	10	0	161	80	67	36	0	183	59	209	43	0	311	739	0
17:45	22	51	28	0	101	29	148	9	0	186	72	64	26	0	162	49	198	47	0	294	743	0
Total	105	165	104	0	374	117	596	42	0	755	304	284	118	0	706	206	843	193	0	1242	3077	0
Grand Total	327	707	563	0	1597	416	2215	145	7	2783	1026	1054	435	0	2515	614	2836	699	3	4152	11047	10
Apprch %	20.5%	44.3%	35.3%	0.0%		14.9%	79.6%	5.2%	0.3%		40.8%	41.9%	17.3%	0.0%		14.8%	68.3%	16.8%	0.1%			
Total %	3.0%	6.4%	5.1%	0.0%	14.5%	3.8%	20.1%	1.3%	0.1%	25.2%	9.3%	9.5%	3.9%	0.0%	22.8%	5.6%	25.7%	6.3%	0.0%	37.6%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	3	68	61	0	132	18	169	8	0	195	60	50	22	0	132	24	112	27	1	164	623
7:30	8	64	46	0	118	34	137	7	0	178	51	51	36	0	138	31	154	38	0	223	657
7:45	17	51	22	0	90	31	144	8	2	185	71	69	31	0	171	48	174	54	0	276	722
8:00	17	50	42	0	109	25	122	9	0	156	60	82	32	0	174	43	165	47	0	255	694
Total Volume	45	233	171	0	449	108	572	32	2	714	242	252	121	0	615	146	605	166	1	918	2696
% App Total	10.0%	51.9%	38.1%	0.0%		15.1%	80.1%	4.5%	0.3%		39.3%	41.0%	19.7%	0.0%		15.9%	65.9%	18.1%	0.1%		
PHF	.662	.857	.701	.000	.850	.794	.846	.889	.250	.915	.852	.768	.840	.000	.884	.760	.869	.769	.250	.832	.934

PM PEAK HOUR	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	27	36	29	0	92	25	127	16	2	170	71	93	36	0	200	59	233	56	1	349	811
16:15	24	51	33	0	108	26	129	11	1	167	58	81	37	0	176	52	229	62	0	343	794
16:30	28	31	34	0	93	34	150	11	1	196	61	85	25	0	171	42	243	48	1	334	794
16:45	25	50	27	0	102	28	137	7	0	172	82	80	31	0	193	50	198	47	0	295	762
Total Volume	104	168	123	0	395	113	543	45	4	705	272	339	129	0	740	203	903	213	2	1321	3161
% App Total	26.3%	42.5%	31.1%	0.0%		16.0%	77.0%	6.4%	0.6%		36.8%	45.8%	17.4%	0.0%		15.4%	68.4%	16.1%	0.2%		
PHF	.929	.824	.904	.000	.914	.831	.905	.703	.500	.899	.829	.911	.872	.000	.925	.860	.929	.859	.500	.946	.974

File Name: 21-090069-003
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Main St Westbound				Ohlone Pkwy Northbound				Main St Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5
7:00 AM	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	3
7:15 AM	U	U	U	4	U	U	U	7	U	U	U	3	U	1	U	U	10
7:30 AM	0	0	0	3	0	2	0	2	2	0	0	0	0	0	0	0	10
7:45 AM	1	1	U	2	U	U	1	4	U	U	U	1	U	U	U	U	6
8:00 AM	0	0	0	1	0	1	0	3	0	0	0	0	0	0	1	0	5
8:15 AM	U	U	U	U	U	1	U	U	U	U	U	U	U	U	U	U	3
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	4	0	0	0	0	2
8:45 AM	U	1	U	2	U	U	U	2	U	U	U	U	U	1	U	U	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	9
4:00 PM	0	0	0	1	1	0	0	5	0	0	0	3	0	1	0	3	11
4:15 PM	U	U	U	9	U	1	1	9	U	1	U	U	U	1	U	U	11
4:30 PM	0	0	0	1	0	0	0	2	0	0	0	2	1	2	0	2	12
4:45 PM	U	1	U	2	U	U	U	2	U	U	U	5	U	1	U	U	13
5:00 PM	0	0	0	3	0	0	0	0	0	0	0	1	2	0	0	0	13
5:15 PM	5	U	U	U	U	U	U	2	U	U	U	2	U	U	U	U	11
5:30 PM	1	0	0	0	0	1	0	5	0	1	0	3	1	0	0	0	6
5:45 PM	U	1	U	1	U	U	U	5	U	1	U	U	U	U	U	U	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-003
Date : 8/19/2021

All Bikes and Peds

	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	4
7:15	0	0	0	4	0	0	0	0	7	0	0	0	0	3	0	0	1	0	0	1	1	14
7:30	0	0	0	3	0	0	2	0	2	2	2	0	0	0	2	0	0	0	0	0	4	5
7:45	1	1	0	2	2	0	0	1	4	1	0	0	0	1	0	0	0	0	0	0	3	7
Total	1	1	0	10	2	0	2	1	15	3	2	0	0	5	2	0	1	0	0	1	8	30
8:00	0	0	0	1	0	0	1	0	3	1	0	0	0	0	0	0	0	1	0	1	2	4
8:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
8:30	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	0	0	0	0	0	6
8:45	0	1	0	2	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	2	4
Total	0	1	0	3	1	0	2	0	7	2	0	0	0	4	0	0	1	1	0	2	5	14
16:00	0	0	0	1	0	1	0	0	5	1	0	0	0	3	0	0	1	0	3	1	2	12
16:15	0	0	0	9	0	0	1	1	9	2	0	1	0	0	1	0	1	0	0	1	4	18
16:30	0	0	0	1	0	0	0	0	2	0	0	0	0	2	0	1	2	0	2	3	3	7
16:45	0	1	0	2	1	0	0	0	2	0	0	0	0	5	0	0	1	0	0	1	2	9
Total	0	1	0	13	1	1	1	1	18	3	0	1	0	10	1	1	5	0	5	6	11	46
17:00	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	2	2	4
17:15	5	0	0	0	5	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	5	4
17:30	1	0	0	0	1	0	1	0	5	1	0	1	0	3	1	1	0	0	0	1	4	8
17:45	0	1	0	1	1	0	0	0	5	0	0	1	0	0	1	0	0	0	0	0	2	6
Total	6	1	0	4	7	0	1	0	12	1	0	2	0	6	2	3	0	0	0	3	13	22
Grand Total	7	4	0	30	11	1	6	2	52	9	2	3	0	25	5	4	7	1	5	12	37	112
Apprch %	63.6%	36.4%	0.0%			11.1%	66.7%	22.2%			40.0%	60.0%	0.0%			33.3%	58.3%	8.3%				
Total %	18.9%	10.8%	0.0%		29.7%	2.7%	16.2%	5.4%		24.3%	5.4%	8.1%	0.0%		13.5%	10.8%	18.9%	2.7%		32.4%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	4	0	0	0	0	7	0	0	0	0	3	0	0	1	0	0	1	1
7:30	0	0	0	3	0	0	2	0	2	2	2	0	0	0	2	0	0	0	0	0	4
7:45	1	1	0	2	2	0	0	1	4	1	0	0	0	1	0	0	0	0	0	0	3
8:00	0	0	0	1	0	0	1	0	3	1	0	0	0	0	0	0	0	1	0	1	2
Total Volume	1	1	0	10	2	0	3	1	16	4	2	0	0	4	2	0	1	1	0	2	10
% App Total	50.0%	50.0%	0.0%			0.0%	75.0%	25.0%			100.0%	0.0%	0.0%			0.0%	50.0%	50.0%			
PHF	.250	.250	.000		.250	.000	.375	.250		.500	.250	.000	.000		.250	.000	.250	.250		.500	.625

PM PEAK HOUR	Ohlone Pkwy Southbound					Main St Westbound					Ohlone Pkwy Northbound					Main St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	1	0	1	0	0	5	1	0	0	0	3	0	0	1	0	3	1	2
16:15	0	0	0	9	0	0	1	1	9	2	0	1	0	0	1	0	1	0	0	1	4
16:30	0	0	0	1	0	0	0	0	2	0	0	0	0	2	0	1	2	0	2	3	3
16:45	0	1	0	2	1	0	0	0	2	0	0	0	0	5	0	0	1	0	0	1	2
Total Volume	0	1	0	13	1	1	1	1	18	3	0	1	0	10	1	1	5	0	5	6	11
% App Total	0.0%	100.0%	0.0%			33.3%	33.3%	33.3%			0.0%	100.0%	0.0%			16.7%	83.3%	0.0%			
PHF	.000	.250	.000		.250	.250	.250	.250		.375	.000	.250	.000		.250	.250	.625	.000		.500	.688

National Data & Surveying Services Intersection Turning Movement Count

Location: Main St & E Riverside Dr
City: Watsonville
Control: Signalized

Project ID: 21-090069-004
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Main St				Main St				E Riverside Dr				E Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	1.5	0.5	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	108	143	38	0	6	68	6	0	7	45	42	0	48	156	9	0	676
7:15 AM	100	153	82	0	14	65	9	0	12	88	58	1	54	122	6	0	764
7:30 AM	110	219	100	0	9	76	8	0	15	92	72	0	70	100	9	0	880
7:45 AM	85	204	76	0	10	91	11	0	17	103	69	0	76	116	18	0	876
8:00 AM	82	177	59	0	9	96	17	0	14	83	77	3	65	123	19	0	824
8:15 AM	96	105	49	0	6	75	7	0	19	84	70	0	53	112	18	0	694
8:30 AM	71	145	50	0	17	86	11	0	15	75	66	0	45	96	16	0	693
8:45 AM	97	114	40	0	9	74	7	0	14	69	64	1	44	65	12	0	610
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	749	1260	494	0	80	631	76	0	113	639	518	5	455	890	107	0	6017
APPROACH %'s :	29.92%	50.34%	19.74%	0.00%	10.17%	80.18%	9.66%	0.00%	8.86%	50.12%	40.63%	0.39%	31.34%	61.29%	7.37%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	377	753	317	0	42	328	45	0	58	366	276	4	265	461	52	0	3344
PEAK HR FACTOR :	0.857	0.860	0.793	0.000	0.750	0.854	0.662	0.000	0.853	0.888	0.896	0.333	0.872	0.937	0.684	0.000	0.950
	0.843				0.850				0.931				0.926				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	1.5	0.5	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	73	171	74	0	23	165	5	0	14	131	149	0	106	78	14	1	1004
4:15 PM	83	203	77	0	23	182	7	0	22	93	133	0	81	94	16	0	1014
4:30 PM	67	188	61	0	18	181	9	0	14	81	130	2	75	81	8	0	915
4:45 PM	91	209	91	0	19	192	4	0	6	111	161	0	68	87	8	0	1047
5:00 PM	73	145	75	0	24	173	4	0	14	131	161	0	86	64	5	0	955
5:15 PM	91	152	91	0	14	200	2	0	2	114	162	1	75	65	7	0	976
5:30 PM	67	120	70	0	16	180	3	0	13	127	175	0	80	82	7	0	940
5:45 PM	87	146	56	0	17	179	7	0	8	105	113	0	74	53	6	0	851
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	632	1334	595	0	154	1452	41	0	93	893	1184	3	645	604	71	1	7702
APPROACH %'s :	24.68%	52.09%	23.23%	0.00%	9.35%	88.16%	2.49%	0.00%	4.28%	41.10%	54.49%	0.14%	48.83%	45.72%	5.37%	0.08%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	314	771	303	0	83	720	25	0	56	416	573	2	330	340	46	1	3980
PEAK HR FACTOR :	0.863	0.922	0.832	0.000	0.902	0.938	0.694	0.000	0.636	0.794	0.890	0.250	0.778	0.904	0.719	0.250	0.950
	0.887				0.963				0.890				0.901				

National Data & Surveying Services Intersection Turning Movement Count

Location: Main St & E Riverside Dr
City: Watsonville
Control: Signalized

Project ID: 21-090069-004
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Main St				Main St				E Riverside Dr				E Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	1.5	0.5	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
7:15 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
7:45 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4
8:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	3	4	1	0	0	1	0	0	1	0	2	0	1	1	0	0	14
APPROACH %'s :	37.50%	50.00%	12.50%	0.00%	0.00%	100.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%	50.00%	50.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	4	0	0	0	1	0	0	0	0	2	0	0	1	0	0	10
PEAK HR FACTOR :	0.250	0.333	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.625
	0.500				0.250				0.500				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	1	0	1	2	0	0	1	1.5	0.5	0	2	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	4
4:15 PM	0	2	0	0	0	1	2	0	0	1	0	0	0	0	0	0	6
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	3	0	0	0	1	0	0	0	1	0	0	5
5:15 PM	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	4	1	0	1	9	2	0	0	3	0	0	0	2	0	0	24
APPROACH %'s :	28.57%	57.14%	14.29%	0.00%	8.33%	75.00%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	2	2	1	0	0	4	2	0	0	2	0	0	0	0	0	0	13
PEAK HR FACTOR :	0.500	0.250	0.250	0.000	0.000	0.500	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.542
	0.625				0.500				0.500								

National Data & Surveying Services Intersection Turning Movement Count

Location: Main St & E Riverside Dr
City: Watsonville
Project ID: 21-090069-004
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Main St		Main St		E Riverside Dr		E Riverside Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	2	0	1	0	3
7:15 AM	0	0	0	0	1	2	0	1	4
7:30 AM	3	2	5	1	4	0	3	0	18
7:45 AM	0	3	1	1	2	0	0	0	7
8:00 AM	1	3	1	0	3	0	1	1	10
8:15 AM	0	0	0	0	1	0	0	0	1
8:30 AM	1	0	0	0	0	0	0	0	1
8:45 AM	0	2	0	0	2	0	1	0	5
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	5	10	7	2	15	2	6	2	49
APPROACH %'s :	33.33%	66.67%	77.78%	22.22%	88.24%	11.76%	75.00%	25.00%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	4	8	7	2	10	2	4	2	39
PEAK HR FACTOR :	0.333	0.667	0.350	0.500	0.625	0.250	0.333	0.500	0.542
	0.600		0.375		0.750		0.500		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	4	0	0	1	1	6	0	1	13
4:15 PM	0	0	1	1	1	2	1	1	7
4:30 PM	0	2	3	0	2	0	0	3	10
4:45 PM	3	2	0	0	1	2	2	0	10
5:00 PM	1	3	1	0	1	2	0	1	9
5:15 PM	0	0	1	3	1	1	0	0	6
5:30 PM	0	0	0	0	0	1	1	0	2
5:45 PM	0	0	0	2	2	2	2	3	11
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	8	7	6	7	9	16	6	9	68
APPROACH %'s :	53.33%	46.67%	46.15%	53.85%	36.00%	64.00%	40.00%	60.00%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	7	4	4	2	5	10	3	5	40
PEAK HR FACTOR :	0.438	0.500	0.333	0.500	0.625	0.417	0.375	0.417	0.769
	0.550		0.500		0.536		0.667		

Prepared by National Data & Surveying Services

Main St & E Riverside Dr

Peak Hour Turning Movement Count

ID: 21-090069-004
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

CONTROL: Signalized

	AM	NOON	PM
TEV	3344	0	3980
PHF	0.95		0.95

Main St — SOUTHBOUND

	Left	Thru	Right	U-Turn	
AM	45	328	42	0	863 AM
NOON	0	0	0	0	0 NOON
PM	25	720	83	0	873 PM

E Riverside Dr — EASTBOUND

	Left	Thru	Right	
AM	887	0	681	
NOON	0	0	0	
PM	0	2	1	0

E Riverside Dr — WESTBOUND

	Left	Thru	Right	
PM	46	0	52	0
NOON	340	0	461	2
AM	330	0	265	2
	1	0	0	0
	803	0	725	

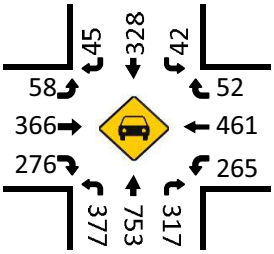
E Riverside Dr — EASTBOUND

	Left	Thru	Right	
AM	4	0	2	0
NOON	58	0	56	1
PM	366	0	416	1.5
	276	0	573	0.5

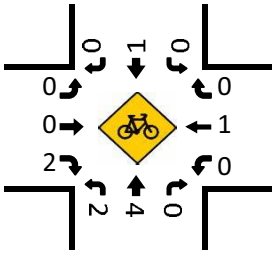
Main St — NORTHBOUND

	Left	Thru	Thru	Right	
PM	1623	0	314	771	303 PM
NOON	0	0	0	0	0 NOON
AM	869	0	377	753	317 AM
	0	1	2	1	

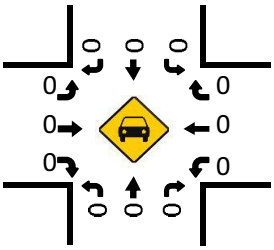
Totals (AM)



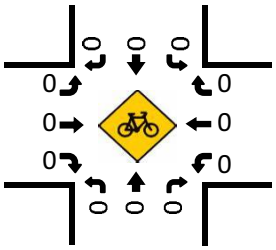
Total Bikes (AM)



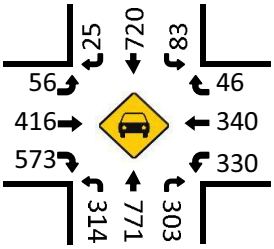
Totals (NOON)



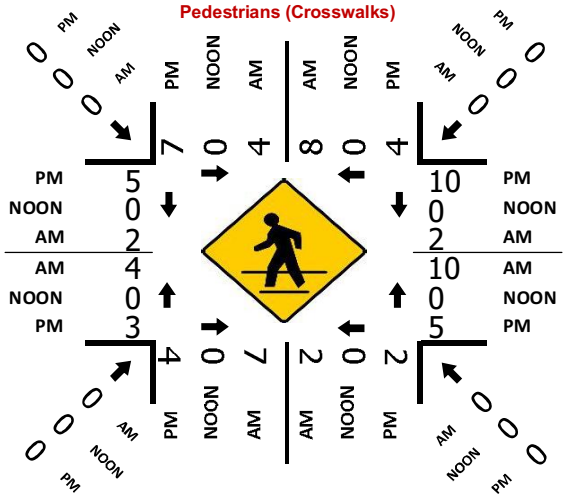
Total Bikes (NOON)



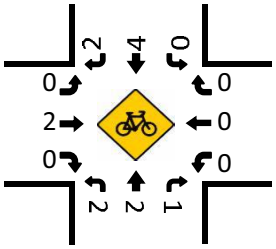
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-004
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Main St Southbound				E Riverside Dr Westbound				Main St Northbound				E Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	676
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1439
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2519
7:00 AM	6	68	6	0	48	156	9	0	108	143	38	0	7	45	42	0	3195
7:15 AM	14	65	9	U	54	122	6	U	100	153	82	U	12	88	58	1	3540
7:30 AM	9	76	8	0	70	100	9	0	110	219	100	0	15	92	72	0	3271
7:45 AM	10	91	11	U	76	116	18	U	85	204	76	U	17	103	69	U	3084
8:00 AM	9	96	17	0	65	123	19	0	82	177	59	0	14	83	77	3	2817
8:15 AM	6	75	7	U	53	112	18	U	96	105	49	U	19	84	70	U	1996
8:30 AM	17	86	11	0	45	96	16	0	71	145	50	0	15	75	66	0	1302
8:45 AM	9	74	7	U	44	66	12	U	99	114	40	U	14	69	64	1	680
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1003
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2017
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2930
4:00 PM	23	165	5	0	106	78	14	1	73	171	74	0	14	131	149	0	3977
4:15 PM	23	182	7	U	81	94	16	U	83	203	77	U	22	93	133	U	3929
4:30 PM	18	181	9	0	75	81	8	0	67	188	61	0	14	81	130	2	3890
4:45 PM	19	192	4	U	88	87	8	U	91	209	91	U	6	111	161	U	3917
5:00 PM	24	173	4	0	86	64	5	0	73	145	75	0	14	131	161	0	3721
5:15 PM	14	200	2	U	75	69	7	U	91	162	91	U	2	114	162	1	2766
5:30 PM	16	180	3	0	80	82	7	0	67	120	70	0	13	127	175	0	1791
5:45 PM	17	179	7	U	74	53	6	U	87	146	56	U	8	105	113	U	951
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-004
Date : 8/19/2021

All Vehicles & Uturns

	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	6	68	6	0	80	48	156	9	0	213	108	143	38	0	289	7	45	42	0	94	676	0
7:15	14	65	9	0	88	54	122	6	0	182	100	153	82	0	335	12	88	58	1	159	764	1
7:30	9	76	8	0	93	70	100	9	0	179	110	219	100	0	429	15	92	72	0	179	880	0
7:45	10	91	11	0	112	76	116	18	0	210	85	204	76	0	365	17	103	69	0	189	876	0
Total	39	300	34	0	373	248	494	42	0	784	403	719	296	0	1418	51	328	241	1	621	3196	1
8:00	9	96	17	0	122	65	123	19	0	207	82	177	59	0	318	14	83	77	3	177	824	3
8:15	6	75	7	0	88	53	112	18	0	183	96	105	49	0	250	19	84	70	0	173	694	0
8:30	17	86	11	0	114	45	96	16	0	157	71	145	50	0	266	15	75	66	0	156	693	0
8:45	9	74	7	0	90	44	65	12	0	121	97	114	40	0	251	14	69	64	1	148	610	1
Total	41	331	42	0	414	207	396	65	0	668	346	541	198	0	1085	62	311	277	4	654	2821	4
16:00	23	165	5	0	193	106	78	14	1	199	73	171	74	0	318	14	131	149	0	294	1004	1
16:15	23	182	7	0	212	81	94	16	0	191	83	203	77	0	363	22	93	133	0	248	1014	0
16:30	18	181	9	0	208	75	81	8	0	164	67	188	61	0	316	14	81	130	2	227	915	2
16:45	19	192	4	0	215	68	87	8	0	163	91	209	91	0	391	6	111	161	0	278	1047	0
Total	83	720	25	0	828	330	340	46	1	717	314	771	303	0	1388	56	416	573	2	1047	3980	3
17:00	24	173	4	0	201	86	64	5	0	155	73	145	75	0	293	14	131	161	0	306	955	0
17:15	14	200	2	0	216	75	65	7	0	147	91	152	91	0	334	2	114	162	1	279	976	1
17:30	16	180	3	0	199	80	82	7	0	169	67	120	70	0	257	13	127	175	0	315	940	0
17:45	17	179	7	0	203	74	53	6	0	133	87	146	56	0	289	8	105	113	0	226	851	0
Total	71	732	16	0	819	315	264	25	0	604	318	563	292	0	1173	37	477	611	1	1126	3722	1
Grand Total	234	2083	117	0	2434	1100	1494	178	1	2773	1381	2594	1089	0	5064	206	1532	1702	8	3448	13719	9
Apprch %	9.6%	85.6%	4.8%	0.0%		39.7%	53.9%	6.4%	0.0%		27.3%	51.2%	21.5%	0.0%		6.0%	44.4%	49.4%	0.2%			
Total %	1.7%	15.2%	0.9%	0.0%	17.7%	8.0%	10.9%	1.3%	0.0%	20.2%	10.1%	18.9%	7.9%	0.0%	36.9%	1.5%	11.2%	12.4%	0.1%	25.1%	100.0%	

AM PEAK HOUR	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	14	65	9	0	88	54	122	6	0	182	100	153	82	0	335	12	88	58	1	159	764
7:30	9	76	8	0	93	70	100	9	0	179	110	219	100	0	429	15	92	72	0	179	880
7:45	10	91	11	0	112	76	116	18	0	210	85	204	76	0	365	17	103	69	0	189	876
8:00	9	96	17	0	122	65	123	19	0	207	82	177	59	0	318	14	83	77	3	177	824
Total Volume	42	328	45	0	415	265	461	52	0	778	377	753	317	0	1447	58	366	276	4	704	3344
% App Total	10.1%	79.0%	10.8%	0.0%		34.1%	59.3%	6.7%	0.0%		26.1%	52.0%	21.9%	0.0%		8.2%	52.0%	39.2%	0.6%		
PHF	.750	.854	.662	.000	.850	.872	.937	.684	.000	.926	.857	.860	.793	.000	.843	.853	.888	.896	.333	.931	.950

PM PEAK HOUR	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	23	165	5	0	193	106	78	14	1	199	73	171	74	0	318	14	131	149	0	294	1004
16:15	23	182	7	0	212	81	94	16	0	191	83	203	77	0	363	22	93	133	0	248	1014
16:30	18	181	9	0	208	75	81	8	0	164	67	188	61	0	316	14	81	130	2	227	915
16:45	19	192	4	0	215	68	87	8	0	163	91	209	91	0	391	6	111	161	0	278	1047
Total Volume	83	720	25	0	828	330	340	46	1	717	314	771	303	0	1388	56	416	573	2	1047	3980
% App Total	10.0%	87.0%	3.0%	0.0%		46.0%	47.4%	6.4%	0.1%		22.6%	55.5%	21.8%	0.0%		5.3%	39.7%	54.7%	0.2%		
PHF	.902	.938	.694	.000	.963	.778	.904	.719	.250	.901	.863	.922	.832	.000	.887	.636	.794	.890	.250	.890	.950

File Name: 21-090069-004
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Main St Southbound				E Riverside Dr Westbound				Main St Northbound				E Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	1	10
7:15 AM	U	U	U	U	U	U	U	3	U	1	U	U	U	U	1	1	10
7:30 AM	0	1	0	5	0	0	0	4	0	0	0	6	0	0	1	3	8
7:45 AM	U	U	U	3	U	1	U	2	U	3	U	2	U	U	U	U	8
8:00 AM	0	0	0	4	0	0	0	3	2	0	0	1	0	0	0	2	4
8:15 AM	U	U	U	U	U	U	U	1	U	U	U	U	U	U	U	U	2
8:30 AM	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	2
8:45 AM	U	U	U	2	U	U	U	2	U	U	U	U	U	U	U	1	U
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	4
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	10
4:00 PM	0	1	0	4	0	0	0	7	1	0	1	1	0	1	0	1	13
4:15 PM	U	1	2	U	U	U	U	3	U	2	U	2	U	1	U	2	14
4:30 PM	0	0	0	2	0	0	0	2	0	0	0	3	0	0	0	3	12
4:45 PM	U	2	U	5	U	U	U	3	1	U	U	U	U	U	U	2	12
5:00 PM	0	3	0	4	0	1	0	3	0	0	0	1	0	1	0	1	11
5:15 PM	1	1	U	U	U	1	U	2	U	1	U	4	U	U	U	U	9
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
5:45 PM	U	1	U	U	U	U	U	4	U	1	U	2	U	U	U	5	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-004
Date : 8/19/2021

All Bikes and Peds

	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	2	0	1	0	0	0	1	1	0	0	1	1	2	3
7:15	0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	0	0	1	1	1	2	4
7:30	0	1	0	5	1	0	0	0	4	0	0	0	0	6	0	0	0	1	3	1	2	18
7:45	0	0	0	3	0	0	1	0	2	1	0	3	0	2	3	0	0	0	0	0	4	7
Total	0	1	0	8	1	0	1	0	11	1	1	4	0	8	5	1	0	2	5	3	10	32
8:00	0	0	0	4	0	0	0	0	3	0	2	0	0	1	2	0	0	0	2	0	2	10
8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30	0	0	0	1	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2	1
8:45	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	5
Total	0	0	0	7	0	1	0	0	6	1	2	0	1	1	3	0	0	0	3	0	4	17
16:00	0	1	0	4	1	0	0	0	7	0	1	0	1	1	2	0	1	0	1	1	4	13
16:15	0	1	2	0	3	0	0	0	3	0	0	2	0	2	2	0	1	0	2	1	6	7
16:30	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0	0	0	3	0	0	10
16:45	0	2	0	5	2	0	0	0	3	0	1	0	0	0	1	0	0	0	2	0	3	10
Total	0	4	2	11	6	0	0	0	15	0	2	2	1	6	5	0	2	0	8	2	13	40
17:00	0	3	0	4	3	0	1	0	3	1	0	0	0	1	0	0	1	0	1	1	5	9
17:15	1	1	0	0	2	0	1	0	2	1	0	1	0	4	1	0	0	0	0	0	4	6
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2
17:45	0	1	0	0	1	0	0	0	4	0	0	1	0	2	1	0	0	0	5	0	2	11
Total	1	5	0	4	6	0	2	0	10	2	0	2	0	7	2	0	1	0	7	1	11	28
Grand Total	1	10	2	30	13	1	3	0	42	4	5	8	2	22	15	1	3	2	23	6	38	117
Apprch %	7.7%	76.9%	15.4%			25.0%	75.0%	0.0%			33.3%	53.3%	13.3%			16.7%	50.0%	33.3%				
Total %	2.6%	26.3%	5.3%		34.2%	2.6%	7.9%	0.0%		10.5%	13.2%	21.1%	5.3%		39.5%	2.6%	7.9%	5.3%		15.8%	100.0%	

AM PEAK HOUR	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	0	0	0	3	0	0	1	0	0	1	0	0	1	1	1	2
7:30	0	1	0	5	1	0	0	0	4	0	0	0	0	6	0	0	0	1	3	1	2
7:45	0	0	0	3	0	0	1	0	2	1	0	3	0	2	3	0	0	0	0	0	4
8:00	0	0	0	4	0	0	0	0	3	0	2	0	0	1	2	0	0	0	2	0	2
Total Volume	0	1	0	12	1	0	1	0	12	1	2	4	0	9	6	0	0	2	6	2	10
% App Total	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			33.3%	66.7%	0.0%			0.0%	0.0%	100.0%			
PHF	.000	.250	.000		.250	.000	.250	.000		.250	.250	.333	.000		.500	.000	.000	.500		.500	.625

PM PEAK HOUR	Main St Southbound					E Riverside Dr Westbound					Main St Northbound					E Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	1	0	4	1	0	0	0	7	0	1	0	1	1	2	0	1	0	1	1	4
16:15	0	1	2	0	3	0	0	0	3	0	0	2	0	2	2	0	1	0	2	1	6
16:30	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	0	0	0	3	0	0
16:45	0	2	0	5	2	0	0	0	3	0	1	0	0	0	1	0	0	0	2	0	3
Total Volume	0	4	2	11	6	0	0	0	15	0	2	2	1	6	5	0	2	0	8	2	13
% App Total	0.0%	66.7%	33.3%			0.0%	0.0%	0.0%			40.0%	40.0%	20.0%			0.0%	100.0%	0.0%			
PHF	.000	.500	.250		.500	.000	.000	.000		.000	.500	.250	.250		.625	.000	.500	.000		.500	.542

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Loma Vista
City: Watsonville
Control: 2-Way Stop(EB/WB)

Project ID: 21-090069-005
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Loma Vista				Loma Vista				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	52	0	0	1	26	4	0	21	0	5	0	0	0	9	0	118
7:15 AM	3	69	1	0	3	46	3	0	20	1	1	0	1	0	7	0	155
7:30 AM	0	81	1	0	1	76	10	0	29	0	2	0	1	0	9	0	210
7:45 AM	3	60	1	1	8	68	17	0	22	0	2	0	2	0	4	0	188
8:00 AM	0	60	0	0	1	58	16	0	18	0	4	0	1	0	4	0	162
8:15 AM	0	44	0	0	3	70	12	0	11	0	6	0	2	0	6	0	154
8:30 AM	0	41	1	0	1	55	7	0	10	0	2	0	1	1	4	0	123
8:45 AM	0	37	1	0	4	41	7	0	8	1	2	0	1	0	0	0	102
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	6	444	5	1	22	440	76	0	139	2	24	0	9	1	43	0	1212
APPROACH %'s :	1.32%	97.37%	1.10%	0.22%	4.09%	81.78%	14.13%	0.00%	84.24%	1.21%	14.55%	0.00%	16.98%	1.89%	81.13%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	6	270	3	1	13	248	46	0	89	1	9	0	5	0	24	0	715
PEAK HR FACTOR :	0.500	0.833	0.750	0.250	0.406	0.816	0.676	0.000	0.767	0.250	0.563	0.000	0.625	0.000	0.667	0.000	0.851
	0.854				0.825				0.798				0.725				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	80	3	0	7	63	20	0	12	0	3	0	3	0	1	0	194
4:15 PM	2	49	3	0	9	51	12	0	8	0	1	0	2	0	6	0	143
4:30 PM	3	60	4	0	5	59	18	0	18	0	1	0	2	0	5	0	175
4:45 PM	3	62	2	0	4	56	23	0	5	0	2	0	1	1	4	0	163
5:00 PM	3	75	9	0	11	60	20	0	7	0	3	0	1	0	2	0	191
5:15 PM	4	50	0	1	3	65	18	0	4	1	4	0	1	1	7	0	159
5:30 PM	2	48	3	0	6	52	24	0	16	0	2	0	3	0	5	0	161
5:45 PM	1	51	2	0	13	42	14	0	16	0	2	0	1	1	6	0	149
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	475	26	1	58	448	149	0	86	1	18	0	14	3	36	0	1335
APPROACH %'s :	3.83%	91.00%	4.98%	0.19%	8.85%	68.40%	22.75%	0.00%	81.90%	0.95%	17.14%	0.00%	26.42%	5.66%	67.92%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	13	247	15	1	23	240	79	0	34	1	10	0	5	2	18	0	688
PEAK HR FACTOR :	0.813	0.823	0.417	0.250	0.523	0.923	0.859	0.000	0.472	0.250	0.625	0.000	0.625	0.500	0.643	0.000	0.901
	0.793				0.940				0.592				0.694				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Loma Vista
City: Watsonville
Control: 2-Way Stop(EB/WB)

Project ID: 21-090069-005
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Loma Vista				Loma Vista				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	2	0	0	4	0	0	0	0	1	0	0	8
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	3	0	0	0	0	1	0	0	5
PEAK HR FACTOR :	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.313
	0.250				0.000				0.250				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0.5	0.5	1	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	5
5:30 PM	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:45 PM	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	5	0	0	0	6	1	0	5	0	1	0	0	0	0	0	19
APPROACH %'s :	16.67%	83.33%	0.00%	0.00%	0.00%	85.71%	14.29%	0.00%	83.33%	0.00%	16.67%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	3	0	0	0	3	1	0	2	0	1	0	0	0	0	0	10
PEAK HR FACTOR :	0.000	0.750	0.000	0.000	0.000	0.750	0.250	0.000	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500
	0.750				0.500				0.375								

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Loma Vista
City: Watsonville
Project ID: 21-090069-005
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Ohlone Pkwy		Ohlone Pkwy		Loma Vista		Loma Vista		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	5	3	0	1	0	0	15	1	25
7:15 AM	0	1	0	1	1	0	2	2	7
7:30 AM	5	2	0	0	6	0	2	0	15
7:45 AM	2	4	0	0	2	3	0	1	12
8:00 AM	1	0	0	0	2	1	2	1	7
8:15 AM	2	1	0	0	1	1	2	1	8
8:30 AM	1	0	0	0	0	1	1	0	3
8:45 AM	0	0	0	0	0	2	2	0	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	16	11	0	2	12	8	26	6	81
APPROACH %'s :	59.26%	40.74%	0.00%	100.00%	60.00%	40.00%	81.25%	18.75%	
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	8	7	0	1	11	4	6	4	41
PEAK HR FACTOR :	0.400	0.438		0.250	0.458	0.333	0.750	0.500	0.683
	0.536		0.250		0.625		0.625		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	1	0	0	0	0	1	2	2	6
4:15 PM	0	0	0	0	1	0	1	0	2
4:30 PM	0	0	0	0	0	0	1	1	2
4:45 PM	1	0	0	0	1	1	0	0	3
5:00 PM	0	0	1	0	2	1	0	0	4
5:15 PM	4	0	0	0	1	3	2	0	10
5:30 PM	3	2	0	0	2	1	1	2	11
5:45 PM	3	0	1	0	2	4	2	2	14
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	12	2	2	0	9	11	9	7	52
APPROACH %'s :	85.71%	14.29%	100.00%	0.00%	45.00%	55.00%	56.25%	43.75%	
PEAK HR :	**04:30 PM - 05:30 PM**								TOTAL
PEAK HR VOL :	5	0	1	0	4	5	3	1	19
PEAK HR FACTOR :	0.313		0.250		0.500	0.417	0.375	0.250	0.475
	0.313		0.250		0.563		0.500		

Prepared by National Data & Surveying Services

Ohlone Pkwy & Loma Vista

Peak Hour Turning Movement Count

ID: 21-090069-005
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Ohlone Pkwy)

AM	46	248	13	0	383	AM
NOON	0	0	0	0	0	NOON
PM	79	240	23	0	299	PM

NORTHBOUND (Ohlone Pkwy)

PM	256	1	13	247	15	PM
NOON	0	0	0	0	0	NOON
AM	263	1	6	270	3	AM

WESTBOUND (Loma Vista)

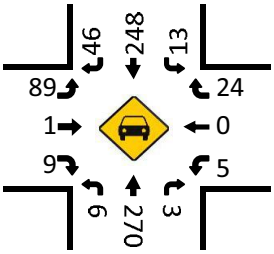
AM	NOON	PM	
0	0	0	0
89	0	34	0.5
1	0	1	0.5
9	0	10	1
52	0	94	

EASTBOUND (Loma Vista)

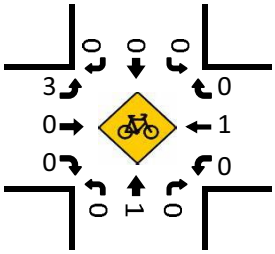
PM	NOON	AM	
0	0	0	0
2	0	0	1
5	0	5	0
0	0	0	0
39	0	17	

CONTROL			
2-Way Stop(EB/WB)			
TEV	715 AM	0 NOON	688 PM
PHF	0.85		0.90

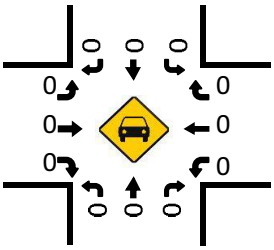
Totals (AM)



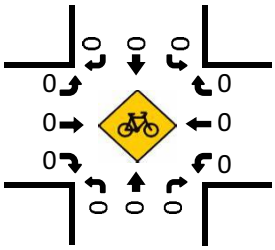
Total Bikes (AM)



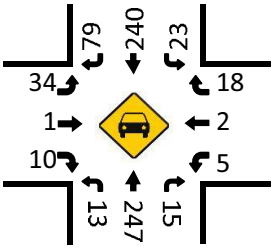
Totals (NOON)



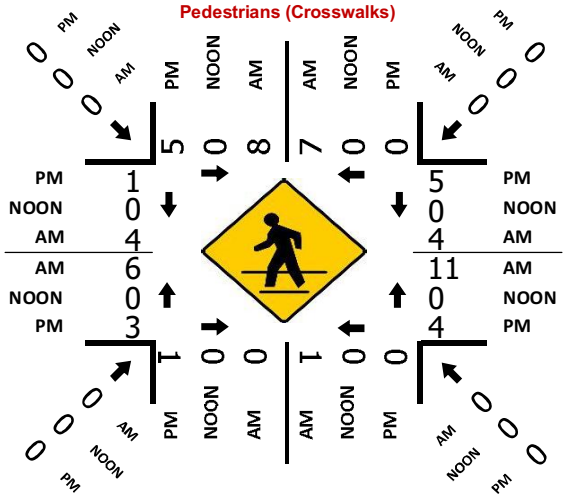
Total Bikes (NOON)



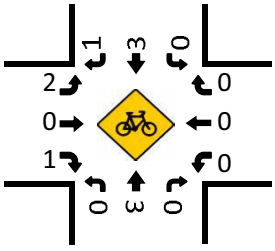
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-005
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Loma Vista Westbound				Ohlone Pkwy Northbound				Loma Vista Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	118
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	273
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	483
7:00 AM	1	26	4	0	0	0	9	0	0	52	0	0	21	0	5	0	670
7:15 AM	3	46	3	U	1	U	7	U	3	69	1	U	20	1	1	U	714
7:30 AM	1	76	10	0	1	0	9	0	0	31	1	0	29	0	2	0	713
7:45 AM	8	88	17	U	2	U	4	U	3	80	1	1	22	U	2	U	626
8:00 AM	1	58	16	0	1	0	4	0	0	60	0	0	18	0	4	0	541
8:15 AM	3	70	12	U	2	U	6	U	U	44	U	U	11	U	6	U	379
8:30 AM	1	55	7	0	1	1	4	0	0	41	1	0	10	0	2	0	225
8:45 AM	4	41	7	U	1	U	U	U	U	37	1	U	8	1	2	U	102
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	194
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	337
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	512
4:00 PM	7	63	20	0	3	0	1	0	2	80	3	0	12	0	3	0	675
4:15 PM	9	51	12	U	2	U	6	U	2	49	3	U	8	U	1	U	672
4:30 PM	5	59	18	0	2	0	5	0	3	60	4	0	18	0	1	0	687
4:45 PM	4	56	23	U	1	1	4	U	3	62	2	U	5	U	2	U	673
5:00 PM	11	60	20	0	1	0	2	0	3	75	9	0	7	0	3	0	659
5:15 PM	3	65	16	U	1	1	7	U	4	50	U	1	4	1	4	U	498
5:30 PM	6	52	24	0	3	0	5	0	2	48	3	0	16	0	2	0	310
5:45 PM	13	42	14	U	1	1	6	U	1	51	2	U	16	U	2	U	149
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-005
Date : 8/19/2021

All Vehicles & Uturns

	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	26	4	0	31	0	0	9	0	9	0	52	0	0	52	21	0	5	0	26	118	0
7:15	3	46	3	0	52	1	0	7	0	8	3	69	1	0	73	20	1	1	0	22	155	0
7:30	1	76	10	0	87	1	0	9	0	10	0	81	1	0	82	29	0	2	0	31	210	0
7:45	8	68	17	0	93	2	0	4	0	6	3	60	1	1	65	22	0	2	0	24	188	1
Total	13	216	34	0	263	4	0	29	0	33	6	262	3	1	272	92	1	10	0	103	671	1
8:00	1	58	16	0	75	1	0	4	0	5	0	60	0	0	60	18	0	4	0	22	162	0
8:15	3	70	12	0	85	2	0	6	0	8	0	44	0	0	44	11	0	6	0	17	154	0
8:30	1	55	7	0	63	1	1	4	0	6	0	41	1	0	42	10	0	2	0	12	123	0
8:45	4	41	7	0	52	1	0	0	0	1	0	37	1	0	38	8	1	2	0	11	102	0
Total	9	224	42	0	275	5	1	14	0	20	0	182	2	0	184	47	1	14	0	62	541	0
16:00	7	63	20	0	90	3	0	1	0	4	2	80	3	0	85	12	0	3	0	15	194	0
16:15	9	51	12	0	72	2	0	6	0	8	2	49	3	0	54	8	0	1	0	9	143	0
16:30	5	59	18	0	82	2	0	5	0	7	3	60	4	0	67	18	0	1	0	19	175	0
16:45	4	56	23	0	83	1	1	4	0	6	3	62	2	0	67	5	0	2	0	7	163	0
Total	25	229	73	0	327	8	1	16	0	25	10	251	12	0	273	43	0	7	0	50	675	0
17:00	11	60	20	0	91	1	0	2	0	3	3	75	9	0	87	7	0	3	0	10	191	0
17:15	3	65	18	0	86	1	1	7	0	9	4	50	0	1	55	4	1	4	0	9	159	1
17:30	6	52	24	0	82	3	0	5	0	8	2	48	3	0	53	16	0	2	0	18	161	0
17:45	13	42	14	0	69	1	1	6	0	8	1	51	2	0	54	16	0	2	0	18	149	0
Total	33	219	76	0	328	6	2	20	0	28	10	224	14	1	249	43	1	11	0	55	660	1
Grand Total	80	888	225	0	1193	23	4	79	0	106	26	919	31	2	978	225	3	42	0	270	2547	2
Apprch %	6.7%	74.4%	18.9%	0.0%		21.7%	3.8%	74.5%	0.0%		2.7%	94.0%	3.2%	0.2%		83.3%	1.1%	15.6%	0.0%			
Total %	3.1%	34.9%	8.8%	0.0%	46.8%	0.9%	0.2%	3.1%	0.0%	4.2%	1.0%	36.1%	1.2%	0.1%	38.4%	8.8%	0.1%	1.6%	0.0%	10.6%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	3	46	3	0	52	1	0	7	0	8	3	69	1	0	73	20	1	1	0	22	155
7:30	1	76	10	0	87	1	0	9	0	10	0	81	1	0	82	29	0	2	0	31	210
7:45	8	68	17	0	93	2	0	4	0	6	3	60	1	1	65	22	0	2	0	24	188
8:00	1	58	16	0	75	1	0	4	0	5	0	60	0	0	60	18	0	4	0	22	162
Total Volume	13	248	46	0	307	5	0	24	0	29	6	270	3	1	280	89	1	9	0	99	715
% App Total	4.2%	80.8%	15.0%	0.0%		17.2%	0.0%	82.8%	0.0%		2.1%	96.4%	1.1%	0.4%		89.9%	1.0%	9.1%	0.0%		
PHF	.406	.816	.676	.000	.825	.625	.000	.667	.000	.725	.500	.833	.750	.250	.854	.767	.250	.563	.000	.798	.851

PM PEAK HOUR	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	5	59	18	0	82	2	0	5	0	7	3	60	4	0	67	18	0	1	0	19	175
16:45	4	56	23	0	83	1	1	4	0	6	3	62	2	0	67	5	0	2	0	7	163
17:00	11	60	20	0	91	1	0	2	0	3	3	75	9	0	87	7	0	3	0	10	191
17:15	3	65	18	0	86	1	1	7	0	9	4	50	0	1	55	4	1	4	0	9	159
Total Volume	23	240	79	0	342	5	2	18	0	25	13	247	15	1	276	34	1	10	0	45	688
% App Total	6.7%	70.2%	23.1%	0.0%		20.0%	8.0%	72.0%	0.0%		4.7%	89.5%	5.4%	0.4%		75.6%	2.2%	22.2%	0.0%		
PHF	.523	.923	.859	.000	.940	.625	.500	.643	.000	.694	.813	.823	.417	.250	.793	.472	.250	.625	.000	.592	.901

File Name: 21-090069-005
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Loma Vista Westbound				Ohlone Pkwy Northbound				Loma Vista Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5
7:00 AM	0	0	0	8	0	0	0	0	0	0	0	1	1	0	0	16	6
7:15 AM	U	U	U	1	U	1	U	1	U	U	U	1	3	U	U	4	5
7:30 AM	0	0	0	7	0	0	0	6	0	0	0	0	0	0	0	2	1
7:45 AM	U	U	U	6	U	U	U	5	U	1	U	U	U	U	U	1	1
8:00 AM	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	3	2
8:15 AM	U	U	U	3	U	U	U	2	U	U	U	U	U	U	U	3	2
8:30 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	2
8:45 AM	U	2	U	U	U	U	U	2	U	U	U	U	U	U	U	2	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	4
4:00 PM	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	4	7
4:15 PM	U	2	U	U	U	U	U	1	U	U	U	U	U	U	U	1	7
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10
4:45 PM	U	1	U	1	U	U	U	2	U	1	U	U	1	U	U	U	12
5:00 PM	0	0	0	0	0	0	0	3	0	1	0	1	0	0	0	0	12
5:15 PM	U	1	1	4	U	U	U	4	U	1	U	U	1	1	1	2	11
5:30 PM	0	1	0	5	0	0	0	3	1	0	0	0	1	0	0	3	6
5:45 PM	U	U	U	3	U	U	U	6	U	2	U	1	1	U	U	4	3
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-005
Date : 8/19/2021

All Bikes and Peds

	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	8	0	0	0	0	0	0	0	0	0	1	0	1	0	0	16	1	1	25
7:15	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	3	0	0	4	3	4	7
7:30	0	0	0	7	0	0	0	0	6	0	0	0	0	0	0	0	0	0	2	0	0	15
7:45	0	0	0	6	0	0	0	0	5	0	0	1	0	0	1	0	0	0	1	0	1	12
Total	0	0	0	22	0	0	1	0	12	1	0	1	0	2	1	4	0	0	23	4	6	59
8:00	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	7
8:15	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	0	8
8:30	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
8:45	0	2	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	2	4
Total	0	2	0	5	2	0	0	0	8	0	0	0	0	0	0	0	0	0	9	0	2	22
16:00	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	4	1	1	6
16:15	0	2	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2	2
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2
16:45	0	1	0	1	1	0	0	0	2	0	0	1	0	0	1	1	0	0	0	1	3	3
Total	0	4	0	2	4	0	0	0	4	0	0	1	0	0	1	2	0	0	7	2	7	13
17:00	0	0	0	0	0	0	0	0	3	0	0	1	0	1	1	0	0	0	0	0	1	4
17:15	0	1	1	4	2	0	0	0	4	0	0	1	0	0	1	1	0	1	2	2	5	10
17:30	0	1	0	5	1	0	0	0	3	0	1	0	0	0	1	1	0	0	3	1	3	11
17:45	0	0	0	3	0	0	0	0	6	0	0	2	0	1	2	1	0	0	4	1	3	14
Total	0	2	1	12	3	0	0	0	16	0	1	4	0	2	5	3	0	1	9	4	12	39
Grand Total	0	8	1	41	9	0	1	0	40	1	1	6	0	4	7	9	0	1	48	10	27	133
Apprch %	0.0%	88.9%	11.1%			0.0%	100.0%	0.0%			14.3%	85.7%	0.0%			90.0%	0.0%	10.0%				
Total %	0.0%	29.6%	3.7%		33.3%	0.0%	3.7%	0.0%		3.7%	3.7%	22.2%	0.0%		25.9%	33.3%	0.0%	3.7%		37.0%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	1	0	0	1	0	1	1	0	0	0	1	0	3	0	0	4	3	4
7:30	0	0	0	7	0	0	0	0	6	0	0	0	0	0	0	0	0	0	2	0	0
7:45	0	0	0	6	0	0	0	0	5	0	0	1	0	0	1	0	0	0	1	0	1
8:00	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0
Total Volume	0	0	0	15	0	0	1	0	15	1	0	1	0	1	1	3	0	0	10	3	5
% App Total	0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.250	.000		.250	.000	.250	.000		.250	.250	.000	.000		.250	.313

PM PEAK HOUR	Ohlone Pkwy Southbound					Loma Vista Westbound					Ohlone Pkwy Northbound					Loma Vista Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
16:45	0	1	0	1	1	0	0	0	2	0	0	1	0	0	1	1	0	0	0	1	3
17:00	0	0	0	0	0	0	0	0	3	0	0	1	0	1	1	0	0	0	0	0	1
17:15	0	1	1	4	2	0	0	0	4	0	0	1	0	0	1	1	0	1	2	2	5
Total Volume	0	3	1	5	4	0	0	0	9	0	0	3	0	1	3	2	0	1	4	3	10
% App Total	0.0%	75.0%	25.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			66.7%	0.0%	33.3%			
PHF	.000	.750	.250		.500	.000	.000	.000		.000	.000	.750	.000		.750	.500	.000	.250		.375	.500

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Lighthouse Dr
City: Watsonville
Control: 2-Way Stop(EB/WB)

Project ID: 21-090069-006
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Lighthouse Dr				Lighthouse Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	6	23	0	0	2	25	3	0	23	0	13	0	1	0	9	0	105
7:15 AM	2	45	1	1	3	41	6	0	26	0	13	0	0	0	5	0	143
7:30 AM	7	42	2	1	7	64	7	0	30	0	17	0	5	0	8	0	190
7:45 AM	4	41	1	1	5	59	7	1	17	0	15	0	2	1	10	0	164
8:00 AM	5	35	3	0	1	48	14	0	20	0	8	0	1	0	4	0	139
8:15 AM	8	33	0	0	4	62	10	1	5	0	4	0	3	0	5	0	135
8:30 AM	5	21	0	0	3	50	8	0	13	0	6	0	0	0	7	0	113
8:45 AM	9	22	0	0	2	32	9	0	15	0	7	0	2	1	3	0	102
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	46	262	7	3	27	381	64	2	149	0	83	0	14	2	51	0	1091
APPROACH %'s :	14.47%	82.39%	2.20%	0.94%	5.70%	80.38%	13.50%	0.42%	64.22%	0.00%	35.78%	0.00%	20.90%	2.99%	76.12%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	18	163	7	3	16	212	34	1	93	0	53	0	8	1	27	0	636
PEAK HR FACTOR :	0.643	0.906	0.583	0.750	0.571	0.828	0.607	0.250	0.775	0.000	0.779	0.000	0.400	0.250	0.675	0.000	0.837
	0.918				0.843				0.777				0.692				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	18	66	3	2	3	48	15	1	9	0	6	0	1	0	5	0	177
4:15 PM	10	41	2	2	3	35	18	0	11	0	3	0	1	0	2	0	128
4:30 PM	15	49	2	4	7	38	16	1	13	0	9	0	0	0	5	0	159
4:45 PM	20	46	0	1	8	36	17	0	10	0	8	0	3	0	5	0	154
5:00 PM	15	65	4	2	9	41	17	0	18	0	5	0	0	0	4	0	180
5:15 PM	14	41	0	3	9	45	17	0	13	1	9	0	1	0	5	0	158
5:30 PM	14	40	1	0	8	31	16	0	4	0	5	0	2	0	3	0	124
5:45 PM	9	38	6	0	9	28	9	0	10	0	7	0	1	1	5	0	123
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	115	386	18	14	56	302	125	2	88	1	52	0	9	1	34	0	1203
APPROACH %'s :	21.58%	72.42%	3.38%	2.63%	11.55%	62.27%	25.77%	0.41%	62.41%	0.71%	36.88%	0.00%	20.45%	2.27%	77.27%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	64	201	6	10	33	160	67	1	54	1	31	0	4	0	19	0	651
PEAK HR FACTOR :	0.800	0.773	0.375	0.625	0.917	0.889	0.985	0.250	0.750	0.250	0.861	0.000	0.333	0.000	0.950	0.000	0.904
	0.817				0.919				0.935				0.719				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Lighthouse Dr
City: Watsonville
Control: 2-Way Stop(EB/WB)

Project ID: 21-090069-006
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				Lighthouse Dr				Lighthouse Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	5
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
			0.000		0.500				0.250						0.000		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	1	1	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	4	0	6
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	4	0	0	4	4	0	0	0	0	0	0	1	0	5	0	18
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%					16.67%	0.00%	83.33%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	3	0	0	3	2	0	0	0	0	0	0	0	0	1	0	9
PEAK HR FACTOR :	0.000	0.375	0.000	0.000	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.563
		0.375			0.417								0.250				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & Lighthouse Dr
City: Watsonville
Project ID: 21-090069-006
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Ohlone Pkwy		Ohlone Pkwy		Lighthouse Dr		Lighthouse Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	1	1	0	0	0	6	0	8
7:15 AM	0	0	0	0	2	0	1	2	5
7:30 AM	0	0	2	0	2	1	1	0	6
7:45 AM	0	0	0	0	0	4	0	1	5
8:00 AM	0	0	0	2	1	1	1	2	7
8:15 AM	0	0	0	0	0	0	2	1	3
8:30 AM	0	0	1	1	0	0	2	0	4
8:45 AM	0	0	1	1	0	4	1	0	7
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	5	4	5	10	14	6	45
APPROACH %'s :	0.00%	100.00%	55.56%	44.44%	33.33%	66.67%	70.00%	30.00%	
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	2	2	5	6	3	5	23
PEAK HR FACTOR :			0.250	0.250	0.625	0.375	0.750	0.625	0.821
			0.500		0.688		0.667		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	1	1	0	1	0	0	2	5
4:15 PM	0	0	0	0	1	0	0	0	1
4:30 PM	0	0	5	0	0	0	0	1	6
4:45 PM	0	0	1	2	2	1	0	0	6
5:00 PM	0	0	3	4	1	0	0	0	8
5:15 PM	0	0	1	0	1	0	2	1	5
5:30 PM	0	0	1	2	2	3	0	0	8
5:45 PM	0	0	0	2	0	1	3	2	8
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	12	10	8	5	5	6	47
APPROACH %'s :	0.00%	100.00%	54.55%	45.45%	61.54%	38.46%	45.45%	54.55%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	10	6	4	1	2	2	25
PEAK HR FACTOR :			0.500	0.375	0.500	0.250	0.250	0.500	0.781
			0.571		0.417		0.333		

Prepared by National Data & Surveying Services

Ohlone Pkwy & Lighthouse Dr

Peak Hour Turning Movement Count

ID: 21-090069-006
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Ohlone Pkwy)

	Left	Thru	Right	U-Turn	
AM	34	212	16	1	284 AM
NOON	0	0	0	0	0 NOON
PM	67	160	33	1	275 PM

WESTBOUND (Lighthouse Dr)

	Left	Thru	Right	U-Turn
AM	53	0	131	
NOON	0	0	0	0
PM	93	0	54	1
	0	0	1	0.5
	53	0	31	0.5

EASTBOUND (Lighthouse Dr)

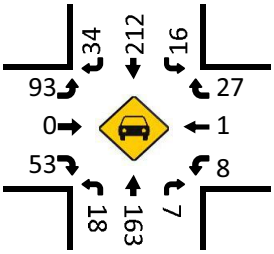
	Left	Thru	Right	U-Turn
PM	19	0	27	0
NOON	0	0	1	1
AM	4	0	8	0
	0	0	0	0
	40	0	23	

NORTHBOUND (Ohlone Pkwy)

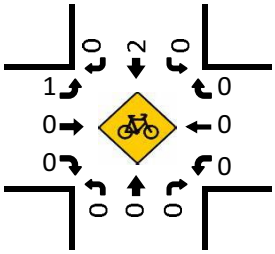
	Left	Thru	Right	U-Turn	
PM	205	10	64	201	6 PM
NOON	0	0	0	0	0 NOON
AM	276	3	18	163	7 AM

CONTROL			
2-Way Stop(EB/WB)			
TEV	636 AM	0 NOON	651 PM
PHF	0.84		0.90

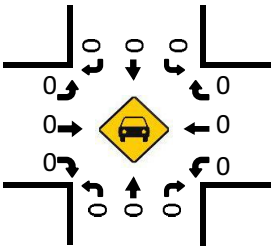
Totals (AM)



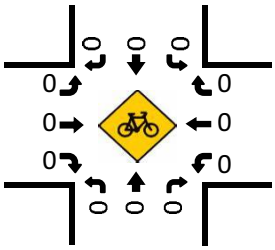
Total Bikes (AM)



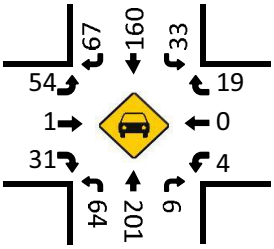
Totals (NOON)



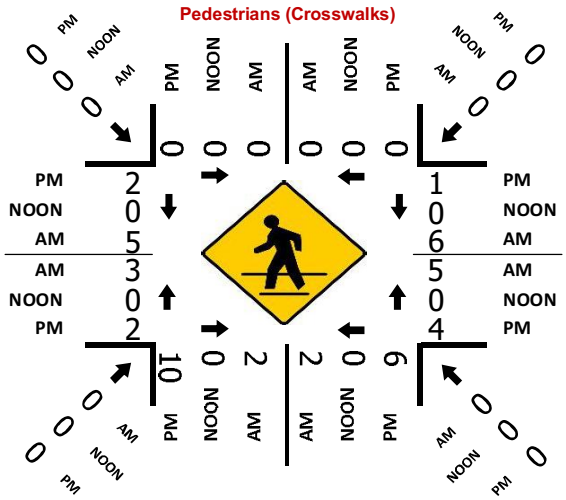
Total Bikes (NOON)



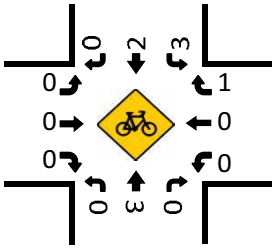
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-006
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Lighthouse Dr Westbound				Ohlone Pkwy Northbound				Lighthouse Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	105
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	247
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	436
7:00 AM	2	25	3	0	1	0	9	0	6	23	0	0	23	0	13	0	598
7:15 AM	3	41	6	U	U	U	5	U	2	45	1	1	46	U	13	U	652
7:30 AM	7	64	7	0	5	0	8	0	7	42	2	1	30	0	17	0	624
7:45 AM	5	59	7	1	2	1	10	U	4	41	1	1	17	U	15	U	548
8:00 AM	1	48	14	0	1	0	4	0	5	35	3	0	20	0	8	0	488
8:15 AM	4	62	10	1	3	U	5	U	8	33	U	U	5	U	4	U	349
8:30 AM	3	50	8	0	0	0	7	0	5	21	0	0	13	0	6	0	215
8:45 AM	2	32	9	U	2	1	3	U	9	22	U	U	15	U	7	U	102
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	174
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	464
4:00 PM	3	48	15	1	1	0	5	0	18	66	3	2	9	0	6	0	607
4:15 PM	3	35	18	U	1	U	2	U	10	41	2	2	11	U	3	U	611
4:30 PM	7	38	16	1	0	0	5	0	15	49	2	4	13	0	9	0	640
4:45 PM	8	36	17	U	3	U	5	U	20	46	U	1	10	U	8	U	610
5:00 PM	9	41	17	0	0	0	4	0	15	66	4	2	18	0	5	0	580
5:15 PM	1	49	17	U	1	U	5	U	14	41	U	3	13	1	9	U	402
5:30 PM	8	31	16	0	2	0	3	0	14	40	1	0	4	0	5	0	247
5:45 PM	9	28	9	U	1	1	5	U	9	38	6	U	10	U	7	U	123
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-006
Date : 8/19/2021

All Vehicles & Uturns

	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	2	25	3	0	30	1	0	9	0	10	6	23	0	0	29	23	0	13	0	36	105	0
7:15	3	41	6	0	50	0	0	5	0	5	2	45	1	1	49	26	0	13	0	39	143	1
7:30	7	64	7	0	78	5	0	8	0	13	7	42	2	1	52	30	0	17	0	47	190	1
7:45	5	59	7	1	72	2	1	10	0	13	4	41	1	1	47	17	0	15	0	32	164	2
Total	17	189	23	1	230	8	1	32	0	41	19	151	4	3	177	96	0	58	0	154	602	4
8:00	1	48	14	0	63	1	0	4	0	5	5	35	3	0	43	20	0	8	0	28	139	0
8:15	4	62	10	1	77	3	0	5	0	8	8	33	0	0	41	5	0	4	0	9	135	1
8:30	3	50	8	0	61	0	0	7	0	7	5	21	0	0	26	13	0	6	0	19	113	0
8:45	2	32	9	0	43	2	1	3	0	6	9	22	0	0	31	15	0	7	0	22	102	0
Total	10	192	41	1	244	6	1	19	0	26	27	111	3	0	141	53	0	25	0	78	489	1
16:00	3	48	15	1	67	1	0	5	0	6	18	66	3	2	89	9	0	6	0	15	177	3
16:15	3	35	18	0	56	1	0	2	0	3	10	41	2	2	55	11	0	3	0	14	128	2
16:30	7	38	16	1	62	0	0	5	0	5	15	49	2	4	70	13	0	9	0	22	159	5
16:45	8	36	17	0	61	3	0	5	0	8	20	46	0	1	67	10	0	8	0	18	154	1
Total	21	157	66	2	246	5	0	17	0	22	63	202	7	9	281	43	0	26	0	69	618	11
17:00	9	41	17	0	67	0	0	4	0	4	15	65	4	2	86	18	0	5	0	23	180	2
17:15	9	45	17	0	71	1	0	5	0	6	14	41	0	3	58	13	1	9	0	23	158	3
17:30	8	31	16	0	55	2	0	3	0	5	14	40	1	0	55	4	0	5	0	9	124	0
17:45	9	28	9	0	46	1	1	5	0	7	9	38	6	0	53	10	0	7	0	17	123	0
Total	35	145	59	0	239	4	1	17	0	22	52	184	11	5	252	45	1	26	0	72	585	5
Grand Total	83	683	189	4	959	23	3	85	0	111	161	648	25	17	851	237	1	135	0	373	2294	21
Apprch %	8.7%	71.2%	19.7%	0.4%		20.7%	2.7%	76.6%	0.0%		18.9%	76.1%	2.9%	2.0%		63.5%	0.3%	36.2%	0.0%			
Total %	3.6%	29.8%	8.2%	0.2%	41.8%	1.0%	0.1%	3.7%	0.0%	4.8%	7.0%	28.2%	1.1%	0.7%	37.1%	10.3%	0.0%	5.9%	0.0%	16.3%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	3	41	6	0	50	0	0	5	0	5	2	45	1	1	49	26	0	13	0	39	143
7:30	7	64	7	0	78	5	0	8	0	13	7	42	2	1	52	30	0	17	0	47	190
7:45	5	59	7	1	72	2	1	10	0	13	4	41	1	1	47	17	0	15	0	32	164
8:00	1	48	14	0	63	1	0	4	0	5	5	35	3	0	43	20	0	8	0	28	139
Total Volume	16	212	34	1	263	8	1	27	0	36	18	163	7	3	191	93	0	53	0	146	636
% App Total	6.1%	80.6%	12.9%	0.4%		22.2%	2.8%	75.0%	0.0%		9.4%	85.3%	3.7%	1.6%		63.7%	0.0%	36.3%	0.0%		
PHF	.571	.828	.607	.250	.843	.400	.250	.675	.000	.692	.643	.906	.583	.750	.918	.775	.000	.779	.000	.777	.837

PM PEAK HOUR	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	7	38	16	1	62	0	0	5	0	5	15	49	2	4	70	13	0	9	0	22	159
16:45	8	36	17	0	61	3	0	5	0	8	20	46	0	1	67	10	0	8	0	18	154
17:00	9	41	17	0	67	0	0	4	0	4	15	65	4	2	86	18	0	5	0	23	180
17:15	9	45	17	0	71	1	0	5	0	6	14	41	0	3	58	13	1	9	0	23	158
Total Volume	33	160	67	1	261	4	0	19	0	23	64	201	6	10	281	54	1	31	0	86	651
% App Total	12.6%	61.3%	25.7%	0.4%		17.4%	0.0%	82.6%	0.0%		22.8%	71.5%	2.1%	3.6%		62.8%	1.2%	36.0%	0.0%		
PHF	.917	.889	.985	.250	.919	.333	.000	.950	.000	.719	.800	.773	.375	.625	.817	.750	.250	.861	.000	.935	.904

File Name: 21-090069-006
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				Lighthouse Dr Westbound				Ohlone Pkwy Northbound				Lighthouse Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	6	2
7:15 AM	U	1	U	U	U	U	U	2	U	U	U	U	U	U	U	3	3
7:30 AM	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	1	2
7:45 AM	U	U	U	U	U	U	U	4	U	U	U	U	1	U	U	1	2
8:00 AM	0	1	0	0	0	0	0	2	0	0	0	2	0	0	0	3	3
8:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	3	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
8:45 AM	U	2	U	U	U	U	U	4	U	U	U	2	U	U	U	1	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2
4:00 PM	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	2	5
4:15 PM	1	U	U	U	U	U	U	1	U	U	U	U	U	U	U	U	9
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	1	9
4:45 PM	U	1	U	U	U	U	U	3	U	2	U	3	U	U	U	U	14
5:00 PM	3	0	0	0	0	0	0	1	0	1	0	7	0	0	0	0	13
5:15 PM	U	U	U	U	U	U	1	1	U	U	U	1	U	U	U	3	14
5:30 PM	0	2	0	0	0	0	4	5	0	0	0	3	0	0	0	0	8
5:45 PM	U	U	U	U	1	U	U	1	U	1	U	2	U	U	U	5	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-006
Date : 8/19/2021

All Bikes and Peds

	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	6	0	0	8
7:15	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	1	5
7:30	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	1	0	0	6
7:45	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	1	1	1	5
Total	0	1	0	1	1	0	0	0	9	0	0	0	0	3	0	1	0	0	11	1	2	24
8:00	0	1	0	0	1	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	1	7
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	4
8:45	0	2	0	0	2	0	0	0	4	0	0	0	0	2	0	0	0	0	1	0	2	7
Total	0	3	0	0	3	0	0	0	6	0	0	0	0	6	0	0	0	0	9	0	3	21
16:00	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	0	0	5
16:15	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0	1	6
16:45	0	1	0	0	1	0	0	0	3	0	0	2	0	3	2	0	0	0	0	0	3	6
Total	1	2	0	1	3	0	0	0	5	0	0	2	0	9	2	0	0	0	3	0	5	18
17:00	3	0	0	0	3	0	0	0	1	0	0	1	0	7	1	0	0	0	0	0	4	8
17:15	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	3	0	1	5
17:30	0	2	0	0	2	0	0	4	5	4	0	0	0	3	0	0	0	0	0	0	6	8
17:45	0	0	0	0	0	1	0	0	1	1	0	1	0	2	1	0	0	0	5	0	2	8
Total	3	2	0	0	5	1	0	5	8	6	0	2	0	13	2	0	0	0	8	0	13	29
Grand Total	4	8	0	2	12	1	0	5	28	6	0	4	0	31	4	1	0	0	31	1	23	92
Apprch %	33.3%	66.7%	0.0%			16.7%	0.0%	83.3%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%				
Total %	17.4%	34.8%	0.0%		52.2%	4.3%	0.0%	21.7%		26.1%	0.0%	17.4%	0.0%		17.4%	4.3%	0.0%	0.0%		4.3%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	0	1
7:30	0	0	0	0	0	0	0	0	3	0	0	0	0	2	0	0	0	0	1	0	0
7:45	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	1	1	1
8:00	0	1	0	0	1	0	0	0	2	0	0	0	0	2	0	0	0	0	3	0	1
Total Volume	0	2	0	0	2	0	0	0	11	0	0	0	0	4	0	1	0	0	8	1	3
% App Total	0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			100.0%	0.0%	0.0%			
PHF	.000	.500	.000		.500	.000	.000	.000		.000	.000	.000	.000		.000	.250	.000	.000		.250	.750

PM PEAK HOUR	Ohlone Pkwy Southbound					Lighthouse Dr Westbound					Ohlone Pkwy Northbound					Lighthouse Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	1	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0	1
16:45	0	1	0	0	1	0	0	0	3	0	0	2	0	3	2	0	0	0	0	0	3
17:00	3	0	0	0	3	0	0	0	1	0	0	1	0	7	1	0	0	0	0	0	4
17:15	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	3	0	1
Total Volume	3	2	0	0	5	0	0	1	5	1	0	3	0	16	3	0	0	0	4	0	9
% App Total	60.0%	40.0%	0.0%			0.0%	0.0%	100.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.250	.500	.000		.417	.000	.000	.250		.250	.000	.375	.000		.375	.000	.000	.000		.000	.563

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & W Beach St
City: Watsonville
Control: 1-Way Stop(SB)

Project ID: 21-090069-007
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				W Beach St				W Beach St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	2	0	0	1	2	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	16	0	27	0	7	22	0	0	0	39	21	0	132
7:15 AM	0	0	0	0	25	0	35	0	12	30	0	0	0	39	38	0	179
7:30 AM	0	0	0	0	44	0	39	0	11	35	0	0	0	43	39	0	211
7:45 AM	0	0	1	0	47	0	33	0	25	42	0	0	0	46	33	0	227
8:00 AM	0	0	0	0	35	0	20	0	14	34	0	0	0	58	37	0	198
8:15 AM	0	0	0	0	37	0	26	0	23	42	0	0	0	42	52	0	222
8:30 AM	0	1	0	0	20	0	29	0	20	45	0	0	0	53	42	0	210
8:45 AM	0	0	1	0	17	0	24	0	20	55	0	0	0	47	29	0	193
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	2	0	241	0	233	0	132	305	0	0	0	367	291	0	1572
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%	50.84%	0.00%	49.16%	0.00%	30.21%	69.79%	0.00%	0.00%	0.00%	55.78%	44.22%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	1	0	163	0	118	0	73	153	0	0	0	189	161	0	858
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.867	0.000	0.756	0.000	0.730	0.911	0.000	0.000	0.000	0.815	0.774	0.000	0.945
	0.250				0.846				0.843				0.921				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	2	0	0	1	2	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	23	0	17	0	34	84	0	0	0	31	48	0	238
4:15 PM	0	0	0	0	32	0	18	0	29	88	0	0	0	18	33	0	218
4:30 PM	0	0	0	0	30	0	26	0	39	79	0	0	0	33	50	0	257
4:45 PM	0	0	0	0	35	0	17	0	20	69	0	0	0	36	58	0	235
5:00 PM	0	0	0	0	33	0	24	0	42	75	0	0	1	29	51	0	255
5:15 PM	0	0	1	0	20	0	25	0	18	61	0	0	0	32	55	0	212
5:30 PM	0	0	0	0	21	0	18	0	24	59	0	0	0	31	31	0	184
5:45 PM	0	0	0	0	26	0	14	0	25	43	0	0	0	31	31	0	170
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	2	0	220	0	159	0	231	558	0	0	1	241	357	0	1769
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%	58.05%	0.00%	41.95%	0.00%	29.28%	70.72%	0.00%	0.00%	0.17%	40.23%	59.60%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	130	0	85	0	130	311	0	0	1	116	192	0	965
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.929	0.000	0.817	0.000	0.774	0.884	0.000	0.000	0.250	0.806	0.828	0.000	0.939
					0.943				0.934				0.822				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & W Beach St
City: Watsonville
Control: 1-Way Stop(SB)

Project ID: 21-090069-007
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Ohlone Pkwy				Ohlone Pkwy				W Beach St				W Beach St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	2	0	0	1	2	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	1	0	0	0	0	2	0	0	0	6	0	0	9
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.375
					0.250				0.250				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	2	0	0	1	2	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3
4:30 PM	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	3	0	0	0	0	2	0	0	2	2	7	0	16
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	18.18%	18.18%	63.64%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	3	0	0	0	0	2	0	0	2	0	4	0	11
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.500	0.000	0.688
					0.250				0.500				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Ohlone Pkwy & W Beach St
City: Watsonville
Project ID: 21-090069-007
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Ohlone Pkwy		Ohlone Pkwy		W Beach St		W Beach St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	0	0	0	0	0	0	0	1
APPROACH %'s :	100.00%	0.00%							
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	1	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.250								
	0.250								0.250

Prepared by National Data & Surveying Services

Ohlone Pkwy & W Beach St

Peak Hour Turning Movement Count

ID: 21-090069-007
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Ohlone Pkwy)

AM	118	0	163	0	234	AM
NOON	0	0	0	0	0	NOON
PM	85	0	130	0	322	PM

0 2 0 0

W Beach St (WESTBOUND)

AM	NOON	PM	
307	0	201	
0	0	0	0
73	0	130	1
153	0	311	2
0	0	0	0

EASTBOUND (W Beach St)

PM	NOON	AM	
192	0	161	1
116	0	189	1
1	0	0	0
0	0	0	0
441	0	317	

CONTROL

1-Way Stop(SB)

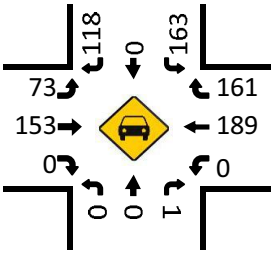
	AM	NOON	PM
TEV	858	0	965
PHF	0.94		0.94

0 0 0 0

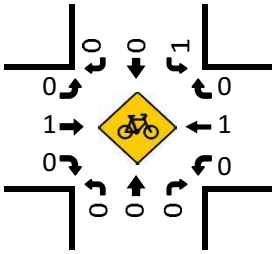
NORTHBOUND (Ohlone Pkwy)

PM	1	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	1	AM

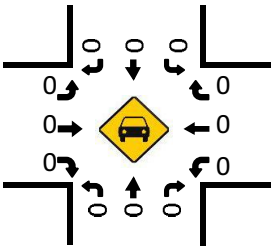
Totals (AM)



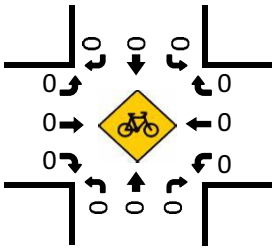
Total Bikes (AM)



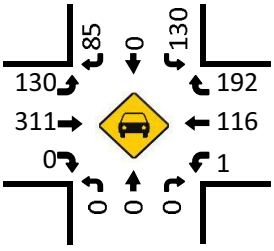
Totals (NOON)



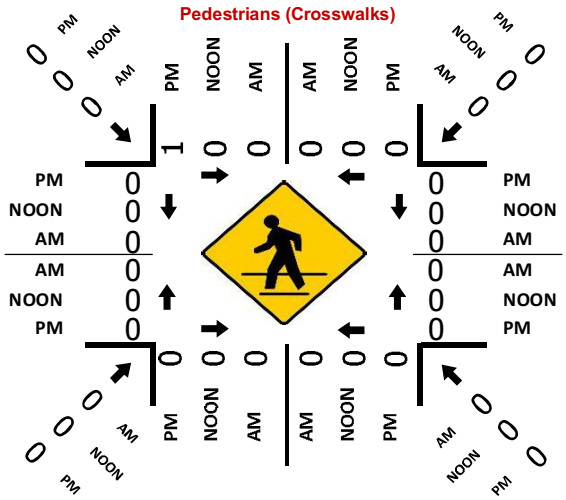
Total Bikes (NOON)



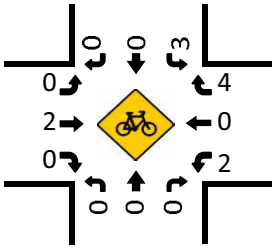
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-007
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				W Beach St Westbound				Ohlone Pkwy Northbound				W Beach St Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	132
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	311
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	522
7:00 AM	16	0	27	0	0	39	21	0	0	0	0	0	7	22	0	0	749
7:15 AM	25	U	35	U	U	39	38	U	U	U	U	U	12	30	U	U	915
7:30 AM	44	0	39	0	0	43	39	0	0	0	0	0	11	35	0	0	868
7:45 AM	47	U	33	U	U	46	33	U	U	U	1	U	25	42	U	U	867
8:00 AM	35	0	20	0	0	58	37	0	0	0	0	0	14	34	0	0	823
8:15 AM	31	U	26	U	U	42	52	U	U	U	U	U	23	42	U	U	825
8:30 AM	20	0	29	0	0	53	42	0	0	1	0	0	20	45	0	0	803
8:45 AM	17	U	24	U	U	47	29	U	U	U	1	U	20	56	U	U	793
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	598
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	466
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	713
4:00 PM	23	0	17	0	0	31	48	0	0	0	1	0	34	84	0	0	948
4:15 PM	32	U	18	U	U	18	33	U	U	U	U	U	29	88	U	U	965
4:30 PM	30	0	26	0	0	33	50	0	0	0	0	0	39	79	0	0	959
4:45 PM	35	U	17	U	U	36	58	U	U	U	U	U	20	69	U	U	886
5:00 PM	33	0	24	0	1	29	51	0	0	0	0	0	42	75	0	0	821
5:15 PM	31	U	25	U	U	32	55	U	U	U	1	U	18	61	U	U	666
5:30 PM	21	0	18	0	0	31	31	0	0	0	0	0	24	59	0	0	364
5:45 PM	26	U	14	U	U	31	31	U	U	U	U	U	25	43	U	U	170
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-007
Date : 8/19/2021

All Vehicles & Uturns

	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	16	0	27	0	43	0	39	21	0	60	0	0	0	0	0	7	22	0	0	29	132	0
7:15	25	0	35	0	60	0	39	38	0	77	0	0	0	0	0	12	30	0	0	42	179	0
7:30	44	0	39	0	83	0	43	39	0	82	0	0	0	0	0	11	35	0	0	46	211	0
7:45	47	0	33	0	80	0	46	33	0	79	0	0	1	0	1	25	42	0	0	67	227	0
Total	132	0	134	0	266	0	167	131	0	298	0	0	1	0	1	55	129	0	0	184	749	0
8:00	35	0	20	0	55	0	58	37	0	95	0	0	0	0	0	14	34	0	0	48	198	0
8:15	37	0	26	0	63	0	42	52	0	94	0	0	0	0	0	23	42	0	0	65	222	0
8:30	20	0	29	0	49	0	53	42	0	95	0	1	0	0	1	20	45	0	0	65	210	0
8:45	17	0	24	0	41	0	47	29	0	76	0	0	1	0	1	20	55	0	0	75	193	0
Total	109	0	99	0	208	0	200	160	0	360	0	1	1	0	2	77	176	0	0	253	823	0
16:00	23	0	17	0	40	0	31	48	0	79	0	0	1	0	1	34	84	0	0	118	238	0
16:15	32	0	18	0	50	0	18	33	0	51	0	0	0	0	0	29	88	0	0	117	218	0
16:30	30	0	26	0	56	0	33	50	0	83	0	0	0	0	0	39	79	0	0	118	257	0
16:45	35	0	17	0	52	0	36	58	0	94	0	0	0	0	0	20	69	0	0	89	235	0
Total	120	0	78	0	198	0	118	189	0	307	0	0	1	0	1	122	320	0	0	442	948	0
17:00	33	0	24	0	57	1	29	51	0	81	0	0	0	0	0	42	75	0	0	117	255	0
17:15	20	0	25	0	45	0	32	55	0	87	0	0	1	0	1	18	61	0	0	79	212	0
17:30	21	0	18	0	39	0	31	31	0	62	0	0	0	0	0	24	59	0	0	83	184	0
17:45	26	0	14	0	40	0	31	31	0	62	0	0	0	0	0	25	43	0	0	68	170	0
Total	100	0	81	0	181	1	123	168	0	292	0	0	1	0	1	109	238	0	0	347	821	0
Grand Total	461	0	392	0	853	1	608	648	0	1257	0	1	4	0	5	363	863	0	0	1226	3341	0
Apprch %	54.0%	0.0%	46.0%	0.0%		0.1%	48.4%	51.6%	0.0%		0.0%	20.0%	80.0%	0.0%		29.6%	70.4%	0.0%	0.0%			
Total %	13.8%	0.0%	11.7%	0.0%	25.5%	0.0%	18.2%	19.4%	0.0%	37.6%	0.0%	0.0%	0.1%	0.0%	0.1%	10.9%	25.8%	0.0%	0.0%	36.7%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	44	0	39	0	83	0	43	39	0	82	0	0	0	0	0	11	35	0	0	46	211
7:45	47	0	33	0	80	0	46	33	0	79	0	0	1	0	1	25	42	0	0	67	227
8:00	35	0	20	0	55	0	58	37	0	95	0	0	0	0	0	14	34	0	0	48	198
8:15	37	0	26	0	63	0	42	52	0	94	0	0	0	0	0	23	42	0	0	65	222
Total Volume	163	0	118	0	281	0	189	161	0	350	0	0	1	0	1	73	153	0	0	226	858
% App Total	58.0%	0.0%	42.0%	0.0%		0.0%	54.0%	46.0%	0.0%		0.0%	0.0%	100.0%	0.0%		32.3%	67.7%	0.0%	0.0%		
PHF	.867	.000	.756	.000	.846	.000	.815	.774	.000	.921	.000	.000	.250	.000	.250	.730	.911	.000	.000	.843	.945

PM PEAK HOUR	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	32	0	18	0	50	0	18	33	0	51	0	0	0	0	0	29	88	0	0	117	218
16:30	30	0	26	0	56	0	33	50	0	83	0	0	0	0	0	39	79	0	0	118	257
16:45	35	0	17	0	52	0	36	58	0	94	0	0	0	0	0	20	69	0	0	89	235
17:00	33	0	24	0	57	1	29	51	0	81	0	0	0	0	0	42	75	0	0	117	255
Total Volume	130	0	85	0	215	1	116	192	0	309	0	0	0	0	0	130	311	0	0	441	965
% App Total	60.5%	0.0%	39.5%	0.0%		0.3%	37.5%	62.1%	0.0%		0.0%	0.0%	0.0%	0.0%		29.5%	70.5%	0.0%	0.0%		
PHF	.929	.000	.817	.000	.943	.250	.806	.828	.000	.822	.000	.000	.000	.000	.000	.774	.884	.000	.000	.934	.939

File Name: 21-090069-007
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Ohlone Pkwy Southbound				W Beach St Westbound				Ohlone Pkwy Northbound				W Beach St Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
7:15 AM	U	U	U	U	U	1	U	U	U	U	U	U	U	1	U	U	5
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	3
8:00 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	U	U	U	U	U	1	U	U	U	U	U	U	U	U	U	U	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	3
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	10
4:00 PM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	12
4:15 PM	U	U	U	1	2	U	1	U	U	U	U	U	U	U	U	U	11
4:30 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	8
4:45 PM	U	U	U	U	U	U	2	U	U	U	U	U	U	U	U	U	5
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	4
5:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
5:45 PM	U	U	U	U	U	1	U	U	U	U	U	U	U	U	U	U	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-007
Date : 8/19/2021

All Bikes and Peds

	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0
7:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	6	0
8:00	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0
16:00	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	3	0
16:15	0	0	0	1	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	3	1
16:30	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0
16:45	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2	0
Total	3	0	0	1	3	2	1	5	0	8	0	0	0	0	0	0	1	0	0	1	12	1
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Total	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	0	1	0	0	1	4	0
Grand Total	4	0	0	1	4	2	8	7	0	17	0	0	0	0	0	0	4	0	0	4	25	1
Apprch %	100.0%	0.0%	0.0%			11.8%	47.1%	41.2%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	16.0%	0.0%	0.0%		16.0%	8.0%	32.0%	28.0%		68.0%	0.0%	0.0%	0.0%		0.0%	0.0%	16.0%	0.0%		16.0%	100.0%	

AM PEAK HOUR	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
8:00	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3
% App Total	100.0%	0.0%	0.0%			0.0%	100.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.000	.250	.000		.250	.000	.000	.000		.000	.000	.250	.000		.250	.375

PM PEAK HOUR	Ohlone Pkwy Southbound					W Beach St Westbound					Ohlone Pkwy Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	0	0	0	1	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	3
16:30	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4
16:45	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
17:00	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	3	0	0	1	3	2	0	4	0	6	0	0	0	0	0	0	2	0	0	2	11
% App Total	100.0%	0.0%	0.0%			33.3%	0.0%	66.7%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.250	.000	.500		.500	.000	.000	.000		.000	.000	.500	.000		.500	.688

National Data & Surveying Services Intersection Turning Movement Count

Location: Walker St & W Beach St
City: Watsonville
Control: 4-Way Stop

Project ID: 21-090069-008
Date: 8/19/2021

Data - Totals

NS/EW Streets:	Walker St				Walker St				W Beach St				W Beach St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	13	27	5	0	9	23	36	0	8	7	8	0	3	24	6	0	169
7:15 AM	12	41	2	0	12	40	30	0	30	39	7	0	2	25	7	0	247
7:30 AM	18	45	7	0	22	41	38	0	16	41	13	0	3	31	10	0	285
7:45 AM	5	67	5	0	14	62	56	0	39	33	9	0	8	41	12	0	351
8:00 AM	13	42	4	0	13	57	51	0	34	40	21	0	14	48	7	0	344
8:15 AM	12	43	4	0	13	54	58	0	37	43	5	0	12	25	3	0	309
8:30 AM	22	34	4	0	9	37	55	0	33	42	10	0	3	23	6	0	278
8:45 AM	5	47	3	0	12	30	40	0	20	34	11	0	2	23	9	0	236
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	100	346	34	0	104	344	364	0	217	279	84	0	47	240	60	0	2219
APPROACH %'s :	20.83%	72.08%	7.08%	0.00%	12.81%	42.36%	44.83%	0.00%	37.41%	48.10%	14.48%	0.00%	13.54%	69.16%	17.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	48	197	20	0	62	214	203	0	126	157	48	0	37	145	32	0	1289
PEAK HR FACTOR :	0.667	0.735	0.714	0.000	0.705	0.863	0.875	0.000	0.808	0.913	0.571	0.000	0.661	0.755	0.667	0.000	0.918
	0.860				0.907				0.871				0.775				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	13	55	15	0	18	51	30	0	67	67	12	0	17	27	15	0	387
4:15 PM	9	47	10	0	12	67	31	0	57	56	29	0	13	20	20	0	371
4:30 PM	17	61	3	0	13	63	28	0	40	53	30	0	9	27	11	0	355
4:45 PM	12	62	12	0	15	52	39	0	53	66	31	0	4	30	9	0	385
5:00 PM	13	46	3	0	15	62	34	0	42	58	28	0	11	32	15	0	359
5:15 PM	12	51	9	0	15	65	35	0	37	48	27	0	10	31	2	0	342
5:30 PM	7	57	14	0	26	60	29	0	25	49	15	0	5	21	7	0	315
5:45 PM	7	52	5	0	16	46	31	0	18	41	6	0	4	24	10	0	260
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	90	431	71	0	130	466	257	0	339	438	178	0	73	212	89	0	2774
APPROACH %'s :	15.20%	72.80%	11.99%	0.00%	15.24%	54.63%	30.13%	0.00%	35.50%	45.86%	18.64%	0.00%	19.52%	56.68%	23.80%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	51	225	40	0	58	233	128	0	217	242	102	0	43	104	55	0	1498
PEAK HR FACTOR :	0.750	0.907	0.667	0.000	0.806	0.869	0.821	0.000	0.810	0.903	0.823	0.000	0.632	0.867	0.688	0.000	0.968
	0.919				0.952				0.935				0.856				

National Data & Surveying Services Intersection Turning Movement Count

Location: Walker St & W Beach St
City: Watsonville
Control: 4-Way Stop

Project ID: 21-090069-008
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	Walker St				Walker St				W Beach St				W Beach St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	3
7:30 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	3
8:00 AM	1	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	4
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	0	0	0	0	3	8	0	4	2	1	0	0	1	0	0	21
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	27.27%	72.73%	0.00%	57.14%	28.57%	14.29%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	0	0	0	0	2	7	0	3	1	0	0	0	1	0	0	15
PEAK HR FACTOR :	0.250	0.000	0.000	0.000	0.000	0.500	0.438	0.000	0.375	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.625
	0.250				0.450				0.333				0.250				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	1	0	0	1	0	0	1	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
4:45 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	2
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	3	0	0	0	3	0	1	1	4	0	0	0	3	1	0	17
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	0.00%	75.00%	0.00%	25.00%	20.00%	80.00%	0.00%	0.00%	0.00%	75.00%	25.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	1	2	0	0	0	1	0	1	1	4	0	0	0	2	0	0	12
PEAK HR FACTOR :	0.250	0.500	0.000	0.000	0.000	0.250	0.000	0.250	0.250	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.750
	0.375				0.500				0.625				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Walker St & W Beach St
City: Watsonville
Project ID: 21-090069-008
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Walker St		Walker St		W Beach St		W Beach St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	1	1
7:15 AM	0	0	2	0	0	0	2	2	6
7:30 AM	0	0	1	0	0	0	1	2	4
7:45 AM	0	0	0	0	0	0	2	1	3
8:00 AM	0	0	0	1	0	1	14	7	23
8:15 AM	0	0	1	2	0	0	8	8	19
8:30 AM	0	3	0	1	0	0	0	1	5
8:45 AM	0	0	0	0	1	0	0	3	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	3	4	4	1	1	27	25	65
APPROACH %'s :	0.00%	100.00%	50.00%	50.00%	50.00%	50.00%	51.92%	48.08%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	2	3	0	1	25	18	49
PEAK HR FACTOR :			0.500	0.375		0.250	0.446	0.563	0.533
			0.417		0.250		0.512		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	2	1	0	1	0	0	2	0	6
4:15 PM	0	0	2	0	0	0	3	0	5
4:30 PM	0	0	1	0	0	0	2	0	3
4:45 PM	1	0	0	0	0	0	1	0	2
5:00 PM	0	0	0	2	0	0	0	1	3
5:15 PM	1	1	0	0	0	0	1	2	5
5:30 PM	0	0	1	0	1	0	1	0	3
5:45 PM	0	0	0	0	0	0	1	2	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	4	2	4	3	1	0	11	5	30
APPROACH %'s :	66.67%	33.33%	57.14%	42.86%	100.00%	0.00%	68.75%	31.25%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	3	1	3	1	0	0	8	0	16
PEAK HR FACTOR :	0.375	0.250	0.375	0.250			0.667		0.667
	0.333		0.500				0.667		

Prepared by National Data & Surveying Services

Walker St & W Beach St

Peak Hour Turning Movement Count

ID: 21-090069-008
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

CONTROL: 4-Way Stop

	AM	NOON	PM
TEV	1289	0	1498
PHF	0.92		0.97

Walker St — SOUTHBOUND

	Left	Thru	Right	U-Turn	Total
AM	203	214	62	0	355
NOON	0	0	0	0	0
PM	128	233	58	0	497

W Beach St — EASTBOUND

	Left	Thru	Right	U-Turn
AM	396	0	283	0
NOON	0	0	0	0
PM	126	0	217	1
	157	0	242	0.5
	48	0	102	0.5

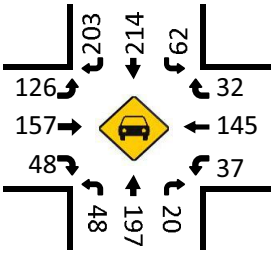
W Beach St — WESTBOUND

	Left	Thru	Right	U-Turn
PM	55	0	32	0
NOON	104	0	145	1
AM	43	0	37	0
	0	0	0	0
	340	0	239	

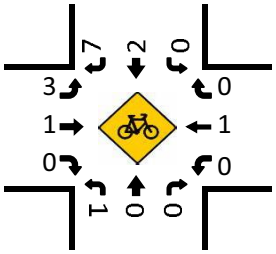
Walker St — NORTHBOUND

	Left	Thru	Right	U-Turn	Total
PM	378	0	51	225	40
NOON	0	0	0	0	0
AM	299	0	48	197	20

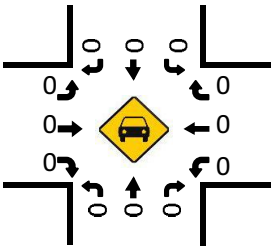
Totals (AM)



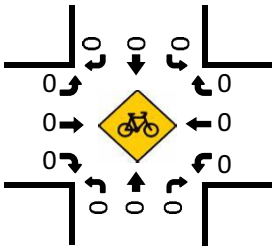
Total Bikes (AM)



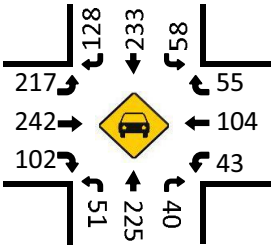
Totals (NOON)



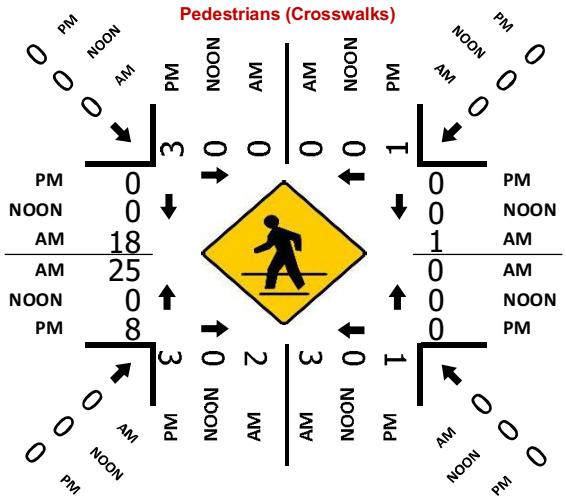
Total Bikes (NOON)



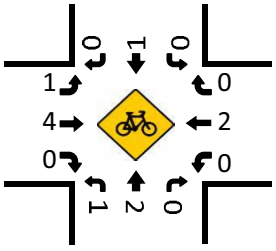
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-008
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Walker St Southbound				W Beach St Westbound				Walker St Northbound				W Beach St Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	188
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	416
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	701
7:00 AM	9	23	36	0	3	24	6	0	13	27	5	0	8	7	8	0	1052
7:15 AM	12	40	30	U	2	25	7	U	12	41	2	U	30	39	7	U	1227
7:30 AM	22	41	38	0	3	31	10	0	18	45	7	0	16	41	13	0	1289
7:45 AM	14	52	56	U	8	41	12	U	5	67	5	U	39	33	9	U	1282
8:00 AM	13	57	51	0	14	48	7	0	13	42	4	0	34	40	21	0	1167
8:15 AM	13	54	58	U	12	25	3	U	12	43	4	U	37	43	5	U	823
8:30 AM	9	37	55	0	3	23	6	0	22	34	4	0	33	42	10	0	514
8:45 AM	12	30	40	U	2	23	9	U	5	47	3	U	28	34	11	U	386
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	387
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	768
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1113
4:00 PM	18	51	30	0	17	27	15	0	13	55	15	0	67	67	12	0	1498
4:15 PM	12	67	31	U	13	20	20	U	9	47	10	U	57	56	29	U	1470
4:30 PM	13	63	28	0	9	27	11	0	17	61	3	0	40	53	30	0	1441
4:45 PM	15	52	39	U	4	30	9	U	12	62	12	U	53	66	31	U	1401
5:00 PM	15	62	34	0	11	32	15	0	13	46	3	0	42	58	28	0	1276
5:15 PM	15	66	35	U	10	31	2	U	12	51	9	U	37	48	27	U	1317
5:30 PM	26	60	29	0	5	21	7	0	7	57	14	0	25	49	15	0	575
5:45 PM	16	46	31	U	4	24	10	U	7	52	5	U	18	41	6	U	380
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-008
Date : 8/19/2021

All Vehicles & Uturns

	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	9	23	36	0	68	3	24	6	0	33	13	27	5	0	45	8	7	8	0	23	169	0
7:15	12	40	30	0	82	2	25	7	0	34	12	41	2	0	55	30	39	7	0	76	247	0
7:30	22	41	38	0	101	3	31	10	0	44	18	45	7	0	70	16	41	13	0	70	285	0
7:45	14	62	56	0	132	8	41	12	0	61	5	67	5	0	77	39	33	9	0	81	351	0
Total	57	166	160	0	383	16	121	35	0	172	48	180	19	0	247	93	120	37	0	250	1052	0
8:00	13	57	51	0	121	14	48	7	0	69	13	42	4	0	59	34	40	21	0	95	344	0
8:15	13	54	58	0	125	12	25	3	0	40	12	43	4	0	59	37	43	5	0	85	309	0
8:30	9	37	55	0	101	3	23	6	0	32	22	34	4	0	60	33	42	10	0	85	278	0
8:45	12	30	40	0	82	2	23	9	0	34	5	47	3	0	55	20	34	11	0	65	236	0
Total	47	178	204	0	429	31	119	25	0	175	52	166	15	0	233	124	159	47	0	330	1167	0
16:00	18	51	30	0	99	17	27	15	0	59	13	55	15	0	83	67	67	12	0	146	387	0
16:15	12	67	31	0	110	13	20	20	0	53	9	47	10	0	66	57	56	29	0	142	371	0
16:30	13	63	28	0	104	9	27	11	0	47	17	61	3	0	81	40	53	30	0	123	355	0
16:45	15	52	39	0	106	4	30	9	0	43	12	62	12	0	86	53	66	31	0	150	385	0
Total	58	233	128	0	419	43	104	55	0	202	51	225	40	0	316	217	242	102	0	561	1498	0
17:00	15	62	34	0	111	11	32	15	0	58	13	46	3	0	62	42	58	28	0	128	359	0
17:15	15	65	35	0	115	10	31	2	0	43	12	51	9	0	72	37	48	27	0	112	342	0
17:30	26	60	29	0	115	5	21	7	0	33	7	57	14	0	78	25	49	15	0	89	315	0
17:45	16	46	31	0	93	4	24	10	0	38	7	52	5	0	64	18	41	6	0	65	260	0
Total	72	233	129	0	434	30	108	34	0	172	39	206	31	0	276	122	196	76	0	394	1276	0
Grand Total	234	810	621	0	1665	120	452	149	0	721	190	777	105	0	1072	556	717	262	0	1535	4993	0
Apprch %	14.1%	48.6%	37.3%	0.0%		16.6%	62.7%	20.7%	0.0%		17.7%	72.5%	9.8%	0.0%		36.2%	46.7%	17.1%	0.0%			
Total %	4.7%	16.2%	12.4%	0.0%	33.3%	2.4%	9.1%	3.0%	0.0%	14.4%	3.8%	15.6%	2.1%	0.0%	21.5%	11.1%	14.4%	5.2%	0.0%	30.7%	100.0%	

AM PEAK HOUR	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	22	41	38	0	101	3	31	10	0	44	18	45	7	0	70	16	41	13	0	70	285
7:45	14	62	56	0	132	8	41	12	0	61	5	67	5	0	77	39	33	9	0	81	351
8:00	13	57	51	0	121	14	48	7	0	69	13	42	4	0	59	34	40	21	0	95	344
8:15	13	54	58	0	125	12	25	3	0	40	12	43	4	0	59	37	43	5	0	85	309
Total Volume	62	214	203	0	479	37	145	32	0	214	48	197	20	0	265	126	157	48	0	331	1289
% App Total	12.9%	44.7%	42.4%	0.0%		17.3%	67.8%	15.0%	0.0%		18.1%	74.3%	7.5%	0.0%		38.1%	47.4%	14.5%	0.0%		
PHF	.705	.863	.875	.000	.907	.661	.755	.667	.000	.775	.667	.735	.714	.000	.860	.808	.913	.571	.000	.871	.918

PM PEAK HOUR	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	18	51	30	0	99	17	27	15	0	59	13	55	15	0	83	67	67	12	0	146	387
16:15	12	67	31	0	110	13	20	20	0	53	9	47	10	0	66	57	56	29	0	142	371
16:30	13	63	28	0	104	9	27	11	0	47	17	61	3	0	81	40	53	30	0	123	355
16:45	15	52	39	0	106	4	30	9	0	43	12	62	12	0	86	53	66	31	0	150	385
Total Volume	58	233	128	0	419	43	104	55	0	202	51	225	40	0	316	217	242	102	0	561	1498
% App Total	13.8%	55.6%	30.5%	0.0%		21.3%	51.5%	27.2%	0.0%		16.1%	71.2%	12.7%	0.0%		38.7%	43.1%	18.2%	0.0%		
PHF	.806	.869	.821	.000	.952	.632	.867	.688	.000	.856	.750	.907	.667	.000	.919	.810	.903	.823	.000	.935	.968

File Name: 21-090069-008
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	Walker St Southbound				W Beach St Westbound				Walker St Northbound				W Beach St Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	2
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	5
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	7
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	10
7:15 AM	U	U	1	U	U	U	U	U	U	U	U	2	U	1	1	4	14
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	3	15
7:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	2	1	U	3	14
8:00 AM	0	1	4	0	0	0	0	1	1	0	0	1	0	0	0	21	11
8:15 AM	U	U	3	U	U	1	U	U	U	U	U	3	U	U	U	16	5
8:30 AM	0	0	0	3	0	0	0	0	1	0	0	1	0	0	0	1	1
8:45 AM	U	U	U	U	U	U	U	1	U	U	U	U	U	U	U	3	U
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	3
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	3
4:00 PM	0	0	0	3	0	0	0	0	1	1	0	1	0	1	0	2	11
4:15 PM	U	U	U	U	U	1	U	U	U	U	U	2	U	2	U	3	9
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	2	6
4:45 PM	U	1	U	1	U	U	U	U	U	1	U	U	1	U	U	1	6
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	1	5
5:15 PM	U	U	U	2	U	U	U	U	U	U	U	U	U	U	U	3	4
5:30 PM	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	1	4
5:45 PM	U	U	U	U	U	1	U	U	U	1	U	U	U	U	U	3	2
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-008
Date : 8/19/2021

All Bikes and Peds

	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	1
7:15	0	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	1	1	4	2	3	6
7:30	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	3	1	2	4
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	3	3	3
Total	0	2	1	0	3	0	0	0	0	0	0	0	0	3	0	4	2	1	11	7	10	14
8:00	0	1	4	0	5	0	0	0	1	0	1	0	0	1	1	0	0	0	21	0	6	23
8:15	0	0	3	0	3	0	1	0	0	1	0	0	0	3	0	0	0	0	16	0	4	19
8:30	0	0	0	3	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	1	5
8:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	4
Total	0	1	7	3	8	0	1	0	2	1	2	0	0	5	2	0	0	0	41	0	11	51
16:00	0	0	0	3	0	0	0	0	0	0	1	1	0	1	2	0	1	0	2	1	3	6
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	2	0	3	2	3	5
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	2	1	2	3
16:45	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	0	1	1	3	2
Total	0	1	0	4	1	0	2	0	0	2	1	2	0	4	3	1	4	0	8	5	11	16
17:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	1	3
17:15	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	5
17:30	0	1	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	1	0	2	3
17:45	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	3	0	2	3
Total	0	2	0	2	2	0	1	1	1	2	0	1	0	3	1	0	0	0	8	0	5	14
Grand Total	0	6	8	9	14	0	4	1	3	5	3	3	0	15	6	5	6	1	68	12	37	95
Apprch %	0.0%	42.9%	57.1%			0.0%	80.0%	20.0%			50.0%	50.0%	0.0%			41.7%	50.0%	8.3%				
Total %	0.0%	16.2%	21.6%		37.8%	0.0%	10.8%	2.7%		13.5%	8.1%	8.1%	0.0%		16.2%	13.5%	16.2%	2.7%		32.4%	100.0%	

AM PEAK HOUR	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	3	1	2
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	3	3
8:00	0	1	4	0	5	0	0	0	1	0	1	0	0	1	1	0	0	0	21	0	6
8:15	0	0	3	0	3	0	1	0	0	1	0	0	0	3	0	0	0	0	16	0	4
Total Volume	0	2	7	0	9	0	1	0	1	1	1	0	0	5	1	3	1	0	43	4	15
% App Total	0.0%	22.2%	77.8%			0.0%	100.0%	0.0%			100.0%	0.0%	0.0%			75.0%	25.0%	0.0%			
PHF	.000	.500	.438		.450	.000	.250	.000		.250	.250	.000	.000		.250	.375	.250	.000		.333	.625

PM PEAK HOUR	Walker St Southbound					W Beach St Westbound					Walker St Northbound					W Beach St Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	3	0	0	0	0	0	0	1	1	0	1	2	0	1	0	2	1	3
16:15	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	2	0	3	2	3
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	2	1	2
16:45	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	0	1	1	3
Total Volume	0	1	0	4	1	0	2	0	0	2	1	2	0	4	3	1	4	0	8	5	11
% App Total	0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			33.3%	66.7%	0.0%			20.0%	80.0%	0.0%			
PHF	.000	.250	.000		.250	.000	.500	.000		.500	.250	.500	.000		.375	.250	.500	.000		.625	.917

National Data & Surveying Services Intersection Turning Movement Count

Location: SB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Control: 1-Way Stop(SB)

Project ID: 21-090069-009
Date: 8/19/2021

Data - Totals

NS/EW Streets:	SB Hwy 1 Ramps				SB Hwy 1 Ramps				W Riverside Dr				W Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	58	0	24	0	0	48	31	0	0	66	0	0	227
7:15 AM	0	0	0	0	90	0	42	0	0	44	29	0	1	76	0	0	282
7:30 AM	0	0	0	0	107	1	42	0	0	39	39	0	0	72	0	0	300
7:45 AM	0	0	0	0	105	0	62	0	0	43	39	0	1	63	0	0	313
8:00 AM	0	0	0	0	94	0	67	0	0	38	33	0	0	63	0	0	295
8:15 AM	0	0	0	0	77	1	44	0	0	45	44	0	0	67	0	0	278
8:30 AM	0	0	0	0	69	0	57	0	0	38	51	0	0	52	0	0	267
8:45 AM	0	0	0	0	74	1	46	0	0	47	39	0	0	59	0	0	266
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	674	3	384	0	0	342	305	0	2	518	0	0	2228
APPROACH %'s :					63.52%	0.28%	36.19%	0.00%	0.00%	52.86%	47.14%	0.00%	0.38%	99.62%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	396	1	213	0	0	164	140	0	2	274	0	0	1190
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.925	0.250	0.795	0.000	0.000	0.932	0.897	0.000	0.500	0.901	0.000	0.000	0.950
					0.913				0.927				0.896				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	85	0	50	0	0	89	53	0	0	39	0	0	316
4:15 PM	0	0	0	0	87	1	60	0	0	79	40	0	0	52	0	0	319
4:30 PM	0	0	0	0	93	0	46	0	0	77	47	0	1	44	0	0	308
4:45 PM	0	0	0	0	99	1	56	0	0	69	50	0	0	40	0	0	315
5:00 PM	0	0	0	0	106	0	45	0	0	62	55	0	0	37	0	0	305
5:15 PM	0	0	0	0	113	1	56	0	0	47	25	0	0	36	0	0	278
5:30 PM	0	0	0	0	116	0	50	0	0	44	52	0	0	42	0	0	304
5:45 PM	0	0	0	0	95	0	49	0	0	45	39	0	0	36	0	0	264
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	794	3	412	0	0	512	361	0	1	326	0	0	2409
APPROACH %'s :					65.67%	0.25%	34.08%	0.00%	0.00%	58.65%	41.35%	0.00%	0.31%	99.69%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	364	2	212	0	0	314	190	0	1	175	0	0	1258
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.919	0.500	0.883	0.000	0.000	0.882	0.896	0.000	0.250	0.841	0.000	0.000	0.986
					0.926				0.887				0.846				

National Data & Surveying Services Intersection Turning Movement Count

Location: SB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Control: 1-Way Stop(SB)

Project ID: 21-090069-009
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	SB Hwy 1 Ramps				SB Hwy 1 Ramps				W Riverside Dr				W Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	1	0	1	0	0	0.5	0.5	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
										0.250							

National Data & Surveying Services Intersection Turning Movement Count

Location: SB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Project ID: 21-090069-009
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	SB Hwy 1 Ramps		SB Hwy 1 Ramps		W Riverside Dr		W Riverside Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	1
APPROACH %'s :	0.00%	100.00%							
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250							0.250
	0.250								

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

SB Hwy 1 Ramps & W Riverside Dr

Peak Hour Turning Movement Count

ID: 21-090069-009
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

SB Hwy 1 Ramps — SOUTHBOUND

AM	213	1	396	0	0	AM
NOON	0	0	0	0	0	NOON
PM	212	2	364	0	0	PM

W Riverside Dr

AM	NOON	PM		PM	NOON	AM
487	0	387	⇦	678	0	560
0	0	0	0	0	0	0
0	0	0	0	175	0	274
164	0	314	0.5	1	0	2
140	0	190	0.5	0	0	0
AM	NOON	PM		PM	NOON	AM

	1	0	1	0
	0	0	0	0

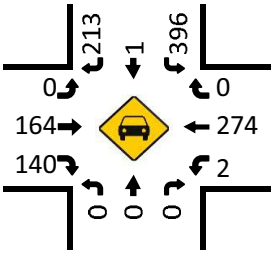
CONTROL
1-Way Stop(SB)

TEV	1190 AM	0 NOON	1258 PM
PHF	0.95		0.99

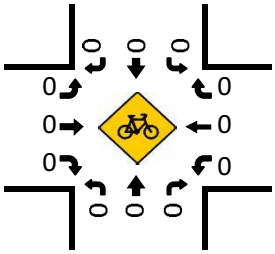
SB Hwy 1 Ramps — NORTHBOUND

PM	193	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	143	0	0	0	0	AM

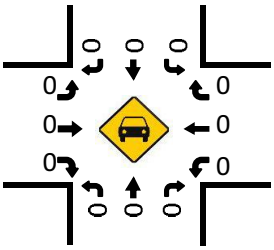
Totals (AM)



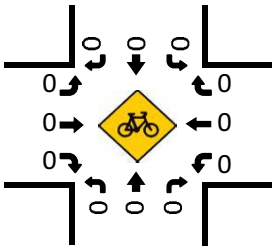
Total Bikes (AM)



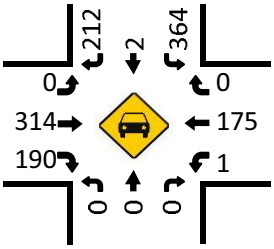
Totals (NOON)



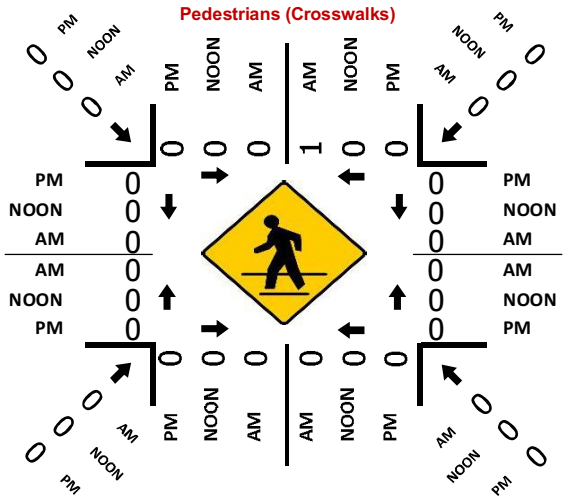
Total Bikes (NOON)



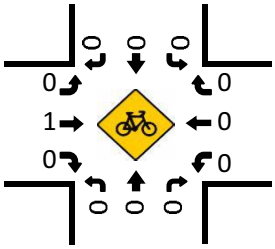
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-009
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	SB Hwy 1 Ramps Southbound				W Riverside Dr Westbound				SB Hwy 1 Ramps Northbound				W Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	227
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	509
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	809
7:00 AM	59	0	24	0	0	66	0	0	0	0	0	0	0	48	31	0	1122
7:15 AM	90	U	42	U	1	76	U	U	U	U	U	U	U	44	29	U	1190
7:30 AM	107	1	42	0	0	72	0	0	0	0	0	0	0	39	39	0	1186
7:45 AM	105	U	62	U	1	63	U	U	U	U	U	U	U	43	39	U	1153
8:00 AM	94	0	67	0	0	63	0	0	0	0	0	0	0	38	33	0	1106
8:15 AM	77	1	44	U	U	67	U	U	U	U	U	U	U	45	44	U	811
8:30 AM	69	0	57	0	0	52	0	0	0	0	0	0	0	38	51	0	533
8:45 AM	74	1	46	U	U	59	U	U	U	U	U	U	U	47	39	U	266
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	376
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	636
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	943
4:00 PM	85	0	50	0	0	39	0	0	0	0	0	0	0	89	53	0	1258
4:15 PM	87	1	60	U	U	52	U	U	U	U	U	U	U	79	40	U	1247
4:30 PM	93	0	46	0	1	44	0	0	0	0	0	0	0	77	47	0	1206
4:45 PM	99	1	56	U	U	40	U	U	U	U	U	U	U	69	50	U	1202
5:00 PM	106	0	45	0	0	37	0	0	0	0	0	0	0	62	55	0	1151
5:15 PM	113	1	56	U	U	39	U	U	U	U	U	U	U	47	25	U	986
5:30 PM	116	0	50	0	0	42	0	0	0	0	0	0	0	44	52	0	668
5:45 PM	95	U	49	U	U	36	U	U	U	U	U	U	U	45	39	U	264
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-009
Date : 8/19/2021

All Vehicles & Uturns

	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	58	0	24	0	82	0	66	0	0	66	0	0	0	0	0	0	48	31	0	79	227	0
7:15	90	0	42	0	132	1	76	0	0	77	0	0	0	0	0	0	44	29	0	73	282	0
7:30	107	1	42	0	150	0	72	0	0	72	0	0	0	0	0	0	39	39	0	78	300	0
7:45	105	0	62	0	167	1	63	0	0	64	0	0	0	0	0	0	43	39	0	82	313	0
Total	360	1	170	0	531	2	277	0	0	279	0	0	0	0	0	0	174	138	0	312	1122	0
8:00	94	0	67	0	161	0	63	0	0	63	0	0	0	0	0	0	38	33	0	71	295	0
8:15	77	1	44	0	122	0	67	0	0	67	0	0	0	0	0	0	45	44	0	89	278	0
8:30	69	0	57	0	126	0	52	0	0	52	0	0	0	0	0	0	38	51	0	89	267	0
8:45	74	1	46	0	121	0	59	0	0	59	0	0	0	0	0	0	47	39	0	86	266	0
Total	314	2	214	0	530	0	241	0	0	241	0	0	0	0	0	0	168	167	0	335	1106	0
16:00	85	0	50	0	135	0	39	0	0	39	0	0	0	0	0	0	89	53	0	142	316	0
16:15	87	1	60	0	148	0	52	0	0	52	0	0	0	0	0	0	79	40	0	119	319	0
16:30	93	0	46	0	139	1	44	0	0	45	0	0	0	0	0	0	77	47	0	124	308	0
16:45	99	1	56	0	156	0	40	0	0	40	0	0	0	0	0	0	69	50	0	119	315	0
Total	364	2	212	0	578	1	175	0	0	176	0	0	0	0	0	0	314	190	0	504	1258	0
17:00	106	0	45	0	151	0	37	0	0	37	0	0	0	0	0	0	62	55	0	117	305	0
17:15	113	1	56	0	170	0	36	0	0	36	0	0	0	0	0	0	47	25	0	72	278	0
17:30	116	0	50	0	166	0	42	0	0	42	0	0	0	0	0	0	44	52	0	96	304	0
17:45	95	0	49	0	144	0	36	0	0	36	0	0	0	0	0	0	45	39	0	84	264	0
Total	430	1	200	0	631	0	151	0	0	151	0	0	0	0	0	0	198	171	0	369	1151	0
Grand Total	1468	6	796	0	2270	3	844	0	0	847	0	0	0	0	0	0	854	666	0	1520	4637	0
Apprch %	64.7%	0.3%	35.1%	0.0%		0.4%	99.6%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	56.2%	43.8%	0.0%			
Total %	31.7%	0.1%	17.2%	0.0%	49.0%	0.1%	18.2%	0.0%	0.0%	18.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.4%	14.4%	0.0%	32.8%	100.0%	

AM PEAK HOUR	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	90	0	42	0	132	1	76	0	0	77	0	0	0	0	0	0	44	29	0	73	282
7:30	107	1	42	0	150	0	72	0	0	72	0	0	0	0	0	0	39	39	0	78	300
7:45	105	0	62	0	167	1	63	0	0	64	0	0	0	0	0	0	43	39	0	82	313
8:00	94	0	67	0	161	0	63	0	0	63	0	0	0	0	0	0	38	33	0	71	295
Total Volume	396	1	213	0	610	2	274	0	0	276	0	0	0	0	0	0	164	140	0	304	1190
% App Total	64.9%	0.2%	34.9%	0.0%		0.7%	99.3%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	53.9%	46.1%	0.0%		
PHF	.925	.250	.795	.000	.913	.500	.901	.000	.000	.896	.000	.000	.000	.000	.000	.000	.932	.897	.000	.927	.950

PM PEAK HOUR	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	85	0	50	0	135	0	39	0	0	39	0	0	0	0	0	0	89	53	0	142	316
16:15	87	1	60	0	148	0	52	0	0	52	0	0	0	0	0	0	79	40	0	119	319
16:30	93	0	46	0	139	1	44	0	0	45	0	0	0	0	0	0	77	47	0	124	308
16:45	99	1	56	0	156	0	40	0	0	40	0	0	0	0	0	0	69	50	0	119	315
Total Volume	364	2	212	0	578	1	175	0	0	176	0	0	0	0	0	0	314	190	0	504	1258
% App Total	63.0%	0.3%	36.7%	0.0%		0.6%	99.4%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	62.3%	37.7%	0.0%		
PHF	.919	.500	.883	.000	.926	.250	.841	.000	.000	.846	.000	.000	.000	.000	.000	.000	.882	.896	.000	.887	.986

File Name: 21-090069-009
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	SB Hwy 1 Ramps Southbound				W Riverside Dr Westbound				SB Hwy 1 Ramps Northbound				W Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-009
Date : 8/19/2021

All Bikes and Peds

	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	100.0%	

AM PEAK HOUR	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	SB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					SB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250

National Data & Surveying Services Intersection Turning Movement Count

Location: NB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Control: 1-Way Stop(NB)

Project ID: 21-090069-010
Date: 8/19/2021

Data - Totals

NS/EW Streets:	NB Hwy 1 Ramps				NB Hwy 1 Ramps				W Riverside Dr				W Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0	0	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	35	1	52	0	0	0	0	0	33	70	0	0	0	80	235	0	506
7:15 AM	43	0	88	0	0	0	0	0	26	111	0	0	0	77	144	0	489
7:30 AM	35	0	101	0	0	0	0	0	26	119	0	0	0	77	126	0	484
7:45 AM	37	1	93	0	0	0	0	0	19	130	0	0	0	75	111	0	466
8:00 AM	33	0	65	0	0	0	0	0	19	113	0	0	0	80	110	0	420
8:15 AM	29	0	77	0	0	0	0	0	17	99	0	0	0	83	121	0	426
8:30 AM	30	0	76	0	0	0	0	0	21	92	0	0	0	57	110	0	386
8:45 AM	24	0	53	0	0	0	0	0	18	98	0	0	0	60	95	0	348
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	266	2	605	0	0	0	0	0	179	832	0	0	0	589	1052	0	3525
APPROACH %'s :	30.47%	0.23%	69.30%	0.00%					17.71%	82.29%	0.00%	0.00%	0.00%	35.89%	64.11%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	150	2	334	0	0	0	0	0	104	430	0	0	0	309	616	0	1945
PEAK HR FACTOR :	0.872	0.500	0.827	0.000	0.000	0.000	0.000	0.000	0.788	0.827	0.000	0.000	0.000	0.966	0.655	0.000	0.961
	0.893								0.896				0.734				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0	0	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	15	0	94	0	0	0	0	0	39	142	0	1	0	66	107	0	464
4:15 PM	23	2	93	0	0	0	0	0	30	136	0	0	0	78	119	0	481
4:30 PM	12	0	67	0	0	0	0	0	22	143	0	0	0	89	104	0	437
4:45 PM	14	1	89	0	0	0	0	0	38	138	0	0	0	78	110	0	468
5:00 PM	19	0	56	0	0	0	0	0	24	136	0	0	0	64	135	0	434
5:15 PM	19	0	77	0	0	0	0	0	19	144	0	0	0	52	84	0	395
5:30 PM	18	1	67	0	0	0	0	0	29	131	0	1	0	64	111	0	422
5:45 PM	14	1	65	0	0	0	0	0	19	122	0	0	0	58	95	0	374
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	134	5	608	0	0	0	0	0	220	1092	0	2	0	549	865	0	3475
APPROACH %'s :	17.94%	0.67%	81.39%	0.00%					16.74%	83.11%	0.00%	0.15%	0.00%	38.83%	61.17%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	64	3	343	0	0	0	0	0	129	559	0	1	0	311	440	0	1850
PEAK HR FACTOR :	0.696	0.375	0.912	0.000	0.000	0.000	0.000	0.000	0.827	0.977	0.000	0.250	0.000	0.874	0.924	0.000	0.962
	0.869								0.946				0.953				

National Data & Surveying Services Intersection Turning Movement Count

Location: NB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Control: 1-Way Stop(NB)

Project ID: 21-090069-010
Date: 8/19/2021

Data - Bikes

NS/EW Streets:	NB Hwy 1 Ramps				NB Hwy 1 Ramps				W Riverside Dr				W Riverside Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0	0	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5	0.5	1	0	0	0	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%					
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
										0.250							

National Data & Surveying Services Intersection Turning Movement Count

Location: NB Hwy 1 Ramps & W Riverside Dr
City: Watsonville
Project ID: 21-090069-010
Date: 8/19/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	NB Hwy 1 Ramps		NB Hwy 1 Ramps		W Riverside Dr		W Riverside Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	1
APPROACH %'s :	0.00%	100.00%							
PEAK HR :	07:00 AM - 08:00 AM								TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	1
PEAK HR FACTOR :		0.250							0.250
	0.250								

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

NB Hwy 1 Ramps & W Riverside Dr

Peak Hour Turning Movement Count

ID: 21-090069-010
City: Watsonville

Day: Thursday
Date: 8/19/2021

PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	7:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	4:00 PM - 06:00 PM

NB Hwy 1 Ramps

SOUTHBOUND

AM	0	0	0	0	722	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	572	PM

W Riverside Dr (AM / NOON / PM)				
	459	0	376	
0	0	0	1	0
1	104	0	129	1
1	430	0	559	1
0	0	0	0	0

W Riverside Dr (PM / NOON / AM)			
1	440	0	616
1	311	0	309
0	0	0	0
0	0	0	0
	902	0	764

CONTROL

1-Way Stop(NB)

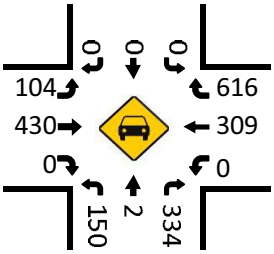
TEV	1945 AM	0 NOON	1850 PM
PHF	0.96		0.96

PM	0	0	64	3	343	PM
NOON	0	0	0	0	0	NOON
AM	0	0	150	2	334	AM

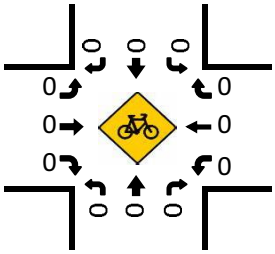
NORTHBOUND

NB Hwy 1 Ramps

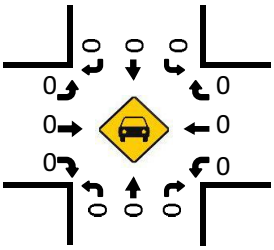
Totals (AM)



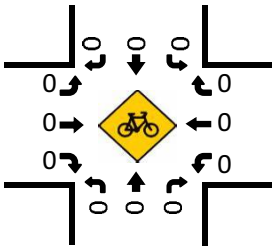
Total Bikes (AM)



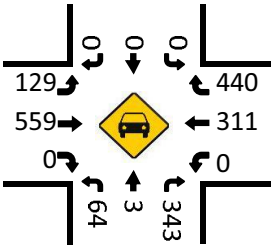
Totals (NOON)



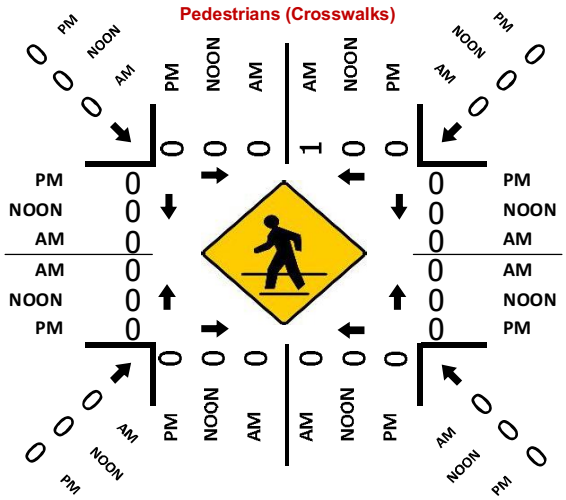
Total Bikes (NOON)



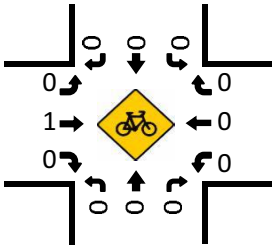
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



File Name: 21-090069-010
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	NB Hwy 1 Ramps Southbound				W Riverside Dr Westbound				NB Hwy 1 Ramps Northbound				W Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	LEFT	THRU	RIGHT	UTURNS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	586
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	695
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1479
7:00 AM	0	0	0	0	0	80	235	0	35	1	52	0	33	70	0	0	1945
7:15 AM	U	U	U	U	U	77	144	U	43	U	88	U	26	111	U	U	1694
7:30 AM	0	0	0	0	0	77	126	0	35	0	101	0	26	119	0	0	1796
7:45 AM	U	U	U	U	U	75	111	U	37	1	93	U	19	130	U	U	1689
8:00 AM	0	0	0	0	0	80	110	0	33	0	65	0	19	113	0	0	1580
8:15 AM	U	U	U	U	U	83	121	U	29	U	77	U	17	99	U	U	1180
8:30 AM	0	0	0	0	0	57	110	0	30	0	76	0	21	92	0	0	734
8:45 AM	U	U	U	U	U	60	95	U	24	U	63	U	18	98	U	U	548
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	463
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	344
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1081
4:00 PM	0	0	0	0	0	86	107	0	15	0	94	0	39	142	0	1	1849
4:15 PM	U	U	U	U	U	78	119	U	23	2	93	U	30	136	U	U	1820
4:30 PM	0	0	0	0	0	89	104	0	12	0	67	0	22	143	0	0	1734
4:45 PM	U	U	U	U	U	78	110	U	14	1	89	U	38	138	U	U	1718
5:00 PM	0	0	0	0	0	64	135	0	19	0	56	0	24	136	0	0	1624
5:15 PM	U	U	U	U	U	52	94	U	19	U	77	U	19	144	U	U	1194
5:30 PM	0	0	0	0	0	64	111	0	18	1	67	0	29	131	0	1	795
5:45 PM	U	U	U	U	U	58	95	U	14	1	65	U	19	122	U	U	374
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-010
Date : 8/19/2021

All Vehicles & Uturns

	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	0	0	0	0	80	235	0	315	35	1	52	0	88	33	70	0	0	103	506	0
7:15	0	0	0	0	0	0	77	144	0	221	43	0	88	0	131	26	111	0	0	137	489	0
7:30	0	0	0	0	0	0	77	126	0	203	35	0	101	0	136	26	119	0	0	145	484	0
7:45	0	0	0	0	0	0	75	111	0	186	37	1	93	0	131	19	130	0	0	149	466	0
Total	0	0	0	0	0	0	309	616	0	925	150	2	334	0	486	104	430	0	0	534	1945	0
8:00	0	0	0	0	0	0	80	110	0	190	33	0	65	0	98	19	113	0	0	132	420	0
8:15	0	0	0	0	0	0	83	121	0	204	29	0	77	0	106	17	99	0	0	116	426	0
8:30	0	0	0	0	0	0	57	110	0	167	30	0	76	0	106	21	92	0	0	113	386	0
8:45	0	0	0	0	0	0	60	95	0	155	24	0	53	0	77	18	98	0	0	116	348	0
Total	0	0	0	0	0	0	280	436	0	716	116	0	271	0	387	75	402	0	0	477	1580	0
16:00	0	0	0	0	0	0	66	107	0	173	15	0	94	0	109	39	142	0	1	182	464	1
16:15	0	0	0	0	0	0	78	119	0	197	23	2	93	0	118	30	136	0	0	166	481	0
16:30	0	0	0	0	0	0	89	104	0	193	12	0	67	0	79	22	143	0	0	165	437	0
16:45	0	0	0	0	0	0	78	110	0	188	14	1	89	0	104	38	138	0	0	176	468	0
Total	0	0	0	0	0	0	311	440	0	751	64	3	343	0	410	129	559	0	1	689	1850	1
17:00	0	0	0	0	0	0	64	135	0	199	19	0	56	0	75	24	136	0	0	160	434	0
17:15	0	0	0	0	0	0	52	84	0	136	19	0	77	0	96	19	144	0	0	163	395	0
17:30	0	0	0	0	0	0	64	111	0	175	18	1	67	0	86	29	131	0	1	161	422	1
17:45	0	0	0	0	0	0	58	95	0	153	14	1	65	0	80	19	122	0	0	141	374	0
Total	0	0	0	0	0	0	238	425	0	663	70	2	265	0	337	91	533	0	1	625	1625	1
Grand Total	0	0	0	0	0	0	1138	1917	0	3055	400	7	1213	0	1620	399	1924	0	2	2325	7000	2
Apprch %	0.0%	0.0%	0.0%	0.0%		0.0%	37.3%	62.7%	0.0%		24.7%	0.4%	74.9%	0.0%		17.2%	82.8%	0.0%	0.1%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.3%	27.4%	0.0%	43.6%	5.7%	0.1%	17.3%	0.0%	23.1%	5.7%	27.5%	0.0%	0.0%	33.2%	100.0%	

AM PEAK HOUR	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	0	0	0	0	0	80	235	0	315	35	1	52	0	88	33	70	0	0	103	506
7:15	0	0	0	0	0	0	77	144	0	221	43	0	88	0	131	26	111	0	0	137	489
7:30	0	0	0	0	0	0	77	126	0	203	35	0	101	0	136	26	119	0	0	145	484
7:45	0	0	0	0	0	0	75	111	0	186	37	1	93	0	131	19	130	0	0	149	466
Total Volume	0	0	0	0	0	0	309	616	0	925	150	2	334	0	486	104	430	0	0	534	1945
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	33.4%	66.6%	0.0%		30.9%	0.4%	68.7%	0.0%		19.5%	80.5%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.966	.655	.000	.734	.872	.500	.827	.000	.893	.788	.827	.000	.000	.896	.961

PM PEAK HOUR	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	0	0	0	66	107	0	173	15	0	94	0	109	39	142	0	1	182	464
16:15	0	0	0	0	0	0	78	119	0	197	23	2	93	0	118	30	136	0	0	166	481
16:30	0	0	0	0	0	0	89	104	0	193	12	0	67	0	79	22	143	0	0	165	437
16:45	0	0	0	0	0	0	78	110	0	188	14	1	89	0	104	38	138	0	0	176	468
Total Volume	0	0	0	0	0	0	311	440	0	751	64	3	343	0	410	129	559	0	1	689	1850
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	41.4%	58.6%	0.0%		15.6%	0.7%	83.7%	0.0%		18.7%	81.1%	0.0%	0.1%		
PHF	.000	.000	.000	.000	.000	.000	.874	.924	.000	.953	.696	.375	.912	.000	.869	.827	.977	.000	.250	.946	.962

File Name: 21-090069-010
Start Date: 8/19/2021
Start Time: 7:00 AM
Site Code:
Comment 1: City of Watsonville
Comment 2:
Comment 3:
Comment 4:

	NB Hwy 1 Ramps Southbound				W Riverside Dr Westbound				NB Hwy 1 Ramps Northbound				W Riverside Dr Eastbound				
Start Time	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	LEFT	THRU	RIGHT	PEDS	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	1	U	U	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

ALL TRAFFIC DATA

City of Watsonville

(916) 771-8700

File Name : 21-090069-010
Date : 8/19/2021

All Bikes and Peds

	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
Apprch %	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%				
Total %	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	100.0%	0.0%		100.0%	100.0%	

AM PEAK HOUR	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000

PM PEAK HOUR	NB Hwy 1 Ramps Southbound					W Riverside Dr Westbound					NB Hwy 1 Ramps Northbound					W Riverside Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% App Total	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.000	.000	.000		.000	.000	.000	.000		.000	.000	.000	.000		.000	.000	.250	.000		.250	.250

B - User Estimated Trip Generation

Employee LIST

CLASS	Number of Employees	Schedule	START TIME	END TIME
Delivery - Group A	8	Monday thru Friday	4:00 AM	1:00 PM
Delivery - Group B	8	Monday thru Friday	5:30 AM	2:30 PM
Delivery - Group C	8	Monday thru Friday	7:00 AM	4:00 PM
Warehouse - Day	6	Monday thru Friday	5:00 AM	2:00 PM
Warehouse - Swing	3	Monday thru Friday	11:00 AM	8:00 PM
Warehouse - Night	15	Sunday thru Thursday	6:00 PM	4:00 AM
Sales - On Premise	9	1-day per week Tuesday	8:00 AM	3:00 PM
Sales - Off Premise	8	1-day per week Wednesday	8:00 AM	3:00 PM
Sales - Chain	8	1-day per week Thursday	8:00 AM	3:00 PM
Administration	5	Monday thru Friday	8:00 AM	5:00 PM
Leadership / Supervisors	10	2 or 3-day per week	8:00 AM	3:00 PM

C – Level of Service and Vehicle Queuing Calculation Sheets

Intersection	
Int Delay, s/veh	10.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	402	0	0	652	56	415
Future Vol, veh/h	402	0	0	652	56	415
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	473	0	0	767	66	488

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1240	474
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	767	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	193	590
Stage 1	-	0	0	-	627	-
Stage 2	-	0	0	-	458	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	193	589
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	193	589	-	-
HCM Lane V/C Ratio	0.341	0.829	-	-
HCM Control Delay (s)	33	34	-	-
HCM Lane LOS	D	D	-	-
HCM 95th %tile Q(veh)	1.4	8.6	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	580	295	137	584	235	221	514	161	680	139
v/c Ratio	0.64	0.60	0.47	0.22	0.46	0.34	0.85	0.93	0.41	0.89	0.33
Control Delay	62.4	42.3	7.0	43.3	32.1	5.4	76.5	75.0	9.5	60.2	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	42.3	7.0	43.3	32.1	5.4	76.5	75.0	9.5	60.2	5.8
Queue Length 50th (ft)	77	213	0	47	185	0	183	216	0	265	0
Queue Length 95th (ft)	114	284	73	77	260	59	#324	#317	56	328	37
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	962	628	612	1274	691	273	575	399	890	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.60	0.47	0.22	0.46	0.34	0.81	0.89	0.40	0.76	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	551	280	130	555	223	234	465	153	220	426	132
Future Volume (veh/h)	186	551	280	130	555	223	234	465	153	220	426	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.86
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	196	580	295	137	584	235	245	490	161	232	448	139
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	691	1255	544	296	622	219	268	554	312
Arrive On Green	0.08	0.23	0.23	0.20	0.35	0.35	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1519	3456	3554	1540	1781	3741	1316	1169	2419	1365
Grp Volume(v), veh/h	196	580	295	137	584	235	245	490	161	359	321	139
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1540	1781	1870	1316	1812	1777	1365
Q Serve(g_s), s	6.6	18.1	22.3	4.0	15.3	14.0	16.0	15.1	13.9	22.9	20.4	10.5
Cycle Q Clear(g_c), s	6.6	18.1	22.3	4.0	15.3	14.0	16.0	15.1	13.9	22.9	20.4	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.65		1.00
Lane Grp Cap(c), veh/h	288	808	346	691	1255	544	296	622	219	415	407	312
V/C Ratio(X)	0.68	0.72	0.85	0.20	0.47	0.43	0.83	0.79	0.74	0.87	0.79	0.45
Avail Cap(c_a), veh/h	501	808	346	691	1255	544	303	636	224	464	455	349
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	42.8	44.4	40.0	30.0	29.6	48.3	48.0	47.5	44.5	43.5	39.7
Incr Delay (d2), s/veh	1.1	5.4	22.6	0.1	1.2	2.5	15.6	5.8	10.2	13.6	7.0	0.4
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	2.9	8.4	10.4	1.7	6.6	5.4	8.4	7.5	5.1	11.5	9.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	48.2	67.1	40.1	31.3	32.1	64.0	53.8	57.7	58.1	50.6	40.1
LnGrp LOS	D	D	E	D	C	C	E	D	E	E	D	D
Approach Vol, veh/h		1071			956			896			819	
Approach Delay, s/veh		54.6			32.7			57.3			52.1	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	48.1		24.6	29.7	33.0		32.8				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	8.6	17.3		18.0	6.0	24.3		24.9				
Green Ext Time (p_c), s	0.0	0.6		0.3	0.0	0.3		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		49.1	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

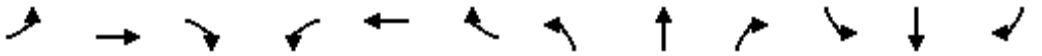


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	123	647	225	134	520	46	326	288	157	359	174
v/c Ratio	0.54	0.50	0.33	0.74	0.43	0.08	0.49	0.80	0.37	1.09	0.43
Control Delay	58.7	33.2	9.6	75.4	33.4	0.3	44.7	62.3	8.0	122.4	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	33.2	9.6	75.4	33.4	0.3	44.7	62.3	8.0	122.4	13.0
Queue Length 50th (ft)	91	197	22	102	159	0	119	218	0	~313	14
Queue Length 95th (ft)	155	301	94	166	236	0	150	291	53	#504	78
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1298	677	198	1208	571	984	534	552	329	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.33	0.68	0.43	0.08	0.33	0.54	0.28	1.09	0.43

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.



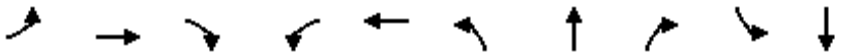
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	602	209	125	484	43	303	268	146	63	271	162
Future Volume (veh/h)	114	602	209	125	484	43	303	268	146	63	271	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	647	225	134	520	46	326	288	157	68	291	174
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1366	589	160	880	375	651	352	291	63	268	271
Arrive On Green	0.22	0.38	0.38	0.09	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1532	1781	3554	1515	3456	1870	1545	351	1502	1522
Grp Volume(v), veh/h	123	647	225	134	520	46	326	288	157	359	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1532	1781	1777	1515	1728	1870	1545	1853	0	1522
Q Serve(g_s), s	6.9	16.4	12.7	8.9	15.5	2.8	10.1	17.7	11.0	21.4	0.0	12.7
Cycle Q Clear(g_c), s	6.9	16.4	12.7	8.9	15.5	2.8	10.1	17.7	11.0	21.4	0.0	12.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.19		1.00
Lane Grp Cap(c), veh/h	393	1366	589	160	880	375	651	352	291	330	0	271
V/C Ratio(X)	0.31	0.47	0.38	0.84	0.59	0.12	0.50	0.82	0.54	1.09	0.00	0.64
Avail Cap(c_a), veh/h	393	1366	589	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	27.8	26.7	53.8	39.8	35.0	43.6	46.7	44.0	49.3	0.0	45.7
Incr Delay (d2), s/veh	0.2	1.2	1.9	22.3	2.9	0.7	0.2	3.3	0.6	74.6	0.0	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	3.0	7.0	4.8	4.9	7.0	1.1	4.3	8.5	4.2	16.8	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	29.0	28.5	76.1	42.7	35.7	43.9	50.0	44.6	123.9	0.0	49.7
LnGrp LOS	D	C	C	E	D	D	D	D	D	F	A	D
Approach Vol, veh/h		995			700			771			533	
Approach Delay, s/veh		30.2			48.6			46.3			99.7	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.4	51.4		26.0	31.8	35.0		27.2				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	10.9	18.4		23.4	8.9	17.5		19.7				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.0	
HCM 6th LOS		D	

Notes

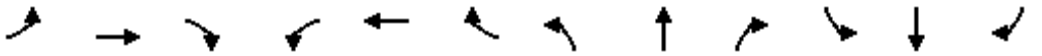
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	63	357	312	279	524	388	797	300	53	457
v/c Ratio	0.43	0.34	0.35	0.65	0.42	0.84	0.59	0.41	0.37	0.76
Control Delay	59.8	33.9	10.2	56.0	30.3	58.3	30.7	8.2	58.0	52.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	33.9	10.2	56.0	30.3	58.3	30.7	8.2	58.0	52.9
Queue Length 50th (ft)	45	110	72	103	156	265	248	33	38	171
Queue Length 95th (ft)	89	160	153	148	223	#483	306	98	79	207
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	1049	904	426	1258	460	1358	734	204	869
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	0.33	0.34	0.35	0.65	0.42	0.84	0.59	0.41	0.26	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	339	296	265	444	54	369	757	285	50	410	24
Future Volume (veh/h)	60	339	296	265	444	54	369	757	285	50	410	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	357	312	279	467	57	388	797	300	53	432	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	921	755	694	1261	153	393	1176	512	114	566	33
Arrive On Green	0.07	0.26	0.26	0.20	0.40	0.40	0.22	0.33	0.33	0.06	0.17	0.17
Sat Flow, veh/h	1781	3554	1563	3456	3181	386	1781	3554	1548	1781	3406	196
Grp Volume(v), veh/h	63	357	312	279	260	264	388	797	300	53	225	232
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1791	1781	1777	1548	1781	1777	1826
Q Serve(g_s), s	3.9	9.5	0.0	8.1	11.9	12.0	25.0	22.2	10.8	3.3	13.9	14.0
Cycle Q Clear(g_c), s	3.9	9.5	0.0	8.1	11.9	12.0	25.0	22.2	10.8	3.3	13.9	14.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	121	921	755	694	704	710	393	1176	512	114	295	303
V/C Ratio(X)	0.52	0.39	0.41	0.40	0.37	0.37	0.99	0.68	0.59	0.47	0.76	0.77
Avail Cap(c_a), veh/h	191	921	755	694	704	710	393	1176	512	206	439	451
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.1	19.4	40.0	24.5	24.6	44.6	33.2	10.9	51.9	45.8	45.8
Incr Delay (d2), s/veh	1.3	1.2	1.7	0.1	1.5	1.5	41.5	1.3	1.2	1.1	1.9	2.1
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	1.8	4.3	5.8	3.5	5.3	5.4	15.5	9.8	3.8	1.5	6.3	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	36.3	21.0	40.1	26.0	26.1	86.1	34.5	12.1	53.0	47.7	47.9
LnGrp LOS	D	D	C	D	C	C	F	C	B	D	D	D
Approach Vol, veh/h		732			803			1485			510	
Approach Delay, s/veh		31.2			30.9			43.4			48.3	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	34.0	30.0	23.7	11.5	49.8	11.0	42.7
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.1	11.5	27.0	16.0	5.9	14.0	5.3	24.2
Green Ext Time (p_c), s	0.1	2.2	0.0	1.2	0.0	2.1	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	38.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	2	10	6	0	25	9	277	4	14	254	48
Future Vol, veh/h	92	2	10	6	0	25	9	277	4	14	254	48
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	2	12	7	0	29	11	326	5	16	299	56

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	721	709	310	730	760	356	365	0	0	346	0	0
Stage 1	341	341	-	363	363	-	-	-	-	-	-	-
Stage 2	380	368	-	367	397	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	343	359	730	338	336	688	1194	-	-	1213	-	-
Stage 1	674	639	-	656	625	-	-	-	-	-	-	-
Stage 2	642	621	-	653	603	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	315	343	722	320	321	668	1183	-	-	1196	-	-
Mov Cap-2 Maneuver	315	343	-	320	321	-	-	-	-	-	-	-
Stage 1	661	624	-	641	611	-	-	-	-	-	-	-
Stage 2	599	607	-	631	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.2	12	0.3	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1183	-	-	316	722	552	1196	-	-
HCM Lane V/C Ratio	0.009	-	-	0.35	0.016	0.066	0.014	-	-
HCM Control Delay (s)	8.1	-	-	22.4	10.1	12	8.1	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.5	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	96	0	55	9	2	28	23	167	8	19	217	35
Future Vol, veh/h	96	0	55	9	2	28	23	167	8	19	217	35
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	0	65	11	2	33	27	199	10	23	258	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	588	586	270	626	618	210	308	0	0	220	0	0
Stage 1	312	312	-	264	264	-	-	-	-	-	-	-
Stage 2	276	274	-	362	354	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	421	422	769	397	405	830	1253	-	-	1349	-	-
Stage 1	699	658	-	741	690	-	-	-	-	-	-	-
Stage 2	730	683	-	657	630	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	387	398	760	347	382	821	1243	-	-	1335	-	-
Mov Cap-2 Maneuver	387	398	-	347	382	-	-	-	-	-	-	-
Stage 1	679	642	-	717	668	-	-	-	-	-	-	-
Stage 2	683	661	-	588	614	-	-	-	-	-	-	-

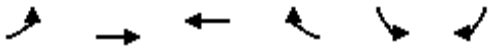
Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	11.5	0.9	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1243	-	-	387	760	597	1335	-	-
HCM Lane V/C Ratio	0.022	-	-	0.295	0.086	0.078	0.017	-	-
HCM Control Delay (s)	8	-	-	18.2	10.2	11.5	7.7	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.3	0.3	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	80	167	206	176	307
v/c Ratio	0.29	0.09	0.46	0.11	0.64
Control Delay	23.8	7.1	21.9	0.2	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	7.1	21.9	0.2	21.2
Queue Length 50th (ft)	20	11	51	0	65
Queue Length 95th (ft)	62	28	123	0	154
Internal Link Dist (ft)		427	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	719	3336	946	1551	719
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.05	0.22	0.11	0.43

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	157	194	165	167	121
Future Volume (veh/h)	75	157	194	165	167	121
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	167	206	0	178	129
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	217	1789	449		226	164
Arrive On Green	0.12	0.50	0.24	0.00	0.23	0.23
Sat Flow, veh/h	1781	3647	1870	1585	979	709
Grp Volume(v), veh/h	80	167	206	0	308	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1694	0
Q Serve(g_s), s	1.7	1.0	3.9	0.0	7.0	0.0
Cycle Q Clear(g_c), s	1.7	1.0	3.9	0.0	7.0	0.0
Prop In Lane	1.00			1.00	0.58	0.42
Lane Grp Cap(c), veh/h	217	1789	449		391	0
V/C Ratio(X)	0.37	0.09	0.46		0.79	0.00
Avail Cap(c_a), veh/h	868	2166	1140		826	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.6	5.3	13.3	0.0	14.8	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.7	0.0	3.6	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	0.7	0.2	1.4	0.0	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	5.3	14.0	0.0	18.4	0.0
LnGrp LOS	B	A	B		B	A
Approach Vol, veh/h		247	206	A	308	
Approach Delay, s/veh		9.3	14.0		18.4	
Approach LOS		A	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.5		14.6	10.8	15.7
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.0		9.0	3.7	5.9
Green Ext Time (p_c), s		0.9		0.7	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	19.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	129	161	50	38	149	33	50	202	21	64	219	208
Future Vol, veh/h	129	161	50	38	149	33	50	202	21	64	219	208
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	140	175	54	41	162	36	54	220	23	70	238	226
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	16.8	20.4	21.7	20.1
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	0%	100%	0%	17%	23%	0%
Vol Thru, %	80%	0%	0%	76%	68%	77%	0%
Vol Right, %	0%	100%	0%	24%	15%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	252	21	129	211	220	283	208
LT Vol	50	0	129	0	38	64	0
Through Vol	202	0	0	161	149	219	0
RT Vol	0	21	0	50	33	0	208
Lane Flow Rate	274	23	140	229	239	308	226
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.609	0.045	0.327	0.491	0.539	0.655	0.429
Departure Headway (Hd)	8	7.173	8.396	7.711	8.12	7.665	6.827
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	449	496	426	466	442	471	525
Service Time	5.785	4.958	6.182	5.496	6.214	5.447	4.608
HCM Lane V/C Ratio	0.61	0.046	0.329	0.491	0.541	0.654	0.43
HCM Control Delay	22.6	10.3	15.2	17.8	20.4	24	14.7
HCM Lane LOS	C	B	C	C	C	C	B
HCM 95th-tile Q	4	0.1	1.4	2.7	3.1	4.6	2.1

Intersection	
Int Delay, s/veh	14.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	168	144	0	281	0	0	0	0	408	0	218
Future Vol, veh/h	0	168	144	0	281	0	0	0	0	408	0	218
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	177	152	0	296	0	0	0	0	429	0	229

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			473	-	296
Stage 1	-	-	-	-	-	-			296	-	-
Stage 2	-	-	-	-	-	-			177	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			550	0	743
Stage 1	0	-	0	0	-	0			755	0	-
Stage 2	0	-	0	0	-	0			854	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			550	0	743
Mov Cap-2 Maneuver	-	-	-	-	-	-			550	0	-
Stage 1	-	-	-	-	-	-			755	0	-
Stage 2	-	-	-	-	-	-			854	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	550	743
HCM Lane V/C Ratio	-	-	0.781	0.309
HCM Control Delay (s)	-	-	31	12
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	7.2	1.3

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	440	0	0	317	631	154	3	342	0	0	0
Future Vol, veh/h	107	440	0	0	317	631	154	3	342	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	458	0	0	330	657	160	3	356	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	330	0	-	-	-	0	1010	1010	-
Stage 1	-	-	-	-	-	-	680	680	-
Stage 2	-	-	-	-	-	-	330	330	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1229	-	0	0	-	0	266	240	0
Stage 1	-	-	0	0	-	0	503	451	0
Stage 2	-	-	0	0	-	0	728	646	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1229	-	-	-	-	-	242	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	0	-
Stage 1	-	-	-	-	-	-	458	0	-
Stage 2	-	-	-	-	-	-	728	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	46.2
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	242	-	1229	-	-
HCM Lane V/C Ratio	0.676	-	0.091	-	-
HCM Control Delay (s)	46.2	0	8.2	-	-
HCM Lane LOS	E	A	A	-	-
HCM 95th %tile Q(veh)	4.3	-	0.3	-	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	0	0	441	14	514
Future Vol, veh/h	66	0	0	441	14	514
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	0	0	501	16	584

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	576	81
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	501	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	479	979
Stage 1	-	0	0	-	948	-
Stage 2	-	0	0	-	609	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	479	973
Mov Cap-2 Maneuver	-	-	-	-	479	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	609	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	479	973	-	-
HCM Lane V/C Ratio	0.033	0.6	-	-
HCM Control Delay (s)	12.8	14.1	-	-
HCM Lane LOS	B	B	-	-
HCM 95th %tile Q(veh)	0.1	4.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	360	943	334	208	632	294	268	556	126	693	134
v/c Ratio	0.65	0.78	0.51	0.66	0.66	0.46	0.95	0.95	0.31	0.91	0.29
Control Delay	53.3	42.3	15.3	63.2	43.9	6.9	91.9	74.8	4.5	62.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	42.3	15.3	63.2	43.9	6.9	91.9	74.8	4.5	62.2	4.1
Queue Length 50th (ft)	136	345	68	82	233	0	226	234	0	275	0
Queue Length 95th (ft)	188	#516	176	120	313	72	#404	#342	25	335	29
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1204	657	583	955	634	291	608	414	890	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.78	0.51	0.36	0.66	0.46	0.92	0.91	0.30	0.78	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	342	896	317	198	600	279	335	447	120	225	433	127
Future Volume (veh/h)	342	896	317	198	600	279	335	447	120	225	433	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	360	943	334	208	632	294	275	581	126	237	456	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	679	1243	549	288	808	353	307	646	268	258	532	337
Arrive On Green	0.20	0.35	0.35	0.08	0.23	0.23	0.17	0.17	0.17	0.22	0.22	0.22
Sat Flow, veh/h	3456	3554	1569	3456	3554	1550	1781	3741	1552	1172	2416	1528
Grp Volume(v), veh/h	360	943	334	208	632	294	275	581	126	366	327	134
Grp Sat Flow(s),veh/h/ln	1728	1777	1569	1728	1777	1550	1781	1870	1552	1812	1777	1528
Q Serve(g_s), s	11.2	28.2	21.1	7.0	20.1	21.7	18.1	18.3	8.8	23.7	21.1	9.0
Cycle Q Clear(g_c), s	11.2	28.2	21.1	7.0	20.1	21.7	18.1	18.3	8.8	23.7	21.1	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.65		1.00
Lane Grp Cap(c), veh/h	679	1243	549	288	808	353	307	646	268	399	391	337
V/C Ratio(X)	0.53	0.76	0.61	0.72	0.78	0.83	0.89	0.90	0.47	0.92	0.83	0.40
Avail Cap(c_a), veh/h	679	1243	549	587	808	353	322	676	281	464	455	391
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	34.5	32.2	53.7	43.6	44.2	48.6	48.6	44.7	45.7	44.7	40.0
Incr Delay (d2), s/veh	0.4	4.4	5.0	1.3	7.4	20.2	24.1	14.1	0.5	20.1	9.9	0.3
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	4.8	12.5	8.5	3.1	9.4	10.1	10.1	9.8	3.3	12.5	10.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.7	38.9	37.2	54.9	51.0	64.3	72.7	62.8	45.2	65.8	54.6	40.3
LnGrp LOS	D	D	D	D	D	E	E	E	D	E	D	D
Approach Vol, veh/h		1637			1134			982			827	
Approach Delay, s/veh		39.6			55.2			63.3			57.2	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.3	33.0		26.0	14.6	47.7		31.7				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	13.2	23.7		20.3	9.0	30.2		25.7				
Green Ext Time (p_c), s	0.0	0.4		0.2	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		51.7	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

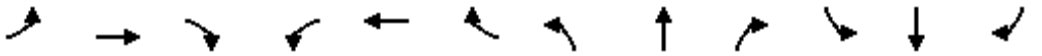


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	239	989	197	132	644	49	340	302	122	295	146
v/c Ratio	0.85	0.77	0.32	0.67	0.58	0.09	0.50	0.82	0.29	0.95	0.37
Control Delay	75.2	40.5	16.2	71.5	42.6	17.2	44.5	63.8	4.4	88.9	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	40.5	16.2	71.5	42.6	17.2	44.5	63.8	4.4	88.9	8.9
Queue Length 50th (ft)	181	353	48	109	269	11	123	229	0	226	0
Queue Length 95th (ft)	264	#532	121	#190	#370	m37	155	306	28	#390	52
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	317	1281	612	197	1115	526	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.77	0.32	0.67	0.58	0.09	0.35	0.57	0.22	0.90	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



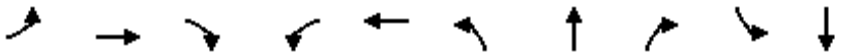
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	959	191	128	625	48	330	293	118	103	183	142
Future Volume (veh/h)	232	959	191	128	625	48	330	293	118	103	183	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	989	197	132	644	49	340	302	122	106	189	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	939	397	356	1142	488	677	367	298	115	206	265
Arrive On Green	0.15	0.26	0.26	0.20	0.32	0.32	0.20	0.20	0.20	0.17	0.17	0.17
Sat Flow, veh/h	1781	3554	1504	1781	3554	1520	3456	1870	1522	660	1177	1516
Grp Volume(v), veh/h	239	989	197	132	644	49	340	302	122	295	0	146
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1520	1728	1870	1522	1837	0	1516
Q Serve(g_s), s	15.8	31.7	13.3	7.7	18.0	2.7	10.5	18.6	8.4	18.9	0.0	10.6
Cycle Q Clear(g_c), s	15.8	31.7	13.3	7.7	18.0	2.7	10.5	18.6	8.4	18.9	0.0	10.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	265	939	397	356	1142	488	677	367	298	321	0	265
V/C Ratio(X)	0.90	1.05	0.50	0.37	0.56	0.10	0.50	0.82	0.41	0.92	0.00	0.55
Avail Cap(c_a), veh/h	303	939	397	356	1142	488	991	536	436	328	0	270
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	44.2	37.4	41.5	33.8	28.6	43.0	46.2	42.2	48.7	0.0	45.2
Incr Delay (d2), s/veh	24.6	44.5	4.4	0.2	2.0	0.4	0.2	4.3	0.3	28.9	0.0	1.3
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	8.7	19.3	5.3	3.3	7.9	1.0	4.5	9.0	3.2	11.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.8	88.7	41.8	41.7	35.8	29.0	43.2	50.5	42.5	77.6	0.0	46.5
LnGrp LOS	E	F	D	D	D	C	D	D	D	E	A	D
Approach Vol, veh/h		1425			825			764			441	
Approach Delay, s/veh		79.9			36.3			46.0			67.3	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.3	37.0		25.6	22.4	43.9		28.1				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	9.7	33.7		20.9	17.8	20.0		20.6				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		60.4	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

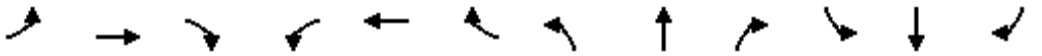


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	61	522	639	413	441	358	720	357	91	744
v/c Ratio	0.44	0.59	0.81	0.79	0.37	0.89	0.54	0.48	0.58	0.93
Control Delay	62.8	43.1	31.0	60.9	30.9	69.8	31.6	9.5	89.7	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	43.1	31.0	60.9	30.9	69.8	31.6	9.5	89.7	52.6
Queue Length 50th (ft)	46	188	340	160	134	273	224	41	68	140
Queue Length 95th (ft)	90	247	#512	#227	187	#452	303	129	m100	m#373
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	786	523	1199	403	1329	748	255	833
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	0.29	0.59	0.81	0.79	0.37	0.89	0.54	0.48	0.36	0.89

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	496	607	392	376	43	340	684	339	86	673	34
Future Volume (veh/h)	58	496	607	392	376	43	340	684	339	86	673	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	522	639	413	396	45	358	720	357	91	708	36
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	882	723	569	1132	128	382	1338	582	127	776	39
Arrive On Green	0.07	0.25	0.25	0.16	0.35	0.35	0.21	0.38	0.38	0.07	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3215	363	1781	3554	1546	1781	3434	174
Grp Volume(v), veh/h	61	522	639	413	218	223	358	720	357	91	366	378
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1801	1781	1777	1546	1781	1777	1831
Q Serve(g_s), s	4.0	15.5	18.6	13.6	10.9	11.0	23.7	19.0	13.9	6.0	24.1	24.1
Cycle Q Clear(g_c), s	4.0	15.5	18.6	13.6	10.9	11.0	23.7	19.0	13.9	6.0	24.1	24.1
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	116	882	723	569	625	634	382	1338	582	127	401	414
V/C Ratio(X)	0.53	0.59	0.88	0.73	0.35	0.35	0.94	0.54	0.61	0.72	0.91	0.91
Avail Cap(c_a), veh/h	212	882	723	569	625	634	392	1338	582	257	421	433
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.7	29.1	47.5	28.7	28.8	46.3	29.3	11.6	54.5	45.3	45.3
Incr Delay (d2), s/veh	1.4	2.9	14.8	4.0	1.5	1.5	29.1	1.6	4.8	2.8	22.6	22.3
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	1.8	7.2	8.0	6.2	5.0	5.1	13.6	8.5	5.5	2.8	13.2	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	42.6	43.9	51.6	30.2	30.3	75.5	30.8	16.4	57.3	67.9	67.6
LnGrp LOS	E	D	D	D	C	C	E	C	B	E	E	E
Approach Vol, veh/h		1222			854			1435			835	
Approach Delay, s/veh		43.9			40.6			38.4			66.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	34.0	30.3	31.7	11.5	46.4	12.3	49.8
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	15.6	20.6	25.7	26.1	6.0	13.0	8.0	21.0
Green Ext Time (p_c), s	0.0	3.0	0.0	0.7	0.0	1.8	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	45.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	2	12	6	3	20	17	274	17	26	266	88
Future Vol, veh/h	38	2	12	6	3	20	17	274	17	26	266	88
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	2	13	7	3	22	19	304	19	29	296	98

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	727	728	301	763	807	318	398	0	0	332	0	0
Stage 1	358	358	-	351	351	-	-	-	-	-	-	-
Stage 2	369	370	-	412	456	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	339	350	739	321	315	723	1161	-	-	1227	-	-
Stage 1	660	628	-	666	632	-	-	-	-	-	-	-
Stage 2	651	620	-	617	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	313	332	735	301	299	713	1157	-	-	1216	-	-
Mov Cap-2 Maneuver	313	332	-	301	299	-	-	-	-	-	-	-
Stage 1	647	610	-	649	616	-	-	-	-	-	-	-
Stage 2	614	605	-	589	552	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	12.7	0.5	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1157	-	-	314	735	500	1216	-	-
HCM Lane V/C Ratio	0.016	-	-	0.142	0.018	0.064	0.024	-	-
HCM Control Delay (s)	8.2	-	-	18.3	10	12.7	8	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	2	35	5	0	22	83	223	7	39	178	75
Future Vol, veh/h	60	2	35	5	0	22	83	223	7	39	178	75
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	2	39	6	0	24	92	248	8	43	198	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	736	733	218	799	808	253	285	0	0	261	0	0
Stage 1	288	288	-	437	437	-	-	-	-	-	-	-
Stage 2	448	445	-	362	371	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	335	348	822	304	315	786	1277	-	-	1303	-	-
Stage 1	720	674	-	598	579	-	-	-	-	-	-	-
Stage 2	590	575	-	657	620	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	298	309	806	260	280	782	1272	-	-	1297	-	-
Mov Cap-2 Maneuver	298	309	-	260	280	-	-	-	-	-	-	-
Stage 1	665	649	-	552	534	-	-	-	-	-	-	-
Stage 2	530	531	-	593	597	-	-	-	-	-	-	-

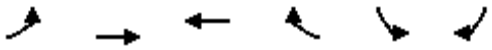
Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	11.7	2.1	1.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	298	742	570	1297	-	-
HCM Lane V/C Ratio	0.073	-	-	0.224	0.055	0.053	0.033	-	-
HCM Control Delay (s)	8.1	-	-	20.5	10.1	11.7	7.9	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0.2	0.2	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	153	367	137	227	254
v/c Ratio	0.41	0.21	0.30	0.15	0.55
Control Delay	22.4	6.9	20.7	0.2	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.4	6.9	20.7	0.2	19.4
Queue Length 50th (ft)	37	24	33	0	52
Queue Length 95th (ft)	97	55	90	0	128
Internal Link Dist (ft)		268	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	796	3368	1048	1551	791
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.11	0.13	0.15	0.32

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	144	345	129	213	144	95
Future Volume (veh/h)	144	345	129	213	144	95
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	367	137	0	153	101
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	206	1858	482		200	132
Arrive On Green	0.12	0.52	0.26	0.00	0.20	0.20
Sat Flow, veh/h	1781	3647	1870	1585	1019	673
Grp Volume(v), veh/h	153	367	137	0	255	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1698	0
Q Serve(g_s), s	3.2	2.1	2.3	0.0	5.5	0.0
Cycle Q Clear(g_c), s	3.2	2.1	2.3	0.0	5.5	0.0
Prop In Lane	1.00			1.00	0.60	0.40
Lane Grp Cap(c), veh/h	206	1858	482		333	0
V/C Ratio(X)	0.74	0.20	0.28		0.77	0.00
Avail Cap(c_a), veh/h	918	2290	1205		876	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.6	4.9	11.5	0.0	14.7	0.0
Incr Delay (d2), s/veh	5.2	0.1	0.3	0.0	3.7	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	1.4	0.5	0.8	0.0	2.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	5.0	11.9	0.0	18.4	0.0
LnGrp LOS	C	A	B		B	A
Approach Vol, veh/h		520	137	A	255	
Approach Delay, s/veh		9.9	11.9		18.4	
Approach LOS		A	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.1		12.7	10.3	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		4.1		7.5	5.2	4.3
Green Ext Time (p_c), s		2.3		0.6	0.3	0.6

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	36.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	241	269	113	48	116	61	57	250	45	65	259	142
Future Vol, veh/h	241	269	113	48	116	61	57	250	45	65	259	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	248	277	116	49	120	63	59	258	46	67	267	146
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	42.5	25.9	35.7	33.6
HCM LOS	E	D	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	19%	0%	100%	0%	21%	20%	0%
Vol Thru, %	81%	0%	0%	70%	52%	80%	0%
Vol Right, %	0%	100%	0%	30%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	307	45	241	382	225	324	142
LT Vol	57	0	241	0	48	65	0
Through Vol	250	0	0	269	116	259	0
RT Vol	0	45	0	113	61	0	142
Lane Flow Rate	316	46	248	394	232	334	146
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.796	0.106	0.625	0.911	0.605	0.824	0.327
Departure Headway (Hd)	9.059	8.231	9.058	8.325	9.397	8.884	8.049
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	399	435	398	437	385	408	446
Service Time	6.813	5.984	6.813	6.08	7.46	6.639	5.803
HCM Lane V/C Ratio	0.792	0.106	0.623	0.902	0.603	0.819	0.327
HCM Control Delay	39.2	12	25.8	53	25.9	41.9	14.7
HCM Lane LOS	E	B	D	F	D	E	B
HCM 95th-tile Q	6.9	0.4	4.1	10	3.8	7.6	1.4

Intersection	
Int Delay, s/veh	15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	348	211	0	194	0	0	0	0	404	0	235
Future Vol, veh/h	0	348	211	0	194	0	0	0	0	404	0	235
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	352	213	0	196	0	0	0	0	408	0	237

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			548	-	196
Stage 1	-	-	-	-	-	-			196	-	-
Stage 2	-	-	-	-	-	-			352	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			497	0	845
Stage 1	0	-	0	0	-	0			837	0	-
Stage 2	0	-	0	0	-	0			712	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			497	0	845
Mov Cap-2 Maneuver	-	-	-	-	-	-			497	0	-
Stage 1	-	-	-	-	-	-			837	0	-
Stage 2	-	-	-	-	-	-			712	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	27.7
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	497	845
HCM Lane V/C Ratio	-	-	0.821	0.281
HCM Control Delay (s)	-	-	37.5	10.9
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	8	1.2

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	620	0	0	345	488	71	4	380	0	0	0
Future Vol, veh/h	145	620	0	0	345	488	71	4	380	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	646	0	0	359	508	74	4	396	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	359	0	-	-	-	0	1307	1307	-
Stage 1	-	-	-	-	-	-	948	948	-
Stage 2	-	-	-	-	-	-	359	359	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1200	-	0	0	-	0	176	160	0
Stage 1	-	-	0	0	-	0	377	339	0
Stage 2	-	-	0	0	-	0	707	627	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1200	-	-	-	-	-	154	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	0	-
Stage 1	-	-	-	-	-	-	329	0	-
Stage 2	-	-	-	-	-	-	707	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	50.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	154	-	1200	-	-
HCM Lane V/C Ratio	0.507	-	0.126	-	-
HCM Control Delay (s)	50.3	0	8.4	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	2.5	-	0.4	-	-

Intersection	
Int Delay, s/veh	10.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	402	0	0	652	56	417
Future Vol, veh/h	402	0	0	652	56	417
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	473	0	0	767	66	491

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1240	474
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	767	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	193	590
Stage 1	-	0	0	-	627	-
Stage 2	-	0	0	-	458	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	193	589
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	34.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	193	589	-	-
HCM Lane V/C Ratio	0.341	0.833	-	-
HCM Control Delay (s)	33	34.4	-	-
HCM Lane LOS	D	D	-	-
HCM 95th %tile Q(veh)	1.4	8.7	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	196	580	295	137	584	235	221	514	161	682	139
v/c Ratio	0.64	0.60	0.47	0.22	0.46	0.34	0.85	0.93	0.41	0.90	0.33
Control Delay	62.4	42.4	7.0	43.3	32.1	5.4	76.5	75.0	9.5	60.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	42.4	7.0	43.3	32.1	5.4	76.5	75.0	9.5	60.4	5.8
Queue Length 50th (ft)	77	213	0	47	185	0	183	216	0	266	0
Queue Length 95th (ft)	114	284	73	77	260	59	#324	#317	56	329	37
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	960	628	612	1273	690	273	575	399	890	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.60	0.47	0.22	0.46	0.34	0.81	0.89	0.40	0.77	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	551	280	130	555	223	234	465	153	222	426	132
Future Volume (veh/h)	186	551	280	130	555	223	234	465	153	222	426	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.86
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	196	580	295	137	584	235	245	490	161	234	448	139
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	690	1255	544	296	622	219	269	552	312
Arrive On Green	0.08	0.23	0.23	0.20	0.35	0.35	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1519	3456	3554	1540	1781	3741	1316	1176	2412	1365
Grp Volume(v), veh/h	196	580	295	137	584	235	245	490	161	360	322	139
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1540	1781	1870	1316	1812	1777	1365
Q Serve(g_s), s	6.6	18.1	22.3	4.0	15.3	14.0	16.0	15.1	13.9	23.0	20.4	10.5
Cycle Q Clear(g_c), s	6.6	18.1	22.3	4.0	15.3	14.0	16.0	15.1	13.9	23.0	20.4	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.65		1.00
Lane Grp Cap(c), veh/h	288	808	346	690	1255	544	296	622	219	415	407	312
V/C Ratio(X)	0.68	0.72	0.85	0.20	0.47	0.43	0.83	0.79	0.74	0.87	0.79	0.44
Avail Cap(c_a), veh/h	501	808	346	690	1255	544	303	636	224	463	455	349
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	42.8	44.4	40.0	30.0	29.6	48.3	48.0	47.5	44.5	43.6	39.7
Incr Delay (d2), s/veh	1.1	5.4	22.6	0.1	1.2	2.5	15.6	5.8	10.2	13.8	7.2	0.4
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	2.9	8.4	10.4	1.7	6.6	5.4	8.4	7.5	5.1	11.6	9.5	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	48.2	67.1	40.1	31.3	32.1	64.0	53.8	57.7	58.4	50.7	40.1
LnGrp LOS	D	D	E	D	C	C	E	D	E	E	D	D
Approach Vol, veh/h		1071			956			896			821	
Approach Delay, s/veh		54.6			32.7			57.3			52.3	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	48.1		24.6	29.7	33.0		32.8				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	8.6	17.3		18.0	6.0	24.3		25.0				
Green Ext Time (p_c), s	0.0	0.6		0.3	0.0	0.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			49.1									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

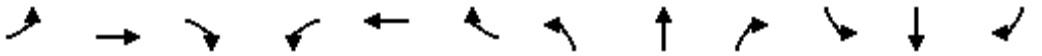


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	123	647	227	137	520	46	326	288	157	362	174
v/c Ratio	0.54	0.50	0.34	0.74	0.43	0.08	0.49	0.80	0.37	1.10	0.43
Control Delay	58.7	33.3	9.8	75.8	33.4	0.3	44.7	62.3	8.0	125.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	33.3	9.8	75.8	33.4	0.3	44.7	62.3	8.0	125.2	13.0
Queue Length 50th (ft)	91	198	23	105	159	0	119	218	0	~318	14
Queue Length 95th (ft)	155	301	95	170	236	0	150	291	53	#508	78
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1294	676	200	1208	571	984	534	552	329	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.50	0.34	0.69	0.43	0.08	0.33	0.54	0.28	1.10	0.43

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.



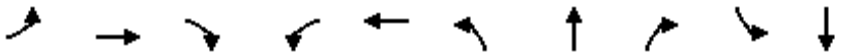
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	602	211	127	484	43	303	268	146	63	273	162
Future Volume (veh/h)	114	602	211	127	484	43	303	268	146	63	273	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	647	227	137	520	46	326	288	157	68	294	174
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	1360	586	163	880	375	651	352	291	62	268	271
Arrive On Green	0.22	0.38	0.38	0.09	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1532	1781	3554	1515	3456	1870	1545	348	1505	1522
Grp Volume(v), veh/h	123	647	227	137	520	46	326	288	157	362	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1532	1781	1777	1515	1728	1870	1545	1853	0	1522
Q Serve(g_s), s	6.9	16.5	12.9	9.1	15.5	2.8	10.1	17.7	11.0	21.4	0.0	12.7
Cycle Q Clear(g_c), s	6.9	16.5	12.9	9.1	15.5	2.8	10.1	17.7	11.0	21.4	0.0	12.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.19		1.00
Lane Grp Cap(c), veh/h	393	1360	586	163	880	375	651	352	291	330	0	271
V/C Ratio(X)	0.31	0.48	0.39	0.84	0.59	0.12	0.50	0.82	0.54	1.10	0.00	0.64
Avail Cap(c_a), veh/h	393	1360	586	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	28.0	26.8	53.7	39.8	35.0	43.6	46.7	44.0	49.3	0.0	45.7
Incr Delay (d2), s/veh	0.2	1.2	1.9	23.3	2.9	0.7	0.2	3.3	0.6	77.6	0.0	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	3.0	7.0	4.9	5.1	7.0	1.1	4.3	8.5	4.2	17.1	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	29.2	28.8	77.0	42.7	35.7	43.9	50.0	44.6	126.9	0.0	49.7
LnGrp LOS	D	C	C	E	D	D	D	D	D	F	A	D
Approach Vol, veh/h		997			703			771			536	
Approach Delay, s/veh		30.3			48.9			46.3			101.8	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	51.2		26.0	31.8	35.0		27.2				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	11.1	18.5		23.4	8.9	17.5		19.7				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.5	
HCM 6th LOS		D	

Notes

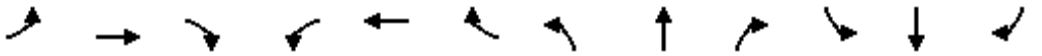
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	63	360	314	279	529	393	797	300	53	457
v/c Ratio	0.43	0.35	0.35	0.65	0.43	0.84	0.58	0.41	0.37	0.76
Control Delay	59.8	34.2	10.2	56.0	30.7	57.3	30.3	8.1	58.0	52.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	34.2	10.2	56.0	30.7	57.3	30.3	8.1	58.0	52.9
Queue Length 50th (ft)	45	112	73	103	159	268	247	33	38	171
Queue Length 95th (ft)	89	161	154	148	225	#493	306	98	79	207
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	1031	904	426	1241	468	1371	739	204	869
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	0.33	0.35	0.35	0.65	0.43	0.84	0.58	0.41	0.26	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	342	298	265	448	54	373	757	285	50	410	24
Future Volume (veh/h)	60	342	298	265	448	54	373	757	285	50	410	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	360	314	279	472	57	393	797	300	53	432	25
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	921	755	694	1263	152	393	1176	512	114	566	33
Arrive On Green	0.07	0.26	0.26	0.20	0.40	0.40	0.22	0.33	0.33	0.06	0.17	0.17
Sat Flow, veh/h	1781	3554	1563	3456	3186	383	1781	3554	1548	1781	3406	196
Grp Volume(v), veh/h	63	360	314	279	262	267	393	797	300	53	225	232
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1792	1781	1777	1548	1781	1777	1826
Q Serve(g_s), s	3.9	9.6	0.0	8.1	12.0	12.1	25.4	22.2	10.8	3.3	13.9	14.0
Cycle Q Clear(g_c), s	3.9	9.6	0.0	8.1	12.0	12.1	25.4	22.2	10.8	3.3	13.9	14.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	121	921	755	694	704	710	393	1176	512	114	295	303
V/C Ratio(X)	0.52	0.39	0.42	0.40	0.37	0.38	1.00	0.68	0.59	0.47	0.76	0.77
Avail Cap(c_a), veh/h	191	921	755	694	704	710	393	1176	512	206	439	451
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.1	19.4	40.0	24.6	24.6	44.8	33.2	10.9	51.9	45.8	45.8
Incr Delay (d2), s/veh	1.3	1.2	1.7	0.1	1.5	1.5	45.1	1.3	1.2	1.1	1.9	2.1
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	1.8	4.4	5.8	3.5	5.4	5.5	16.1	9.8	3.8	1.5	6.3	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	36.4	21.1	40.1	26.1	26.1	89.8	34.5	12.1	53.0	47.7	47.9
LnGrp LOS	D	D	C	D	C	C	F	C	B	D	D	D
Approach Vol, veh/h		737			808			1490			510	
Approach Delay, s/veh		31.3			30.9			44.6			48.3	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	34.0	30.0	23.7	11.5	49.8	11.0	42.7
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.1	11.6	27.4	16.0	5.9	14.1	5.3	24.2
Green Ext Time (p_c), s	0.1	2.2	0.0	1.2	0.0	2.1	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	39.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	2	10	6	0	25	9	277	4	14	262	48
Future Vol, veh/h	92	2	10	6	0	25	9	277	4	14	262	48
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	108	2	12	7	0	29	11	326	5	16	308	56

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	730	718	319	739	769	356	374	0	0	346	0	0
Stage 1	350	350	-	363	363	-	-	-	-	-	-	-
Stage 2	380	368	-	376	406	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	338	355	722	333	332	688	1184	-	-	1213	-	-
Stage 1	666	633	-	656	625	-	-	-	-	-	-	-
Stage 2	642	621	-	645	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	310	339	714	315	317	668	1173	-	-	1196	-	-
Mov Cap-2 Maneuver	310	339	-	315	317	-	-	-	-	-	-	-
Stage 1	653	618	-	640	611	-	-	-	-	-	-	-
Stage 2	599	607	-	623	584	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.6	12	0.3	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	311	714	549	1196	-	-
HCM Lane V/C Ratio	0.009	-	-	0.356	0.016	0.066	0.014	-	-
HCM Control Delay (s)	8.1	-	-	22.8	10.1	12	8.1	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	96	0	56	9	2	28	23	167	8	19	225	35
Future Vol, veh/h	96	0	56	9	2	28	23	167	8	19	225	35
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	0	67	11	2	33	27	199	10	23	268	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	598	596	280	637	628	210	318	0	0	220	0	0
Stage 1	322	322	-	264	264	-	-	-	-	-	-	-
Stage 2	276	274	-	373	364	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	414	417	759	390	400	830	1242	-	-	1349	-	-
Stage 1	690	651	-	741	690	-	-	-	-	-	-	-
Stage 2	730	683	-	648	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	381	394	750	340	378	821	1233	-	-	1335	-	-
Mov Cap-2 Maneuver	381	394	-	340	378	-	-	-	-	-	-	-
Stage 1	670	635	-	717	668	-	-	-	-	-	-	-
Stage 2	683	661	-	578	608	-	-	-	-	-	-	-

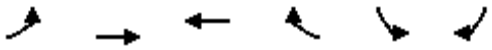
Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	11.6	0.9	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1233	-	-	381	750	592	1335	-	-
HCM Lane V/C Ratio	0.022	-	-	0.3	0.089	0.078	0.017	-	-
HCM Control Delay (s)	8	-	-	18.4	10.3	11.6	7.7	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.3	0.3	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	102	167	206	191	328
v/c Ratio	0.35	0.09	0.47	0.12	0.66
Control Delay	24.8	7.3	23.0	0.2	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	24.8	7.3	23.0	0.2	22.4
Queue Length 50th (ft)	28	12	54	0	73
Queue Length 95th (ft)	75	28	126	0	172
Internal Link Dist (ft)		427	2338		209
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	693	3286	912	1551	694
Starvation Cap Reductn	0	0	0	0	19
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.05	0.23	0.12	0.49

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	96	157	194	180	179	130
Future Volume (veh/h)	96	157	194	180	179	130
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	167	206	0	190	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	213	1760	442		238	173
Arrive On Green	0.12	0.50	0.24	0.00	0.24	0.24
Sat Flow, veh/h	1781	3647	1870	1585	978	710
Grp Volume(v), veh/h	102	167	206	0	329	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1694	0
Q Serve(g_s), s	2.2	1.0	3.9	0.0	7.6	0.0
Cycle Q Clear(g_c), s	2.2	1.0	3.9	0.0	7.6	0.0
Prop In Lane	1.00			1.00	0.58	0.42
Lane Grp Cap(c), veh/h	213	1760	442		413	0
V/C Ratio(X)	0.48	0.09	0.47		0.80	0.00
Avail Cap(c_a), veh/h	854	2129	1120		812	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	5.6	13.7	0.0	14.8	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.8	0.0	3.6	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	0.9	0.3	1.5	0.0	2.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.8	5.6	14.4	0.0	18.4	0.0
LnGrp LOS	B	A	B		B	A
Approach Vol, veh/h		269	206	A	329	
Approach Delay, s/veh		10.6	14.4		18.4	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.5		15.3	10.8	15.7
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.0		9.6	4.2	5.9
Green Ext Time (p_c), s		0.9		0.8	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	19.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	129	161	50	38	151	33	53	202	21	64	219	209
Future Vol, veh/h	129	161	50	38	151	33	53	202	21	64	219	209
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	140	175	54	41	164	36	58	220	23	70	238	227
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	16.9	20.7	22.1	20.2
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	100%	0%	17%	23%	0%
Vol Thru, %	79%	0%	0%	76%	68%	77%	0%
Vol Right, %	0%	100%	0%	24%	15%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	255	21	129	211	222	283	209
LT Vol	53	0	129	0	38	64	0
Through Vol	202	0	0	161	151	219	0
RT Vol	0	21	0	50	33	0	209
Lane Flow Rate	277	23	140	229	241	308	227
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.618	0.046	0.328	0.493	0.546	0.657	0.433
Departure Headway (Hd)	8.026	7.195	8.428	7.742	8.149	7.694	6.856
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	449	495	425	463	439	468	523
Service Time	5.813	4.981	6.216	5.529	6.244	5.479	4.64
HCM Lane V/C Ratio	0.617	0.046	0.329	0.495	0.549	0.658	0.434
HCM Control Delay	23.1	10.3	15.3	17.9	20.7	24.2	14.8
HCM Lane LOS	C	B	C	C	C	C	B
HCM 95th-tile Q	4.1	0.1	1.4	2.7	3.2	4.7	2.2

Intersection	
Int Delay, s/veh	14.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	173	148	0	283	0	0	0	0	408	0	237
Future Vol, veh/h	0	173	148	0	283	0	0	0	0	408	0	237
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	182	156	0	298	0	0	0	0	429	0	249

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			480	-	298
Stage 1	-	-	-	-	-	-			298	-	-
Stage 2	-	-	-	-	-	-			182	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			545	0	741
Stage 1	0	-	0	0	-	0			753	0	-
Stage 2	0	-	0	0	-	0			849	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			545	0	741
Mov Cap-2 Maneuver	-	-	-	-	-	-			545	0	-
Stage 1	-	-	-	-	-	-			753	0	-
Stage 2	-	-	-	-	-	-			849	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	545	741
HCM Lane V/C Ratio	-	-	0.788	0.337
HCM Control Delay (s)	-	-	31.9	12.3
HCM Lane LOS	-	-	D	B
HCM 95th %tile Q(veh)	-	-	7.4	1.5

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	112	440	0	0	317	638	156	3	346	0	0	0
Future Vol, veh/h	112	440	0	0	317	638	156	3	346	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	117	458	0	0	330	665	163	3	360	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	330	0	-	-	-	0	1022	1022	-
Stage 1	-	-	-	-	-	-	692	692	-
Stage 2	-	-	-	-	-	-	330	330	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1229	-	0	0	-	0	261	236	0
Stage 1	-	-	0	0	-	0	497	445	0
Stage 2	-	-	0	0	-	0	728	646	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1229	-	-	-	-	-	236	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	0	-
Stage 1	-	-	-	-	-	-	450	0	-
Stage 2	-	-	-	-	-	-	728	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	49.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	236	-	1229	-	-
HCM Lane V/C Ratio	0.702	-	0.095	-	-
HCM Control Delay (s)	49.7	0	8.2	-	-
HCM Lane LOS	E	A	A	-	-
HCM 95th %tile Q(veh)	4.6	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	21	31	14	0
Future Vol, veh/h	0	21	21	31	14	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	23	34	15	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	40	40	-	0
Stage 1	40	40	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	972	852	-	-
Stage 1	982	862	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	972	0	-	-
Mov Cap-2 Maneuver	972	0	-	-
Stage 1	982	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	0	24	52	0	0
Future Vol, veh/h	35	0	24	52	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	0	26	57	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	147	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1572	-	845	1034
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1572	-	831	1034
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	900	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1572	-
HCM Lane V/C Ratio	-	-	-	0.017	-
HCM Control Delay (s)	0	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	66	0	0	442	14	516
Future Vol, veh/h	66	0	0	442	14	516
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	0	0	502	16	586

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	577	81
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	502	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	478	979
Stage 1	-	0	0	-	948	-
Stage 2	-	0	0	-	608	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	478	973
Mov Cap-2 Maneuver	-	-	-	-	478	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	608	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

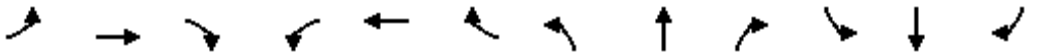
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	478	973	-	-
HCM Lane V/C Ratio	0.033	0.603	-	-
HCM Control Delay (s)	12.8	14.1	-	-
HCM Lane LOS	B	B	-	-
HCM 95th %tile Q(veh)	0.1	4.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	360	943	334	208	632	295	268	556	126	694	134
v/c Ratio	0.65	0.78	0.51	0.66	0.66	0.47	0.95	0.95	0.31	0.91	0.29
Control Delay	53.3	42.3	15.3	63.2	44.0	6.9	91.9	74.8	4.5	62.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	42.3	15.3	63.2	44.0	6.9	91.9	74.8	4.5	62.3	4.1
Queue Length 50th (ft)	136	345	68	82	233	0	226	234	0	276	0
Queue Length 95th (ft)	188	#516	176	120	313	73	#404	#342	25	336	29
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1203	657	583	955	634	291	608	414	890	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.78	0.51	0.36	0.66	0.47	0.92	0.91	0.30	0.78	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	342	896	317	198	600	280	335	447	120	226	433	127
Future Volume (veh/h)	342	896	317	198	600	280	335	447	120	226	433	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	360	943	334	208	632	295	275	581	126	238	456	134
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	678	1242	548	288	808	353	307	646	268	259	532	337
Arrive On Green	0.20	0.35	0.35	0.08	0.23	0.23	0.17	0.17	0.17	0.22	0.22	0.22
Sat Flow, veh/h	3456	3554	1569	3456	3554	1550	1781	3741	1552	1175	2413	1528
Grp Volume(v), veh/h	360	943	334	208	632	295	275	581	126	367	327	134
Grp Sat Flow(s),veh/h/ln	1728	1777	1569	1728	1777	1550	1781	1870	1552	1812	1777	1528
Q Serve(g_s), s	11.2	28.2	21.1	7.0	20.1	21.8	18.1	18.3	8.8	23.7	21.1	9.0
Cycle Q Clear(g_c), s	11.2	28.2	21.1	7.0	20.1	21.8	18.1	18.3	8.8	23.7	21.1	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.65		1.00
Lane Grp Cap(c), veh/h	678	1242	548	288	808	353	307	646	268	399	392	337
V/C Ratio(X)	0.53	0.76	0.61	0.72	0.78	0.84	0.89	0.90	0.47	0.92	0.84	0.40
Avail Cap(c_a), veh/h	678	1242	548	587	808	353	322	676	281	463	455	391
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	34.6	32.3	53.7	43.6	44.2	48.6	48.6	44.7	45.7	44.7	40.0
Incr Delay (d2), s/veh	0.4	4.4	5.0	1.3	7.4	20.4	24.1	14.1	0.5	20.2	9.9	0.3
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	4.8	12.5	8.5	3.1	9.4	10.2	10.1	9.8	3.3	12.5	10.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.7	38.9	37.2	54.9	51.0	64.7	72.7	62.8	45.2	65.9	54.6	40.2
LnGrp LOS	D	D	D	D	D	E	E	E	D	E	D	D
Approach Vol, veh/h		1637			1135			982			828	
Approach Delay, s/veh		39.6			55.3			63.3			57.3	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.2	33.0		26.0	14.6	47.6		31.8				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	13.2	23.8		20.3	9.0	30.2		25.7				
Green Ext Time (p_c), s	0.0	0.4		0.2	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		51.8	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

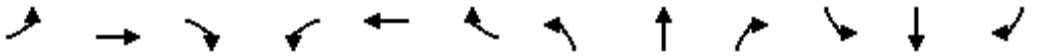


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	239	989	198	134	644	49	341	302	122	296	146
v/c Ratio	0.85	0.77	0.32	0.68	0.58	0.09	0.50	0.82	0.29	0.95	0.37
Control Delay	75.2	40.5	16.3	72.3	42.7	17.2	44.6	63.8	4.4	88.8	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	40.5	16.3	72.3	42.7	17.2	44.6	63.8	4.4	88.8	8.9
Queue Length 50th (ft)	181	353	48	111	269	11	124	229	0	227	0
Queue Length 95th (ft)	264	#532	123	#192	#370	m36	156	306	28	#392	52
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	317	1279	611	197	1113	525	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.77	0.32	0.68	0.58	0.09	0.35	0.57	0.22	0.91	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



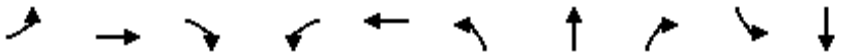
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	959	192	130	625	48	331	293	118	103	184	142
Future Volume (veh/h)	232	959	192	130	625	48	331	293	118	103	184	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	989	198	134	644	49	341	302	122	106	190	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	939	397	355	1140	488	677	367	298	115	207	266
Arrive On Green	0.15	0.26	0.26	0.20	0.32	0.32	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1504	1781	3554	1520	3456	1870	1522	658	1179	1516
Grp Volume(v), veh/h	239	989	198	134	644	49	341	302	122	296	0	146
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1520	1728	1870	1522	1837	0	1516
Q Serve(g_s), s	15.8	31.7	13.4	7.8	18.0	2.7	10.6	18.6	8.4	19.0	0.0	10.5
Cycle Q Clear(g_c), s	15.8	31.7	13.4	7.8	18.0	2.7	10.6	18.6	8.4	19.0	0.0	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	265	939	397	355	1140	488	677	367	298	322	0	266
V/C Ratio(X)	0.90	1.05	0.50	0.38	0.56	0.10	0.50	0.82	0.41	0.92	0.00	0.55
Avail Cap(c_a), veh/h	303	939	397	355	1140	488	991	536	436	328	0	270
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	44.2	37.4	41.6	33.8	28.6	43.0	46.2	42.2	48.6	0.0	45.2
Incr Delay (d2), s/veh	24.6	44.5	4.4	0.2	2.0	0.4	0.2	4.3	0.3	29.0	0.0	1.3
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	8.7	19.3	5.3	3.4	7.9	1.0	4.5	9.0	3.2	11.4	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.8	88.7	41.8	41.8	35.8	29.0	43.2	50.5	42.5	77.7	0.0	46.4
LnGrp LOS	E	F	D	D	D	C	D	D	D	E	A	D
Approach Vol, veh/h		1426			827			765			442	
Approach Delay, s/veh		79.8			36.4			46.0			67.4	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.2	37.0		25.6	22.4	43.8		28.1				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	9.8	33.7		21.0	17.8	20.0		20.6				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		60.4	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

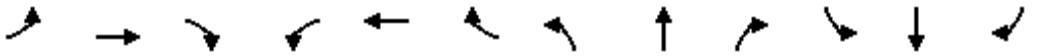


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	61	525	640	413	444	360	720	357	91	744
v/c Ratio	0.44	0.60	0.81	0.79	0.37	0.89	0.54	0.48	0.58	0.93
Control Delay	62.8	43.1	31.1	60.9	31.0	70.5	31.6	9.5	89.7	52.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	43.1	31.1	60.9	31.0	70.5	31.6	9.5	89.7	52.6
Queue Length 50th (ft)	46	190	341	160	135	275	224	41	68	141
Queue Length 95th (ft)	90	248	#515	#227	188	#457	303	129	m100	m#372
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	786	523	1199	403	1329	748	255	833
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	0.29	0.60	0.81	0.79	0.37	0.89	0.54	0.48	0.36	0.89

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	499	608	392	379	43	342	684	339	86	673	34
Future Volume (veh/h)	58	499	608	392	379	43	342	684	339	86	673	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	525	640	413	399	45	360	720	357	91	708	36
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	882	725	565	1129	127	384	1342	584	127	776	39
Arrive On Green	0.07	0.25	0.25	0.16	0.35	0.35	0.22	0.38	0.38	0.07	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3218	361	1781	3554	1546	1781	3434	174
Grp Volume(v), veh/h	61	525	640	413	219	225	360	720	357	91	366	378
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1801	1781	1777	1546	1781	1777	1831
Q Serve(g_s), s	4.0	15.6	18.5	13.6	11.0	11.1	23.8	19.0	13.9	6.0	24.1	24.1
Cycle Q Clear(g_c), s	4.0	15.6	18.5	13.6	11.0	11.1	23.8	19.0	13.9	6.0	24.1	24.1
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	116	882	725	565	624	632	384	1342	584	127	401	414
V/C Ratio(X)	0.53	0.59	0.88	0.73	0.35	0.36	0.94	0.54	0.61	0.72	0.91	0.91
Avail Cap(c_a), veh/h	212	882	725	565	624	632	392	1342	584	257	421	433
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.8	29.0	47.7	28.8	28.9	46.3	29.2	11.6	54.5	45.3	45.3
Incr Delay (d2), s/veh	1.4	2.9	14.7	4.2	1.6	1.6	29.3	1.5	4.7	2.8	22.6	22.3
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	1.8	7.3	8.0	6.2	5.0	5.1	13.7	8.4	5.5	2.8	13.2	13.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	42.7	43.7	51.9	30.4	30.4	75.6	30.7	16.3	57.3	67.9	67.6
LnGrp LOS	E	D	D	D	C	C	E	C	B	E	E	E
Approach Vol, veh/h		1226			857			1437			835	
Approach Delay, s/veh		43.9			40.8			38.4			66.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	34.0	30.5	31.7	11.5	46.3	12.3	49.9
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	15.6	20.5	25.8	26.1	6.0	13.1	8.0	21.0
Green Ext Time (p_c), s	0.0	3.0	0.0	0.7	0.0	1.8	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	45.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	2	12	6	3	20	17	276	17	26	272	88
Future Vol, veh/h	38	2	12	6	3	20	17	276	17	26	272	88
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	2	13	7	3	22	19	307	19	29	302	98

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	736	737	307	772	816	321	404	0	0	335	0	0
Stage 1	364	364	-	354	354	-	-	-	-	-	-	-
Stage 2	372	373	-	418	462	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	335	346	733	317	311	720	1155	-	-	1224	-	-
Stage 1	655	624	-	663	630	-	-	-	-	-	-	-
Stage 2	648	618	-	612	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	309	328	730	297	295	710	1151	-	-	1214	-	-
Mov Cap-2 Maneuver	309	328	-	297	295	-	-	-	-	-	-	-
Stage 1	642	607	-	646	614	-	-	-	-	-	-	-
Stage 2	611	602	-	584	549	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.5	12.8	0.4	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1151	-	-	310	730	495	1214	-	-
HCM Lane V/C Ratio	0.016	-	-	0.143	0.018	0.065	0.024	-	-
HCM Control Delay (s)	8.2	-	-	18.5	10	12.8	8	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	2	35	5	0	22	83	225	7	39	184	75
Future Vol, veh/h	60	2	35	5	0	22	83	225	7	39	184	75
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	2	39	6	0	24	92	250	8	43	204	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	744	741	224	807	816	255	291	0	0	263	0	0
Stage 1	294	294	-	439	439	-	-	-	-	-	-	-
Stage 2	450	447	-	368	377	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	331	344	815	300	311	784	1271	-	-	1301	-	-
Stage 1	714	670	-	597	578	-	-	-	-	-	-	-
Stage 2	589	573	-	652	616	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	294	305	800	256	276	780	1266	-	-	1295	-	-
Mov Cap-2 Maneuver	294	305	-	256	276	-	-	-	-	-	-	-
Stage 1	660	645	-	551	533	-	-	-	-	-	-	-
Stage 2	529	528	-	589	593	-	-	-	-	-	-	-

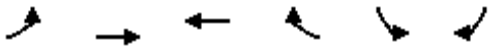
Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	11.7	2.1	1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1266	-	-	294	735	566	1295	-	-
HCM Lane V/C Ratio	0.073	-	-	0.227	0.056	0.053	0.033	-	-
HCM Control Delay (s)	8.1	-	-	20.8	10.2	11.7	7.9	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	0.2	0.2	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	167	367	137	236	275
v/c Ratio	0.43	0.21	0.31	0.15	0.57
Control Delay	23.0	7.2	21.8	0.2	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	7.2	21.8	0.2	20.1
Queue Length 50th (ft)	42	25	34	0	59
Queue Length 95th (ft)	108	57	93	0	141
Internal Link Dist (ft)		268	2338		238
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	784	3323	1032	1551	780
Starvation Cap Reductn	0	0	0	0	6
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.21	0.11	0.13	0.15	0.36

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	345	129	222	153	105
Future Volume (veh/h)	157	345	129	222	153	105
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	167	367	137	0	163	112
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	225	1845	465		210	144
Arrive On Green	0.13	0.52	0.25	0.00	0.21	0.21
Sat Flow, veh/h	1781	3647	1870	1585	1002	688
Grp Volume(v), veh/h	167	367	137	0	276	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1696	0
Q Serve(g_s), s	3.6	2.2	2.4	0.0	6.2	0.0
Cycle Q Clear(g_c), s	3.6	2.2	2.4	0.0	6.2	0.0
Prop In Lane	1.00			1.00	0.59	0.41
Lane Grp Cap(c), veh/h	225	1845	465		356	0
V/C Ratio(X)	0.74	0.20	0.29		0.78	0.00
Avail Cap(c_a), veh/h	886	2210	1163		844	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.9	5.2	12.2	0.0	15.0	0.0
Incr Delay (d2), s/veh	4.8	0.1	0.3	0.0	3.6	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	1.6	0.5	0.9	0.0	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	5.2	12.6	0.0	18.6	0.0
LnGrp LOS	C	A	B		B	A
Approach Vol, veh/h		534	137	A	276	
Approach Delay, s/veh		10.4	12.6		18.6	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.7		13.5	10.9	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		4.2		8.2	5.6	4.4
Green Ext Time (p_c), s		2.3		0.7	0.4	0.6

Intersection Summary	
HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	37
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	241	270	113	48	118	61	59	250	45	65	259	142
Future Vol, veh/h	241	270	113	48	118	61	59	250	45	65	259	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	248	278	116	49	122	63	61	258	46	67	267	146
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	43.2	26.4	36.6	34
HCM LOS	E	D	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	19%	0%	100%	0%	21%	20%	0%
Vol Thru, %	81%	0%	0%	70%	52%	80%	0%
Vol Right, %	0%	100%	0%	30%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	45	241	383	227	324	142
LT Vol	59	0	241	0	48	65	0
Through Vol	250	0	0	270	118	259	0
RT Vol	0	45	0	113	61	0	142
Lane Flow Rate	319	46	248	395	234	334	146
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.804	0.106	0.627	0.916	0.613	0.827	0.329
Departure Headway (Hd)	9.085	8.253	9.086	8.354	9.424	8.915	8.08
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	398	434	398	434	384	408	445
Service Time	6.841	6.01	6.847	6.114	7.491	6.671	5.835
HCM Lane V/C Ratio	0.802	0.106	0.623	0.91	0.609	0.819	0.328
HCM Control Delay	40.2	12	26	54.1	26.4	42.4	14.8
HCM Lane LOS	E	B	D	F	D	E	B
HCM 95th-tile Q	7.1	0.4	4.1	10.1	3.9	7.6	1.4

Intersection	
Int Delay, s/veh	15.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	354	215	0	196	0	0	0	0	404	0	246
Future Vol, veh/h	0	354	215	0	196	0	0	0	0	404	0	246
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	358	217	0	198	0	0	0	0	408	0	248

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			556	-	198
Stage 1	-	-	-	-	-	-			198	-	-
Stage 2	-	-	-	-	-	-			358	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			492	0	843
Stage 1	0	-	0	0	-	0			835	0	-
Stage 2	0	-	0	0	-	0			707	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			492	0	843
Mov Cap-2 Maneuver	-	-	-	-	-	-			492	0	-
Stage 1	-	-	-	-	-	-			835	0	-
Stage 2	-	-	-	-	-	-			707	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	28.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	492	843
HCM Lane V/C Ratio	-	-	0.829	0.295
HCM Control Delay (s)	-	-	38.8	11
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	8.2	1.2

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	151	620	0	0	345	492	73	4	382	0	0	0
Future Vol, veh/h	151	620	0	0	345	492	73	4	382	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	157	646	0	0	359	513	76	4	398	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	359	0	-	-	-	0	1319	1319	-
Stage 1	-	-	-	-	-	-	960	960	-
Stage 2	-	-	-	-	-	-	359	359	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1200	-	0	0	-	0	173	157	0
Stage 1	-	-	0	0	-	0	372	335	0
Stage 2	-	-	0	0	-	0	707	627	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1200	-	-	-	-	-	150	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	150	0	-
Stage 1	-	-	-	-	-	-	323	0	-
Stage 2	-	-	-	-	-	-	707	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	53.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	150	-	1200	-	-
HCM Lane V/C Ratio	0.535	-	0.131	-	-
HCM Control Delay (s)	53.7	0	8.5	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	2.6	-	0.5	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	12	19	36	0
Future Vol, veh/h	0	15	12	19	36	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	13	21	39	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	24	24	-	0
Stage 1	24	24	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	992	869	-	-
Stage 1	999	875	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	992	0	-	-
Mov Cap-2 Maneuver	992	0	-	-
Stage 1	999	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	0	15	31	0	5
Future Vol, veh/h	51	0	15	31	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	0	16	34	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	121	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1550	-	874	1012
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	864	1012
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	946	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1012	-	-	1550	-
HCM Lane V/C Ratio	0.005	-	-	0.011	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	13.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↰	↱
Traffic Vol, veh/h	403	0	0	698	56	453
Future Vol, veh/h	403	0	0	698	56	453
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	0	0	821	66	533

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1295	475
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	821	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	179	590
Stage 1	-	0	0	-	626	-
Stage 2	-	0	0	-	432	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	179	589
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	43.2
HCM LOS			E

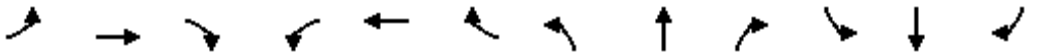
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	179	589	-	-
HCM Lane V/C Ratio	0.368	0.905	-	-
HCM Control Delay (s)	36.4	44	-	-
HCM Lane LOS	E	E	-	-
HCM 95th %tile Q(veh)	1.6	11.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	223	607	295	158	642	271	221	543	164	735	163
v/c Ratio	0.69	0.67	0.48	0.26	0.53	0.39	0.82	0.96	0.42	0.92	0.37
Control Delay	63.9	45.1	7.3	43.8	34.9	5.6	73.1	79.5	9.8	62.6	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	45.1	7.3	43.8	34.9	5.6	73.1	79.5	9.8	62.6	8.3
Queue Length 50th (ft)	88	226	1	55	211	0	183	231	0	291	2
Queue Length 95th (ft)	127	299	74	87	291	63	#324	#345	59	359	56
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	908	609	612	1206	690	273	575	399	889	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.67	0.48	0.26	0.53	0.39	0.81	0.94	0.41	0.83	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	577	280	150	610	257	234	492	156	249	449	155
Future Volume (veh/h)	212	577	280	150	610	257	234	492	156	249	449	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.86
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	223	607	295	158	642	271	246	518	164	262	473	163
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	677	1241	538	297	623	219	284	550	318
Arrive On Green	0.08	0.23	0.23	0.20	0.35	0.35	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1519	3456	3554	1540	1781	3741	1317	1221	2365	1368
Grp Volume(v), veh/h	223	607	295	158	642	271	246	518	164	388	347	163
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1540	1781	1870	1317	1809	1777	1368
Q Serve(g_s), s	7.6	19.1	22.3	4.6	17.2	16.7	16.0	16.1	14.2	25.2	22.3	12.5
Cycle Q Clear(g_c), s	7.6	19.1	22.3	4.6	17.2	16.7	16.0	16.1	14.2	25.2	22.3	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.67		1.00
Lane Grp Cap(c), veh/h	288	808	346	677	1241	538	297	623	219	421	413	318
V/C Ratio(X)	0.77	0.75	0.85	0.23	0.52	0.50	0.83	0.83	0.75	0.92	0.84	0.51
Avail Cap(c_a), veh/h	501	808	346	677	1241	538	303	636	224	463	455	350
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	43.2	44.4	40.7	31.0	30.8	48.4	48.4	47.6	45.0	43.9	40.1
Incr Delay (d2), s/veh	1.7	6.3	22.6	0.1	1.5	3.3	15.9	8.4	11.2	22.0	11.1	0.5
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	3.3	8.9	10.4	1.9	7.5	6.5	8.4	8.2	5.2	13.4	10.8	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	49.5	67.1	40.7	32.6	34.2	64.3	56.8	58.8	67.0	55.1	40.6
LnGrp LOS	E	D	E	D	C	C	E	E	E	E	E	D
Approach Vol, veh/h		1125			1071			928			898	
Approach Delay, s/veh		55.3			34.2			59.1			57.6	
Approach LOS		E			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	47.6		24.6	29.2	33.0		33.2				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	9.6	19.2		18.1	6.6	24.3		27.2				
Green Ext Time (p_c), s	0.0	0.7		0.3	0.0	0.4		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.1	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

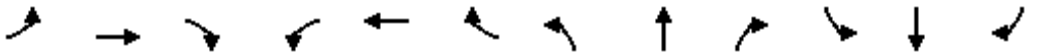


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	127	705	251	145	608	55	369	291	182	378	182
v/c Ratio	0.56	0.55	0.37	0.76	0.50	0.10	0.55	0.81	0.41	1.15	0.45
Control Delay	59.4	34.7	11.6	75.8	34.8	0.6	45.9	62.5	8.0	141.8	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	34.7	11.6	75.8	34.8	0.6	45.9	62.5	8.0	141.8	14.1
Queue Length 50th (ft)	94	224	34	110	192	0	136	221	0	~344	19
Queue Length 95th (ft)	160	332	116	179	280	3	169	295	56	#538	87
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1275	671	205	1204	570	984	534	570	328	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.55	0.37	0.71	0.50	0.10	0.38	0.54	0.32	1.15	0.45

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.



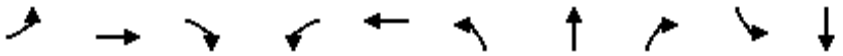
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	656	233	135	565	51	343	271	169	71	281	169
Future Volume (veh/h)	118	656	233	135	565	51	343	271	169	71	281	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	705	251	145	608	55	369	291	182	76	302	182
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	1339	577	171	880	375	655	355	293	66	264	271
Arrive On Green	0.22	0.38	0.38	0.10	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1531	1781	3554	1515	3456	1870	1545	372	1479	1522
Grp Volume(v), veh/h	127	705	251	145	608	55	369	291	182	378	0	182
Grp Sat Flow(s),veh/h/ln	1781	1777	1531	1781	1777	1515	1728	1870	1545	1852	0	1522
Q Serve(g_s), s	7.2	18.5	14.7	9.6	18.6	3.4	11.6	17.9	13.0	21.4	0.0	13.4
Cycle Q Clear(g_c), s	7.2	18.5	14.7	9.6	18.6	3.4	11.6	17.9	13.0	21.4	0.0	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.20		1.00
Lane Grp Cap(c), veh/h	391	1339	577	171	880	375	655	355	293	330	0	271
V/C Ratio(X)	0.32	0.53	0.44	0.85	0.69	0.15	0.56	0.82	0.62	1.14	0.00	0.67
Avail Cap(c_a), veh/h	391	1339	577	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.4	29.1	27.9	53.4	41.0	35.3	44.1	46.7	44.7	49.3	0.0	46.0
Incr Delay (d2), s/veh	0.2	1.5	2.4	25.9	4.4	0.8	0.3	3.5	0.8	94.7	0.0	5.1
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	7.9	5.6	5.5	8.5	1.3	5.0	8.6	5.0	18.6	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	30.6	30.3	79.3	45.4	36.1	44.4	50.2	45.5	144.0	0.0	51.1
LnGrp LOS	D	C	C	E	D	D	D	D	D	F	A	D
Approach Vol, veh/h		1083			808			842			560	
Approach Delay, s/veh		31.5			50.9			46.6			113.8	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	50.5		26.0	31.6	35.0		27.4				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	11.6	20.5		23.4	9.2	20.6		19.9				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.6		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		54.1	
HCM 6th LOS		D	

Notes

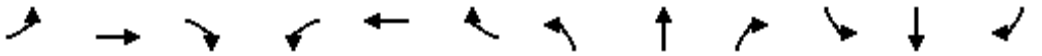
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	361	321	279	591	395	806	300	108	557
v/c Ratio	0.49	0.37	0.37	0.65	0.51	0.87	0.62	0.42	0.65	0.82
Control Delay	61.5	35.5	11.4	56.0	32.4	61.7	32.5	9.0	68.3	53.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	35.5	11.4	56.0	32.4	61.7	32.5	9.0	68.3	53.0
Queue Length 50th (ft)	54	116	83	103	183	273	246	34	79	204
Queue Length 95th (ft)	101	161	159	148	253	#498	325	106	136	251
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	975	871	426	1166	455	1310	715	204	864
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	0.39	0.37	0.37	0.65	0.51	0.87	0.62	0.42	0.53	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	343	305	265	448	113	375	766	285	103	452	77
Future Volume (veh/h)	70	343	305	265	448	113	375	766	285	103	452	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	361	321	279	472	119	395	806	300	108	476	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	921	755	604	1029	257	393	1227	535	135	581	98
Arrive On Green	0.07	0.26	0.26	0.17	0.37	0.37	0.22	0.35	0.35	0.08	0.19	0.19
Sat Flow, veh/h	1781	3554	1563	3456	2801	701	1781	3554	1549	1781	3022	511
Grp Volume(v), veh/h	74	361	321	279	298	293	395	806	300	108	279	278
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1725	1781	1777	1549	1781	1777	1757
Q Serve(g_s), s	4.6	9.6	0.0	8.3	14.7	14.9	25.4	22.1	11.1	6.9	17.3	17.5
Cycle Q Clear(g_c), s	4.6	9.6	0.0	8.3	14.7	14.9	25.4	22.1	11.1	6.9	17.3	17.5
Prop In Lane	1.00		1.00	1.00		0.41	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	126	921	755	604	653	634	393	1227	535	135	342	338
V/C Ratio(X)	0.59	0.39	0.43	0.46	0.46	0.46	1.00	0.66	0.56	0.80	0.82	0.82
Avail Cap(c_a), veh/h	191	921	755	604	653	634	393	1227	535	206	439	434
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.1	19.5	42.6	27.7	27.7	44.8	31.9	11.6	52.3	44.5	44.6
Incr Delay (d2), s/veh	1.6	1.3	1.8	0.2	2.3	2.4	46.4	1.0	0.8	6.2	7.0	7.8
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	2.1	4.4	6.0	3.6	6.7	6.6	16.3	9.7	3.9	3.3	8.3	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	36.4	21.2	42.8	30.0	30.1	91.2	32.9	12.4	58.5	51.5	52.3
LnGrp LOS	D	D	C	D	C	C	F	C	B	E	D	D
Approach Vol, veh/h		756			870			1501			665	
Approach Delay, s/veh		31.6			34.1			44.2			53.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.3	34.0	30.0	26.7	11.9	46.4	12.4	44.3
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.3	11.6	27.4	19.5	6.6	16.9	8.9	24.1
Green Ext Time (p_c), s	0.1	2.2	0.0	1.3	0.0	2.3	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	40.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	2	23	9	0	27	21	330	7	16	285	57
Future Vol, veh/h	101	2	23	9	0	27	21	330	7	16	285	57
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	119	2	27	11	0	32	25	388	8	19	335	67

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	856	844	346	875	903	418	412	0	0	411	0	0
Stage 1	383	383	-	453	453	-	-	-	-	-	-	-
Stage 2	473	461	-	422	450	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	278	300	697	270	277	635	1147	-	-	1148	-	-
Stage 1	640	612	-	586	570	-	-	-	-	-	-	-
Stage 2	572	565	-	609	572	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	250	281	690	247	260	617	1136	-	-	1132	-	-
Mov Cap-2 Maneuver	250	281	-	247	260	-	-	-	-	-	-	-
Stage 1	620	595	-	565	549	-	-	-	-	-	-	-
Stage 2	523	545	-	572	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.1	13.9	0.5	0.4
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1136	-	-	251	690	449	1132	-	-
HCM Lane V/C Ratio	0.022	-	-	0.483	0.039	0.094	0.017	-	-
HCM Control Delay (s)	8.2	-	-	32	10.4	13.9	8.2	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.4	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	103	0	65	28	2	48	32	191	19	26	263	42
Future Vol, veh/h	103	0	65	28	2	48	32	191	19	26	263	42
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	77	33	2	57	38	227	23	31	313	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	727	720	325	757	747	238	371	0	0	261	0	0
Stage 1	383	383	-	314	314	-	-	-	-	-	-	-
Stage 2	344	337	-	443	433	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	339	354	716	324	341	801	1188	-	-	1303	-	-
Stage 1	640	612	-	697	656	-	-	-	-	-	-	-
Stage 2	671	641	-	594	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	297	329	708	272	316	793	1179	-	-	1289	-	-
Mov Cap-2 Maneuver	297	329	-	272	316	-	-	-	-	-	-	-
Stage 1	614	592	-	668	628	-	-	-	-	-	-	-
Stage 2	600	614	-	514	563	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.7	14.8	1.1	0.6
HCM LOS	C	B		

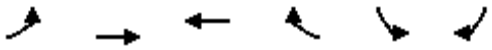
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	297	708	459	1289	-	-
HCM Lane V/C Ratio	0.032	-	-	0.413	0.109	0.202	0.024	-	-
HCM Control Delay (s)	8.2	-	-	25.4	10.7	14.8	7.9	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	0.4	0.7	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	100	167	206	228	387
v/c Ratio	0.36	0.10	0.50	0.15	0.69
Control Delay	26.2	8.1	24.6	0.2	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	8.1	24.6	0.2	23.6
Queue Length 50th (ft)	30	15	61	0	95
Queue Length 95th (ft)	74	28	125	0	#223
Internal Link Dist (ft)		427	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	656	3211	863	1551	657
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.05	0.24	0.15	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	94	157	194	214	222	142
Future Volume (veh/h)	94	157	194	214	222	142
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	100	167	206	0	236	151
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	204	1682	423		287	183
Arrive On Green	0.11	0.47	0.23	0.00	0.28	0.28
Sat Flow, veh/h	1781	3647	1870	1585	1034	661
Grp Volume(v), veh/h	100	167	206	0	388	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1700	0
Q Serve(g_s), s	2.3	1.1	4.2	0.0	9.3	0.0
Cycle Q Clear(g_c), s	2.3	1.1	4.2	0.0	9.3	0.0
Prop In Lane	1.00			1.00	0.61	0.39
Lane Grp Cap(c), veh/h	204	1682	423		471	0
V/C Ratio(X)	0.49	0.10	0.49		0.82	0.00
Avail Cap(c_a), veh/h	815	2032	1070		778	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	6.4	14.7	0.0	14.8	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.9	0.0	3.7	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	0.9	0.3	1.6	0.0	3.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.0	6.4	15.6	0.0	18.5	0.0
LnGrp LOS	B	A	B		B	A
Approach Vol, veh/h		267	206	A	388	
Approach Delay, s/veh		11.5	15.6		18.5	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.5		17.2	10.8	15.7
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.1		11.3	4.3	6.2
Green Ext Time (p_c), s		0.9		0.9	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	28.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	129	235	61	38	184	40	56	209	50	73	219	209
Future Vol, veh/h	129	235	61	38	184	40	56	209	50	73	219	209
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	140	255	66	41	200	43	61	227	54	79	238	227
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	28.3	31.6	28.3	27.7
HCM LOS	D	D	D	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	100%	0%	15%	25%	0%
Vol Thru, %	79%	0%	0%	79%	70%	75%	0%
Vol Right, %	0%	100%	0%	21%	15%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	50	129	296	262	292	209
LT Vol	56	0	129	0	38	73	0
Through Vol	209	0	0	235	184	219	0
RT Vol	0	50	0	61	40	0	209
Lane Flow Rate	288	54	140	322	285	317	227
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.716	0.122	0.356	0.757	0.712	0.764	0.493
Departure Headway (Hd)	8.951	8.11	9.138	8.47	9.003	8.671	7.812
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	403	441	394	428	402	416	461
Service Time	6.713	5.872	6.898	6.23	7.068	6.434	5.574
HCM Lane V/C Ratio	0.715	0.122	0.355	0.752	0.709	0.762	0.492
HCM Control Delay	31.4	12	16.9	33.3	31.6	34.6	18
HCM Lane LOS	D	B	C	D	D	D	C
HCM 95th-tile Q	5.5	0.4	1.6	6.3	5.4	6.4	2.7

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	173	160	0	285	0	0	0	0	441	0	233
Future Vol, veh/h	0	173	160	0	285	0	0	0	0	441	0	233
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	182	168	0	300	0	0	0	0	464	0	245

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			482	-	300
Stage 1	-	-	-	-	-	-			300	-	-
Stage 2	-	-	-	-	-	-			182	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			543	0	740
Stage 1	0	-	0	0	-	0			752	0	-
Stage 2	0	-	0	0	-	0			849	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			543	0	740
Mov Cap-2 Maneuver	-	-	-	-	-	-			543	0	-
Stage 1	-	-	-	-	-	-			752	0	-
Stage 2	-	-	-	-	-	-			849	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.8
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	543	740
HCM Lane V/C Ratio	-	-	0.855	0.331
HCM Control Delay (s)	-	-	39.1	12.3
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	9.2	1.5

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	112	473	0	0	353	650	158	3	391	0	0	0
Future Vol, veh/h	112	473	0	0	353	650	158	3	391	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	117	493	0	0	368	677	165	3	407	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	368	0	-	-	-	0	1095	1095	-
Stage 1	-	-	-	-	-	-	727	727	-
Stage 2	-	-	-	-	-	-	368	368	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1191	-	0	0	-	0	236	214	0
Stage 1	-	-	0	0	-	0	478	429	0
Stage 2	-	-	0	0	-	0	700	621	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1191	-	-	-	-	-	213	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	213	0	-
Stage 1	-	-	-	-	-	-	431	0	-
Stage 2	-	-	-	-	-	-	700	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	65
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	213	-	1191	-	-
HCM Lane V/C Ratio	0.787	-	0.098	-	-
HCM Control Delay (s)	65	0	8.4	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	5.6	-	0.3	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	0	0	477	14	544
Future Vol, veh/h	71	0	0	477	14	544
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	0	0	542	16	618

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	623	87
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	542	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	450	971
Stage 1	-	0	0	-	942	-
Stage 2	-	0	0	-	583	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	450	965
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	583	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

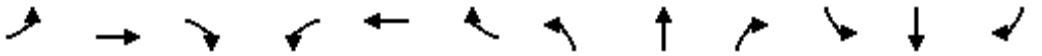
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	450	965	-	-
HCM Lane V/C Ratio	0.035	0.641	-	-
HCM Control Delay (s)	13.3	15.1	-	-
HCM Lane LOS	B	C	-	-
HCM 95th %tile Q(veh)	0.1	4.8	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	376	981	334	224	677	319	272	568	133	726	145
v/c Ratio	0.68	0.85	0.53	0.69	0.74	0.50	0.96	0.96	0.33	0.92	0.30
Control Delay	54.3	46.7	16.7	64.0	47.1	7.1	93.3	77.1	5.1	62.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	46.7	16.7	64.0	47.1	7.1	93.3	77.1	5.1	62.4	5.3
Queue Length 50th (ft)	142	373	76	88	257	0	230	240	0	287	0
Queue Length 95th (ft)	196	#557	185	127	#354	76	#413	#354	31	354	37
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1158	635	583	920	640	291	608	414	889	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.85	0.53	0.38	0.74	0.50	0.93	0.93	0.32	0.82	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	357	932	317	213	643	303	335	463	126	246	444	138
Future Volume (veh/h)	357	932	317	213	643	303	335	463	126	246	444	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	376	981	334	224	677	319	280	589	133	259	467	145
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	646	1209	534	288	808	353	310	651	270	279	539	349
Arrive On Green	0.19	0.34	0.34	0.08	0.23	0.23	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1569	3456	3554	1550	1781	3741	1552	1222	2364	1530
Grp Volume(v), veh/h	376	981	334	224	677	319	280	589	133	383	343	145
Grp Sat Flow(s),veh/h/ln	1728	1777	1569	1728	1777	1550	1781	1870	1552	1809	1777	1530
Q Serve(g_s), s	11.9	30.2	21.4	7.6	21.8	24.0	18.5	18.5	9.3	24.9	22.1	9.7
Cycle Q Clear(g_c), s	11.9	30.2	21.4	7.6	21.8	24.0	18.5	18.5	9.3	24.9	22.1	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.68		1.00
Lane Grp Cap(c), veh/h	646	1209	534	288	808	353	310	651	270	413	405	349
V/C Ratio(X)	0.58	0.81	0.63	0.78	0.84	0.90	0.90	0.90	0.49	0.93	0.84	0.42
Avail Cap(c_a), veh/h	646	1209	534	587	808	353	322	676	281	463	455	391
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	36.1	33.2	53.9	44.2	45.1	48.6	48.6	44.8	45.4	44.3	39.5
Incr Delay (d2), s/veh	0.9	6.0	5.5	1.7	10.1	28.9	25.7	14.8	0.5	22.7	11.4	0.3
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	5.1	13.6	8.7	3.3	10.5	11.8	10.4	10.0	3.5	13.4	10.7	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	42.1	38.6	55.6	54.3	74.0	74.3	63.4	45.3	68.1	55.6	39.8
LnGrp LOS	D	D	D	E	D	E	E	E	D	E	E	D
Approach Vol, veh/h		1691			1220			1002			871	
Approach Delay, s/veh		42.1			59.7			64.0			58.5	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.1	33.0		26.2	14.6	46.5		32.7				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	13.9	26.0		20.5	9.6	32.2		26.9				
Green Ext Time (p_c), s	0.0	0.2		0.2	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		54.2
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

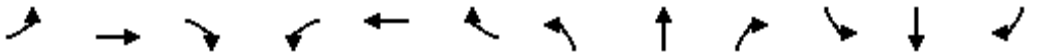


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	245	1035	221	139	704	55	365	307	143	312	155
v/c Ratio	0.85	0.82	0.37	0.71	0.65	0.11	0.54	0.83	0.34	0.97	0.39
Control Delay	74.6	43.1	17.7	72.4	43.7	16.7	45.1	64.3	6.9	93.8	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	43.1	17.7	72.4	43.7	16.7	45.1	64.3	6.9	93.8	10.0
Queue Length 50th (ft)	185	378	60	115	293	12	132	233	0	242	1
Queue Length 95th (ft)	270	#573	141	#205	#423	m39	167	312	44	#421	59
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	318	1257	605	197	1078	511	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.82	0.37	0.71	0.65	0.11	0.37	0.57	0.26	0.96	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



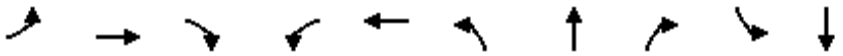
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1004	214	135	683	53	354	298	139	109	194	150
Future Volume (veh/h)	238	1004	214	135	683	53	354	298	139	109	194	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	1035	221	139	704	55	365	307	143	112	200	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	939	397	346	1110	475	684	370	301	118	210	271
Arrive On Green	0.15	0.26	0.26	0.19	0.31	0.31	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1504	1781	3554	1519	3456	1870	1522	660	1178	1517
Grp Volume(v), veh/h	245	1035	221	139	704	55	365	307	143	312	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1519	1728	1870	1522	1837	0	1517
Q Serve(g_s), s	16.2	31.7	15.2	8.2	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Cycle Q Clear(g_c), s	16.2	31.7	15.2	8.2	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	271	939	397	346	1110	475	684	370	301	328	0	271
V/C Ratio(X)	0.90	1.10	0.56	0.40	0.63	0.12	0.53	0.83	0.47	0.95	0.00	0.57
Avail Cap(c_a), veh/h	303	939	397	346	1110	475	991	536	436	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	44.2	38.1	42.2	35.4	29.4	43.1	46.2	42.6	48.8	0.0	45.1
Incr Delay (d2), s/veh	25.6	61.6	5.5	0.3	2.8	0.5	0.2	4.7	0.4	36.8	0.0	1.9
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	9.0	21.5	6.1	3.6	9.0	1.2	4.8	9.2	3.8	12.6	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	105.7	43.6	42.5	38.1	29.9	43.4	50.9	43.0	85.6	0.0	47.0
LnGrp LOS	E	F	D	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1501			898			815			467	
Approach Delay, s/veh		91.7			38.3			46.1			72.8	
Approach LOS		F			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.6	37.0		26.0	22.8	42.8		28.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	10.2	33.7		22.2	18.2	22.4		20.9				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.3		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		66.2
HCM 6th LOS		E

Notes

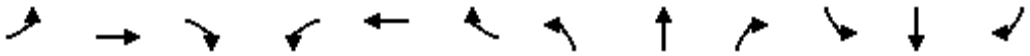
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	526	647	413	460	367	727	357	107	766
v/c Ratio	0.48	0.60	0.83	0.79	0.39	0.92	0.56	0.48	0.64	0.94
Control Delay	63.8	43.2	32.2	60.9	31.3	74.9	32.5	10.0	89.0	54.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	43.2	32.2	60.9	31.3	74.9	32.5	10.0	89.0	54.6
Queue Length 50th (ft)	52	190	347	160	141	282	231	44	80	158
Queue Length 95th (ft)	98	249	#537	#227	196	#470	313	135	m107	m#390
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	783	523	1187	399	1306	739	255	832
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	0.32	0.60	0.83	0.79	0.39	0.92	0.56	0.48	0.42	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	500	615	392	381	56	349	691	339	102	689	39
Future Volume (veh/h)	65	500	615	392	381	56	349	691	339	102	689	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	526	647	413	401	59	367	727	357	107	725	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	882	731	539	1060	155	391	1360	592	132	784	44
Arrive On Green	0.07	0.25	0.25	0.16	0.34	0.34	0.22	0.38	0.38	0.07	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3107	454	1781	3554	1546	1781	3411	193
Grp Volume(v), veh/h	68	526	647	413	228	232	367	727	357	107	377	389
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1783	1781	1777	1546	1781	1777	1827
Q Serve(g_s), s	4.4	15.7	18.6	13.7	11.6	11.8	24.3	19.1	14.0	7.1	24.9	25.0
Cycle Q Clear(g_c), s	4.4	15.7	18.6	13.7	11.6	11.8	24.3	19.1	14.0	7.1	24.9	25.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	120	882	731	539	606	609	391	1360	592	132	408	420
V/C Ratio(X)	0.57	0.60	0.89	0.77	0.38	0.38	0.94	0.53	0.60	0.81	0.92	0.93
Avail Cap(c_a), veh/h	212	882	731	539	606	609	392	1360	592	257	421	432
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.8	28.8	48.5	29.9	29.9	46.1	28.7	11.7	54.7	45.2	45.2
Incr Delay (d2), s/veh	1.6	3.0	14.8	5.9	1.8	1.8	30.1	1.5	4.5	4.5	25.2	24.8
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	2.1	7.3	8.0	6.4	5.3	5.4	14.1	8.5	5.5	3.4	13.9	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.8	42.8	43.6	54.5	31.7	31.7	76.1	30.3	16.3	59.2	70.4	70.1
LnGrp LOS	E	D	D	D	C	C	E	C	B	E	E	E
Approach Vol, veh/h		1241			873			1451			873	
Approach Delay, s/veh		43.9			42.5			38.4			68.9	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.9	34.0	30.9	32.2	11.8	45.1	12.6	50.5
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	15.7	20.6	26.3	27.0	6.4	13.8	9.1	21.1
Green Ext Time (p_c), s	0.0	3.0	0.0	0.5	0.0	1.9	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	46.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	2	14	6	3	22	19	315	18	27	310	94
Future Vol, veh/h	44	2	14	6	3	22	19	315	18	27	310	94
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	2	16	7	3	24	21	350	20	30	344	104

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	829	349	867	913	364	452	0	0	379	0	0
Stage 1	408	408	-	401	401	-	-	-	-	-	-	-
Stage 2	421	421	-	466	512	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	290	306	694	273	273	681	1109	-	-	1179	-	-
Stage 1	620	597	-	626	601	-	-	-	-	-	-	-
Stage 2	610	589	-	577	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	265	289	691	254	257	672	1105	-	-	1169	-	-
Mov Cap-2 Maneuver	265	289	-	254	257	-	-	-	-	-	-	-
Stage 1	606	579	-	609	584	-	-	-	-	-	-	-
Stage 2	571	573	-	547	520	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	13.5	0.4	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1105	-	-	266	691	456	1169	-	-
HCM Lane V/C Ratio	0.019	-	-	0.192	0.023	0.076	0.026	-	-
HCM Control Delay (s)	8.3	-	-	21.7	10.3	13.5	8.2	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	2	36	13	0	34	85	258	27	50	195	79
Future Vol, veh/h	65	2	36	13	0	34	85	258	27	50	195	79
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	2	40	14	0	38	94	287	30	56	217	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	842	843	237	890	901	292	309	0	0	322	0	0
Stage 1	333	333	-	480	480	-	-	-	-	-	-	-
Stage 2	509	510	-	410	421	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	284	300	802	264	278	747	1252	-	-	1238	-	-
Stage 1	681	644	-	567	554	-	-	-	-	-	-	-
Stage 2	547	538	-	619	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	263	787	222	243	743	1247	-	-	1232	-	-
Mov Cap-2 Maneuver	244	263	-	222	243	-	-	-	-	-	-	-
Stage 1	627	612	-	522	510	-	-	-	-	-	-	-
Stage 2	480	495	-	550	560	-	-	-	-	-	-	-

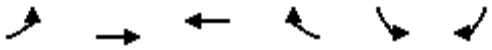
Approach	EB	WB	NB	SB
HCM Control Delay, s	20.1	14	1.9	1.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1247	-	-	244	712	451	1232	-	-
HCM Lane V/C Ratio	0.076	-	-	0.296	0.059	0.116	0.045	-	-
HCM Control Delay (s)	8.1	-	-	25.8	10.4	14	8.1	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	0.2	0.4	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	173	367	137	268	310
v/c Ratio	0.45	0.21	0.32	0.17	0.61
Control Delay	23.7	7.6	22.6	0.2	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	7.6	22.6	0.2	21.1
Queue Length 50th (ft)	46	27	36	0	70
Queue Length 95th (ft)	112	57	94	0	165
Internal Link Dist (ft)		268	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	761	3291	1001	1551	757
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.11	0.14	0.17	0.41

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	163	345	129	252	173	118
Future Volume (veh/h)	163	345	129	252	173	118
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	173	367	137	0	184	126
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	232	1805	447		233	159
Arrive On Green	0.13	0.51	0.24	0.00	0.23	0.23
Sat Flow, veh/h	1781	3647	1870	1585	1004	687
Grp Volume(v), veh/h	173	367	137	0	311	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1696	0
Q Serve(g_s), s	3.9	2.4	2.5	0.0	7.2	0.0
Cycle Q Clear(g_c), s	3.9	2.4	2.5	0.0	7.2	0.0
Prop In Lane	1.00			1.00	0.59	0.41
Lane Grp Cap(c), veh/h	232	1805	447		393	0
V/C Ratio(X)	0.75	0.20	0.31		0.79	0.00
Avail Cap(c_a), veh/h	851	2123	1117		811	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.5	5.7	13.1	0.0	15.1	0.0
Incr Delay (d2), s/veh	4.7	0.1	0.4	0.0	3.6	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	1.7	0.6	0.9	0.0	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.2	5.7	13.5	0.0	18.7	0.0
LnGrp LOS	C	A	B		B	A
Approach Vol, veh/h		540	137	A	311	
Approach Delay, s/veh		11.0	13.5		18.7	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		27.1		14.8	11.3	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		4.4		9.2	5.9	4.5
Green Ext Time (p_c), s		2.3		0.7	0.4	0.6

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	44.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	243	282	123	52	130	61	65	257	46	65	259	142
Future Vol, veh/h	243	282	123	52	130	61	65	257	46	65	259	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	251	291	127	54	134	63	67	265	47	67	267	146
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	56	30.7	43.9	37.4
HCM LOS	F	D	E	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	20%	0%	100%	0%	21%	20%	0%
Vol Thru, %	80%	0%	0%	70%	53%	80%	0%
Vol Right, %	0%	100%	0%	30%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	322	46	243	405	243	324	142
LT Vol	65	0	243	0	52	65	0
Through Vol	257	0	0	282	130	259	0
RT Vol	0	46	0	123	61	0	142
Lane Flow Rate	332	47	251	418	251	334	146
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.859	0.112	0.649	0.996	0.674	0.853	0.34
Departure Headway (Hd)	9.317	8.479	9.33	8.59	9.682	9.19	8.353
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	388	422	386	422	373	394	430
Service Time	7.08	6.241	7.098	6.357	7.757	6.952	6.114
HCM Lane V/C Ratio	0.856	0.111	0.65	0.991	0.673	0.848	0.34
HCM Control Delay	48.4	12.3	27.9	72.8	30.7	47	15.4
HCM Lane LOS	E	B	D	F	D	E	C
HCM 95th-tile Q	8.2	0.4	4.4	12.4	4.7	8.1	1.5

Intersection	
Int Delay, s/veh	16

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	358	224	0	199	0	0	0	0	407	0	249
Future Vol, veh/h	0	358	224	0	199	0	0	0	0	407	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	362	226	0	201	0	0	0	0	411	0	252

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			563	-	201
Stage 1	-	-	-	-	-	-			201	-	-
Stage 2	-	-	-	-	-	-			362	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			487	0	840
Stage 1	0	-	0	0	-	0			833	0	-
Stage 2	0	-	0	0	-	0			704	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			487	0	840
Mov Cap-2 Maneuver	-	-	-	-	-	-			487	0	-
Stage 1	-	-	-	-	-	-			833	0	-
Stage 2	-	-	-	-	-	-			704	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	29.6
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	487	840
HCM Lane V/C Ratio	-	-	0.844	0.299
HCM Control Delay (s)	-	-	40.9	11.1
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	8.5	1.3

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	155	623	0	0	355	493	76	4	406	0	0	0
Future Vol, veh/h	155	623	0	0	355	493	76	4	406	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	161	649	0	0	370	514	79	4	423	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	370	0	-	-	-	0	1341	1341	-
Stage 1	-	-	-	-	-	-	971	971	-
Stage 2	-	-	-	-	-	-	370	370	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1189	-	0	0	-	0	168	152	0
Stage 1	-	-	0	0	-	0	367	331	0
Stage 2	-	-	0	0	-	0	699	620	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1189	-	-	-	-	-	145	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	0	-
Stage 1	-	-	-	-	-	-	317	0	-
Stage 2	-	-	-	-	-	-	699	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	58.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	145	-	1189	-	-
HCM Lane V/C Ratio	0.575	-	0.136	-	-
HCM Control Delay (s)	58.9	0	8.5	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	2.9	-	0.5	-	-

Intersection	
Int Delay, s/veh	13.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	0	0	698	56	455
Future Vol, veh/h	403	0	0	698	56	455
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	0	0	821	66	535

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1295	475
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	821	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	179	590
Stage 1	-	0	0	-	626	-
Stage 2	-	0	0	-	432	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	179	589
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	43.7
HCM LOS			E

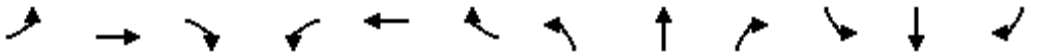
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	179	589	-	-
HCM Lane V/C Ratio	0.368	0.909	-	-
HCM Control Delay (s)	36.4	44.6	-	-
HCM Lane LOS	E	E	-	-
HCM 95th %tile Q(veh)	1.6	11.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	223	607	295	158	642	271	221	543	164	737	163
v/c Ratio	0.69	0.67	0.48	0.26	0.53	0.39	0.82	0.96	0.42	0.92	0.37
Control Delay	63.9	45.1	7.3	43.8	34.9	5.6	73.1	79.5	9.8	62.7	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	45.1	7.3	43.8	34.9	5.6	73.1	79.5	9.8	62.7	8.3
Queue Length 50th (ft)	88	226	1	55	211	0	183	231	0	292	2
Queue Length 95th (ft)	127	299	74	87	291	63	#324	#345	59	361	56
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	907	609	612	1204	689	273	575	399	889	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.67	0.48	0.26	0.53	0.39	0.81	0.94	0.41	0.83	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	577	280	150	610	257	234	492	156	251	449	155
Future Volume (veh/h)	212	577	280	150	610	257	234	492	156	251	449	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.86
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	223	607	295	158	642	271	246	518	164	264	473	163
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	676	1241	538	297	623	219	285	549	318
Arrive On Green	0.08	0.23	0.23	0.20	0.35	0.35	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1519	3456	3554	1540	1781	3741	1317	1227	2359	1368
Grp Volume(v), veh/h	223	607	295	158	642	271	246	518	164	389	348	163
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1540	1781	1870	1317	1809	1777	1368
Q Serve(g_s), s	7.6	19.1	22.3	4.6	17.2	16.7	16.0	16.1	14.2	25.2	22.4	12.5
Cycle Q Clear(g_c), s	7.6	19.1	22.3	4.6	17.2	16.7	16.0	16.1	14.2	25.2	22.4	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.68		1.00
Lane Grp Cap(c), veh/h	288	808	346	676	1241	538	297	623	219	421	413	318
V/C Ratio(X)	0.77	0.75	0.85	0.23	0.52	0.50	0.83	0.83	0.75	0.92	0.84	0.51
Avail Cap(c_a), veh/h	501	808	346	676	1241	538	303	636	224	463	455	350
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	43.2	44.4	40.7	31.0	30.8	48.4	48.4	47.6	45.0	43.9	40.1
Incr Delay (d2), s/veh	1.7	6.3	22.6	0.1	1.5	3.4	15.9	8.4	11.2	22.4	11.3	0.5
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	3.3	8.9	10.4	1.9	7.5	6.5	8.4	8.2	5.2	13.5	10.8	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	49.5	67.1	40.7	32.6	34.2	64.3	56.8	58.8	67.4	55.3	40.6
LnGrp LOS	E	D	E	D	C	C	E	E	E	E	E	D
Approach Vol, veh/h		1125			1071			928			900	
Approach Delay, s/veh		55.3			34.2			59.1			57.9	
Approach LOS		E			C			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	47.6		24.6	29.2	33.0		33.2				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	9.6	19.2		18.1	6.6	24.3		27.2				
Green Ext Time (p_c), s	0.0	0.7		0.3	0.0	0.4		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.1	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

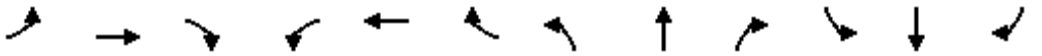


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	127	705	253	147	608	55	369	291	182	380	182
v/c Ratio	0.56	0.55	0.38	0.76	0.50	0.10	0.55	0.81	0.41	1.16	0.45
Control Delay	59.4	34.9	11.6	75.7	34.8	0.6	45.9	62.5	8.0	143.9	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	34.9	11.6	75.7	34.8	0.6	45.9	62.5	8.0	143.9	14.1
Queue Length 50th (ft)	94	225	34	112	192	0	136	221	0	~347	19
Queue Length 95th (ft)	160	332	115	180	280	3	169	295	56	#541	87
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1271	670	206	1204	570	984	534	570	328	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.55	0.38	0.71	0.50	0.10	0.38	0.54	0.32	1.16	0.45

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.



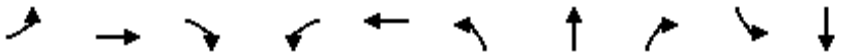
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	656	235	137	565	51	343	271	169	71	283	169
Future Volume (veh/h)	118	656	235	137	565	51	343	271	169	71	283	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	705	253	147	608	55	369	291	182	76	304	182
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	1335	575	173	880	375	655	355	293	66	264	271
Arrive On Green	0.22	0.38	0.38	0.10	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1531	1781	3554	1515	3456	1870	1545	370	1481	1522
Grp Volume(v), veh/h	127	705	253	147	608	55	369	291	182	380	0	182
Grp Sat Flow(s),veh/h/ln	1781	1777	1531	1781	1777	1515	1728	1870	1545	1852	0	1522
Q Serve(g_s), s	7.2	18.5	14.8	9.7	18.6	3.4	11.6	17.9	13.0	21.4	0.0	13.4
Cycle Q Clear(g_c), s	7.2	18.5	14.8	9.7	18.6	3.4	11.6	17.9	13.0	21.4	0.0	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.20		1.00
Lane Grp Cap(c), veh/h	391	1335	575	173	880	375	655	355	293	330	0	271
V/C Ratio(X)	0.32	0.53	0.44	0.85	0.69	0.15	0.56	0.82	0.62	1.15	0.00	0.67
Avail Cap(c_a), veh/h	391	1335	575	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.4	29.2	28.0	53.3	41.0	35.3	44.1	46.7	44.7	49.3	0.0	46.0
Incr Delay (d2), s/veh	0.2	1.5	2.4	26.5	4.4	0.8	0.3	3.5	0.8	96.9	0.0	5.1
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	8.0	5.7	5.6	8.5	1.3	5.0	8.6	5.0	18.8	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.5	30.7	30.5	79.8	45.4	36.1	44.4	50.2	45.5	146.2	0.0	51.1
LnGrp LOS	D	C	C	E	D	D	D	D	D	F	A	D
Approach Vol, veh/h		1085			810			842			562	
Approach Delay, s/veh		31.7			51.0			46.6			115.4	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.3	50.4		26.0	31.6	35.0		27.4				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	11.7	20.5		23.4	9.2	20.6		19.9				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.6		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			54.5									
HCM 6th LOS			D									

Notes

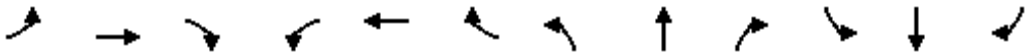
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	364	323	279	595	399	806	300	108	557
v/c Ratio	0.49	0.38	0.37	0.65	0.52	0.87	0.62	0.42	0.65	0.82
Control Delay	61.5	35.8	11.4	56.0	32.8	61.1	32.2	8.9	68.3	53.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	35.8	11.4	56.0	32.8	61.1	32.2	8.9	68.3	53.0
Queue Length 50th (ft)	54	117	84	103	185	277	246	34	79	204
Queue Length 95th (ft)	101	163	161	148	255	#506	325	106	136	251
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	964	871	426	1155	461	1314	716	204	864
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	0.39	0.38	0.37	0.65	0.52	0.87	0.61	0.42	0.53	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	346	307	265	452	113	379	766	285	103	452	77
Future Volume (veh/h)	70	346	307	265	452	113	379	766	285	103	452	77
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	364	323	279	476	119	399	806	300	108	476	81
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	921	755	604	1031	256	393	1227	535	135	581	98
Arrive On Green	0.07	0.26	0.26	0.17	0.37	0.37	0.22	0.35	0.35	0.08	0.19	0.19
Sat Flow, veh/h	1781	3554	1563	3456	2807	697	1781	3554	1549	1781	3022	511
Grp Volume(v), veh/h	74	364	323	279	300	295	399	806	300	108	279	278
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1726	1781	1777	1549	1781	1777	1757
Q Serve(g_s), s	4.6	9.7	0.0	8.3	14.8	15.0	25.4	22.1	11.1	6.9	17.3	17.5
Cycle Q Clear(g_c), s	4.6	9.7	0.0	8.3	14.8	15.0	25.4	22.1	11.1	6.9	17.3	17.5
Prop In Lane	1.00		1.00	1.00		0.40	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	126	921	755	604	653	634	393	1227	535	135	342	338
V/C Ratio(X)	0.59	0.40	0.43	0.46	0.46	0.47	1.01	0.66	0.56	0.80	0.82	0.82
Avail Cap(c_a), veh/h	191	921	755	604	653	634	393	1227	535	206	439	434
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.2	19.5	42.6	27.7	27.8	44.8	31.9	11.6	52.3	44.5	44.6
Incr Delay (d2), s/veh	1.6	1.3	1.8	0.2	2.3	2.4	49.0	1.0	0.8	6.2	7.0	7.8
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	2.1	4.4	6.0	3.6	6.8	6.7	16.6	9.7	3.9	3.3	8.3	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	36.4	21.3	42.8	30.0	30.2	93.8	32.9	12.4	58.5	51.5	52.3
LnGrp LOS	D	D	C	D	C	C	F	C	B	E	D	D
Approach Vol, veh/h		761			874			1505			665	
Approach Delay, s/veh		31.7			34.2			45.0			53.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.3	34.0	30.0	26.7	11.9	46.4	12.4	44.3
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.3	11.7	27.4	19.5	6.6	17.0	8.9	24.1
Green Ext Time (p_c), s	0.1	2.2	0.0	1.3	0.0	2.3	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	41.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	2	23	9	0	27	21	330	7	16	293	57
Future Vol, veh/h	101	2	23	9	0	27	21	330	7	16	293	57
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	119	2	27	11	0	32	25	388	8	19	345	67

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	866	854	356	885	913	418	422	0	0	411	0	0
Stage 1	393	393	-	453	453	-	-	-	-	-	-	-
Stage 2	473	461	-	432	460	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	274	296	688	266	273	635	1137	-	-	1148	-	-
Stage 1	632	606	-	586	570	-	-	-	-	-	-	-
Stage 2	572	565	-	602	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	278	681	243	256	617	1126	-	-	1132	-	-
Mov Cap-2 Maneuver	246	278	-	243	256	-	-	-	-	-	-	-
Stage 1	612	590	-	565	549	-	-	-	-	-	-	-
Stage 2	523	545	-	566	551	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.7	13.9	0.5	0.4
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1126	-	-	247	681	446	1132	-	-
HCM Lane V/C Ratio	0.022	-	-	0.491	0.04	0.095	0.017	-	-
HCM Control Delay (s)	8.3	-	-	32.8	10.5	13.9	8.2	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.5	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	103	0	66	28	2	48	32	191	19	26	271	42
Future Vol, veh/h	103	0	66	28	2	48	32	191	19	26	271	42
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	79	33	2	57	38	227	23	31	323	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	737	730	335	768	757	238	381	0	0	261	0	0
Stage 1	393	393	-	314	314	-	-	-	-	-	-	-
Stage 2	344	337	-	454	443	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	334	349	707	319	337	801	1177	-	-	1303	-	-
Stage 1	632	606	-	697	656	-	-	-	-	-	-	-
Stage 2	671	641	-	586	576	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	293	324	699	267	312	793	1168	-	-	1289	-	-
Mov Cap-2 Maneuver	293	324	-	267	312	-	-	-	-	-	-	-
Stage 1	607	587	-	667	628	-	-	-	-	-	-	-
Stage 2	600	613	-	506	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.9	15	1.1	0.6
HCM LOS	C	C		

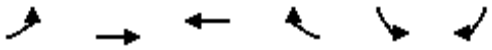
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1168	-	-	293	699	454	1289	-	-
HCM Lane V/C Ratio	0.033	-	-	0.418	0.112	0.205	0.024	-	-
HCM Control Delay (s)	8.2	-	-	25.8	10.8	15	7.9	-	-
HCM Lane LOS	A	-	-	D	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.4	0.8	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	122	167	206	244	410
v/c Ratio	0.42	0.10	0.51	0.16	0.71
Control Delay	27.3	8.2	25.7	0.2	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.8
Total Delay	27.3	8.2	25.7	0.2	25.9
Queue Length 50th (ft)	39	15	65	0	105
Queue Length 95th (ft)	87	28	128	0	#269
Internal Link Dist (ft)		427	2338		209
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	630	3143	830	1551	635
Starvation Cap Reductn	0	0	0	0	65
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.05	0.25	0.16	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	157	194	229	234	151
Future Volume (veh/h)	115	157	194	229	234	151
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	167	206	0	249	161
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	205	1658	414		298	193
Arrive On Green	0.12	0.47	0.22	0.00	0.29	0.29
Sat Flow, veh/h	1781	3647	1870	1585	1029	666
Grp Volume(v), veh/h	122	167	206	0	411	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1699	0
Q Serve(g_s), s	2.9	1.2	4.3	0.0	10.1	0.0
Cycle Q Clear(g_c), s	2.9	1.2	4.3	0.0	10.1	0.0
Prop In Lane	1.00			1.00	0.61	0.39
Lane Grp Cap(c), veh/h	205	1658	414		492	0
V/C Ratio(X)	0.59	0.10	0.50		0.83	0.00
Avail Cap(c_a), veh/h	797	1987	1046		760	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	18.8	6.7	15.2	0.0	14.9	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.9	0.0	4.9	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	1.2	0.3	1.7	0.0	3.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.5	6.7	16.2	0.0	19.7	0.0
LnGrp LOS	C	A	B		B	A
Approach Vol, veh/h		289	206	A	411	
Approach Delay, s/veh		13.0	16.2		19.7	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.7		18.1	11.0	15.7
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.2		12.1	4.9	6.3
Green Ext Time (p_c), s		0.9		0.9	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	29.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	129	235	61	38	186	40	59	209	50	73	219	210
Future Vol, veh/h	129	235	61	38	186	40	59	209	50	73	219	210
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	140	255	66	41	202	43	64	227	54	79	238	228
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	28.6	32.3	29.2	28
HCM LOS	D	D	D	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	22%	0%	100%	0%	14%	25%	0%
Vol Thru, %	78%	0%	0%	79%	70%	75%	0%
Vol Right, %	0%	100%	0%	21%	15%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	268	50	129	296	264	292	210
LT Vol	59	0	129	0	38	73	0
Through Vol	209	0	0	235	186	219	0
RT Vol	0	50	0	61	40	0	210
Lane Flow Rate	291	54	140	322	287	317	228
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.727	0.123	0.357	0.76	0.72	0.768	0.498
Departure Headway (Hd)	8.983	8.137	9.176	8.508	9.037	8.708	7.849
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	402	440	391	425	399	416	459
Service Time	6.746	5.899	6.939	6.271	7.106	6.472	5.612
HCM Lane V/C Ratio	0.724	0.123	0.358	0.758	0.719	0.762	0.497
HCM Control Delay	32.4	12	17	33.7	32.3	35.1	18.2
HCM Lane LOS	D	B	C	D	D	E	C
HCM 95th-tile Q	5.6	0.4	1.6	6.3	5.5	6.4	2.7

Intersection	
Int Delay, s/veh	18.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	178	164	0	287	0	0	0	0	441	0	252
Future Vol, veh/h	0	178	164	0	287	0	0	0	0	441	0	252
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	187	173	0	302	0	0	0	0	464	0	265

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			489	-	302
Stage 1	-	-	-	-	-	-			302	-	-
Stage 2	-	-	-	-	-	-			187	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			538	0	738
Stage 1	0	-	0	0	-	0			750	0	-
Stage 2	0	-	0	0	-	0			845	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			538	0	738
Mov Cap-2 Maneuver	-	-	-	-	-	-			538	0	-
Stage 1	-	-	-	-	-	-			750	0	-
Stage 2	-	-	-	-	-	-			845	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	538	738
HCM Lane V/C Ratio	-	-	0.863	0.359
HCM Control Delay (s)	-	-	40.4	12.6
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	9.4	1.6

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	117	473	0	0	353	657	160	3	395	0	0	0
Future Vol, veh/h	117	473	0	0	353	657	160	3	395	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	122	493	0	0	368	684	167	3	411	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	368	0	-	-	-	0	1105	1105	-
Stage 1	-	-	-	-	-	-	737	737	-
Stage 2	-	-	-	-	-	-	368	368	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1191	-	0	0	-	0	233	211	0
Stage 1	-	-	0	0	-	0	473	425	0
Stage 2	-	-	0	0	-	0	700	621	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1191	-	-	-	-	-	209	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	209	0	-
Stage 1	-	-	-	-	-	-	425	0	-
Stage 2	-	-	-	-	-	-	700	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	69.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	209	-	1191	-	-
HCM Lane V/C Ratio	0.812	-	0.102	-	-
HCM Control Delay (s)	69.9	0	8.4	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	5.9	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	21	31	14	0
Future Vol, veh/h	0	21	21	31	14	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	23	34	15	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	40	40	-	0
Stage 1	40	40	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	972	852	-	-
Stage 1	982	862	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	972	0	-	-
Mov Cap-2 Maneuver	972	0	-	-
Stage 1	982	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	0	24	52	0	0
Future Vol, veh/h	35	0	24	52	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	0	26	57	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	147	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1572	-	845	1034
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1572	-	831	1034
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	900	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1572	-
HCM Lane V/C Ratio	-	-	-	0.017	-
HCM Control Delay (s)	0	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	7.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	0	0	478	14	546
Future Vol, veh/h	71	0	0	478	14	546
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	0	0	543	16	620

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	624	87
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	449	971
Stage 1	-	0	0	-	942	-
Stage 2	-	0	0	-	582	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	449	965
Mov Cap-2 Maneuver	-	-	-	-	449	-
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	582	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

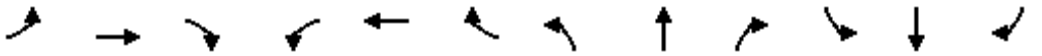
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	449	965	-	-
HCM Lane V/C Ratio	0.035	0.643	-	-
HCM Control Delay (s)	13.3	15.2	-	-
HCM Lane LOS	B	C	-	-
HCM 95th %tile Q(veh)	0.1	4.9	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	376	981	334	224	677	320	272	568	133	727	145
v/c Ratio	0.68	0.85	0.53	0.69	0.74	0.50	0.96	0.96	0.33	0.92	0.30
Control Delay	54.3	46.8	16.7	64.0	47.2	7.1	93.3	77.1	5.1	62.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	46.8	16.7	64.0	47.2	7.1	93.3	77.1	5.1	62.3	5.3
Queue Length 50th (ft)	142	373	76	88	257	0	230	240	0	288	0
Queue Length 95th (ft)	196	#557	185	127	#354	76	#413	#354	31	354	37
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1157	635	583	919	640	291	608	414	889	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.85	0.53	0.38	0.74	0.50	0.93	0.93	0.32	0.82	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	357	932	317	213	643	304	335	463	126	247	444	138
Future Volume (veh/h)	357	932	317	213	643	304	335	463	126	247	444	138
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	376	981	334	224	677	320	280	589	133	260	467	145
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	645	1208	533	288	808	353	310	651	270	280	539	349
Arrive On Green	0.19	0.34	0.34	0.08	0.23	0.23	0.17	0.17	0.17	0.23	0.23	0.23
Sat Flow, veh/h	3456	3554	1569	3456	3554	1550	1781	3741	1552	1225	2361	1530
Grp Volume(v), veh/h	376	981	334	224	677	320	280	589	133	384	343	145
Grp Sat Flow(s),veh/h/ln	1728	1777	1569	1728	1777	1550	1781	1870	1552	1809	1777	1530
Q Serve(g_s), s	11.9	30.2	21.4	7.6	21.8	24.1	18.5	18.5	9.3	24.9	22.2	9.7
Cycle Q Clear(g_c), s	11.9	30.2	21.4	7.6	21.8	24.1	18.5	18.5	9.3	24.9	22.2	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.68		1.00
Lane Grp Cap(c), veh/h	645	1208	533	288	808	353	310	651	270	413	406	349
V/C Ratio(X)	0.58	0.81	0.63	0.78	0.84	0.91	0.90	0.90	0.49	0.93	0.85	0.41
Avail Cap(c_a), veh/h	645	1208	533	587	808	353	322	676	281	463	455	391
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	36.1	33.2	53.9	44.2	45.1	48.6	48.6	44.8	45.3	44.3	39.5
Incr Delay (d2), s/veh	0.9	6.0	5.5	1.7	10.1	29.3	25.7	14.8	0.5	22.8	11.4	0.3
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	5.1	13.7	8.7	3.3	10.5	11.9	10.4	10.0	3.5	13.4	10.7	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	42.1	38.7	55.6	54.3	74.5	74.3	63.4	45.3	68.2	55.7	39.8
LnGrp LOS	D	D	D	E	D	E	E	E	D	E	E	D
Approach Vol, veh/h		1691			1221			1002			872	
Approach Delay, s/veh		42.2			59.8			64.0			58.5	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.1	33.0		26.2	14.6	46.5		32.7				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	13.9	26.1		20.5	9.6	32.2		26.9				
Green Ext Time (p_c), s	0.0	0.2		0.2	0.0	0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		54.2
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

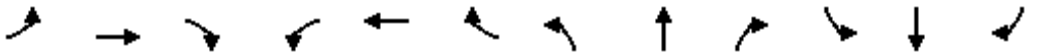


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	245	1035	222	141	704	55	366	307	143	313	155
v/c Ratio	0.85	0.82	0.37	0.72	0.65	0.11	0.54	0.83	0.34	0.98	0.39
Control Delay	74.6	43.2	17.7	73.2	43.8	16.6	45.1	64.3	6.9	93.9	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	43.2	17.7	73.2	43.8	16.6	45.1	64.3	6.9	93.9	10.0
Queue Length 50th (ft)	185	378	59	116	293	12	133	233	0	243	1
Queue Length 95th (ft)	270	#573	140	#205	#422	m40	167	312	44	#422	59
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	318	1256	605	197	1076	511	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.82	0.37	0.72	0.65	0.11	0.37	0.57	0.26	0.96	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



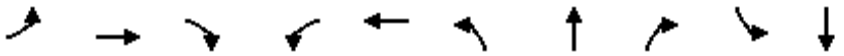
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1004	215	137	683	53	355	298	139	109	195	150
Future Volume (veh/h)	238	1004	215	137	683	53	355	298	139	109	195	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	1035	222	141	704	55	366	307	143	112	201	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	939	397	346	1110	475	684	370	301	117	210	271
Arrive On Green	0.15	0.26	0.26	0.19	0.31	0.31	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1504	1781	3554	1519	3456	1870	1522	658	1180	1517
Grp Volume(v), veh/h	245	1035	222	141	704	55	366	307	143	313	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1519	1728	1870	1522	1837	0	1517
Q Serve(g_s), s	16.2	31.7	15.3	8.3	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Cycle Q Clear(g_c), s	16.2	31.7	15.3	8.3	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	271	939	397	346	1110	475	684	370	301	328	0	271
V/C Ratio(X)	0.90	1.10	0.56	0.41	0.63	0.12	0.53	0.83	0.47	0.96	0.00	0.57
Avail Cap(c_a), veh/h	303	939	397	346	1110	475	991	536	436	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	44.2	38.1	42.3	35.4	29.4	43.2	46.2	42.6	48.8	0.0	45.1
Incr Delay (d2), s/veh	25.6	61.6	5.6	0.3	2.8	0.5	0.2	4.7	0.4	37.5	0.0	1.9
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	9.0	21.5	6.1	3.6	9.0	1.2	4.9	9.2	3.8	12.7	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	105.7	43.7	42.6	38.1	29.9	43.4	50.9	43.0	86.4	0.0	47.0
LnGrp LOS	E	F	D	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1502			900			816			468	
Approach Delay, s/veh		91.7			38.3			46.2			73.3	
Approach LOS		F			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.6	37.0		26.0	22.8	42.8		28.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	10.3	33.7		22.2	18.2	22.4		20.9				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.3		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		66.2	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	529	648	413	463	369	727	357	107	766
v/c Ratio	0.48	0.60	0.83	0.79	0.39	0.92	0.56	0.48	0.64	0.94
Control Delay	63.8	43.3	32.3	60.9	31.3	75.7	32.5	10.0	89.0	54.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	43.3	32.3	60.9	31.3	75.7	32.5	10.0	89.0	54.5
Queue Length 50th (ft)	52	191	348	160	142	284	231	44	79	158
Queue Length 95th (ft)	98	250	#539	#227	197	#473	313	135	m107	m#389
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	783	523	1187	399	1306	739	255	832
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	0.32	0.60	0.83	0.79	0.39	0.92	0.56	0.48	0.42	0.92

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	503	616	392	384	56	351	691	339	102	689	39
Future Volume (veh/h)	65	503	616	392	384	56	351	691	339	102	689	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	529	648	413	404	59	369	727	357	107	725	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	882	732	536	1059	154	392	1362	593	132	784	44
Arrive On Green	0.07	0.25	0.25	0.16	0.34	0.34	0.22	0.38	0.38	0.07	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3110	451	1781	3554	1546	1781	3411	193
Grp Volume(v), veh/h	68	529	648	413	230	233	369	727	357	107	377	389
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1784	1781	1777	1546	1781	1777	1827
Q Serve(g_s), s	4.4	15.8	18.6	13.8	11.7	11.9	24.5	19.0	14.0	7.1	24.9	25.0
Cycle Q Clear(g_c), s	4.4	15.8	18.6	13.8	11.7	11.9	24.5	19.0	14.0	7.1	24.9	25.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	120	882	732	536	605	607	392	1362	593	132	408	420
V/C Ratio(X)	0.57	0.60	0.89	0.77	0.38	0.38	0.94	0.53	0.60	0.81	0.92	0.93
Avail Cap(c_a), veh/h	212	882	732	536	605	607	392	1362	593	257	421	432
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.8	28.8	48.6	30.0	30.0	46.0	28.7	11.7	54.7	45.2	45.2
Incr Delay (d2), s/veh	1.6	3.0	14.8	6.1	1.8	1.8	30.6	1.5	4.5	4.5	25.2	24.8
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	2.1	7.3	8.0	6.4	5.4	5.5	14.2	8.5	5.5	3.4	13.9	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.8	42.8	43.6	54.7	31.8	31.9	76.6	30.2	16.2	59.2	70.4	70.1
LnGrp LOS	E	D	D	D	C	C	E	C	B	E	E	E
Approach Vol, veh/h		1245			876			1453			873	
Approach Delay, s/veh		43.9			42.6			38.5			68.9	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.8	34.0	31.0	32.2	11.8	45.1	12.6	50.6
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	15.8	20.6	26.5	27.0	6.4	13.9	9.1	21.0
Green Ext Time (p_c), s	0.0	3.0	0.0	0.5	0.0	1.9	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	46.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	2	14	6	3	22	19	317	18	27	316	94
Future Vol, veh/h	44	2	14	6	3	22	19	317	18	27	316	94
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	2	16	7	3	24	21	352	20	30	351	104

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	838	838	356	876	922	366	459	0	0	381	0	0
Stage 1	415	415	-	403	403	-	-	-	-	-	-	-
Stage 2	423	423	-	473	519	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	286	302	688	269	270	679	1102	-	-	1177	-	-
Stage 1	615	592	-	624	600	-	-	-	-	-	-	-
Stage 2	609	588	-	572	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	261	285	685	250	255	670	1098	-	-	1167	-	-
Mov Cap-2 Maneuver	261	285	-	250	255	-	-	-	-	-	-	-
Stage 1	601	574	-	607	583	-	-	-	-	-	-	-
Stage 2	570	572	-	542	517	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.3	13.6	0.4	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1098	-	-	262	685	452	1167	-	-
HCM Lane V/C Ratio	0.019	-	-	0.195	0.023	0.076	0.026	-	-
HCM Control Delay (s)	8.3	-	-	22	10.4	13.6	8.2	-	-
HCM Lane LOS	A	-	-	C	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	2	36	13	0	34	85	260	27	50	201	79
Future Vol, veh/h	65	2	36	13	0	34	85	260	27	50	201	79
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	2	40	14	0	38	94	289	30	56	223	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	850	851	243	898	909	294	315	0	0	324	0	0
Stage 1	339	339	-	482	482	-	-	-	-	-	-	-
Stage 2	511	512	-	416	427	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	280	297	796	260	275	745	1245	-	-	1236	-	-
Stage 1	676	640	-	565	553	-	-	-	-	-	-	-
Stage 2	545	536	-	614	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	241	260	781	218	240	741	1240	-	-	1230	-	-
Mov Cap-2 Maneuver	241	260	-	218	240	-	-	-	-	-	-	-
Stage 1	623	608	-	520	508	-	-	-	-	-	-	-
Stage 2	478	493	-	546	556	-	-	-	-	-	-	-

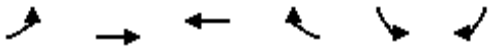
Approach	EB	WB	NB	SB
HCM Control Delay, s	20.4	14.2	1.9	1.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1240	-	-	241	706	445	1230	-	-
HCM Lane V/C Ratio	0.076	-	-	0.3	0.06	0.117	0.045	-	-
HCM Control Delay (s)	8.1	-	-	26.2	10.4	14.2	8.1	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	0.2	0.4	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	187	367	137	278	330
v/c Ratio	0.51	0.20	0.36	0.18	0.67
Control Delay	25.4	7.7	24.0	0.3	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	7.7	24.0	0.3	23.4
Queue Length 50th (ft)	52	29	38	0	77
Queue Length 95th (ft)	120	57	95	0	180
Internal Link Dist (ft)		268	2338		238
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	669	3236	880	1551	671
Starvation Cap Reductn	0	0	0	0	6
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.11	0.16	0.18	0.50

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	176	345	129	261	182	128
Future Volume (veh/h)	176	345	129	261	182	128
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	187	367	137	0	194	136
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	249	1795	432		242	169
Arrive On Green	0.14	0.51	0.23	0.00	0.24	0.24
Sat Flow, veh/h	1781	3647	1870	1585	994	697
Grp Volume(v), veh/h	187	367	137	0	331	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1695	0
Q Serve(g_s), s	4.4	2.5	2.6	0.0	7.9	0.0
Cycle Q Clear(g_c), s	4.4	2.5	2.6	0.0	7.9	0.0
Prop In Lane	1.00			1.00	0.59	0.41
Lane Grp Cap(c), veh/h	249	1795	432		412	0
V/C Ratio(X)	0.75	0.20	0.32		0.80	0.00
Avail Cap(c_a), veh/h	823	2052	1080		783	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.9	5.9	13.8	0.0	15.4	0.0
Incr Delay (d2), s/veh	4.5	0.1	0.4	0.0	3.7	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	1.9	0.6	1.0	0.0	3.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.4	6.0	14.2	0.0	19.1	0.0
LnGrp LOS	C	A	B		B	A
Approach Vol, veh/h		554	137	A	331	
Approach Delay, s/veh		11.5	14.2		19.1	
Approach LOS		B	B		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		27.7		15.6	11.9	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		4.5		9.9	6.4	4.6
Green Ext Time (p_c), s		2.3		0.8	0.4	0.6

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	44.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	243	283	123	52	132	61	67	257	46	65	259	142
Future Vol, veh/h	243	283	123	52	132	61	67	257	46	65	259	142
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	251	292	127	54	136	63	69	265	47	67	267	146
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	56.8	30.5	42.9	36
HCM LOS	F	D	E	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	21%	0%	100%	0%	21%	20%	0%
Vol Thru, %	79%	0%	0%	70%	54%	80%	0%
Vol Right, %	0%	100%	0%	30%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	324	46	243	406	245	324	142
LT Vol	67	0	243	0	52	65	0
Through Vol	257	0	0	283	132	259	0
RT Vol	0	46	0	123	61	0	142
Lane Flow Rate	334	47	251	419	253	334	146
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.851	0.11	0.651	1.002	0.672	0.84	0.336
Departure Headway (Hd)	9.366	8.524	9.36	8.62	9.718	9.241	8.403
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	423	388	423	374	394	430
Service Time	7.066	6.224	7.06	6.32	7.718	6.941	6.103
HCM Lane V/C Ratio	0.854	0.111	0.647	0.991	0.676	0.848	0.34
HCM Control Delay	47.2	12.3	27.9	74.1	30.5	45.1	15.3
HCM Lane LOS	E	B	D	F	D	E	C
HCM 95th-tile Q	8.1	0.4	4.4	12.6	4.7	7.8	1.5

Intersection	
Int Delay, s/veh	16.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	364	228	0	201	0	0	0	0	407	0	260
Future Vol, veh/h	0	364	228	0	201	0	0	0	0	407	0	260
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	368	230	0	203	0	0	0	0	411	0	263

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			571	-	203
Stage 1	-	-	-	-	-	-			203	-	-
Stage 2	-	-	-	-	-	-			368	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			482	0	838
Stage 1	0	-	0	0	-	0			831	0	-
Stage 2	0	-	0	0	-	0			700	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			482	0	838
Mov Cap-2 Maneuver	-	-	-	-	-	-			482	0	-
Stage 1	-	-	-	-	-	-			831	0	-
Stage 2	-	-	-	-	-	-			700	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	30.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	482	838
HCM Lane V/C Ratio	-	-	0.853	0.313
HCM Control Delay (s)	-	-	42.3	11.2
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	8.8	1.3

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	161	623	0	0	355	497	78	4	408	0	0	0
Future Vol, veh/h	161	623	0	0	355	497	78	4	408	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	168	649	0	0	370	518	81	4	425	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	370	0	-	-	-	0	1355	1355	-
Stage 1	-	-	-	-	-	-	985	985	-
Stage 2	-	-	-	-	-	-	370	370	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1189	-	0	0	-	0	165	149	0
Stage 1	-	-	0	0	-	0	362	326	0
Stage 2	-	-	0	0	-	0	699	620	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1189	-	-	-	-	-	142	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	0	-
Stage 1	-	-	-	-	-	-	311	0	-
Stage 2	-	-	-	-	-	-	699	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0	62.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	142	-	1189	-	-
HCM Lane V/C Ratio	0.602	-	0.141	-	-
HCM Control Delay (s)	62.8	0	8.5	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	3.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	12	19	36	0
Future Vol, veh/h	0	15	12	19	36	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	13	21	39	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	24	24	-	0
Stage 1	24	24	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	992	869	-	-
Stage 1	999	875	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	992	0	-	-
Mov Cap-2 Maneuver	992	0	-	-
Stage 1	999	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	0	15	31	0	5
Future Vol, veh/h	51	0	15	31	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	0	16	34	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	121	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1550	-	874	1012
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	864	1012
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	946	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1012	-	-	1550	-
HCM Lane V/C Ratio	0.005	-	-	0.011	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	19

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	0	0	697	66	479
Future Vol, veh/h	421	0	0	697	66	479
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	495	0	0	820	78	564

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1315	496
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	174	574
Stage 1	-	0	0	-	613	-
Stage 2	-	0	0	-	433	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	174	573
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	433	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	58.1
HCM LOS			F

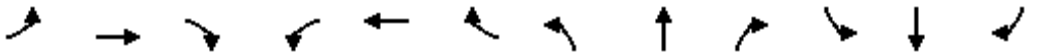
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	174	573	-	-
HCM Lane V/C Ratio	0.446	0.983	-	-
HCM Control Delay (s)	41.4	60.4	-	-
HCM Lane LOS	E	F	-	-
HCM 95th %tile Q(veh)	2.1	14	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	234	739	305	168	653	286	231	560	175	756	174
v/c Ratio	0.71	0.84	0.54	0.27	0.56	0.42	0.85	0.97	0.43	0.93	0.39
Control Delay	64.5	53.1	12.6	44.0	36.1	5.7	75.3	81.4	9.8	63.3	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	53.1	12.6	44.0	36.1	5.7	75.3	81.4	9.8	63.3	9.7
Queue Length 50th (ft)	92	291	34	58	219	0	192	239	0	298	8
Queue Length 95th (ft)	131	#410	123	92	299	65	#343	#361	62	#380	66
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	882	567	612	1171	688	273	575	407	889	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.84	0.54	0.27	0.56	0.42	0.85	0.97	0.43	0.85	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	702	290	160	620	272	244	507	166	259	459	165
Future Volume (veh/h)	222	702	290	160	620	272	244	507	166	259	459	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.86
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	739	305	168	653	286	257	534	175	273	483	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	662	1225	531	299	628	221	292	554	323
Arrive On Green	0.08	0.23	0.23	0.19	0.34	0.34	0.17	0.17	0.17	0.24	0.24	0.24
Sat Flow, veh/h	3456	3554	1519	3456	3554	1539	1781	3741	1319	1237	2348	1371
Grp Volume(v), veh/h	234	739	305	168	653	286	257	534	175	399	357	174
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1539	1781	1870	1319	1809	1777	1371
Q Serve(g_s), s	8.0	24.3	23.3	5.0	17.7	17.9	16.8	16.6	15.3	26.0	23.0	13.3
Cycle Q Clear(g_c), s	8.0	24.3	23.3	5.0	17.7	17.9	16.8	16.6	15.3	26.0	23.0	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.68		1.00
Lane Grp Cap(c), veh/h	288	808	346	662	1225	531	299	628	221	426	419	323
V/C Ratio(X)	0.81	0.91	0.88	0.25	0.53	0.54	0.86	0.85	0.79	0.94	0.85	0.54
Avail Cap(c_a), veh/h	501	808	346	662	1225	531	303	636	224	463	455	351
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	45.2	44.8	41.2	31.6	31.6	48.6	48.5	47.9	45.0	43.9	40.1
Incr Delay (d2), s/veh	2.1	16.6	26.2	0.1	1.7	3.9	20.2	10.0	15.7	24.9	12.6	0.5
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	3.5	12.3	11.1	2.1	7.7	7.1	9.1	8.6	5.8	14.2	11.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	61.8	71.0	41.3	33.2	35.5	68.8	58.5	63.7	69.8	56.4	40.7
LnGrp LOS	E	E	E	D	C	D	E	E	E	E	E	D
Approach Vol, veh/h		1278			1107			966			930	
Approach Delay, s/veh		63.0			35.0			62.2			59.2	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	47.1		24.7	28.7	33.0		33.6				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	10.0	19.9		18.8	7.0	26.3		28.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			54.8									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

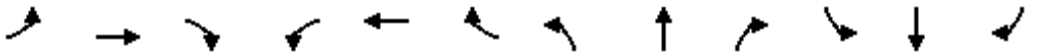


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	145	738	349	156	656	66	419	302	192	400	223
v/c Ratio	0.64	0.59	0.50	0.80	0.55	0.12	0.61	0.81	0.42	1.22	0.55
Control Delay	63.4	36.1	13.3	79.9	36.3	2.2	46.8	62.3	7.7	165.3	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	36.1	13.3	79.9	36.3	2.2	46.8	62.3	7.7	165.3	20.7
Queue Length 50th (ft)	108	244	56	118	213	0	156	229	0	~380	47
Queue Length 95th (ft)	#180	351	164	#219	310	12	188	301	56	#577	129
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1247	700	205	1184	563	984	534	577	328	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.59	0.50	0.76	0.55	0.12	0.43	0.57	0.33	1.22	0.55

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.



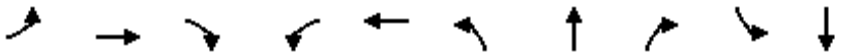
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	686	325	145	610	61	390	281	179	81	291	207
Future Volume (veh/h)	135	686	325	145	610	61	390	281	179	81	291	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	738	349	156	656	66	419	302	192	87	313	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	1301	560	182	880	375	671	363	300	72	258	271
Arrive On Green	0.21	0.37	0.37	0.10	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1531	1781	3554	1515	3456	1870	1546	402	1448	1522
Grp Volume(v), veh/h	145	738	349	156	656	66	419	302	192	400	0	223
Grp Sat Flow(s),veh/h/ln	1781	1777	1531	1781	1777	1515	1728	1870	1546	1850	0	1522
Q Serve(g_s), s	8.3	19.9	22.5	10.3	20.4	4.1	13.3	18.6	13.7	21.4	0.0	16.9
Cycle Q Clear(g_c), s	8.3	19.9	22.5	10.3	20.4	4.1	13.3	18.6	13.7	21.4	0.0	16.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.22		1.00
Lane Grp Cap(c), veh/h	383	1301	560	182	880	375	671	363	300	330	0	271
V/C Ratio(X)	0.38	0.57	0.62	0.86	0.75	0.18	0.62	0.83	0.64	1.21	0.00	0.82
Avail Cap(c_a), veh/h	383	1301	560	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.3	30.4	31.2	53.0	41.7	35.5	44.3	46.5	44.5	49.3	0.0	47.5
Incr Delay (d2), s/veh	0.2	1.8	5.2	29.2	5.7	1.0	0.4	4.5	0.8	120.3	0.0	16.9
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	3.6	8.6	8.8	6.0	9.4	1.6	5.7	9.0	5.3	20.9	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	32.2	36.4	82.2	47.4	36.5	44.7	51.0	45.3	169.6	0.0	64.4
LnGrp LOS	D	C	D	F	D	D	D	D	D	F	A	E
Approach Vol, veh/h		1232			878			913			623	
Approach Delay, s/veh		34.4			52.8			46.9			131.9	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.9	49.2		26.0	31.1	35.0		27.9				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	12.3	24.5		23.4	10.3	22.4		20.6				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.6		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			58.6									
HCM 6th LOS			E									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	84	389	393	289	618	441	871	347	119	591
v/c Ratio	0.55	0.42	0.46	0.68	0.56	0.94	0.65	0.47	0.70	0.83
Control Delay	63.8	37.2	13.6	56.9	34.3	71.4	32.6	10.5	71.1	53.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	37.2	13.6	56.9	34.3	71.4	32.6	10.5	71.1	53.5
Queue Length 50th (ft)	61	126	119	107	194	320	276	50	87	216
Queue Length 95th (ft)	111	174	214	154	265	#579	358	134	147	267
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	917	860	426	1105	470	1340	737	204	863
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	0.44	0.42	0.46	0.68	0.56	0.94	0.65	0.47	0.58	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	370	373	275	465	123	419	827	330	113	474	87
Future Volume (veh/h)	80	370	373	275	465	123	419	827	330	113	474	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	389	393	289	489	129	441	871	347	119	499	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	921	755	576	990	259	393	1235	538	145	597	109
Arrive On Green	0.07	0.26	0.26	0.17	0.36	0.36	0.22	0.35	0.35	0.08	0.20	0.20
Sat Flow, veh/h	1781	3554	1563	3456	2771	726	1781	3554	1549	1781	2980	546
Grp Volume(v), veh/h	84	389	393	289	312	306	441	871	347	119	296	295
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1720	1781	1777	1549	1781	1777	1749
Q Serve(g_s), s	5.3	10.5	0.0	8.7	15.8	16.0	25.4	24.4	13.6	7.6	18.4	18.6
Cycle Q Clear(g_c), s	5.3	10.5	0.0	8.7	15.8	16.0	25.4	24.4	13.6	7.6	18.4	18.6
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	130	921	755	576	635	614	393	1235	538	145	356	351
V/C Ratio(X)	0.65	0.42	0.52	0.50	0.49	0.50	1.12	0.71	0.64	0.82	0.83	0.84
Avail Cap(c_a), veh/h	191	921	755	576	635	614	393	1235	538	206	439	432
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	35.4	20.7	43.6	28.8	28.9	44.8	32.4	12.4	52.0	44.1	44.2
Incr Delay (d2), s/veh	2.0	1.4	2.6	0.3	2.7	2.9	82.4	1.6	2.1	11.1	9.0	9.9
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	2.4	4.8	7.8	3.8	7.3	7.1	20.2	10.8	5.0	3.8	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	36.9	23.2	43.8	31.5	31.8	127.2	34.0	14.5	63.1	53.2	54.1
LnGrp LOS	D	D	C	D	C	C	F	C	B	E	D	D
Approach Vol, veh/h		866			907			1659			710	
Approach Delay, s/veh		32.3			35.5			54.7			55.2	
Approach LOS		C			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	34.0	30.0	27.6	12.1	45.3	13.1	44.6
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.7	12.5	27.4	20.6	7.3	18.0	9.6	26.4
Green Ext Time (p_c), s	0.0	2.5	0.0	1.3	0.0	2.4	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	15	34	25	0	40	34	341	20	29	339	75
Future Vol, veh/h	116	15	34	25	0	40	34	341	20	29	339	75
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	18	40	29	0	47	40	401	24	34	399	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1009	997	410	1037	1061	431	497	0	0	440	0	0
Stage 1	477	477	-	496	496	-	-	-	-	-	-	-
Stage 2	532	520	-	541	565	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	219	244	642	209	224	624	1067	-	-	1120	-	-
Stage 1	569	556	-	556	545	-	-	-	-	-	-	-
Stage 2	531	532	-	525	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	187	222	635	172	204	606	1057	-	-	1104	-	-
Mov Cap-2 Maneuver	187	222	-	172	204	-	-	-	-	-	-	-
Stage 1	542	533	-	527	517	-	-	-	-	-	-	-
Stage 2	464	505	-	461	487	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	61.7	20.5	0.7	0.5
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1057	-	-	190	635	308	1104	-	-
HCM Lane V/C Ratio	0.038	-	-	0.811	0.063	0.248	0.031	-	-
HCM Control Delay (s)	8.5	-	-	74.8	11.1	20.5	8.4	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.7	0.2	1	0.1	-	-

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	11	83	38	15	64	48	224	30	43	278	52
Future Vol, veh/h	113	11	83	38	15	64	48	224	30	43	278	52
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	135	13	99	45	18	76	57	267	36	51	331	62

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	887	869	343	916	895	278	401	0	0	314	0	0
Stage 1	441	441	-	392	392	-	-	-	-	-	-	-
Stage 2	446	428	-	524	503	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	265	290	700	253	280	761	1158	-	-	1246	-	-
Stage 1	595	577	-	633	606	-	-	-	-	-	-	-
Stage 2	591	585	-	537	541	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	209	260	692	192	251	753	1149	-	-	1233	-	-
Mov Cap-2 Maneuver	209	260	-	192	251	-	-	-	-	-	-	-
Stage 1	561	549	-	595	570	-	-	-	-	-	-	-
Stage 2	489	550	-	429	514	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.5	22.7	1.3	0.9
HCM LOS	D	C		

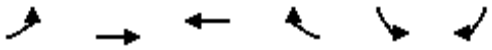
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1149	-	-	209	579	341	1233	-	-
HCM Lane V/C Ratio	0.05	-	-	0.644	0.193	0.408	0.042	-	-
HCM Control Delay (s)	8.3	-	-	48.9	12.7	22.7	8	-	-
HCM Lane LOS	A	-	-	E	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.8	0.7	1.9	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	117	186	244	267	418
v/c Ratio	0.42	0.11	0.57	0.17	0.73
Control Delay	28.2	8.2	26.6	0.2	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	8.2	26.6	0.2	26.5
Queue Length 50th (ft)	38	17	78	0	112
Queue Length 95th (ft)	87	31	150	0	#290
Internal Link Dist (ft)		427	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	615	3073	809	1551	619
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	0.30	0.17	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	175	229	251	236	157
Future Volume (veh/h)	110	175	229	251	236	157
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	186	244	0	251	167
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	200	1645	415		299	199
Arrive On Green	0.11	0.46	0.22	0.00	0.29	0.29
Sat Flow, veh/h	1781	3647	1870	1585	1017	677
Grp Volume(v), veh/h	117	186	244	0	419	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1698	0
Q Serve(g_s), s	2.8	1.3	5.2	0.0	10.4	0.0
Cycle Q Clear(g_c), s	2.8	1.3	5.2	0.0	10.4	0.0
Prop In Lane	1.00			1.00	0.60	0.40
Lane Grp Cap(c), veh/h	200	1645	415		500	0
V/C Ratio(X)	0.59	0.11	0.59		0.84	0.00
Avail Cap(c_a), veh/h	793	1978	1041		756	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	18.9	6.8	15.6	0.0	14.8	0.0
Incr Delay (d2), s/veh	2.7	0.0	1.3	0.0	5.2	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	1.2	0.4	2.1	0.0	4.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.7	6.9	17.0	0.0	20.1	0.0
LnGrp LOS	C	A	B		C	A
Approach Vol, veh/h		303	244	A	419	
Approach Delay, s/veh		12.6	17.0		20.1	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.6		18.3	10.8	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.3		12.4	4.8	7.2
Green Ext Time (p_c), s		1.1		0.9	0.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	49.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	255	76	52	200	50	87	219	60	83	229	254
Future Vol, veh/h	146	255	76	52	200	50	87	219	60	83	229	254
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	159	277	83	57	217	54	95	238	65	90	249	276
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	49.3	59	51.6	44.5
HCM LOS	E	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	28%	0%	100%	0%	17%	27%	0%
Vol Thru, %	72%	0%	0%	77%	66%	73%	0%
Vol Right, %	0%	100%	0%	23%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	306	60	146	331	302	312	254
LT Vol	87	0	146	0	52	83	0
Through Vol	219	0	0	255	200	229	0
RT Vol	0	60	0	76	50	0	254
Lane Flow Rate	333	65	159	360	328	339	276
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.909	0.162	0.442	0.934	0.905	0.908	0.672
Departure Headway (Hd)	9.837	8.951	10.036	9.344	9.93	9.64	8.764
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	369	400	359	389	364	376	411
Service Time	7.619	6.732	7.822	7.13	8.022	7.433	6.557
HCM Lane V/C Ratio	0.902	0.163	0.443	0.925	0.901	0.902	0.672
HCM Control Delay	59.1	13.5	20.6	62	59	58.1	27.9
HCM Lane LOS	F	B	C	F	F	F	D
HCM 95th-tile Q	9.2	0.6	2.2	10.1	9.1	9.3	4.8

Intersection	
Int Delay, s/veh	33.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	193	199	0	320	0	0	0	0	496	0	257
Future Vol, veh/h	0	193	199	0	320	0	0	0	0	496	0	257
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	203	209	0	337	0	0	0	0	522	0	271

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			540	-	337
Stage 1	-	-	-	-	-	-			337	-	-
Stage 2	-	-	-	-	-	-			203	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			~ 503	0	705
Stage 1	0	-	0	0	-	0			723	0	-
Stage 2	0	-	0	0	-	0			831	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			~ 503	0	705
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 503	0	-
Stage 1	-	-	-	-	-	-			723	0	-
Stage 2	-	-	-	-	-	-			831	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	56.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	503	705
HCM Lane V/C Ratio	-	-	1.038	0.384
HCM Control Delay (s)	-	-	79.2	13.3
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	15.2	1.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	73.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	137	551	0	0	419	664	241	13	445	0	0	0
Future Vol, veh/h	137	551	0	0	419	664	241	13	445	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	143	574	0	0	436	692	251	14	464	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	436	0	-	-	-	0	1296	1296	-
Stage 1	-	-	-	-	-	-	860	860	-
Stage 2	-	-	-	-	-	-	436	436	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1124	-	0	0	-	0	~ 179	162	0
Stage 1	-	-	0	0	-	0	414	373	0
Stage 2	-	-	0	0	-	0	652	580	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1124	-	-	-	-	-	~ 156	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 156	0	-
Stage 1	-	-	-	-	-	-	361	0	-
Stage 2	-	-	-	-	-	-	652	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	$ 390
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	156	-	1124	-	-
HCM Lane V/C Ratio	1.696	-	0.127	-	-
HCM Control Delay (s)	$ 390	0	8.7	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	18.8	-	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	82	0	0	535	24	570
Future Vol, veh/h	82	0	0	535	24	570
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	0	0	608	27	648

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	701	99
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	608	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	405	957
Stage 1	-	0	0	-	931	-
Stage 2	-	0	0	-	543	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	405	952
Mov Cap-2 Maneuver	-	-	-	-	405	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	405	952	-	-
HCM Lane V/C Ratio	0.067	0.68	-	-
HCM Control Delay (s)	14.5	16.4	-	-
HCM Lane LOS	B	C	-	-
HCM 95th %tile Q(veh)	0.2	5.6	-	-

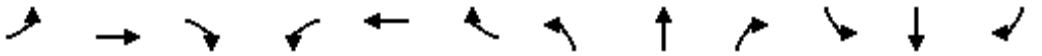


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	386	1086	344	246	957	329	288	605	143	764	168
v/c Ratio	0.70	0.99	0.57	0.73	1.09	0.55	0.99	1.00	0.35	0.93	0.34
Control Delay	54.9	66.5	20.2	65.0	101.4	11.7	99.7	85.1	6.5	63.7	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	66.5	20.2	65.0	101.4	11.7	99.7	85.1	6.5	63.7	7.5
Queue Length 50th (ft)	147	~452	98	97	~457	31	247	259	0	301	1
Queue Length 95th (ft)	201	#661	211	137	#602	122	#445	#390	40	#396	56
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1098	603	583	876	594	291	607	414	889	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.99	0.57	0.42	1.09	0.55	0.99	1.00	0.35	0.86	0.32

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	1032	327	234	909	313	375	473	136	272	454	160
Future Volume (veh/h)	367	1032	327	234	909	313	375	473	136	272	454	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	386	1086	344	246	957	329	298	634	143	286	478	168
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	589	1138	502	300	808	353	322	676	281	305	548	364
Arrive On Green	0.17	0.32	0.32	0.09	0.23	0.23	0.18	0.18	0.18	0.24	0.24	0.24
Sat Flow, veh/h	3456	3554	1568	3456	3554	1550	1781	3741	1553	1281	2302	1531
Grp Volume(v), veh/h	386	1086	344	246	957	329	298	634	143	403	361	168
Grp Sat Flow(s),veh/h/ln	1728	1777	1568	1728	1777	1550	1781	1870	1553	1806	1777	1531
Q Serve(g_s), s	12.5	35.9	22.9	8.4	27.3	25.0	19.7	20.1	10.0	26.3	23.3	11.3
Cycle Q Clear(g_c), s	12.5	35.9	22.9	8.4	27.3	25.0	19.7	20.1	10.0	26.3	23.3	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.71		1.00
Lane Grp Cap(c), veh/h	589	1138	502	300	808	353	322	676	281	430	423	364
V/C Ratio(X)	0.66	0.95	0.69	0.82	1.18	0.93	0.93	0.94	0.51	0.94	0.85	0.46
Avail Cap(c_a), veh/h	589	1138	502	587	808	353	322	676	281	462	455	392
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	39.9	35.5	53.9	46.3	45.5	48.4	48.5	44.3	44.9	43.7	39.1
Incr Delay (d2), s/veh	2.1	17.7	7.4	2.1	95.1	33.6	31.0	20.4	0.6	25.4	12.9	0.3
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	5.5	17.9	9.5	3.7	22.4	12.6	11.5	11.2	3.8	14.4	11.4	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	57.7	42.9	56.0	141.5	79.0	79.4	68.9	45.0	70.3	56.6	39.5
LnGrp LOS	D	E	D	E	F	E	E	E	D	E	E	D
Approach Vol, veh/h		1816			1532			1075			932	
Approach Delay, s/veh		52.9			114.4			68.6			59.4	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.2	33.0		27.0	15.0	44.1		33.8				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	14.5	29.3		22.1	10.4	37.9		28.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		74.8	
HCM 6th LOS		E	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



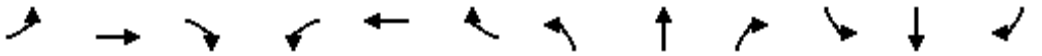
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	276	1062	320	171	857	65	558	329	154	337	180
v/c Ratio	0.88	0.89	0.52	0.87	0.88	0.14	0.77	0.84	0.35	1.03	0.45
Control Delay	76.8	48.6	20.9	89.4	55.4	15.7	51.3	62.8	7.4	107.2	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	48.6	20.9	89.4	55.4	15.7	51.3	62.8	7.4	107.2	13.9
Queue Length 50th (ft)	205	400	98	140	368	14	213	249	0	~280	18
Queue Length 95th (ft)	#374	#637	215	#265	#560	m45	248	322	50	#466	84
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	323	1199	612	197	969	470	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.89	0.52	0.87	0.88	0.14	0.57	0.62	0.28	1.03	0.45

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.

m Volume for 95th percentile queue is metered by upstream signal.



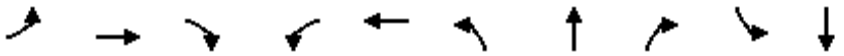
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1030	310	166	831	63	541	319	149	119	208	175
Future Volume (veh/h)	268	1030	310	166	831	63	541	319	149	119	208	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	276	1062	320	171	857	65	558	329	154	123	214	180
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	939	397	330	1018	434	715	387	315	120	208	271
Arrive On Green	0.17	0.26	0.26	0.19	0.29	0.29	0.21	0.21	0.21	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1504	1781	3554	1516	3456	1870	1524	670	1166	1517
Grp Volume(v), veh/h	276	1062	320	171	857	65	558	329	154	337	0	180
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1516	1728	1870	1524	1837	0	1517
Q Serve(g_s), s	18.3	31.7	23.9	10.4	27.2	3.8	18.3	20.3	10.7	21.4	0.0	13.3
Cycle Q Clear(g_c), s	18.3	31.7	23.9	10.4	27.2	3.8	18.3	20.3	10.7	21.4	0.0	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	301	939	397	330	1018	434	715	387	315	328	0	271
V/C Ratio(X)	0.92	1.13	0.81	0.52	0.84	0.15	0.78	0.85	0.49	1.03	0.00	0.67
Avail Cap(c_a), veh/h	303	939	397	330	1018	434	991	536	437	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	44.2	41.3	44.0	40.3	31.9	45.0	45.8	42.0	49.3	0.0	46.0
Incr Delay (d2), s/veh	30.4	72.5	15.9	0.7	8.4	0.7	1.7	6.9	0.4	57.3	0.0	4.9
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	10.5	23.0	10.4	4.6	12.7	1.5	7.9	10.1	4.0	15.1	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	116.7	57.1	44.7	48.7	32.6	46.7	52.7	42.4	106.6	0.0	50.9
LnGrp LOS	E	F	E	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1658			1093			1041			517	
Approach Delay, s/veh		99.0			47.1			48.0			87.2	
Approach LOS		F			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.6	37.0		26.0	24.9	39.7		29.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	12.4	33.7		23.4	20.3	29.2		22.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		72.1	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	79	541	724	449	532	458	757	387	118	860
v/c Ratio	0.53	0.62	0.94	0.86	0.45	1.18	0.59	0.52	0.67	1.03
Control Delay	65.8	43.6	45.4	66.5	32.7	145.0	33.6	11.2	89.9	73.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	43.6	45.4	66.5	32.7	145.0	33.6	11.2	89.9	73.2
Queue Length 50th (ft)	60	196	431	176	167	~424	245	54	90	~280
Queue Length 95th (ft)	109	257	#744	#260	232	#631	332	157	m114	m#436
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	774	523	1178	389	1290	740	255	832
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	0.38	0.62	0.94	0.86	0.45	1.18	0.59	0.52	0.46	1.03

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	514	688	427	440	66	435	719	368	112	766	51
Future Volume (veh/h)	75	514	688	427	440	66	435	719	368	112	766	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	541	724	449	463	69	458	757	387	118	806	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	882	732	513	1027	152	392	1363	593	143	798	53
Arrive On Green	0.07	0.25	0.25	0.15	0.33	0.33	0.22	0.38	0.38	0.08	0.24	0.24
Sat Flow, veh/h	1781	3554	1543	3456	3100	459	1781	3554	1546	1781	3371	226
Grp Volume(v), veh/h	79	541	724	449	264	268	458	757	387	118	425	435
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1782	1781	1777	1546	1781	1777	1820
Q Serve(g_s), s	5.2	16.2	28.7	15.3	14.0	14.2	26.4	20.0	15.8	7.8	28.4	28.4
Cycle Q Clear(g_c), s	5.2	16.2	28.7	15.3	14.0	14.2	26.4	20.0	15.8	7.8	28.4	28.4
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	124	882	732	513	589	590	392	1363	593	143	421	431
V/C Ratio(X)	0.64	0.61	0.99	0.88	0.45	0.45	1.17	0.56	0.65	0.82	1.01	1.01
Avail Cap(c_a), veh/h	212	882	732	513	589	590	392	1363	593	257	421	431
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	40.0	31.4	50.0	31.5	31.6	46.8	29.0	12.5	54.3	45.8	45.8
Incr Delay (d2), s/veh	2.0	3.2	30.8	15.1	2.5	2.5	100.1	1.6	5.5	4.4	46.4	46.0
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	2.4	7.5	14.9	7.7	6.5	6.6	22.6	8.9	6.3	3.7	18.0	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.4	43.2	62.2	65.1	34.0	34.1	146.9	30.6	18.0	58.7	92.2	91.8
LnGrp LOS	E	D	E	E	C	C	F	C	B	E	F	F
Approach Vol, veh/h		1344			981			1602			978	
Approach Delay, s/veh		54.2			48.2			60.8			88.0	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	34.0	31.0	33.0	12.1	43.9	13.4	50.6
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	17.3	30.7	28.4	30.4	7.2	16.2	9.8	22.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	2.1	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	61.9
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	12	27	19	13	37	35	496	35	39	405	106
Future Vol, veh/h	59	12	27	19	13	37	35	496	35	39	405	106
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	13	30	21	14	41	39	551	39	43	450	118

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1221	1217	455	1256	1296	565	572	0	0	599	0	0
Stage 1	540	540	-	638	638	-	-	-	-	-	-	-
Stage 2	681	677	-	618	658	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	157	181	605	148	162	524	1001	-	-	978	-	-
Stage 1	526	521	-	465	471	-	-	-	-	-	-	-
Stage 2	440	452	-	477	461	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	164	602	123	147	517	997	-	-	970	-	-
Mov Cap-2 Maneuver	124	164	-	123	147	-	-	-	-	-	-	-
Stage 1	503	496	-	443	448	-	-	-	-	-	-	-
Stage 2	375	430	-	421	439	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	53.3	30	0.5	0.6
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	997	-	-	129	602	219	970	-	-
HCM Lane V/C Ratio	0.039	-	-	0.612	0.05	0.35	0.045	-	-
HCM Control Delay (s)	8.8	-	-	69.3	11.3	30	8.9	-	-
HCM Lane LOS	A	-	-	F	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.1	0.2	1.5	0.1	-	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	12	57	24	0	51	102	314	37	69	373	93
Future Vol, veh/h	75	12	57	24	0	51	102	314	37	69	373	93
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	13	63	27	0	57	113	349	41	77	414	103

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1196	1193	434	1254	1255	354	521	0	0	395	0	0
Stage 1	572	572	-	580	580	-	-	-	-	-	-	-
Stage 2	624	621	-	674	675	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	163	187	622	149	172	690	1045	-	-	1164	-	-
Stage 1	505	504	-	500	500	-	-	-	-	-	-	-
Stage 2	473	479	-	444	453	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	130	154	610	107	142	687	1041	-	-	1158	-	-
Mov Cap-2 Maneuver	130	154	-	107	142	-	-	-	-	-	-	-
Stage 1	448	469	-	444	444	-	-	-	-	-	-	-
Stage 2	387	425	-	355	421	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.4	26.3	2	1.1
HCM LOS	E	D		

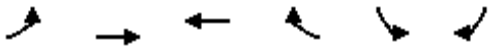
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1041	-	-	130	403	251	1158	-	-
HCM Lane V/C Ratio	0.109	-	-	0.641	0.19	0.332	0.066	-	-
HCM Control Delay (s)	8.9	-	-	72.4	16	26.3	8.3	-	-
HCM Lane LOS	A	-	-	F	C	D	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.7	1.4	0.2	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	214	417	243	302	558
v/c Ratio	0.60	0.23	0.60	0.19	0.97
Control Delay	31.2	8.6	29.8	0.3	55.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	8.6	29.8	0.3	55.6
Queue Length 50th (ft)	75	43	84	0	188
Queue Length 95th (ft)	150	63	165	0	#487
Internal Link Dist (ft)		268	2338		650
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	558	2837	735	1551	575
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.15	0.33	0.19	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	201	392	228	284	260	264
Future Volume (veh/h)	201	392	228	284	260	264
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	214	417	243	0	277	281
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	274	1572	341		298	303
Arrive On Green	0.15	0.44	0.18	0.00	0.36	0.36
Sat Flow, veh/h	1781	3647	1870	1585	831	843
Grp Volume(v), veh/h	214	417	243	0	559	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1677	0
Q Serve(g_s), s	6.3	4.1	6.7	0.0	17.6	0.0
Cycle Q Clear(g_c), s	6.3	4.1	6.7	0.0	17.6	0.0
Prop In Lane	1.00			1.00	0.50	0.50
Lane Grp Cap(c), veh/h	274	1572	341		602	0
V/C Ratio(X)	0.78	0.27	0.71		0.93	0.00
Avail Cap(c_a), veh/h	650	1620	853		612	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	22.3	9.7	21.1	0.0	16.9	0.0
Incr Delay (d2), s/veh	4.8	0.1	2.8	0.0	20.5	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	2.8	1.3	2.9	0.0	9.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.1	9.8	23.8	0.0	37.4	0.0
LnGrp LOS	C	A	C		D	A
Approach Vol, veh/h		631	243	A	559	
Approach Delay, s/veh		15.6	23.8		37.4	
Approach LOS		B	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.0		24.8	14.2	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		6.1		19.6	8.3	8.7
Green Ext Time (p_c), s		2.6		0.1	0.5	1.2

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	116.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	267	404	147	62	203	71	114	267	56	75	269	208
Future Vol, veh/h	267	404	147	62	203	71	114	267	56	75	269	208
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	275	416	152	64	209	73	118	275	58	77	277	214
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	188.9	74	93.2	54.2
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	30%	0%	100%	0%	18%	22%	0%
Vol Thru, %	70%	0%	0%	73%	60%	78%	0%
Vol Right, %	0%	100%	0%	27%	21%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	381	56	267	551	336	344	208
LT Vol	114	0	267	0	62	75	0
Through Vol	267	0	0	404	203	269	0
RT Vol	0	56	0	147	71	0	208
Lane Flow Rate	393	58	275	568	346	355	214
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	1.08	0.145	0.778	1.491	0.961	0.965	0.535
Departure Headway (Hd)	10.484	9.585	10.555	9.833	10.822	10.483	9.626
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	350	376	344	375	339	348	377
Service Time	8.184	7.285	8.255	7.533	8.822	8.183	7.326
HCM Lane V/C Ratio	1.123	0.154	0.799	1.515	1.021	1.02	0.568
HCM Control Delay	104.8	13.9	42	260.1	74	73.2	22.9
HCM Lane LOS	F	B	E	F	F	F	C
HCM 95th-tile Q	13.6	0.5	6.3	29.4	10.2	10.4	3

Intersection	
Int Delay, s/veh	35.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	404	440	0	330	0	0	0	0	421	0	282
Future Vol, veh/h	0	404	440	0	330	0	0	0	0	421	0	282
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	408	444	0	333	0	0	0	0	425	0	285

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			741	-	333
Stage 1	-	-	-	-	-	-			333	-	-
Stage 2	-	-	-	-	-	-			408	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			~ 384	0	709
Stage 1	0	-	0	0	-	0			726	0	-
Stage 2	0	-	0	0	-	0			671	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			~ 384	0	709
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 384	0	-
Stage 1	-	-	-	-	-	-			726	0	-
Stage 2	-	-	-	-	-	-			671	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	71.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	384	709
HCM Lane V/C Ratio	-	-	1.107	0.402
HCM Control Delay (s)	-	-	111	13.4
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	15.5	1.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	53.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	195	695	0	0	564	507	144	5	423	0	0	0
Future Vol, veh/h	195	695	0	0	564	507	144	5	423	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	203	724	0	0	588	528	150	5	441	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	588	0	-	-	-	0	1718	1718	-
Stage 1	-	-	-	-	-	-	1130	1130	-
Stage 2	-	-	-	-	-	-	588	588	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	987	-	0	0	-	0	~ 99	90	0
Stage 1	-	-	0	0	-	0	308	279	0
Stage 2	-	-	0	0	-	0	555	496	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	987	-	-	-	-	-	~ 79	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 79	0	-
Stage 1	-	-	-	-	-	-	245	0	-
Stage 2	-	-	-	-	-	-	555	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.1	0	$ 563.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	79	-	987	-	-
HCM Lane V/C Ratio	1.965	-	0.206	-	-
HCM Control Delay (s)	$ 563.3	0	9.6	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	13.8	-	0.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	19.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	0	0	697	66	481
Future Vol, veh/h	421	0	0	697	66	481
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	495	0	0	820	78	566

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1315	496
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	820	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	174	574
Stage 1	-	0	0	-	613	-
Stage 2	-	0	0	-	433	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	174	573
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	433	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	59
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	174	573	-	-
HCM Lane V/C Ratio	0.446	0.988	-	-
HCM Control Delay (s)	41.4	61.4	-	-
HCM Lane LOS	E	F	-	-
HCM 95th %tile Q(veh)	2.1	14.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	234	739	305	168	653	286	231	560	175	758	174
v/c Ratio	0.71	0.84	0.54	0.27	0.56	0.42	0.85	0.97	0.43	0.93	0.39
Control Delay	64.5	53.1	12.6	44.0	36.1	5.7	75.3	81.4	9.8	63.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.5	53.1	12.6	44.0	36.1	5.7	75.3	81.4	9.8	63.5	9.7
Queue Length 50th (ft)	92	291	34	58	219	0	192	239	0	299	8
Queue Length 95th (ft)	131	#410	123	92	299	65	#343	#361	62	#381	66
Internal Link Dist (ft)		510			875			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	497	881	566	612	1170	687	273	575	407	889	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.84	0.54	0.27	0.56	0.42	0.85	0.97	0.43	0.85	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	702	290	160	620	272	244	507	166	261	459	165
Future Volume (veh/h)	222	702	290	160	620	272	244	507	166	261	459	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.83	1.00		0.87
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	739	305	168	653	286	257	534	175	275	483	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	808	346	660	1223	530	299	628	221	294	553	324
Arrive On Green	0.08	0.23	0.23	0.19	0.34	0.34	0.17	0.17	0.17	0.24	0.24	0.24
Sat Flow, veh/h	3456	3554	1519	3456	3554	1539	1781	3741	1319	1243	2342	1371
Grp Volume(v), veh/h	234	739	305	168	653	286	257	534	175	400	358	174
Grp Sat Flow(s),veh/h/ln	1728	1777	1519	1728	1777	1539	1781	1870	1319	1808	1777	1371
Q Serve(g_s), s	8.0	24.3	23.3	5.0	17.7	18.0	16.8	16.6	15.3	26.0	23.1	13.3
Cycle Q Clear(g_c), s	8.0	24.3	23.3	5.0	17.7	18.0	16.8	16.6	15.3	26.0	23.1	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.69		1.00
Lane Grp Cap(c), veh/h	288	808	346	660	1223	530	299	628	221	427	420	324
V/C Ratio(X)	0.81	0.91	0.88	0.25	0.53	0.54	0.86	0.85	0.79	0.94	0.85	0.54
Avail Cap(c_a), veh/h	501	808	346	660	1223	530	303	636	224	463	455	351
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	45.2	44.8	41.3	31.6	31.7	48.6	48.5	47.9	44.9	43.8	40.1
Incr Delay (d2), s/veh	2.1	16.6	26.2	0.1	1.7	3.9	20.2	10.0	15.7	25.0	12.6	0.5
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	3.5	12.3	11.1	2.1	7.7	7.1	9.1	8.6	5.8	14.2	11.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	61.8	71.0	41.4	33.3	35.6	68.8	58.5	63.7	69.9	56.5	40.6
LnGrp LOS	E	E	E	D	C	D	E	E	E	E	E	D
Approach Vol, veh/h		1278			1107			966			932	
Approach Delay, s/veh		63.0			35.1			62.2			59.3	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	47.0		24.7	28.6	33.0		33.7				
Change Period (Y+Rc), s	4.6	5.7		4.6	5.7	* 5.7		5.3				
Max Green Setting (Gmax), s	17.4	31.3		20.4	20.4	* 27		30.7				
Max Q Clear Time (g_c+I1), s	10.0	20.0		18.8	7.0	26.3		28.0				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			54.8									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

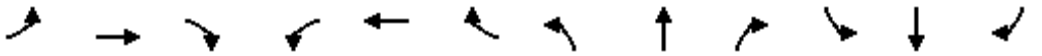


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	145	738	352	158	656	66	419	302	192	402	223
v/c Ratio	0.64	0.59	0.50	0.80	0.55	0.12	0.61	0.81	0.42	1.23	0.55
Control Delay	63.4	36.3	13.4	79.7	36.3	2.2	46.8	62.3	7.7	167.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	36.3	13.4	79.7	36.3	2.2	46.8	62.3	7.7	167.5	20.7
Queue Length 50th (ft)	108	245	56	119	213	0	156	229	0	~383	47
Queue Length 95th (ft)	#180	351	166	#222	310	12	188	301	56	#582	129
Internal Link Dist (ft)		527			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	227	1243	700	207	1184	563	984	534	577	328	404
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.59	0.50	0.76	0.55	0.12	0.43	0.57	0.33	1.23	0.55

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.



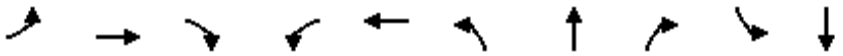
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	686	327	147	610	61	390	281	179	81	293	207
Future Volume (veh/h)	135	686	327	147	610	61	390	281	179	81	293	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.98	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	738	352	158	656	66	419	302	192	87	315	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	1297	559	184	880	375	671	363	300	71	259	271
Arrive On Green	0.21	0.36	0.36	0.10	0.25	0.25	0.19	0.19	0.19	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1530	1781	3554	1515	3456	1870	1546	400	1450	1522
Grp Volume(v), veh/h	145	738	352	158	656	66	419	302	192	402	0	223
Grp Sat Flow(s),veh/h/ln	1781	1777	1530	1781	1777	1515	1728	1870	1546	1850	0	1522
Q Serve(g_s), s	8.3	20.0	22.8	10.5	20.4	4.1	13.3	18.6	13.7	21.4	0.0	16.9
Cycle Q Clear(g_c), s	8.3	20.0	22.8	10.5	20.4	4.1	13.3	18.6	13.7	21.4	0.0	16.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.22		1.00
Lane Grp Cap(c), veh/h	383	1297	559	184	880	375	671	363	300	330	0	271
V/C Ratio(X)	0.38	0.57	0.63	0.86	0.75	0.18	0.62	0.83	0.64	1.22	0.00	0.82
Avail Cap(c_a), veh/h	383	1297	559	184	880	375	991	536	443	330	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.3	30.5	31.4	52.9	41.7	35.5	44.3	46.5	44.5	49.3	0.0	47.5
Incr Delay (d2), s/veh	0.2	1.8	5.3	29.8	5.7	1.0	0.4	4.5	0.8	122.6	0.0	16.9
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	3.6	8.6	9.0	6.1	9.4	1.6	5.7	9.0	5.3	21.2	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.5	32.4	36.7	82.8	47.4	36.5	44.7	51.0	45.3	171.9	0.0	64.4
LnGrp LOS	D	C	D	F	D	D	D	D	D	F	A	E
Approach Vol, veh/h		1235			880			913			625	
Approach Delay, s/veh		34.6			52.9			46.9			133.5	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.0	49.1		26.0	31.1	35.0		27.9				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.4	32.7		21.4	14.4	* 30		34.4				
Max Q Clear Time (g_c+I1), s	12.5	24.8		23.4	10.3	22.4		20.6				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.6		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			59.0									
HCM 6th LOS			E									

Notes

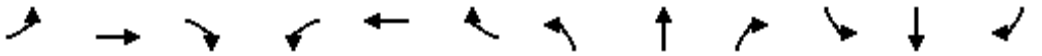
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	84	393	395	289	623	445	871	347	119	591
v/c Ratio	0.55	0.43	0.46	0.68	0.56	0.95	0.65	0.47	0.70	0.83
Control Delay	63.8	37.3	13.7	56.9	34.4	73.0	32.6	10.5	71.1	53.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	37.3	13.7	56.9	34.4	73.0	32.6	10.5	71.1	53.5
Queue Length 50th (ft)	61	127	120	107	195	324	276	50	87	216
Queue Length 95th (ft)	111	175	215	154	268	#585	358	134	147	267
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	189	917	860	426	1105	470	1340	737	204	863
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	0.44	0.43	0.46	0.68	0.56	0.95	0.65	0.47	0.58	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	373	375	275	469	123	423	827	330	113	474	87
Future Volume (veh/h)	80	373	375	275	469	123	423	827	330	113	474	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	393	395	289	494	129	445	871	347	119	499	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	921	755	576	992	257	393	1235	538	145	597	109
Arrive On Green	0.07	0.26	0.26	0.17	0.36	0.36	0.22	0.35	0.35	0.08	0.20	0.20
Sat Flow, veh/h	1781	3554	1563	3456	2777	720	1781	3554	1549	1781	2980	546
Grp Volume(v), veh/h	84	393	395	289	315	308	445	871	347	119	296	295
Grp Sat Flow(s),veh/h/ln	1781	1777	1563	1728	1777	1721	1781	1777	1549	1781	1777	1749
Q Serve(g_s), s	5.3	10.6	0.0	8.7	15.9	16.1	25.4	24.4	13.6	7.6	18.4	18.6
Cycle Q Clear(g_c), s	5.3	10.6	0.0	8.7	15.9	16.1	25.4	24.4	13.6	7.6	18.4	18.6
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	130	921	755	576	635	615	393	1235	538	145	356	351
V/C Ratio(X)	0.65	0.43	0.52	0.50	0.50	0.50	1.13	0.71	0.64	0.82	0.83	0.84
Avail Cap(c_a), veh/h	191	921	755	576	635	615	393	1235	538	206	439	432
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	35.5	20.7	43.6	28.9	28.9	44.8	32.4	12.4	52.0	44.1	44.2
Incr Delay (d2), s/veh	2.0	1.4	2.6	0.3	2.8	2.9	86.0	1.6	2.1	11.1	9.0	9.9
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	2.4	4.8	7.9	3.8	7.3	7.2	20.6	10.8	5.0	3.8	9.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	36.9	23.3	43.8	31.6	31.8	130.8	34.0	14.5	63.1	53.2	54.1
LnGrp LOS	D	D	C	D	C	C	F	C	B	E	D	D
Approach Vol, veh/h		872			912			1663			710	
Approach Delay, s/veh		32.4			35.6			55.8			55.2	
Approach LOS		C			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	34.0	30.0	27.6	12.1	45.3	13.1	44.6
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 12	* 30	25.4	28.4	12.3	* 32	13.3	34.4
Max Q Clear Time (g_c+I1), s	10.7	12.6	27.4	20.6	7.3	18.1	9.6	26.4
Green Ext Time (p_c), s	0.0	2.5	0.0	1.3	0.0	2.4	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	116	15	34	25	0	40	34	341	20	29	347	75
Future Vol, veh/h	116	15	34	25	0	40	34	341	20	29	347	75
Conflicting Peds, #/hr	15	0	1	1	0	15	10	0	15	15	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	18	40	29	0	47	40	401	24	34	408	88

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1018	1006	419	1046	1070	431	506	0	0	440	0	0
Stage 1	486	486	-	496	496	-	-	-	-	-	-	-
Stage 2	532	520	-	550	574	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	216	241	634	206	221	624	1059	-	-	1120	-	-
Stage 1	563	551	-	556	545	-	-	-	-	-	-	-
Stage 2	531	532	-	519	503	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	184	219	627	169	201	606	1049	-	-	1104	-	-
Mov Cap-2 Maneuver	184	219	-	169	201	-	-	-	-	-	-	-
Stage 1	537	528	-	527	517	-	-	-	-	-	-	-
Stage 2	464	505	-	455	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	64.2	20.8	0.7	0.5
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1049	-	-	187	627	304	1104	-	-
HCM Lane V/C Ratio	0.038	-	-	0.824	0.064	0.252	0.031	-	-
HCM Control Delay (s)	8.6	-	-	78	11.1	20.8	8.4	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.8	0.2	1	0.1	-	-

Intersection	
Int Delay, s/veh	10.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	11	84	38	15	64	48	224	30	43	286	52
Future Vol, veh/h	113	11	84	38	15	64	48	224	30	43	286	52
Conflicting Peds, #/hr	0	0	4	4	0	0	8	0	11	11	0	8
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	135	13	100	45	18	76	57	267	36	51	340	62

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	896	878	352	926	904	278	410	0	0	314	0	0
Stage 1	450	450	-	392	392	-	-	-	-	-	-	-
Stage 2	446	428	-	534	512	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	261	287	692	249	277	761	1149	-	-	1246	-	-
Stage 1	589	572	-	633	606	-	-	-	-	-	-	-
Stage 2	591	585	-	530	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	205	257	684	188	248	753	1140	-	-	1233	-	-
Mov Cap-2 Maneuver	205	257	-	188	248	-	-	-	-	-	-	-
Stage 1	555	544	-	595	570	-	-	-	-	-	-	-
Stage 2	489	550	-	422	510	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.5	23	1.3	0.9
HCM LOS	D	C		

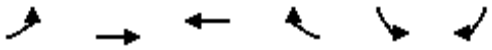
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	205	574	337	1233	-	-
HCM Lane V/C Ratio	0.05	-	-	0.656	0.197	0.413	0.042	-	-
HCM Control Delay (s)	8.3	-	-	50.9	12.8	23	8	-	-
HCM Lane LOS	A	-	-	F	B	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4	0.7	2	0.1	-	-



Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	139	186	244	283	441
v/c Ratio	0.47	0.11	0.59	0.18	0.74
Control Delay	29.0	8.2	27.8	0.3	28.1
Queue Delay	0.0	0.0	0.0	0.0	2.0
Total Delay	29.0	8.2	27.8	0.3	30.1
Queue Length 50th (ft)	46	17	79	0	125
Queue Length 95th (ft)	101	31	153	0	#326
Internal Link Dist (ft)		427	2338		209
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	589	2995	776	1551	596
Starvation Cap Reductn	0	0	0	0	61
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.06	0.31	0.18	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	175	229	266	248	166
Future Volume (veh/h)	131	175	229	266	248	166
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	139	186	244	0	264	177
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	220	1638	399		310	208
Arrive On Green	0.12	0.46	0.21	0.00	0.31	0.31
Sat Flow, veh/h	1781	3647	1870	1585	1014	680
Grp Volume(v), veh/h	139	186	244	0	442	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1697	0
Q Serve(g_s), s	3.5	1.4	5.5	0.0	11.4	0.0
Cycle Q Clear(g_c), s	3.5	1.4	5.5	0.0	11.4	0.0
Prop In Lane	1.00			1.00	0.60	0.40
Lane Grp Cap(c), veh/h	220	1638	399		519	0
V/C Ratio(X)	0.63	0.11	0.61		0.85	0.00
Avail Cap(c_a), veh/h	763	1904	1002		727	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.5	7.2	16.6	0.0	15.2	0.0
Incr Delay (d2), s/veh	3.0	0.0	1.5	0.0	7.0	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	1.5	0.4	2.2	0.0	4.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.5	7.2	18.1	0.0	22.2	0.0
LnGrp LOS	C	A	B		C	A
Approach Vol, veh/h		325	244	A	442	
Approach Delay, s/veh		13.7	18.1		22.2	
Approach LOS		B	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		27.3		19.4	11.6	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		3.4		13.4	5.5	7.5
Green Ext Time (p_c), s		1.1		0.9	0.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	51.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	255	76	52	202	50	90	219	60	83	229	255
Future Vol, veh/h	146	255	76	52	202	50	90	219	60	83	229	255
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	159	277	83	57	220	54	98	238	65	90	249	277
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	50.1	61.1	53.7	45.3
HCM LOS	F	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	29%	0%	100%	0%	17%	27%	0%
Vol Thru, %	71%	0%	0%	77%	66%	73%	0%
Vol Right, %	0%	100%	0%	23%	16%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	60	146	331	304	312	255
LT Vol	90	0	146	0	52	83	0
Through Vol	219	0	0	255	202	229	0
RT Vol	0	60	0	76	50	0	255
Lane Flow Rate	336	65	159	360	330	339	277
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.921	0.163	0.444	0.938	0.915	0.912	0.678
Departure Headway (Hd)	9.868	8.978	10.078	9.387	9.969	9.684	8.808
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	398	357	385	363	373	407
Service Time	7.651	6.76	7.867	7.175	8.06	7.48	6.602
HCM Lane V/C Ratio	0.918	0.163	0.445	0.935	0.909	0.909	0.681
HCM Control Delay	61.5	13.5	20.7	63	61.1	59.1	28.4
HCM Lane LOS	F	B	C	F	F	F	D
HCM 95th-tile Q	9.5	0.6	2.2	10.2	9.3	9.4	4.9

Intersection	
Int Delay, s/veh	34.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	198	203	0	322	0	0	0	0	496	0	276
Future Vol, veh/h	0	198	203	0	322	0	0	0	0	496	0	276
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	208	214	0	339	0	0	0	0	522	0	291

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			547	-	339
Stage 1	-	-	-	-	-	-			339	-	-
Stage 2	-	-	-	-	-	-			208	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			~ 498	0	703
Stage 1	0	-	0	0	-	0			722	0	-
Stage 2	0	-	0	0	-	0			827	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			~ 498	0	703
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 498	0	-
Stage 1	-	-	-	-	-	-			722	0	-
Stage 2	-	-	-	-	-	-			827	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	57.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	498	703
HCM Lane V/C Ratio	-	-	1.048	0.413
HCM Control Delay (s)	-	-	82.5	13.7
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	15.6	2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	77.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	142	551	0	0	419	671	243	13	449	0	0	0
Future Vol, veh/h	142	551	0	0	419	671	243	13	449	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	574	0	0	436	699	253	14	468	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	436	0	-	-	-	0	1306	1306	-
Stage 1	-	-	-	-	-	-	870	870	-
Stage 2	-	-	-	-	-	-	436	436	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	1124	-	0	0	-	0	~ 176	160	0
Stage 1	-	-	0	0	-	0	410	369	0
Stage 2	-	-	0	0	-	0	652	580	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1124	-	-	-	-	-	~ 153	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 153	0	-
Stage 1	-	-	-	-	-	-	356	0	-
Stage 2	-	-	-	-	-	-	652	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0	$ 411.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	153	-	1124	-	-
HCM Lane V/C Ratio	1.743	-	0.132	-	-
HCM Control Delay (s)	$ 411.1	0	8.7	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	19.4	-	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	21	31	14	0
Future Vol, veh/h	0	21	21	31	14	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	23	34	15	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	40	40	-	0
Stage 1	40	40	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	972	852	-	-
Stage 1	982	862	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	972	0	-	-
Mov Cap-2 Maneuver	972	0	-	-
Stage 1	982	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	35	0	24	52	0	0
Future Vol, veh/h	35	0	24	52	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	0	26	57	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	38	0	147	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1572	-	845	1034
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1572	-	831	1034
Mov Cap-2 Maneuver	-	-	-	-	831	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	900	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1572	-
HCM Lane V/C Ratio	-	-	-	0.017	-
HCM Control Delay (s)	0	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0.1	-

Intersection	
Int Delay, s/veh	8.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	82	0	0	536	24	572
Future Vol, veh/h	82	0	0	536	24	572
Conflicting Peds, #/hr	0	4	4	0	0	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	160	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	0	0	609	27	650

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	702	99
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	609	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	0	0	-	404	957
Stage 1	-	0	0	-	931	-
Stage 2	-	0	0	-	543	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	404	952
Mov Cap-2 Maneuver	-	-	-	-	404	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	WBT
Capacity (veh/h)	404	952	-	-
HCM Lane V/C Ratio	0.068	0.683	-	-
HCM Control Delay (s)	14.6	16.5	-	-
HCM Lane LOS	B	C	-	-
HCM 95th %tile Q(veh)	0.2	5.6	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	386	1086	344	246	957	331	288	605	143	765	168
v/c Ratio	0.70	0.99	0.57	0.73	1.09	0.56	0.99	1.00	0.35	0.93	0.34
Control Delay	54.9	66.5	20.2	65.0	101.4	11.7	99.7	85.1	6.5	63.9	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	66.5	20.2	65.0	101.4	11.7	99.7	85.1	6.5	63.9	7.5
Queue Length 50th (ft)	147	~452	98	97	~457	31	247	259	0	302	1
Queue Length 95th (ft)	201	#661	211	137	#602	123	#445	#390	40	#397	56
Internal Link Dist (ft)		510			851			2117		223	
Turn Bay Length (ft)	225		180	250			260		260		105
Base Capacity (vph)	555	1098	603	583	876	595	291	607	414	889	520
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.99	0.57	0.42	1.09	0.56	0.99	1.00	0.35	0.86	0.32

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	1032	327	234	909	314	375	473	136	273	454	160
Future Volume (veh/h)	367	1032	327	234	909	314	375	473	136	273	454	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	386	1086	344	246	957	331	298	634	143	287	478	168
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	588	1137	502	300	808	353	322	676	281	306	548	365
Arrive On Green	0.17	0.32	0.32	0.09	0.23	0.23	0.18	0.18	0.18	0.24	0.24	0.24
Sat Flow, veh/h	3456	3554	1568	3456	3554	1550	1781	3741	1553	1284	2299	1531
Grp Volume(v), veh/h	386	1086	344	246	957	331	298	634	143	404	361	168
Grp Sat Flow(s),veh/h/ln	1728	1777	1568	1728	1777	1550	1781	1870	1553	1806	1777	1531
Q Serve(g_s), s	12.5	35.9	22.9	8.4	27.3	25.2	19.7	20.1	10.0	26.3	23.3	11.3
Cycle Q Clear(g_c), s	12.5	35.9	22.9	8.4	27.3	25.2	19.7	20.1	10.0	26.3	23.3	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.71		1.00
Lane Grp Cap(c), veh/h	588	1137	502	300	808	353	322	676	281	430	423	365
V/C Ratio(X)	0.66	0.96	0.69	0.82	1.18	0.94	0.93	0.94	0.51	0.94	0.85	0.46
Avail Cap(c_a), veh/h	588	1137	502	587	808	353	322	676	281	462	455	392
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	40.0	35.5	53.9	46.3	45.5	48.4	48.5	44.3	44.8	43.7	39.1
Incr Delay (d2), s/veh	2.1	17.9	7.4	2.1	95.1	34.6	31.0	20.4	0.6	25.5	12.9	0.3
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	5.5	17.9	9.6	3.7	22.4	12.8	11.5	11.2	3.8	14.4	11.4	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	57.8	43.0	56.0	141.5	80.1	79.4	68.9	45.0	70.3	56.6	39.4
LnGrp LOS	D	E	D	E	F	F	E	E	D	E	E	D
Approach Vol, veh/h		1816			1534			1075			933	
Approach Delay, s/veh		53.1			114.5			68.6			59.5	
Approach LOS		D			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.1	33.0		27.0	15.0	44.1		33.9				
Change Period (Y+Rc), s	5.7	* 5.7		5.3	4.6	5.7		5.3				
Max Green Setting (Gmax), s	16.4	* 27		21.7	20.4	26.3		30.7				
Max Q Clear Time (g_c+I1), s	14.5	29.3		22.1	10.4	37.9		28.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		74.9	
HCM 6th LOS		E	

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



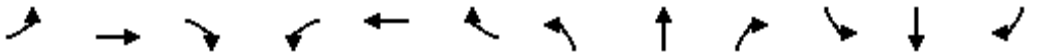
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	276	1062	321	173	857	65	559	329	154	338	180
v/c Ratio	0.88	0.89	0.52	0.88	0.88	0.14	0.77	0.83	0.35	1.04	0.45
Control Delay	76.8	48.6	20.9	90.9	55.5	15.6	51.3	62.7	7.4	107.9	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	48.6	20.9	90.9	55.5	15.6	51.3	62.7	7.4	107.9	13.9
Queue Length 50th (ft)	205	400	98	142	369	14	214	249	0	~282	18
Queue Length 95th (ft)	#374	#637	215	#272	#560	m46	248	322	50	#469	84
Internal Link Dist (ft)		551			1831			888		321	
Turn Bay Length (ft)	480		140	260		200	150		200		160
Base Capacity (vph)	323	1199	612	197	969	469	984	534	548	326	401
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.89	0.52	0.88	0.88	0.14	0.57	0.62	0.28	1.04	0.45

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.

m Volume for 95th percentile queue is metered by upstream signal.



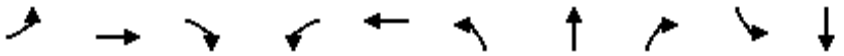
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1030	311	168	831	63	542	319	149	119	209	175
Future Volume (veh/h)	268	1030	311	168	831	63	542	319	149	119	209	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	276	1062	321	173	857	65	559	329	154	123	215	180
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	939	397	330	1018	434	715	387	315	119	208	271
Arrive On Green	0.17	0.26	0.26	0.19	0.29	0.29	0.21	0.21	0.21	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1504	1781	3554	1516	3456	1870	1524	668	1168	1517
Grp Volume(v), veh/h	276	1062	321	173	857	65	559	329	154	338	0	180
Grp Sat Flow(s),veh/h/ln	1781	1777	1504	1781	1777	1516	1728	1870	1524	1837	0	1517
Q Serve(g_s), s	18.3	31.7	24.0	10.5	27.2	3.8	18.4	20.3	10.7	21.4	0.0	13.3
Cycle Q Clear(g_c), s	18.3	31.7	24.0	10.5	27.2	3.8	18.4	20.3	10.7	21.4	0.0	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	301	939	397	330	1018	434	715	387	315	328	0	271
V/C Ratio(X)	0.92	1.13	0.81	0.52	0.84	0.15	0.78	0.85	0.49	1.03	0.00	0.67
Avail Cap(c_a), veh/h	303	939	397	330	1018	434	991	536	437	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	44.2	41.3	44.1	40.3	31.9	45.0	45.8	42.0	49.3	0.0	46.0
Incr Delay (d2), s/veh	30.4	72.5	16.1	0.7	8.4	0.7	1.8	6.9	0.4	58.2	0.0	4.9
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	10.5	23.0	10.4	4.6	12.7	1.5	8.0	10.1	4.0	15.1	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	116.7	57.4	44.8	48.7	32.6	46.8	52.7	42.4	107.5	0.0	50.9
LnGrp LOS	E	F	E	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1659			1095			1042			518	
Approach Delay, s/veh		99.0			47.1			48.0			87.8	
Approach LOS		F			D			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.6	37.0		26.0	24.9	39.7		29.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	12.4	* 32		21.4	20.4	24.7		34.4				
Max Q Clear Time (g_c+I1), s	12.5	33.7		23.4	20.3	29.2		22.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		72.2	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



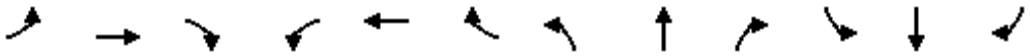
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	79	544	725	449	535	460	757	387	118	860
v/c Ratio	0.53	0.62	0.94	0.86	0.45	1.18	0.59	0.52	0.67	1.03
Control Delay	65.8	43.7	45.6	66.5	32.8	146.8	33.6	11.2	89.8	73.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	43.7	45.6	66.5	32.8	146.8	33.6	11.2	89.8	73.1
Queue Length 50th (ft)	60	197	432	176	168	~428	245	54	90	~280
Queue Length 95th (ft)	109	258	#747	#260	233	#634	332	157	m114	m#435
Internal Link Dist (ft)		4792			416		511			2905
Turn Bay Length (ft)	170		100	140		300		140	170	
Base Capacity (vph)	210	878	774	523	1178	389	1290	740	255	832
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	0.38	0.62	0.94	0.86	0.45	1.18	0.59	0.52	0.46	1.03

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.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	517	689	427	443	66	437	719	368	112	766	51
Future Volume (veh/h)	75	517	689	427	443	66	437	719	368	112	766	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	544	725	449	466	69	460	757	387	118	806	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	882	732	513	1028	151	392	1363	593	143	798	53
Arrive On Green	0.07	0.25	0.25	0.15	0.33	0.33	0.22	0.38	0.38	0.08	0.24	0.24
Sat Flow, veh/h	1781	3554	1543	3456	3103	457	1781	3554	1546	1781	3371	226
Grp Volume(v), veh/h	79	544	725	449	266	269	460	757	387	118	425	435
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1783	1781	1777	1546	1781	1777	1820
Q Serve(g_s), s	5.2	16.3	28.8	15.3	14.1	14.3	26.4	20.0	15.8	7.8	28.4	28.4
Cycle Q Clear(g_c), s	5.2	16.3	28.8	15.3	14.1	14.3	26.4	20.0	15.8	7.8	28.4	28.4
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	124	882	732	513	589	590	392	1363	593	143	421	431
V/C Ratio(X)	0.64	0.62	0.99	0.88	0.45	0.46	1.17	0.56	0.65	0.82	1.01	1.01
Avail Cap(c_a), veh/h	212	882	732	513	589	590	392	1363	593	257	421	431
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	40.0	31.4	50.0	31.6	31.6	46.8	29.0	12.5	54.3	45.8	45.8
Incr Delay (d2), s/veh	2.0	3.2	31.1	15.1	2.5	2.5	102.0	1.6	5.5	4.4	46.4	46.0
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	2.4	7.6	15.0	7.7	6.5	6.6	22.8	8.9	6.3	3.7	18.0	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.4	43.2	62.5	65.1	34.0	34.1	148.8	30.6	18.0	58.7	92.2	91.8
LnGrp LOS	E	D	E	E	C	C	F	C	B	E	F	F
Approach Vol, veh/h		1348			984			1604			978	
Approach Delay, s/veh		54.4			48.2			61.5			88.0	
Approach LOS		D			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	34.0	31.0	33.0	12.1	43.9	13.4	50.6
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 16	* 30	26.4	28.4	14.3	* 34	17.3	34.4
Max Q Clear Time (g_c+I1), s	17.3	30.8	28.4	30.4	7.2	16.3	9.8	22.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	2.1	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	62.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	12	27	19	13	37	35	498	35	39	411	106
Future Vol, veh/h	59	12	27	19	13	37	35	498	35	39	411	106
Conflicting Peds, #/hr	5	0	1	1	0	5	4	0	9	9	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	115	-	50	115	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	13	30	21	14	41	39	553	39	43	457	118

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1230	1226	462	1265	1305	567	579	0	0	601	0	0
Stage 1	547	547	-	640	640	-	-	-	-	-	-	-
Stage 2	683	679	-	625	665	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	154	179	600	146	160	523	995	-	-	976	-	-
Stage 1	521	517	-	464	470	-	-	-	-	-	-	-
Stage 2	439	451	-	473	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	122	162	597	121	145	516	991	-	-	968	-	-
Mov Cap-2 Maneuver	122	162	-	121	145	-	-	-	-	-	-	-
Stage 1	499	492	-	442	447	-	-	-	-	-	-	-
Stage 2	374	429	-	417	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	54.8	30.4	0.5	0.6
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	991	-	-	127	597	217	968	-	-
HCM Lane V/C Ratio	0.039	-	-	0.621	0.05	0.353	0.045	-	-
HCM Control Delay (s)	8.8	-	-	71.4	11.3	30.4	8.9	-	-
HCM Lane LOS	A	-	-	F	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.2	0.2	1.5	0.1	-	-

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	12	57	24	0	51	102	316	37	69	379	93
Future Vol, veh/h	75	12	57	24	0	51	102	316	37	69	379	93
Conflicting Peds, #/hr	0	0	16	16	0	0	4	0	5	5	0	4
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	100	-	50	100	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	13	63	27	0	57	113	351	41	77	421	103

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1205	1202	441	1263	1264	356	528	0	0	397	0	0
Stage 1	579	579	-	582	582	-	-	-	-	-	-	-
Stage 2	626	623	-	681	682	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	161	185	616	147	169	688	1039	-	-	1162	-	-
Stage 1	501	501	-	499	499	-	-	-	-	-	-	-
Stage 2	472	478	-	440	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	128	152	604	105	139	685	1035	-	-	1156	-	-
Mov Cap-2 Maneuver	128	152	-	105	139	-	-	-	-	-	-	-
Stage 1	444	465	-	443	443	-	-	-	-	-	-	-
Stage 2	386	424	-	352	418	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.6	26.7	2	1.1
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1035	-	-	128	398	248	1156	-	-
HCM Lane V/C Ratio	0.11	-	-	0.651	0.193	0.336	0.066	-	-
HCM Control Delay (s)	8.9	-	-	74.6	16.2	26.7	8.3	-	-
HCM Lane LOS	A	-	-	F	C	D	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.5	0.7	1.4	0.2	-	-

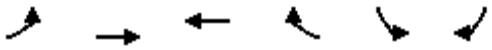


Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	228	417	243	312	577
v/c Ratio	0.62	0.23	0.60	0.20	1.01
Control Delay	31.6	8.5	30.2	0.3	65.8
Queue Delay	0.0	0.0	0.0	0.0	7.7
Total Delay	31.6	8.5	30.2	0.3	73.5
Queue Length 50th (ft)	81	43	86	0	~206
Queue Length 95th (ft)	159	63	166	0	#513
Internal Link Dist (ft)		268	2338		238
Turn Bay Length (ft)	130			120	
Base Capacity (vph)	553	2813	729	1551	570
Starvation Cap Reductn	0	0	0	0	14
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.15	0.33	0.20	1.04

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.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	214	392	228	293	269	274
Future Volume (veh/h)	214	392	228	293	269	274
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
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	228	417	243	0	286	291
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	289	1585	336		297	303
Arrive On Green	0.16	0.45	0.18	0.00	0.36	0.36
Sat Flow, veh/h	1781	3647	1870	1585	830	844
Grp Volume(v), veh/h	228	417	243	0	578	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1870	1585	1677	0
Q Serve(g_s), s	6.9	4.1	6.8	0.0	18.8	0.0
Cycle Q Clear(g_c), s	6.9	4.1	6.8	0.0	18.8	0.0
Prop In Lane	1.00			1.00	0.49	0.50
Lane Grp Cap(c), veh/h	289	1585	336		601	0
V/C Ratio(X)	0.79	0.26	0.72		0.96	0.00
Avail Cap(c_a), veh/h	639	1592	838		601	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	9.7	21.6	0.0	17.5	0.0
Incr Delay (d2), s/veh	4.7	0.1	3.0	0.0	27.3	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	3.0	1.4	3.0	0.0	10.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.2	9.8	24.5	0.0	44.8	0.0
LnGrp LOS	C	A	C		D	A
Approach Vol, veh/h		645	243	A	578	
Approach Delay, s/veh		15.9	24.5		44.8	
Approach LOS		B	C		D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		30.7		25.1	14.9	15.8
Change Period (Y+Rc), s		5.8		5.1	5.8	5.8
Max Green Setting (Gmax), s		25.0		20.0	20.0	25.0
Max Q Clear Time (g_c+I1), s		6.1		20.8	8.9	8.8
Green Ext Time (p_c), s		2.6		0.0	0.5	1.2

Intersection Summary	
HCM 6th Ctrl Delay	28.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	118.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	267	405	147	62	205	71	116	267	56	75	269	208
Future Vol, veh/h	267	405	147	62	205	71	116	267	56	75	269	208
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	275	418	152	64	211	73	120	275	58	77	277	214
Number of Lanes	1	1	0	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	190.5	77.4	95.2	54.6
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	30%	0%	100%	0%	18%	22%	0%
Vol Thru, %	70%	0%	0%	73%	61%	78%	0%
Vol Right, %	0%	100%	0%	27%	21%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	383	56	267	552	338	344	208
LT Vol	116	0	267	0	62	75	0
Through Vol	267	0	0	405	205	269	0
RT Vol	0	56	0	147	71	0	208
Lane Flow Rate	395	58	275	569	348	355	214
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	1.087	0.145	0.776	1.496	0.975	0.966	0.536
Departure Headway (Hd)	10.512	9.611	10.598	9.876	10.847	10.527	9.669
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	347	375	344	376	338	348	375
Service Time	8.212	7.311	8.298	7.576	8.847	8.227	7.369
HCM Lane V/C Ratio	1.138	0.155	0.799	1.513	1.03	1.02	0.571
HCM Control Delay	107.1	13.9	41.9	262.4	77.4	73.7	23
HCM Lane LOS	F	B	E	F	F	F	C
HCM 95th-tile Q	13.8	0.5	6.3	29.5	10.5	10.4	3

Intersection	
Int Delay, s/veh	36.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	410	444	0	332	0	0	0	0	421	0	293
Future Vol, veh/h	0	410	444	0	332	0	0	0	0	421	0	293
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	230	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	414	448	0	335	0	0	0	0	425	0	296

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	-	-	0			749	-	335
Stage 1	-	-	-	-	-	-			335	-	-
Stage 2	-	-	-	-	-	-			414	-	-
Critical Hdwy	-	-	-	-	-	-			6.42	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	-	-
Follow-up Hdwy	-	-	-	-	-	-			3.518	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0			~ 379	0	707
Stage 1	0	-	0	0	-	0			725	0	-
Stage 2	0	-	0	0	-	0			667	0	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	-	-	-			~ 379	0	707
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 379	0	-
Stage 1	-	-	-	-	-	-			725	0	-
Stage 2	-	-	-	-	-	-			667	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	74.3
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	379	707
HCM Lane V/C Ratio	-	-	1.122	0.419
HCM Control Delay (s)	-	-	116.5	13.7
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	15.8	2.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	58.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	201	695	0	0	564	511	146	5	425	0	0	0
Future Vol, veh/h	201	695	0	0	564	511	146	5	425	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	170	-	-	-	-	0	550	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	209	724	0	0	588	532	152	5	443	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	588	0	-	-	-	0	1730	1730	-
Stage 1	-	-	-	-	-	-	1142	1142	-
Stage 2	-	-	-	-	-	-	588	588	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	-
Pot Cap-1 Maneuver	987	-	0	0	-	0	~ 97	88	0
Stage 1	-	-	0	0	-	0	304	275	0
Stage 2	-	-	0	0	-	0	555	496	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	987	-	-	-	-	-	~ 76	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 76	0	-
Stage 1	-	-	-	-	-	-	240	0	-
Stage 2	-	-	-	-	-	-	555	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.2	0	$ 612.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	76	-	987	-	-
HCM Lane V/C Ratio	2.07	-	0.212	-	-
HCM Control Delay (s)	$ 612.5	0	9.6	-	-
HCM Lane LOS	F	A	A	-	-
HCM 95th %tile Q(veh)	14.3	-	0.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	12	19	36	0
Future Vol, veh/h	0	15	12	19	36	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	13	21	39	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	24	24	-	0
Stage 1	24	24	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.42	6.52	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	-
Pot Cap-1 Maneuver	992	869	-	-
Stage 1	999	875	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	992	0	-	-
Mov Cap-2 Maneuver	992	0	-	-
Stage 1	999	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Control Delay, s		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1.5

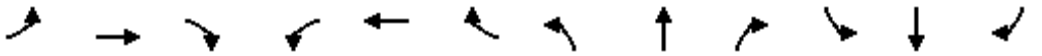
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	0	15	31	0	5
Future Vol, veh/h	51	0	15	31	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	0	16	34	0	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	121	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	66	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1550	-	874	1012
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	864	1012
Mov Cap-2 Maneuver	-	-	-	-	864	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	946	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1012	-	-	1550	-
HCM Lane V/C Ratio	0.005	-	-	0.011	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

D – Improvement Outputs



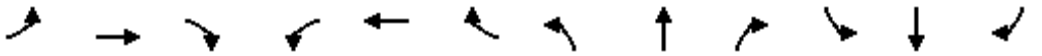
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	602	209	125	484	43	303	268	146	63	271	162
Future Volume (veh/h)	114	602	209	125	484	43	303	268	146	63	271	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	647	225	134	520	46	326	288	157	68	291	174
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	339	1258	542	160	880	375	651	352	291	73	313	319
Arrive On Green	0.19	0.35	0.35	0.09	0.25	0.25	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1781	3554	1530	1781	3554	1515	3456	1870	1545	351	1502	1529
Grp Volume(v), veh/h	123	647	225	134	520	46	326	288	157	359	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1530	1781	1777	1515	1728	1870	1545	1853	0	1529
Q Serve(g_s), s	7.2	17.3	13.4	8.9	15.5	2.8	10.1	17.7	11.0	22.8	0.0	12.2
Cycle Q Clear(g_c), s	7.2	17.3	13.4	8.9	15.5	2.8	10.1	17.7	11.0	22.8	0.0	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.19		1.00
Lane Grp Cap(c), veh/h	339	1258	542	160	880	375	651	352	291	387	0	319
V/C Ratio(X)	0.36	0.51	0.42	0.84	0.59	0.12	0.50	0.82	0.54	0.93	0.00	0.55
Avail Cap(c_a), veh/h	339	1258	542	186	880	375	893	483	399	438	0	362
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	30.6	29.4	53.8	39.8	35.0	43.6	46.7	44.0	46.6	0.0	42.4
Incr Delay (d2), s/veh	0.2	1.5	2.3	21.9	2.9	0.7	0.2	5.5	0.6	23.3	0.0	0.5
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	3.1	7.5	5.2	4.9	7.0	1.1	4.3	8.7	4.2	13.1	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	32.1	31.7	75.7	42.7	35.7	43.9	52.2	44.6	69.9	0.0	42.9
LnGrp LOS	D	C	C	E	D	D	D	D	D	E	A	D
Approach Vol, veh/h		995			700			771			533	
Approach Delay, s/veh		33.3			48.6			47.1			61.1	
Approach LOS		C			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.4	47.8		29.6	28.1	35.0		27.2				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.5	29.0		28.4	11.8	* 30		31.0				
Max Q Clear Time (g_c+I1), s	10.9	19.3		24.8	9.2	17.5		19.7				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		45.4	
HCM 6th LOS		D	

Notes

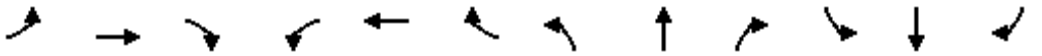
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	161	50	38	149	33	50	202	21	64	219	208
Future Volume (veh/h)	129	161	50	38	149	33	50	202	21	64	219	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.96		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	175	54	41	162	36	54	220	23	70	238	226
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	181	379	117	76	324	72	240	604	63	429	308	293
Arrive On Green	0.10	0.28	0.28	0.04	0.22	0.22	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1360	420	1781	1471	327	910	1654	173	1096	844	801
Grp Volume(v), veh/h	140	0	229	41	0	198	54	0	243	70	0	464
Grp Sat Flow(s),veh/h/ln	1781	0	1779	1781	0	1798	910	0	1826	1096	0	1644
Q Serve(g_s), s	4.1	0.0	5.7	1.2	0.0	5.2	3.0	0.0	5.2	2.7	0.0	13.3
Cycle Q Clear(g_c), s	4.1	0.0	5.7	1.2	0.0	5.2	16.3	0.0	5.2	7.9	0.0	13.3
Prop In Lane	1.00		0.24	1.00		0.18	1.00		0.09	1.00		0.49
Lane Grp Cap(c), veh/h	181	0	496	76	0	396	240	0	667	429	0	601
V/C Ratio(X)	0.77	0.00	0.46	0.54	0.00	0.50	0.22	0.00	0.36	0.16	0.00	0.77
Avail Cap(c_a), veh/h	337	0	1234	357	0	1146	240	0	667	480	0	678
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	15.9	25.0	0.0	18.2	22.2	0.0	12.4	15.3	0.0	15.0
Incr Delay (d2), s/veh	6.8	0.0	0.7	5.8	0.0	1.0	0.5	0.0	0.3	0.2	0.0	4.9
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	1.9	0.0	2.1	0.6	0.0	2.0	0.6	0.0	1.9	0.6	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	0.0	16.6	30.9	0.0	19.2	22.6	0.0	12.7	15.4	0.0	19.9
LnGrp LOS	C	A	B	C	A	B	C	A	B	B	A	B
Approach Vol, veh/h		369			239			297			534	
Approach Delay, s/veh		21.8			21.2			14.5			19.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	20.7		25.3	10.5	17.5		25.3				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.2	7.7		15.3	6.1	7.2		18.3				
Green Ext Time (p_c), s	0.0	1.4		1.9	0.1	1.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			19.3									
HCM 6th LOS			B									

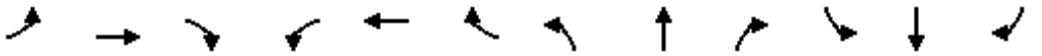


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	440	0	0	317	631	154	3	342	0	0	0
Future Volume (veh/h)	107	440	0	0	317	631	154	3	342	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	111	458	0	0	330	0	160	3	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	287	955	0	0	477		446	8				
Arrive On Green	0.16	0.51	0.00	0.00	0.25	0.00	0.26	0.26	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1750	33	1585			
Grp Volume(v), veh/h	111	458	0	0	330	0	163	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1783	0	1585			
Q Serve(g_s), s	2.2	6.2	0.0	0.0	6.3	0.0	2.9	0.0	0.0			
Cycle Q Clear(g_c), s	2.2	6.2	0.0	0.0	6.3	0.0	2.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	287	955	0	0	477		455	0				
V/C Ratio(X)	0.39	0.48	0.00	0.00	0.69		0.36	0.00				
Avail Cap(c_a), veh/h	422	1784	0	0	1164		609	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.7	6.2	0.0	0.0	13.2	0.0	12.0	0.0	0.0			
Incr Delay (d2), s/veh	0.9	0.4	0.0	0.0	1.8	0.0	0.5	0.0	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			
%ile BackOfQ(50%),veh/ln	0.8	1.7	0.0	0.0	2.3	0.0	1.0	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	6.6	0.0	0.0	15.0	0.0	12.5	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		569			330	A		163	A			
Approach Delay, s/veh		8.4			15.0			12.5				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		24.6			10.0	14.6		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		8.2			4.2	8.3		4.9				
Green Ext Time (p_c), s		3.3			0.1	1.7		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



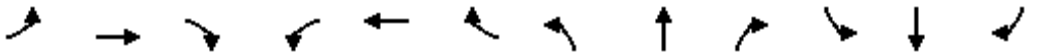
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	959	191	128	625	48	330	293	118	103	183	142
Future Volume (veh/h)	232	959	191	128	625	48	330	293	118	103	183	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	989	197	132	644	49	340	302	122	106	189	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	1128	480	261	1142	489	677	367	298	115	206	265
Arrive On Green	0.15	0.32	0.32	0.15	0.32	0.32	0.20	0.20	0.20	0.17	0.17	0.17
Sat Flow, veh/h	1781	3554	1512	1781	3554	1520	3456	1870	1522	660	1177	1516
Grp Volume(v), veh/h	239	989	197	132	644	49	340	302	122	295	0	146
Grp Sat Flow(s),veh/h/ln	1781	1777	1512	1781	1777	1520	1728	1870	1522	1837	0	1516
Q Serve(g_s), s	15.8	31.6	12.3	8.2	18.0	2.7	10.5	18.6	8.4	18.9	0.0	10.6
Cycle Q Clear(g_c), s	15.8	31.6	12.3	8.2	18.0	2.7	10.5	18.6	8.4	18.9	0.0	10.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	265	1128	480	261	1142	489	677	367	298	321	0	265
V/C Ratio(X)	0.90	0.88	0.41	0.51	0.56	0.10	0.50	0.82	0.41	0.92	0.00	0.55
Avail Cap(c_a), veh/h	273	1128	480	261	1142	489	893	483	393	328	0	270
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	38.7	32.1	47.2	33.7	28.5	43.0	46.3	42.2	48.7	0.0	45.2
Incr Delay (d2), s/veh	29.2	9.7	2.6	0.6	2.0	0.4	0.2	6.6	0.3	28.9	0.0	1.3
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	9.1	14.8	4.7	3.6	7.9	1.0	4.5	9.2	3.2	11.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	48.4	34.7	47.8	35.8	29.0	43.2	52.8	42.5	77.6	0.0	46.5
LnGrp LOS	E	D	C	D	D	C	D	D	D	E	A	D
Approach Vol, veh/h		1425			825			764			441	
Approach Delay, s/veh		51.7			37.3			46.9			67.3	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.9	43.4		25.6	22.4	43.9		28.1				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	10.4	* 38		21.4	18.4	30.1		31.0				
Max Q Clear Time (g_c+I1), s	10.2	33.6		20.9	17.8	20.0		20.6				
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	0.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		49.2	
HCM 6th LOS		D	

Notes

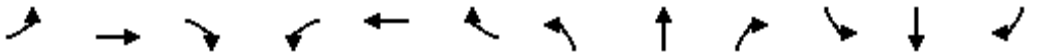
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	269	113	48	116	61	57	250	45	65	259	142
Future Volume (veh/h)	241	269	113	48	116	61	57	250	45	65	259	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	248	277	116	49	120	63	59	258	46	67	267	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	408	171	85	236	124	237	495	88	328	361	198
Arrive On Green	0.17	0.33	0.33	0.05	0.21	0.21	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1239	519	1781	1140	599	968	1536	274	1068	1122	613
Grp Volume(v), veh/h	248	0	393	49	0	183	59	0	304	67	0	413
Grp Sat Flow(s),veh/h/ln	1781	0	1758	1781	0	1739	968	0	1810	1068	0	1735
Q Serve(g_s), s	7.4	0.0	10.7	1.5	0.0	5.2	3.2	0.0	7.6	3.0	0.0	11.7
Cycle Q Clear(g_c), s	7.4	0.0	10.7	1.5	0.0	5.2	14.9	0.0	7.6	10.6	0.0	11.7
Prop In Lane	1.00		0.30	1.00		0.34	1.00		0.15	1.00		0.35
Lane Grp Cap(c), veh/h	303	0	578	85	0	359	237	0	583	328	0	559
V/C Ratio(X)	0.82	0.00	0.68	0.58	0.00	0.51	0.25	0.00	0.52	0.20	0.00	0.74
Avail Cap(c_a), veh/h	395	0	1258	212	0	1065	309	0	718	407	0	688
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	16.1	25.9	0.0	19.5	23.4	0.0	15.3	19.6	0.0	16.7
Incr Delay (d2), s/veh	9.9	0.0	1.4	6.0	0.0	1.1	0.5	0.0	0.7	0.3	0.0	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	3.7	0.0	4.0	0.7	0.0	2.0	0.7	0.0	2.9	0.7	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	0.0	17.5	31.9	0.0	20.6	23.9	0.0	16.0	19.9	0.0	20.0
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	C
Approach Vol, veh/h		641			232			363			480	
Approach Delay, s/veh		23.2			23.0			17.3			20.0	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	24.1		23.7	14.5	17.3		23.7				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	3.5	12.7		13.7	9.4	7.2		16.9				
Green Ext Time (p_c), s	0.0	2.7		1.9	0.2	1.1		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		21.0	
HCM 6th LOS		C	

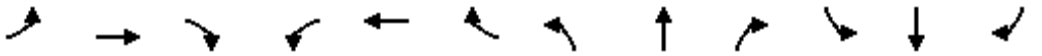


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	620	0	0	345	488	71	4	380	0	0	0
Future Volume (veh/h)	145	620	0	0	345	488	71	4	380	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	151	646	0	0	359	0	74	4	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	288	917	0	0	471		541	29				
Arrive On Green	0.16	0.49	0.00	0.00	0.25	0.00	0.32	0.32	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1694	92	1585			
Grp Volume(v), veh/h	151	646	0	0	359	0	78	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1786	0	1585			
Q Serve(g_s), s	3.7	13.0	0.0	0.0	8.6	0.0	1.5	0.0	0.0			
Cycle Q Clear(g_c), s	3.7	13.0	0.0	0.0	8.6	0.0	1.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	288	917	0	0	471		570	0				
V/C Ratio(X)	0.52	0.70	0.00	0.00	0.76		0.14	0.00				
Avail Cap(c_a), veh/h	380	1372	0	0	829		570	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	18.5	9.6	0.0	0.0	16.7	0.0	11.7	0.0	0.0			
Incr Delay (d2), s/veh	1.5	1.0	0.0	0.0	2.6	0.0	0.5	0.0	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			
%ile BackOfQ(50%),veh/ln	1.5	4.4	0.0	0.0	3.5	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	10.6	0.0	0.0	19.3	0.0	12.2	0.0	0.0			
LnGrp LOS	B	B	A	A	B		B	A				
Approach Vol, veh/h		797			359	A		78	A			
Approach Delay, s/veh		12.4			19.3			12.2				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		28.3			11.5	16.8		20.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		35.4			10.3	21.4		15.4				
Max Q Clear Time (g_c+I1), s		15.0			5.7	10.6		3.5				
Green Ext Time (p_c), s		4.7			0.1	1.6		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



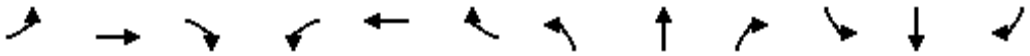
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	602	211	127	484	43	303	268	146	63	273	162
Future Volume (veh/h)	114	602	211	127	484	43	303	268	146	63	273	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	647	227	137	520	46	326	288	157	68	294	174
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	336	1246	536	163	880	375	651	352	291	73	316	321
Arrive On Green	0.19	0.35	0.35	0.09	0.25	0.25	0.19	0.19	0.19	0.21	0.21	0.21
Sat Flow, veh/h	1781	3554	1530	1781	3554	1515	3456	1870	1545	348	1505	1529
Grp Volume(v), veh/h	123	647	227	137	520	46	326	288	157	362	0	174
Grp Sat Flow(s),veh/h/ln	1781	1777	1530	1781	1777	1515	1728	1870	1545	1853	0	1529
Q Serve(g_s), s	7.2	17.3	13.6	9.1	15.5	2.8	10.1	17.7	11.0	23.0	0.0	12.2
Cycle Q Clear(g_c), s	7.2	17.3	13.6	9.1	15.5	2.8	10.1	17.7	11.0	23.0	0.0	12.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.19		1.00
Lane Grp Cap(c), veh/h	336	1246	536	163	880	375	651	352	291	390	0	321
V/C Ratio(X)	0.37	0.52	0.42	0.84	0.59	0.12	0.50	0.82	0.54	0.93	0.00	0.54
Avail Cap(c_a), veh/h	336	1246	536	186	880	375	893	483	399	439	0	362
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.4	30.9	29.7	53.7	39.8	35.0	43.6	46.7	44.0	46.5	0.0	42.2
Incr Delay (d2), s/veh	0.2	1.5	2.4	23.0	2.9	0.7	0.2	5.5	0.6	23.6	0.0	0.5
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	3.2	7.5	5.3	5.0	7.0	1.1	4.3	8.7	4.2	13.2	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.7	32.5	32.1	76.6	42.7	35.7	43.9	52.2	44.6	70.1	0.0	42.8
LnGrp LOS	D	C	C	E	D	D	D	D	D	E	A	D
Approach Vol, veh/h		997			703			771			536	
Approach Delay, s/veh		33.6			48.9			47.1			61.2	
Approach LOS		C			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.6	47.4		29.8	28.0	35.0		27.2				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.5	29.0		28.4	11.8	* 30		31.0				
Max Q Clear Time (g_c+I1), s	11.1	19.3		25.0	9.2	17.5		19.7				
Green Ext Time (p_c), s	0.0	0.6		0.2	0.0	0.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			45.6									
HCM 6th LOS			D									

Notes

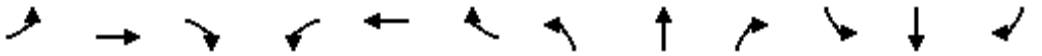
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	161	50	38	151	33	53	202	21	64	219	209
Future Volume (veh/h)	129	161	50	38	151	33	53	202	21	64	219	209
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.96		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	175	54	41	164	36	58	220	23	70	238	227
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	181	379	117	76	324	71	240	605	63	429	308	293
Arrive On Green	0.10	0.28	0.28	0.04	0.22	0.22	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1360	420	1781	1475	324	909	1654	173	1096	841	803
Grp Volume(v), veh/h	140	0	229	41	0	200	58	0	243	70	0	465
Grp Sat Flow(s),veh/h/ln	1781	0	1779	1781	0	1799	909	0	1826	1096	0	1644
Q Serve(g_s), s	4.1	0.0	5.7	1.2	0.0	5.2	3.2	0.0	5.2	2.7	0.0	13.4
Cycle Q Clear(g_c), s	4.1	0.0	5.7	1.2	0.0	5.2	16.6	0.0	5.2	7.9	0.0	13.4
Prop In Lane	1.00		0.24	1.00		0.18	1.00		0.09	1.00		0.49
Lane Grp Cap(c), veh/h	181	0	496	76	0	396	240	0	668	429	0	601
V/C Ratio(X)	0.77	0.00	0.46	0.54	0.00	0.51	0.24	0.00	0.36	0.16	0.00	0.77
Avail Cap(c_a), veh/h	337	0	1233	357	0	1146	240	0	668	480	0	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	15.9	25.0	0.0	18.3	22.3	0.0	12.4	15.3	0.0	15.0
Incr Delay (d2), s/veh	6.8	0.0	0.7	5.8	0.0	1.0	0.5	0.0	0.3	0.2	0.0	5.0
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	1.9	0.0	2.1	0.6	0.0	2.1	0.7	0.0	1.9	0.6	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	0.0	16.6	30.9	0.0	19.3	22.8	0.0	12.7	15.4	0.0	19.9
LnGrp LOS	C	A	B	C	A	B	C	A	B	B	A	B
Approach Vol, veh/h		369			241			301			535	
Approach Delay, s/veh		21.8			21.3			14.7			19.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	20.7		25.3	10.5	17.5		25.3				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.2	7.7		15.4	6.1	7.2		18.6				
Green Ext Time (p_c), s	0.0	1.4		1.9	0.1	1.2		0.0				

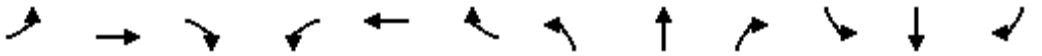
Intersection Summary												
HCM 6th Ctrl Delay			19.3									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	440	0	0	317	638	156	3	346	0	0	0
Future Volume (veh/h)	112	440	0	0	317	638	156	3	346	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	117	458	0	0	330	0	162	3	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	294	960	0	0	476		444	8				
Arrive On Green	0.16	0.51	0.00	0.00	0.25	0.00	0.25	0.25	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1750	32	1585			
Grp Volume(v), veh/h	117	458	0	0	330	0	165	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1783	0	1585			
Q Serve(g_s), s	2.3	6.2	0.0	0.0	6.3	0.0	3.0	0.0	0.0			
Cycle Q Clear(g_c), s	2.3	6.2	0.0	0.0	6.3	0.0	3.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	294	960	0	0	476		452	0				
V/C Ratio(X)	0.40	0.48	0.00	0.00	0.69		0.36	0.00				
Avail Cap(c_a), veh/h	420	1774	0	0	1157		606	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.7	6.2	0.0	0.0	13.3	0.0	12.1	0.0	0.0			
Incr Delay (d2), s/veh	0.9	0.4	0.0	0.0	1.8	0.0	0.5	0.0	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			
%ile BackOfQ(50%),veh/ln	0.9	1.7	0.0	0.0	2.4	0.0	1.0	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.6	6.6	0.0	0.0	15.1	0.0	12.6	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		575			330	A		165	A			
Approach Delay, s/veh		8.4			15.1			12.6				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		24.8			10.2	14.6		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		8.2			4.3	8.3		5.0				
Green Ext Time (p_c), s		3.3			0.1	1.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			11.1									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



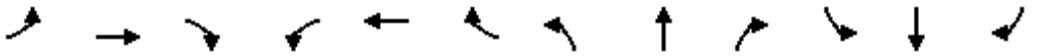
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	959	192	130	625	48	331	293	118	103	184	142
Future Volume (veh/h)	232	959	192	130	625	48	331	293	118	103	184	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	989	198	134	644	49	341	302	122	106	190	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	1128	480	260	1141	488	677	367	298	115	207	266
Arrive On Green	0.15	0.32	0.32	0.15	0.32	0.32	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1512	1781	3554	1520	3456	1870	1522	658	1179	1516
Grp Volume(v), veh/h	239	989	198	134	644	49	341	302	122	296	0	146
Grp Sat Flow(s),veh/h/ln	1781	1777	1512	1781	1777	1520	1728	1870	1522	1837	0	1516
Q Serve(g_s), s	15.8	31.6	12.3	8.3	18.0	2.7	10.6	18.6	8.4	19.0	0.0	10.5
Cycle Q Clear(g_c), s	15.8	31.6	12.3	8.3	18.0	2.7	10.6	18.6	8.4	19.0	0.0	10.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	265	1128	480	260	1141	488	677	367	298	322	0	266
V/C Ratio(X)	0.90	0.88	0.41	0.51	0.56	0.10	0.50	0.82	0.41	0.92	0.00	0.55
Avail Cap(c_a), veh/h	273	1128	480	260	1141	488	893	483	393	328	0	270
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.2	38.7	32.2	47.3	33.8	28.6	43.0	46.3	42.2	48.6	0.0	45.2
Incr Delay (d2), s/veh	29.2	9.7	2.6	0.8	2.0	0.4	0.2	6.6	0.3	29.0	0.0	1.3
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	9.1	14.8	4.8	3.7	7.9	1.0	4.5	9.2	3.2	11.4	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	48.4	34.8	48.1	35.8	29.0	43.2	52.8	42.5	77.7	0.0	46.4
LnGrp LOS	E	D	C	D	D	C	D	D	D	E	A	D
Approach Vol, veh/h		1426			827			765			442	
Approach Delay, s/veh		51.7			37.4			46.9			67.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.8	43.4		25.6	22.4	43.8		28.1				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	10.4	* 38		21.4	18.4	30.1		31.0				
Max Q Clear Time (g_c+I1), s	10.3	33.6		21.0	17.8	20.0		20.6				
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	0.7		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			49.2									
HCM 6th LOS			D									

Notes

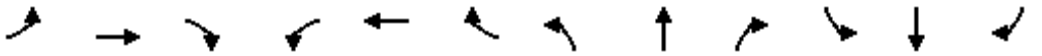
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	270	113	48	118	61	59	250	45	65	259	142
Future Volume (veh/h)	241	270	113	48	118	61	59	250	45	65	259	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	248	278	116	49	122	63	61	258	46	67	267	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	408	170	85	237	122	238	497	89	329	363	198
Arrive On Green	0.17	0.33	0.33	0.05	0.21	0.21	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1240	518	1781	1147	592	968	1536	274	1068	1122	613
Grp Volume(v), veh/h	248	0	394	49	0	185	61	0	304	67	0	413
Grp Sat Flow(s),veh/h/ln	1781	0	1758	1781	0	1740	968	0	1810	1068	0	1735
Q Serve(g_s), s	7.5	0.0	10.8	1.5	0.0	5.3	3.3	0.0	7.6	3.0	0.0	11.8
Cycle Q Clear(g_c), s	7.5	0.0	10.8	1.5	0.0	5.3	15.1	0.0	7.6	10.6	0.0	11.8
Prop In Lane	1.00		0.29	1.00		0.34	1.00		0.15	1.00		0.35
Lane Grp Cap(c), veh/h	303	0	578	85	0	359	238	0	585	329	0	561
V/C Ratio(X)	0.82	0.00	0.68	0.58	0.00	0.52	0.26	0.00	0.52	0.20	0.00	0.74
Avail Cap(c_a), veh/h	394	0	1255	211	0	1064	308	0	716	406	0	686
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	0.0	16.2	25.9	0.0	19.6	23.4	0.0	15.3	19.6	0.0	16.7
Incr Delay (d2), s/veh	10.0	0.0	1.4	6.0	0.0	1.1	0.6	0.0	0.7	0.3	0.0	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	3.7	0.0	4.0	0.7	0.0	2.1	0.7	0.0	2.9	0.7	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.3	0.0	17.6	32.0	0.0	20.8	24.0	0.0	16.0	19.9	0.0	20.0
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	B
Approach Vol, veh/h		642			234			365			480	
Approach Delay, s/veh		23.3			23.1			17.3			20.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	24.1		23.8	14.6	17.3		23.8				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	3.5	12.8		13.8	9.5	7.3		17.1				
Green Ext Time (p_c), s	0.0	2.7		1.9	0.2	1.1		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		21.1	
HCM 6th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	620	0	0	345	492	73	4	382	0	0	0
Future Volume (veh/h)	151	620	0	0	345	492	73	4	382	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	157	646	0	0	359	0	76	4	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	272	862	0	0	446		620	33				
Arrive On Green	0.15	0.46	0.00	0.00	0.24	0.00	0.37	0.37	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1696	89	1585			
Grp Volume(v), veh/h	157	646	0	0	359	0	80	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1786	0	1585			
Q Serve(g_s), s	4.3	15.1	0.0	0.0	9.6	0.0	1.6	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	15.1	0.0	0.0	9.6	0.0	1.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	272	862	0	0	446		653	0				
V/C Ratio(X)	0.58	0.75	0.00	0.00	0.81		0.12	0.00				
Avail Cap(c_a), veh/h	346	1107	0	0	613		653	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	20.9	11.8	0.0	0.0	19.0	0.0	11.2	0.0	0.0			
Incr Delay (d2), s/veh	1.9	2.1	0.0	0.0	5.5	0.0	0.4	0.0	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			
%ile BackOfQ(50%),veh/ln	1.8	5.7	0.0	0.0	4.4	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	13.9	0.0	0.0	24.6	0.0	11.6	0.0	0.0			
LnGrp LOS	C	B	A	A	C		B	A				
Approach Vol, veh/h		803			359	A		80	A			
Approach Delay, s/veh		15.6			24.6			11.6				
Approach LOS		B			C			B				

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		24.0		29.0			11.8	17.2				
Change Period (Y+Rc), s		4.6		4.6			3.7	4.6				
Max Green Setting (Gmax), s		19.4		31.4			10.3	17.4				
Max Q Clear Time (g_c+I1), s		3.6		17.1			6.3	11.6				
Green Ext Time (p_c), s		0.3		4.0			0.1	1.0				

Intersection Summary												
HCM 6th Ctrl Delay			18.0									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



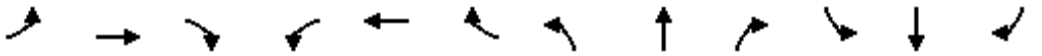
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	403	0	0	698	56	453
Future Volume (veh/h)	403	0	0	698	56	453
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	474	0	0	821	66	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	966	0	0	966	424	
Arrive On Green	0.52	0.00	0.00	0.52	0.24	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	474	0	0	821	66	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	6.9	0.0	0.0	15.9	1.2	0.0
Cycle Q Clear(g_c), s	6.9	0.0	0.0	15.9	1.2	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	966	0	0	966	424	
V/C Ratio(X)	0.49	0.00	0.00	0.85	0.16	
Avail Cap(c_a), veh/h	1177	0	0	1177	989	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.6	0.0	0.0	8.8	12.6	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	5.2	0.2	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	1.9	0.0	0.0	5.4	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.0	0.0	0.0	13.9	12.8	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	474			821	66	A
Approach Delay, s/veh	7.0			13.9	12.8	
Approach LOS	A			B	B	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		27.3				27.3	14.7
Change Period (Y+Rc), s		5.6				5.6	4.7
Max Green Setting (Gmax), s		26.4				26.4	23.3
Max Q Clear Time (g_c+I1), s		8.9				17.9	3.2
Green Ext Time (p_c), s		2.8				3.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



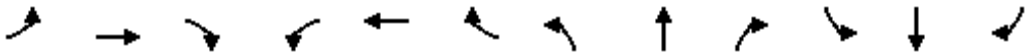
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	656	233	135	565	51	343	271	169	71	281	169
Future Volume (veh/h)	118	656	233	135	565	51	343	271	169	71	281	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	705	251	145	608	55	369	291	182	76	302	182
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	1196	514	171	880	375	655	355	293	81	323	335
Arrive On Green	0.18	0.34	0.34	0.10	0.25	0.25	0.19	0.19	0.19	0.22	0.22	0.22
Sat Flow, veh/h	1781	3554	1529	1781	3554	1515	3456	1870	1545	372	1479	1530
Grp Volume(v), veh/h	127	705	251	145	608	55	369	291	182	378	0	182
Grp Sat Flow(s),veh/h/ln	1781	1777	1529	1781	1777	1515	1728	1870	1545	1852	0	1530
Q Serve(g_s), s	7.6	19.7	15.6	9.6	18.6	3.4	11.6	17.9	13.0	24.1	0.0	12.7
Cycle Q Clear(g_c), s	7.6	19.7	15.6	9.6	18.6	3.4	11.6	17.9	13.0	24.1	0.0	12.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.20		1.00
Lane Grp Cap(c), veh/h	319	1196	514	171	880	375	655	355	293	405	0	335
V/C Ratio(X)	0.40	0.59	0.49	0.85	0.69	0.15	0.56	0.82	0.62	0.93	0.00	0.54
Avail Cap(c_a), veh/h	319	1196	514	186	880	375	893	483	399	438	0	362
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.5	32.9	31.6	53.4	41.0	35.3	44.1	46.7	44.7	46.0	0.0	41.6
Incr Delay (d2), s/veh	0.3	2.1	3.3	25.5	4.4	0.8	0.3	5.8	0.8	25.3	0.0	0.5
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	3.3	8.6	6.1	5.4	8.5	1.3	5.0	8.8	5.0	13.9	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	35.1	34.9	78.9	45.4	36.1	44.4	52.5	45.5	71.4	0.0	42.1
LnGrp LOS	D	D	C	E	D	D	D	D	D	E	A	D
Approach Vol, veh/h		1083			808			842			560	
Approach Delay, s/veh		36.1			50.8			47.4			61.9	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.1	45.7		30.8	26.8	35.0		27.4				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.5	29.0		28.4	11.8	* 30		31.0				
Max Q Clear Time (g_c+I1), s	11.6	21.7		26.1	9.6	20.6		19.9				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.6		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

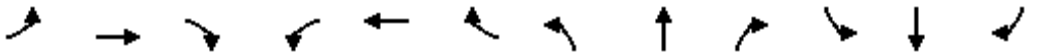
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	235	61	38	184	40	56	209	50	73	219	209
Future Volume (veh/h)	129	235	61	38	184	40	56	209	50	73	219	209
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.97		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	255	66	41	200	43	61	227	54	79	238	227
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	181	397	103	76	326	70	240	527	125	397	308	294
Arrive On Green	0.10	0.28	0.28	0.04	0.22	0.22	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1422	368	1781	1482	319	909	1441	343	1062	841	803
Grp Volume(v), veh/h	140	0	321	41	0	243	61	0	281	79	0	465
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1781	0	1800	909	0	1783	1062	0	1644
Q Serve(g_s), s	4.1	0.0	8.4	1.2	0.0	6.5	3.4	0.0	6.3	3.2	0.0	13.4
Cycle Q Clear(g_c), s	4.1	0.0	8.4	1.2	0.0	6.5	16.8	0.0	6.3	9.6	0.0	13.4
Prop In Lane	1.00		0.21	1.00		0.18	1.00		0.19	1.00		0.49
Lane Grp Cap(c), veh/h	181	0	499	76	0	396	240	0	652	397	0	601
V/C Ratio(X)	0.77	0.00	0.64	0.54	0.00	0.61	0.25	0.00	0.43	0.20	0.00	0.77
Avail Cap(c_a), veh/h	337	0	1240	357	0	1146	240	0	652	446	0	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	16.9	25.1	0.0	18.8	22.4	0.0	12.8	16.4	0.0	15.0
Incr Delay (d2), s/veh	6.8	0.0	1.4	5.8	0.0	1.5	0.6	0.0	0.5	0.2	0.0	5.0
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	1.9	0.0	3.3	0.6	0.0	2.6	0.7	0.0	2.3	0.7	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	0.0	18.3	30.9	0.0	20.3	22.9	0.0	13.2	16.6	0.0	19.9
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	B
Approach Vol, veh/h		461			284			342			544	
Approach Delay, s/veh		21.9			21.9			14.9			19.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	20.7		25.3	10.5	17.5		25.3				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.2	10.4		15.4	6.1	8.5		18.8				
Green Ext Time (p_c), s	0.0	2.0		1.9	0.1	1.4		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		19.6	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	473	0	0	353	650	158	3	391	0	0	0
Future Volume (veh/h)	112	473	0	0	353	650	158	3	391	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	117	493	0	0	368	0	165	3	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	289	987	0	0	513		431	8				
Arrive On Green	0.16	0.53	0.00	0.00	0.27	0.00	0.25	0.25	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1751	32	1585			
Grp Volume(v), veh/h	117	493	0	0	368	0	168	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1783	0	1585			
Q Serve(g_s), s	2.4	6.9	0.0	0.0	7.2	0.0	3.2	0.0	0.0			
Cycle Q Clear(g_c), s	2.4	6.9	0.0	0.0	7.2	0.0	3.2	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	289	987	0	0	513		438	0				
V/C Ratio(X)	0.40	0.50	0.00	0.00	0.72		0.38	0.00				
Avail Cap(c_a), veh/h	407	1720	0	0	1122		588	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	15.3	6.2	0.0	0.0	13.3	0.0	12.8	0.0	0.0			
Incr Delay (d2), s/veh	0.9	0.4	0.0	0.0	1.9	0.0	0.5	0.0	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			
%ile BackOfQ(50%),veh/ln	0.9	1.9	0.0	0.0	2.7	0.0	1.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	6.5	0.0	0.0	15.2	0.0	13.3	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		610			368	A		168	A			
Approach Delay, s/veh		8.4			15.2			13.3				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		26.1			10.3	15.8		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		8.9			4.4	9.2		5.2				
Green Ext Time (p_c), s		3.6			0.1	1.9		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



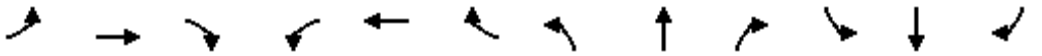
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	71	0	0	477	14	544
Future Volume (veh/h)	71	0	0	477	14	544
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	81	0	0	542	16	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	760	0	0	760	521	
Arrive On Green	0.41	0.00	0.00	0.41	0.29	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	81	0	0	542	16	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	0.9	0.0	0.0	8.3	0.2	0.0
Cycle Q Clear(g_c), s	0.9	0.0	0.0	8.3	0.2	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	760	0	0	760	521	
V/C Ratio(X)	0.11	0.00	0.00	0.71	0.03	
Avail Cap(c_a), veh/h	1821	0	0	1821	854	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.3	0.0	0.0	8.5	8.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	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	0.2	0.0	0.0	2.4	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.4	0.0	0.0	9.7	8.7	0.0
LnGrp LOS	A	A	A	A	A	
Approach Vol, veh/h	81			542	16	A
Approach Delay, s/veh	6.4			9.7	8.7	
Approach LOS	A			A	A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		19.6				19.6	14.6
Change Period (Y+Rc), s		5.7				5.7	4.6
Max Green Setting (Gmax), s		33.3				33.3	16.4
Max Q Clear Time (g_c+I1), s		2.9				10.3	2.2
Green Ext Time (p_c), s		0.4				3.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



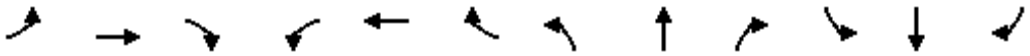
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1004	214	135	683	53	354	298	139	109	194	150
Future Volume (veh/h)	238	1004	214	135	683	53	354	298	139	109	194	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	1035	221	139	704	55	365	307	143	112	200	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	1128	480	251	1111	475	684	370	301	118	210	271
Arrive On Green	0.15	0.32	0.32	0.14	0.31	0.31	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1512	1781	3554	1519	3456	1870	1522	660	1178	1517
Grp Volume(v), veh/h	245	1035	221	139	704	55	365	307	143	312	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1512	1781	1777	1519	1728	1870	1522	1837	0	1517
Q Serve(g_s), s	16.2	33.7	14.0	8.7	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Cycle Q Clear(g_c), s	16.2	33.7	14.0	8.7	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	271	1128	480	251	1111	475	684	370	301	328	0	271
V/C Ratio(X)	0.91	0.92	0.46	0.55	0.63	0.12	0.53	0.83	0.47	0.95	0.00	0.57
Avail Cap(c_a), veh/h	273	1128	480	251	1111	475	893	483	393	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	39.4	32.7	48.0	35.4	29.4	43.1	46.2	42.6	48.8	0.0	45.1
Incr Delay (d2), s/veh	30.2	13.1	3.2	1.6	2.8	0.5	0.2	7.1	0.4	36.8	0.0	1.9
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	9.3	16.2	5.4	3.9	9.0	1.2	4.8	9.4	3.8	12.6	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.3	52.5	35.9	49.6	38.1	29.9	43.4	53.3	43.0	85.6	0.0	47.0
LnGrp LOS	F	D	D	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1501			898			815			467	
Approach Delay, s/veh		54.6			39.4			47.0			72.8	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.2	43.4		26.0	22.8	42.8		28.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	10.4	* 38		21.4	18.4	30.1		31.0				
Max Q Clear Time (g_c+I1), s	10.7	35.7		22.2	18.2	22.4		20.9				
Green Ext Time (p_c), s	0.0	0.6		0.0	0.0	0.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.5	
HCM 6th LOS		D	

Notes

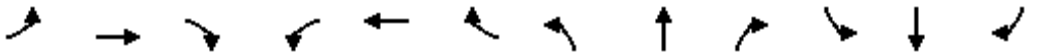
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	282	123	52	130	61	65	257	46	65	259	142
Future Volume (veh/h)	243	282	123	52	130	61	65	257	46	65	259	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	251	291	127	54	134	63	67	265	47	67	267	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	397	173	90	243	114	241	503	89	327	367	201
Arrive On Green	0.17	0.33	0.33	0.05	0.20	0.20	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	1221	533	1781	1188	559	968	1537	273	1061	1122	613
Grp Volume(v), veh/h	251	0	418	54	0	197	67	0	312	67	0	413
Grp Sat Flow(s),veh/h/ln	1781	0	1755	1781	0	1747	968	0	1810	1061	0	1735
Q Serve(g_s), s	7.6	0.0	11.9	1.7	0.0	5.7	3.7	0.0	7.9	3.1	0.0	11.8
Cycle Q Clear(g_c), s	7.6	0.0	11.9	1.7	0.0	5.7	15.5	0.0	7.9	11.0	0.0	11.8
Prop In Lane	1.00		0.30	1.00		0.32	1.00		0.15	1.00		0.35
Lane Grp Cap(c), veh/h	305	0	570	90	0	357	241	0	592	327	0	568
V/C Ratio(X)	0.82	0.00	0.73	0.60	0.00	0.55	0.28	0.00	0.53	0.21	0.00	0.73
Avail Cap(c_a), veh/h	390	0	1239	209	0	1057	304	0	708	395	0	679
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	16.8	26.1	0.0	20.1	23.5	0.0	15.4	19.8	0.0	16.7
Incr Delay (d2), s/veh	10.6	0.0	1.8	6.2	0.0	1.3	0.6	0.0	0.7	0.3	0.0	3.2
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	3.8	0.0	4.5	0.8	0.0	2.3	0.8	0.0	3.0	0.7	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	18.7	32.3	0.0	21.4	24.2	0.0	16.1	20.1	0.0	19.9
LnGrp LOS	C	A	B	C	A	C	C	A	B	C	A	B
Approach Vol, veh/h		669			251			379			480	
Approach Delay, s/veh		24.1			23.7			17.5			19.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	24.1		24.2	14.7	17.3		24.2				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	3.7	13.9		13.8	9.6	7.7		17.5				
Green Ext Time (p_c), s	0.0	2.8		1.9	0.2	1.2		0.9				

Intersection Summary												
HCM 6th Ctrl Delay			21.5									
HCM 6th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	623	0	0	355	493	76	4	406	0	0	0
Future Volume (veh/h)	155	623	0	0	355	493	76	4	406	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	161	649	0	0	370	0	79	4	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	291	928	0	0	481		536	27				
Arrive On Green	0.16	0.50	0.00	0.00	0.26	0.00	0.32	0.32	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1699	86	1585			
Grp Volume(v), veh/h	161	649	0	0	370	0	83	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1785	0	1585			
Q Serve(g_s), s	4.1	13.1	0.0	0.0	8.9	0.0	1.6	0.0	0.0			
Cycle Q Clear(g_c), s	4.1	13.1	0.0	0.0	8.9	0.0	1.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	291	928	0	0	481		563	0				
V/C Ratio(X)	0.55	0.70	0.00	0.00	0.77		0.15	0.00				
Avail Cap(c_a), veh/h	376	1356	0	0	820		563	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	18.8	9.5	0.0	0.0	16.8	0.0	12.0	0.0	0.0			
Incr Delay (d2), s/veh	1.6	1.0	0.0	0.0	2.6	0.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.7	4.4	0.0	0.0	3.7	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	10.5	0.0	0.0	19.4	0.0	12.6	0.0	0.0			
LnGrp LOS	C	B	A	A	B		B	A				
Approach Vol, veh/h		810			370	A		83	A			
Approach Delay, s/veh		12.4			19.4			12.6				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		28.8			11.7	17.2		20.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		35.4			10.3	21.4		15.4				
Max Q Clear Time (g_c+I1), s		15.1			6.1	10.9		3.6				
Green Ext Time (p_c), s		4.7			0.2	1.6		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



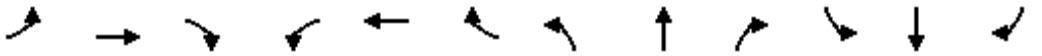
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	403	0	0	698	56	455
Future Volume (veh/h)	403	0	0	698	56	455
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	474	0	0	821	66	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	966	0	0	966	424	
Arrive On Green	0.52	0.00	0.00	0.52	0.24	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	474	0	0	821	66	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	6.9	0.0	0.0	15.9	1.2	0.0
Cycle Q Clear(g_c), s	6.9	0.0	0.0	15.9	1.2	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	966	0	0	966	424	
V/C Ratio(X)	0.49	0.00	0.00	0.85	0.16	
Avail Cap(c_a), veh/h	1177	0	0	1177	989	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.6	0.0	0.0	8.8	12.6	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	5.2	0.2	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	1.9	0.0	0.0	5.4	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.0	0.0	0.0	13.9	12.8	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	474			821	66	A
Approach Delay, s/veh	7.0			13.9	12.8	
Approach LOS	A			B	B	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	27.3				27.3	14.7
Change Period (Y+Rc), s	5.6				5.6	4.7
Max Green Setting (Gmax), s	26.4				26.4	23.3
Max Q Clear Time (g_c+I1), s	8.9				17.9	3.2
Green Ext Time (p_c), s	2.8				3.8	0.1

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



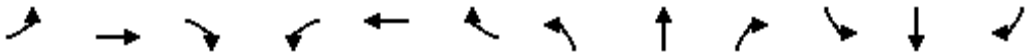
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	656	235	137	565	51	343	271	169	71	283	169
Future Volume (veh/h)	118	656	235	137	565	51	343	271	169	71	283	169
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	705	253	147	608	55	369	291	182	76	304	182
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	1188	511	173	880	375	655	355	293	81	325	336
Arrive On Green	0.18	0.33	0.33	0.10	0.25	0.25	0.19	0.19	0.19	0.22	0.22	0.22
Sat Flow, veh/h	1781	3554	1528	1781	3554	1515	3456	1870	1545	370	1481	1531
Grp Volume(v), veh/h	127	705	253	147	608	55	369	291	182	380	0	182
Grp Sat Flow(s),veh/h/ln	1781	1777	1528	1781	1777	1515	1728	1870	1545	1852	0	1531
Q Serve(g_s), s	7.6	19.8	15.8	9.7	18.6	3.4	11.6	17.9	13.0	24.2	0.0	12.6
Cycle Q Clear(g_c), s	7.6	19.8	15.8	9.7	18.6	3.4	11.6	17.9	13.0	24.2	0.0	12.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.20		1.00
Lane Grp Cap(c), veh/h	318	1188	511	173	880	375	655	355	293	407	0	336
V/C Ratio(X)	0.40	0.59	0.50	0.85	0.69	0.15	0.56	0.82	0.62	0.93	0.00	0.54
Avail Cap(c_a), veh/h	318	1188	511	186	880	375	893	483	399	438	0	362
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	33.2	31.9	53.3	41.0	35.3	44.1	46.7	44.7	46.0	0.0	41.5
Incr Delay (d2), s/veh	0.3	2.2	3.4	26.1	4.4	0.8	0.3	5.8	0.8	25.5	0.0	0.5
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	3.3	8.6	6.2	5.5	8.5	1.3	5.0	8.8	5.0	14.1	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	35.3	35.3	79.4	45.4	36.1	44.4	52.5	45.5	71.5	0.0	42.0
LnGrp LOS	D	D	D	E	D	D	D	D	D	E	A	D
Approach Vol, veh/h		1085			810			842			562	
Approach Delay, s/veh		36.3			51.0			47.4			62.0	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.3	45.4		31.0	26.7	35.0		27.4				
Change Period (Y+Rc), s	4.6	5.3		4.6	5.3	* 5.3		4.6				
Max Green Setting (Gmax), s	12.5	29.0		28.4	11.8	* 30		31.0				
Max Q Clear Time (g_c+I1), s	11.7	21.8		26.2	9.6	20.6		19.9				
Green Ext Time (p_c), s	0.0	0.7		0.2	0.0	0.6		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		47.1	
HCM 6th LOS		D	

Notes

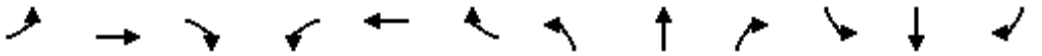
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	235	61	38	186	40	59	209	50	73	219	210
Future Volume (veh/h)	129	235	61	38	186	40	59	209	50	73	219	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.97		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	140	255	66	41	202	43	64	227	54	79	238	228
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	181	397	103	76	327	70	239	527	125	397	307	294
Arrive On Green	0.10	0.28	0.28	0.04	0.22	0.22	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1422	368	1781	1485	316	908	1441	343	1062	839	804
Grp Volume(v), veh/h	140	0	321	41	0	245	64	0	281	79	0	466
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1781	0	1801	908	0	1783	1062	0	1644
Q Serve(g_s), s	4.1	0.0	8.4	1.2	0.0	6.6	3.6	0.0	6.3	3.2	0.0	13.4
Cycle Q Clear(g_c), s	4.1	0.0	8.4	1.2	0.0	6.6	17.0	0.0	6.3	9.6	0.0	13.4
Prop In Lane	1.00		0.21	1.00		0.18	1.00		0.19	1.00		0.49
Lane Grp Cap(c), veh/h	181	0	500	76	0	396	239	0	653	397	0	601
V/C Ratio(X)	0.77	0.00	0.64	0.54	0.00	0.62	0.27	0.00	0.43	0.20	0.00	0.77
Avail Cap(c_a), veh/h	336	0	1239	356	0	1145	239	0	653	445	0	676
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	16.9	25.1	0.0	18.8	22.5	0.0	12.8	16.4	0.0	15.0
Incr Delay (d2), s/veh	6.8	0.0	1.4	5.8	0.0	1.6	0.6	0.0	0.4	0.2	0.0	5.0
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	1.9	0.0	3.3	0.6	0.0	2.6	0.7	0.0	2.3	0.7	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	0.0	18.3	30.9	0.0	20.4	23.1	0.0	13.2	16.6	0.0	20.0
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	C
Approach Vol, veh/h		461			286			345			545	
Approach Delay, s/veh		21.9			21.9			15.1			19.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	20.7		25.4	10.5	17.6		25.4				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.2	10.4		15.4	6.1	8.6		19.0				
Green Ext Time (p_c), s	0.0	2.0		1.9	0.1	1.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		19.7	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	473	0	0	353	657	160	3	395	0	0	0
Future Volume (veh/h)	117	473	0	0	353	657	160	3	395	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	122	493	0	0	368	0	167	3	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	294	991	0	0	513		429	8				
Arrive On Green	0.17	0.53	0.00	0.00	0.27	0.00	0.24	0.24	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1751	31	1585			
Grp Volume(v), veh/h	122	493	0	0	368	0	170	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1783	0	1585			
Q Serve(g_s), s	2.5	6.9	0.0	0.0	7.3	0.0	3.3	0.0	0.0			
Cycle Q Clear(g_c), s	2.5	6.9	0.0	0.0	7.3	0.0	3.3	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.98		1.00			
Lane Grp Cap(c), veh/h	294	991	0	0	513		437	0				
V/C Ratio(X)	0.41	0.50	0.00	0.00	0.72		0.39	0.00				
Avail Cap(c_a), veh/h	406	1713	0	0	1118		585	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	15.3	6.1	0.0	0.0	13.4	0.0	12.9	0.0	0.0			
Incr Delay (d2), s/veh	0.9	0.4	0.0	0.0	1.9	0.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.0	1.9	0.0	0.0	2.7	0.0	1.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	6.5	0.0	0.0	15.3	0.0	13.4	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		615			368	A		170	A			
Approach Delay, s/veh		8.4			15.3			13.4				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		26.2			10.4	15.8		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		8.9			4.5	9.3		5.3				
Green Ext Time (p_c), s		3.6			0.1	1.9		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			11.4									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



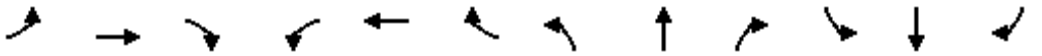
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	71	0	0	478	14	546
Future Volume (veh/h)	71	0	0	478	14	546
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	81	0	0	543	16	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	761	0	0	761	520	
Arrive On Green	0.41	0.00	0.00	0.41	0.29	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	81	0	0	543	16	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	0.9	0.0	0.0	8.3	0.2	0.0
Cycle Q Clear(g_c), s	0.9	0.0	0.0	8.3	0.2	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	761	0	0	761	520	
V/C Ratio(X)	0.11	0.00	0.00	0.71	0.03	
Avail Cap(c_a), veh/h	1819	0	0	1819	853	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.3	0.0	0.0	8.5	8.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	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	0.2	0.0	0.0	2.4	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.4	0.0	0.0	9.7	8.7	0.0
LnGrp LOS	A	A	A	A	A	
Approach Vol, veh/h	81			543	16	A
Approach Delay, s/veh	6.4			9.7	8.7	
Approach LOS	A			A	A	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	19.6				19.6	14.6
Change Period (Y+Rc), s	5.7				5.7	4.6
Max Green Setting (Gmax), s	33.3				33.3	16.4
Max Q Clear Time (g_c+I1), s	2.9				10.3	2.2
Green Ext Time (p_c), s	0.4				3.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1004	215	137	683	53	355	298	139	109	195	150
Future Volume (veh/h)	238	1004	215	137	683	53	355	298	139	109	195	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.96	1.00		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	1035	222	141	704	55	366	307	143	112	201	155
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	1128	480	251	1111	475	684	370	301	117	210	271
Arrive On Green	0.15	0.32	0.32	0.14	0.31	0.31	0.20	0.20	0.20	0.18	0.18	0.18
Sat Flow, veh/h	1781	3554	1512	1781	3554	1519	3456	1870	1522	658	1180	1517
Grp Volume(v), veh/h	245	1035	222	141	704	55	366	307	143	313	0	155
Grp Sat Flow(s),veh/h/ln	1781	1777	1512	1781	1777	1519	1728	1870	1522	1837	0	1517
Q Serve(g_s), s	16.2	33.7	14.1	8.9	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Cycle Q Clear(g_c), s	16.2	33.7	14.1	8.9	20.4	3.1	11.4	18.9	10.0	20.2	0.0	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.36		1.00
Lane Grp Cap(c), veh/h	271	1128	480	251	1111	475	684	370	301	328	0	271
V/C Ratio(X)	0.91	0.92	0.46	0.56	0.63	0.12	0.53	0.83	0.47	0.96	0.00	0.57
Avail Cap(c_a), veh/h	273	1128	480	251	1111	475	893	483	393	328	0	271
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.0	39.4	32.8	48.1	35.4	29.4	43.2	46.2	42.6	48.8	0.0	45.1
Incr Delay (d2), s/veh	30.2	13.1	3.2	1.7	2.8	0.5	0.2	7.1	0.4	37.5	0.0	1.9
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	9.3	16.2	5.5	4.0	9.0	1.2	4.9	9.4	3.8	12.7	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.3	52.5	35.9	49.8	38.1	29.9	43.4	53.3	43.0	86.4	0.0	47.0
LnGrp LOS	F	D	D	D	D	C	D	D	D	F	A	D
Approach Vol, veh/h		1502			900			816			468	
Approach Delay, s/veh		54.6			39.4			47.0			73.3	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.2	43.4		26.0	22.8	42.8		28.4				
Change Period (Y+Rc), s	5.3	* 5.3		4.6	4.6	5.3		4.6				
Max Green Setting (Gmax), s	10.4	* 38		21.4	18.4	30.1		31.0				
Max Q Clear Time (g_c+I1), s	10.9	35.7		22.2	18.2	22.4		20.9				
Green Ext Time (p_c), s	0.0	0.6		0.0	0.0	0.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		51.6	
HCM 6th LOS		D	

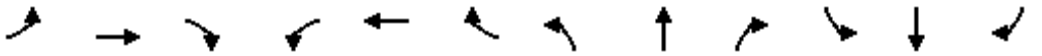
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	283	123	52	132	61	67	257	46	65	259	142
Future Volume (veh/h)	243	283	123	52	132	61	67	257	46	65	259	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	251	292	127	54	136	63	69	265	47	67	267	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	397	173	90	244	113	243	505	90	328	368	201
Arrive On Green	0.17	0.32	0.32	0.05	0.20	0.20	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	1223	532	1781	1195	553	968	1537	273	1061	1122	613
Grp Volume(v), veh/h	251	0	419	54	0	199	69	0	312	67	0	413
Grp Sat Flow(s),veh/h/ln	1781	0	1755	1781	0	1748	968	0	1810	1061	0	1735
Q Serve(g_s), s	7.7	0.0	11.9	1.7	0.0	5.8	3.8	0.0	7.9	3.1	0.0	11.8
Cycle Q Clear(g_c), s	7.7	0.0	11.9	1.7	0.0	5.8	15.6	0.0	7.9	11.0	0.0	11.8
Prop In Lane	1.00		0.30	1.00		0.32	1.00		0.15	1.00		0.35
Lane Grp Cap(c), veh/h	305	0	570	90	0	356	243	0	594	328	0	570
V/C Ratio(X)	0.82	0.00	0.74	0.60	0.00	0.56	0.28	0.00	0.52	0.20	0.00	0.72
Avail Cap(c_a), veh/h	389	0	1236	209	0	1055	303	0	707	394	0	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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	16.9	26.2	0.0	20.2	23.6	0.0	15.4	19.8	0.0	16.7
Incr Delay (d2), s/veh	10.7	0.0	1.9	6.2	0.0	1.4	0.6	0.0	0.7	0.3	0.0	3.1
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	3.8	0.0	4.5	0.8	0.0	2.3	0.9	0.0	3.0	0.7	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.2	0.0	18.8	32.4	0.0	21.5	24.2	0.0	16.1	20.1	0.0	19.8
LnGrp LOS	C	A	B	C	A	C	C	A	B	C	A	B
Approach Vol, veh/h		670			253			381			480	
Approach Delay, s/veh		24.2			23.8			17.5			19.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	24.1		24.3	14.8	17.3		24.3				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	3.7	13.9		13.8	9.7	7.8		17.6				
Green Ext Time (p_c), s	0.0	2.9		1.9	0.2	1.2		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		21.5	
HCM 6th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	623	0	0	355	497	78	4	408	0	0	0
Future Volume (veh/h)	161	623	0	0	355	497	78	4	408	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	168	649	0	0	370	0	81	4	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	294	931	0	0	480		535	26				
Arrive On Green	0.17	0.50	0.00	0.00	0.26	0.00	0.31	0.31	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1701	84	1585			
Grp Volume(v), veh/h	168	649	0	0	370	0	85	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1785	0	1585			
Q Serve(g_s), s	4.3	13.1	0.0	0.0	9.0	0.0	1.7	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	13.1	0.0	0.0	9.0	0.0	1.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	294	931	0	0	480		562	0				
V/C Ratio(X)	0.57	0.70	0.00	0.00	0.77		0.15	0.00				
Avail Cap(c_a), veh/h	375	1352	0	0	818		562	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	18.8	9.5	0.0	0.0	16.9	0.0	12.1	0.0	0.0			
Incr Delay (d2), s/veh	1.7	1.0	0.0	0.0	2.6	0.0	0.6	0.0	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			
%ile BackOfQ(50%),veh/ln	1.8	4.4	0.0	0.0	3.7	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	10.4	0.0	0.0	19.5	0.0	12.6	0.0	0.0			
LnGrp LOS	C	B	A	A	B		B	A				
Approach Vol, veh/h		817			370	A		85	A			
Approach Delay, s/veh		12.5			19.5			12.6				
Approach LOS		B			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		29.0			11.8	17.2		20.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		35.4			10.3	21.4		15.4				
Max Q Clear Time (g_c+I1), s		15.1			6.3	11.0		3.7				
Green Ext Time (p_c), s		4.7			0.2	1.6		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



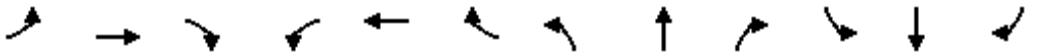
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	421	0	0	697	66	479
Future Volume (veh/h)	421	0	0	697	66	479
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	495	0	0	820	78	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	965	0	0	965	425	
Arrive On Green	0.52	0.00	0.00	0.52	0.24	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	495	0	0	820	78	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	7.3	0.0	0.0	15.8	1.5	0.0
Cycle Q Clear(g_c), s	7.3	0.0	0.0	15.8	1.5	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	965	0	0	965	425	
V/C Ratio(X)	0.51	0.00	0.00	0.85	0.18	
Avail Cap(c_a), veh/h	1177	0	0	1177	990	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	8.7	12.7	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	5.1	0.2	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	2.0	0.0	0.0	5.4	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	0.0	0.0	13.9	12.9	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	495			820	78	A
Approach Delay, s/veh	7.1			13.9	12.9	
Approach LOS	A			B	B	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	27.2				27.2	14.7
Change Period (Y+Rc), s	5.6				5.6	4.7
Max Green Setting (Gmax), s	26.4				26.4	23.3
Max Q Clear Time (g_c+I1), s	9.3				17.8	3.5
Green Ext Time (p_c), s	2.9				3.8	0.2

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	702	290	160	620	272	244	507	166	259	459	165
Future Volume (veh/h)	222	702	290	160	620	272	244	507	166	259	459	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.90	1.00		0.91
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	739	305	168	653	286	257	534	175	273	483	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	782	334	483	1015	438	311	552	423	299	697	537
Arrive On Green	0.08	0.22	0.22	0.14	0.29	0.29	0.09	0.29	0.29	0.17	0.37	0.37
Sat Flow, veh/h	3456	3554	1517	3456	3554	1534	3456	1870	1434	1781	1870	1442
Grp Volume(v), veh/h	234	739	305	168	653	286	257	534	175	273	483	174
Grp Sat Flow(s),veh/h/ln	1728	1777	1517	1728	1777	1534	1728	1870	1434	1781	1870	1442
Q Serve(g_s), s	8.0	24.6	18.2	5.3	19.3	19.6	8.8	33.8	7.9	18.1	26.2	10.3
Cycle Q Clear(g_c), s	8.0	24.6	18.2	5.3	19.3	19.6	8.8	33.8	7.9	18.1	26.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	782	334	483	1015	438	311	552	423	299	697	537
V/C Ratio(X)	0.81	0.95	0.91	0.35	0.64	0.65	0.83	0.97	0.41	0.91	0.69	0.32
Avail Cap(c_a), veh/h	288	782	334	483	1015	438	826	552	423	426	697	537
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	1.00	1.00	0.64	0.64	0.64	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	46.1	27.4	46.7	37.5	37.6	53.7	41.7	15.3	49.1	31.8	26.9
Incr Delay (d2), s/veh	15.1	21.3	31.6	0.2	3.1	7.4	1.4	22.9	0.2	15.5	2.5	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	4.0	12.9	9.3	2.2	8.6	8.0	3.9	18.9	3.8	9.1	11.8	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	67.4	59.0	46.8	40.6	45.0	55.0	64.6	15.5	64.6	34.3	27.0
LnGrp LOS	E	E	E	D	D	D	E	E	B	E	C	C
Approach Vol, veh/h		1278			1107			966			930	
Approach Delay, s/veh		65.7			42.7			53.2			41.8	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	40.0	24.7	40.7	22.5	32.1	15.4	50.0
Change Period (Y+Rc), s	4.6	5.7	4.6	* 5.3	5.7	* 5.7	4.6	5.3
Max Green Setting (Gmax), s	10.0	26.4	28.7	* 35	10.0	* 26	28.7	34.7
Max Q Clear Time (g_c+I1), s	10.0	21.6	20.1	35.8	7.3	26.6	10.8	28.2
Green Ext Time (p_c), s	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	51.7
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	686	325	145	610	61	390	281	179	81	291	207
Future Volume (veh/h)	135	686	325	145	610	61	390	281	179	81	291	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.99	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	738	349	156	656	66	419	302	192	87	313	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1129	485	182	897	383	484	655	547	388	325	232
Arrive On Green	0.16	0.32	0.32	0.10	0.25	0.25	0.10	0.35	0.35	0.07	0.32	0.32
Sat Flow, veh/h	1781	3554	1527	1781	3554	1516	3456	1870	1563	1781	1003	715
Grp Volume(v), veh/h	145	738	349	156	656	66	419	302	192	87	0	536
Grp Sat Flow(s),veh/h/ln	1781	1777	1527	1781	1777	1516	1728	1870	1563	1781	0	1718
Q Serve(g_s), s	8.9	21.5	24.3	10.3	20.3	3.2	9.6	15.0	10.9	3.6	0.0	36.8
Cycle Q Clear(g_c), s	8.9	21.5	24.3	10.3	20.3	3.2	9.6	15.0	10.9	3.6	0.0	36.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	288	1129	485	182	897	383	484	655	547	388	0	557
V/C Ratio(X)	0.50	0.65	0.72	0.86	0.73	0.17	0.87	0.46	0.35	0.22	0.00	0.96
Avail Cap(c_a), veh/h	288	1129	485	199	897	383	650	690	577	448	0	564
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.9	35.3	36.2	53.0	41.1	22.1	29.1	30.2	28.9	22.2	0.0	39.9
Incr Delay (d2), s/veh	0.6	3.0	8.9	25.4	5.2	1.0	7.4	0.2	0.1	0.1	0.0	28.3
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	3.9	9.5	10.1	5.8	9.3	1.6	4.3	6.7	4.1	1.5	0.0	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	38.2	45.1	78.4	46.3	23.1	36.5	30.4	29.0	22.3	0.0	68.2
LnGrp LOS	D	D	D	E	D	C	D	C	C	C	A	E
Approach Vol, veh/h		1232			878			913			623	
Approach Delay, s/veh		41.1			50.3			32.9			61.8	
Approach LOS		D			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	43.4	16.2	43.5	24.7	35.6	13.1	46.6
Change Period (Y+Rc), s	4.6	5.3	4.6	4.6	5.3	* 5.3	4.6	4.6
Max Green Setting (Gmax), s	13.4	30.7	17.4	39.4	13.8	* 30	12.5	44.3
Max Q Clear Time (g_c+I1), s	12.3	26.3	11.6	38.8	10.9	22.3	5.6	17.0
Green Ext Time (p_c), s	0.0	0.6	0.1	0.1	0.0	0.6	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

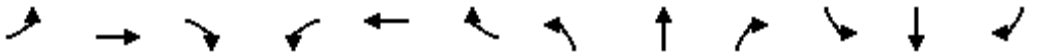
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	370	373	275	465	123	419	827	330	113	474	87
Future Volume (veh/h)	80	370	373	275	465	123	419	827	330	113	474	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	389	393	289	489	129	441	871	347	119	499	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	959	788	471	929	243	411	1280	558	146	605	111
Arrive On Green	0.08	0.27	0.27	0.14	0.34	0.34	0.23	0.36	0.36	0.08	0.20	0.20
Sat Flow, veh/h	1781	3554	1564	3456	2770	726	1781	3554	1550	1781	2980	546
Grp Volume(v), veh/h	84	389	393	289	312	306	441	871	347	119	296	295
Grp Sat Flow(s),veh/h/ln	1781	1777	1564	1728	1777	1719	1781	1777	1550	1781	1777	1750
Q Serve(g_s), s	5.0	9.9	0.0	8.7	15.6	15.8	25.4	22.9	13.4	7.2	17.5	17.8
Cycle Q Clear(g_c), s	5.0	9.9	0.0	8.7	15.6	15.8	25.4	22.9	13.4	7.2	17.5	17.8
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	135	959	788	471	596	576	411	1280	558	146	360	355
V/C Ratio(X)	0.62	0.41	0.50	0.61	0.52	0.53	1.07	0.68	0.62	0.82	0.82	0.83
Avail Cap(c_a), veh/h	177	959	788	471	596	576	411	1280	558	241	452	445
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	32.9	18.2	44.8	29.5	29.6	42.3	29.8	12.7	49.7	41.9	42.0
Incr Delay (d2), s/veh	1.3	0.9	1.7	1.7	3.3	3.5	65.0	1.2	1.6	4.2	7.7	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	2.3	4.4	6.9	3.9	7.2	7.1	18.6	10.0	4.8	3.4	8.5	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	33.9	19.9	46.5	32.8	33.0	107.3	31.1	14.3	53.8	49.6	50.5
LnGrp LOS	D	C	B	D	C	C	F	C	B	D	D	D
Approach Vol, veh/h		866			907			1659			710	
Approach Delay, s/veh		29.1			37.2			47.8			50.7	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	33.9	30.0	26.9	12.0	41.1	12.7	44.2
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 9.8	* 30	25.4	28.0	10.9	* 29	14.9	39.4
Max Q Clear Time (g_c+I1), s	10.7	11.9	27.4	19.8	7.0	17.8	9.2	24.9
Green Ext Time (p_c), s	0.0	2.5	0.0	1.4	0.0	2.1	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Notes

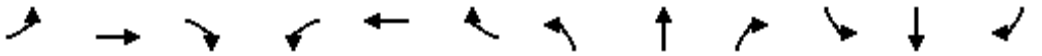
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	255	76	52	200	50	87	219	60	83	229	254
Future Volume (veh/h)	146	255	76	52	200	50	87	219	60	83	229	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.97		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	277	83	57	217	54	95	238	65	90	249	276
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	203	401	120	92	331	82	182	511	140	371	284	314
Arrive On Green	0.11	0.29	0.29	0.05	0.23	0.23	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1371	411	1781	1435	357	863	1393	381	1042	773	856
Grp Volume(v), veh/h	159	0	360	57	0	271	95	0	303	90	0	525
Grp Sat Flow(s),veh/h/ln	1781	0	1782	1781	0	1792	863	0	1774	1042	0	1629
Q Serve(g_s), s	5.0	0.0	10.4	1.8	0.0	7.9	3.8	0.0	7.5	4.2	0.0	17.4
Cycle Q Clear(g_c), s	5.0	0.0	10.4	1.8	0.0	7.9	21.2	0.0	7.5	11.7	0.0	17.4
Prop In Lane	1.00		0.23	1.00		0.20	1.00		0.21	1.00		0.53
Lane Grp Cap(c), veh/h	203	0	521	92	0	413	182	0	651	371	0	598
V/C Ratio(X)	0.78	0.00	0.69	0.62	0.00	0.66	0.52	0.00	0.47	0.24	0.00	0.88
Avail Cap(c_a), veh/h	311	0	1140	330	0	1054	182	0	651	385	0	620
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	18.1	26.9	0.0	20.2	27.8	0.0	14.0	18.4	0.0	17.1
Incr Delay (d2), s/veh	7.0	0.0	1.7	6.5	0.0	1.8	2.7	0.0	0.5	0.3	0.0	13.3
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	2.4	0.0	4.1	0.9	0.0	3.2	1.4	0.0	2.8	1.0	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	19.8	33.4	0.0	22.0	30.5	0.0	14.5	18.8	0.0	30.3
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	C
Approach Vol, veh/h		519			328			398			615	
Approach Delay, s/veh		23.5			23.9			18.3			28.7	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	22.7		27.0	11.7	19.1		27.0				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.8	12.4		19.4	7.0	9.9		23.2				
Green Ext Time (p_c), s	0.0	2.3		1.0	0.1	1.6		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		24.2	
HCM 6th LOS		C	



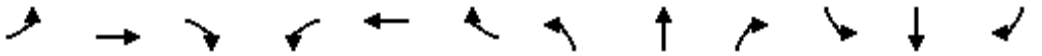
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	193	199	0	320	0	0	0	0	496	0	255
Future Volume (veh/h)	0	193	199	0	320	0	0	0	0	496	0	255
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	203	0	0	337	0				522	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	0				2	0	2
Cap, veh/h	0	636		0	636	0				673	0	
Arrive On Green	0.00	0.34	0.00	0.00	0.34	0.00				0.38	0.00	0.00
Sat Flow, veh/h	0	1870	0	0	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	203	0	0	337	0				522	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	0	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	2.4	0.0	0.0	4.3	0.0				7.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.4	0.0	0.0	4.3	0.0				7.6	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	636		0	636	0				673	0	
V/C Ratio(X)	0.00	0.32		0.00	0.53	0.00				0.78	0.00	
Avail Cap(c_a), veh/h	0	1425		0	1425	0				1775	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	7.2	0.0	0.0	7.8	0.0				8.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.7	0.0				2.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	1.2	0.0				2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.5	0.0	0.0	8.5	0.0				10.0	0.0	0.0
LnGrp LOS	A	A		A	A	A				B	A	
Approach Vol, veh/h		203	A		337						522	A
Approach Delay, s/veh		7.5			8.5						10.0	
Approach LOS		A			A						B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		14.6		14.8		14.6						
Change Period (Y+Rc), s		4.6		3.7		4.6						
Max Green Setting (Gmax), s		22.4		29.3		22.4						
Max Q Clear Time (g_c+I1), s		4.4		9.6		6.3						
Green Ext Time (p_c), s		1.1		1.7		1.8						

Intersection Summary	
HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	551	0	0	419	664	241	13	445	0	0	0
Future Volume (veh/h)	137	551	0	0	419	664	241	13	445	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	143	574	0	0	436	0	251	14	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	302	1050	0	0	575		386	22				
Arrive On Green	0.17	0.56	0.00	0.00	0.31	0.00	0.23	0.23	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1691	94	1585			
Grp Volume(v), veh/h	143	574	0	0	436	0	265	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1786	0	1585			
Q Serve(g_s), s	3.2	8.5	0.0	0.0	9.2	0.0	5.9	0.0	0.0			
Cycle Q Clear(g_c), s	3.2	8.5	0.0	0.0	9.2	0.0	5.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	302	1050	0	0	575		408	0				
V/C Ratio(X)	0.47	0.55	0.00	0.00	0.76		0.65	0.00				
Avail Cap(c_a), veh/h	378	1598	0	0	1043		547	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	16.4	6.1	0.0	0.0	13.7	0.0	15.3	0.0	0.0			
Incr Delay (d2), s/veh	1.2	0.4	0.0	0.0	2.1	0.0	1.7	0.0	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			
%ile BackOfQ(50%),veh/ln	1.3	2.3	0.0	0.0	3.5	0.0	2.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.6	6.5	0.0	0.0	15.8	0.0	17.0	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		717			436	A		265	A			
Approach Delay, s/veh		8.7			15.8			17.0				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		29.2			11.1	18.1		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		10.5			5.2	11.2		7.9				
Green Ext Time (p_c), s		4.4			0.1	2.2		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



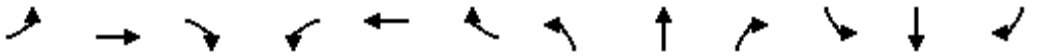
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	82	0	0	535	24	570
Future Volume (veh/h)	82	0	0	535	24	570
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	93	0	0	608	27	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	823	0	0	823	491	
Arrive On Green	0.44	0.00	0.00	0.44	0.28	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	93	0	0	608	27	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	1.1	0.0	0.0	9.8	0.4	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	9.8	0.4	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	823	0	0	823	491	
V/C Ratio(X)	0.11	0.00	0.00	0.74	0.05	
Avail Cap(c_a), veh/h	1718	0	0	1718	806	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.0	0.0	0.0	8.4	9.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	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	0.3	0.0	0.0	2.8	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	0.0	0.0	9.7	9.7	0.0
LnGrp LOS	A	A	A	A	A	
Approach Vol, veh/h	93			608	27	A
Approach Delay, s/veh	6.0			9.7	9.7	
Approach LOS	A			A	A	

Timer - Assigned Phs		2				6	8
Phs Duration (G+Y+Rc), s		21.6				21.6	14.6
Change Period (Y+Rc), s		5.7				5.7	4.6
Max Green Setting (Gmax), s		33.3				33.3	16.4
Max Q Clear Time (g_c+I1), s		3.1				11.8	2.4
Green Ext Time (p_c), s		0.5				4.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	1032	327	234	909	313	375	473	136	272	454	160
Future Volume (veh/h)	367	1032	327	234	909	313	375	473	136	272	454	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	386	1086	344	246	957	329	395	498	143	286	478	168
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
Arrive On Green	0.29	0.50	0.50	0.08	0.29	0.29	0.12	0.26	0.26	0.16	0.30	0.30
Sat Flow, veh/h	3456	3554	1574	3456	3554	1554	3456	1870	1563	1781	1870	1538
Grp Volume(v), veh/h	386	1086	344	246	957	329	395	498	143	286	478	168
Grp Sat Flow(s),veh/h/ln	1728	1777	1574	1728	1777	1554	1728	1870	1563	1781	1870	1538
Q Serve(g_s), s	10.7	26.2	16.6	8.4	31.4	20.7	13.6	31.7	8.9	19.2	28.7	7.4
Cycle Q Clear(g_c), s	10.7	26.2	16.6	8.4	31.4	20.7	13.6	31.7	8.9	19.2	28.7	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
V/C Ratio(X)	0.39	0.61	0.43	0.85	0.93	0.73	0.93	1.01	0.35	0.99	0.84	0.36
Avail Cap(c_a), veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
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	1.00	1.00	0.72	0.72	0.72	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	21.2	18.9	54.3	41.3	31.5	52.1	44.1	35.8	50.2	39.2	16.8
Incr Delay (d2), s/veh	0.1	1.5	1.7	20.4	15.0	9.9	20.5	36.3	0.1	51.0	10.7	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	4.4	10.7	6.1	4.4	15.4	8.7	7.1	19.5	3.3	12.4	14.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	22.8	20.6	74.7	56.3	41.4	72.6	80.5	35.9	101.2	49.9	17.0
LnGrp LOS	C	C	C	E	E	D	E	F	D	F	D	B
Approach Vol, veh/h		1816			1532			1036			932	
Approach Delay, s/veh		24.8			56.1			71.3			59.7	
Approach LOS		C			E			E			E	

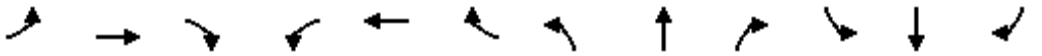
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	40.3	40.6	24.0	37.0	14.6	66.3	19.4	41.6
Change Period (Y+Rc), s	5.7	* 5.7	4.6	5.3	4.6	5.7	4.6	5.3
Max Green Setting (Gmax), s	13.8	* 35	19.4	31.7	10.0	38.7	14.8	36.3
Max Q Clear Time (g_c+I1), s	12.7	33.4	21.2	33.7	10.4	28.2	15.6	30.7
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	1.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



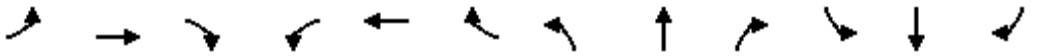
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1030	310	166	831	63	541	319	149	119	208	175
Future Volume (veh/h)	268	1030	310	166	831	63	541	319	149	119	208	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	0.99		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	276	1062	320	171	857	65	558	329	154	123	214	180
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	1196	510	243	1101	471	608	539	443	315	203	171
Arrive On Green	0.17	0.34	0.34	0.14	0.31	0.31	0.14	0.29	0.29	0.07	0.22	0.22
Sat Flow, veh/h	1781	3554	1515	1781	3554	1519	3456	1870	1536	1781	921	775
Grp Volume(v), veh/h	276	1062	320	171	857	65	558	329	154	123	0	394
Grp Sat Flow(s),veh/h/ln	1781	1777	1515	1781	1777	1519	1728	1870	1536	1781	0	1696
Q Serve(g_s), s	18.3	33.9	14.1	11.0	26.3	3.7	14.9	18.2	6.6	5.7	0.0	26.5
Cycle Q Clear(g_c), s	18.3	33.9	14.1	11.0	26.3	3.7	14.9	18.2	6.6	5.7	0.0	26.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	301	1196	510	243	1101	471	608	539	443	315	0	375
V/C Ratio(X)	0.92	0.89	0.63	0.70	0.78	0.14	0.92	0.61	0.35	0.39	0.00	1.05
Avail Cap(c_a), veh/h	303	1196	510	243	1101	471	713	542	445	366	0	375
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	37.7	14.7	49.5	37.7	29.9	32.6	36.9	16.2	27.8	0.0	46.8
Incr Delay (d2), s/veh	30.4	9.9	5.7	7.6	5.4	0.6	14.3	1.4	0.2	0.3	0.0	60.8
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	10.5	15.9	5.5	5.3	11.9	1.4	7.3	8.4	3.4	2.5	0.0	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	47.6	20.5	57.1	43.1	30.5	46.9	38.3	16.4	28.1	0.0	107.6
LnGrp LOS	E	D	C	E	D	C	D	D	B	C	A	F
Approach Vol, veh/h		1658			1093			1041			517	
Approach Delay, s/veh		47.7			44.5			39.7			88.7	
Approach LOS		D			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	45.7	21.5	31.1	24.9	42.5	13.5	39.2
Change Period (Y+Rc), s	5.3	* 5.3	4.6	4.6	4.6	5.3	4.6	4.6
Max Green Setting (Gmax), s	13.4	* 40	20.6	26.5	20.4	33.4	12.3	34.8
Max Q Clear Time (g_c+I1), s	13.0	35.9	16.9	28.5	20.3	28.3	7.7	20.2
Green Ext Time (p_c), s	0.0	0.9	0.1	0.0	0.0	0.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	49.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	514	688	427	440	66	435	719	368	112	766	51
Future Volume (veh/h)	75	514	688	427	440	66	435	719	368	112	766	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	541	724	449	463	69	458	757	387	118	806	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	894	777	914	1398	207	436	1440	627	143	787	53
Arrive On Green	0.07	0.25	0.25	0.26	0.45	0.45	0.25	0.41	0.41	0.08	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3101	460	1781	3554	1547	1781	3371	226
Grp Volume(v), veh/h	79	541	724	449	264	268	458	757	387	118	425	435
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1784	1781	1777	1547	1781	1777	1820
Q Serve(g_s), s	5.2	16.1	22.5	13.2	11.5	11.6	29.4	19.3	15.9	7.8	28.0	28.0
Cycle Q Clear(g_c), s	5.2	16.1	22.5	13.2	11.5	11.6	29.4	19.3	15.9	7.8	28.0	28.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	124	894	777	914	801	804	436	1440	627	143	415	425
V/C Ratio(X)	0.64	0.60	0.93	0.49	0.33	0.33	1.05	0.53	0.62	0.82	1.02	1.02
Avail Cap(c_a), veh/h	177	894	777	914	801	804	436	1440	627	230	415	425
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)	0.64	0.64	0.64	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.6	28.1	37.3	21.3	21.3	45.3	27.0	12.7	54.3	46.0	46.0
Incr Delay (d2), s/veh	1.3	2.0	14.0	0.2	1.1	1.1	56.6	1.4	4.5	5.7	50.6	50.2
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	2.4	7.4	9.0	5.7	5.1	5.2	19.9	8.5	6.3	3.8	18.2	18.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	41.6	42.1	37.4	22.4	22.4	101.9	28.3	17.2	60.0	96.6	96.2
LnGrp LOS	E	D	D	D	C	C	F	C	B	E	F	F
Approach Vol, veh/h		1344			981			1602			978	
Approach Delay, s/veh		42.7			29.3			46.7			92.0	
Approach LOS		D			C			D			F	

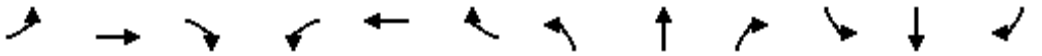
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	36.3	34.4	34.0	32.6	12.1	58.7	13.4	53.2
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 15	* 30	29.4	28.0	11.9	* 34	15.5	42.8
Max Q Clear Time (g_c+I1), s	15.2	24.5	31.4	30.0	7.2	13.6	9.8	21.3
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.0	2.2	0.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	51.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

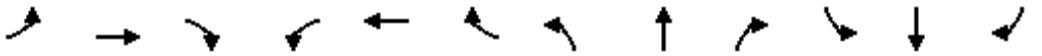
User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	404	147	62	203	71	114	267	56	75	269	208
Future Volume (veh/h)	267	404	147	62	203	71	114	267	56	75	269	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	416	152	64	209	73	118	275	58	77	277	214
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	500	183	91	340	119	145	476	100	277	308	238
Arrive On Green	0.18	0.39	0.39	0.05	0.26	0.26	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1295	473	1781	1312	458	902	1487	314	1041	963	744
Grp Volume(v), veh/h	275	0	568	64	0	282	118	0	333	77	0	491
Grp Sat Flow(s),veh/h/ln	1781	0	1769	1781	0	1771	902	0	1801	1041	0	1706
Q Serve(g_s), s	10.3	0.0	20.0	2.4	0.0	9.7	3.1	0.0	10.6	4.6	0.0	18.9
Cycle Q Clear(g_c), s	10.3	0.0	20.0	2.4	0.0	9.7	22.0	0.0	10.6	15.2	0.0	18.9
Prop In Lane	1.00		0.27	1.00		0.26	1.00		0.17	1.00		0.44
Lane Grp Cap(c), veh/h	317	0	682	91	0	459	145	0	576	277	0	546
V/C Ratio(X)	0.87	0.00	0.83	0.70	0.00	0.61	0.81	0.00	0.58	0.28	0.00	0.90
Avail Cap(c_a), veh/h	319	0	1021	171	0	876	145	0	576	277	0	546
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	19.1	32.1	0.0	22.5	33.8	0.0	19.5	25.8	0.0	22.3
Incr Delay (d2), s/veh	21.3	0.0	3.8	9.3	0.0	1.3	28.1	0.0	1.4	0.5	0.0	17.8
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	6.1	0.0	8.1	1.2	0.0	3.9	3.0	0.0	4.4	1.1	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	22.9	41.4	0.0	23.8	62.0	0.0	20.9	26.4	0.0	40.2
LnGrp LOS	D	A	C	D	A	C	E	A	C	C	A	D
Approach Vol, veh/h		843			346			451			568	
Approach Delay, s/veh		31.3			27.1			31.7			38.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	32.3		27.8	17.4	23.6		27.8				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	4.4	22.0		20.9	12.3	11.7		24.0				
Green Ext Time (p_c), s	0.0	3.7		0.4	0.0	1.7		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			32.5									
HCM 6th LOS			C									



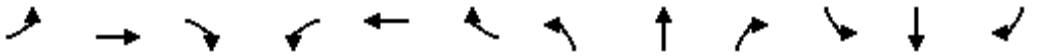
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	404	440	0	330	0	0	0	0	421	0	282
Future Volume (veh/h)	0	404	440	0	330	0	0	0	0	421	0	282
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	408	0	0	333	0				425	0	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99				0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	0	2	0				2	0	2
Cap, veh/h	0	693		0	693	0				571	0	
Arrive On Green	0.00	0.37	0.00	0.00	0.37	0.00				0.32	0.00	0.00
Sat Flow, veh/h	0	1870	0	0	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	408	0	0	333	0				425	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	0	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	4.7	0.0	0.0	3.7	0.0				5.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	4.7	0.0	0.0	3.7	0.0				5.7	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	693		0	693	0				571	0	
V/C Ratio(X)	0.00	0.59		0.00	0.48	0.00				0.74	0.00	
Avail Cap(c_a), veh/h	0	2268		0	2268	0				1266	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.8	0.0	0.0	6.5	0.0				8.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.5	0.0				1.9	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	0.0	0.8	0.0				1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.6	0.0	0.0	7.0	0.0				10.1	0.0	0.0
LnGrp LOS	A	A		A	A	A				B	A	
Approach Vol, veh/h		408	A		333						425	A
Approach Delay, s/veh		7.6			7.0						10.1	
Approach LOS		A			A						B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	14.6	12.3	14.6
Change Period (Y+Rc), s	4.6	3.7	4.6
Max Green Setting (Gmax), s	32.6	19.1	32.6
Max Q Clear Time (g_c+I1), s	6.7	7.7	5.7
Green Ext Time (p_c), s	2.8	1.1	2.1

Intersection Summary	
HCM 6th Ctrl Delay	8.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	695	0	0	564	507	144	5	423	0	0	0
Future Volume (veh/h)	195	695	0	0	564	507	144	5	423	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	203	724	0	0	588	0	150	5	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	271	1060	0	0	654		468	16				
Arrive On Green	0.15	0.57	0.00	0.00	0.35	0.00	0.27	0.27	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1726	58	1585			
Grp Volume(v), veh/h	203	724	0	0	588	0	155	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1784	0	1585			
Q Serve(g_s), s	6.2	15.5	0.0	0.0	16.9	0.0	3.9	0.0	0.0			
Cycle Q Clear(g_c), s	6.2	15.5	0.0	0.0	16.9	0.0	3.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.97		1.00			
Lane Grp Cap(c), veh/h	271	1060	0	0	654		484	0				
V/C Ratio(X)	0.75	0.68	0.00	0.00	0.90		0.32	0.00				
Avail Cap(c_a), veh/h	323	1166	0	0	705		484	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	23.1	8.7	0.0	0.0	17.5	0.0	16.5	0.0	0.0			
Incr Delay (d2), s/veh	7.8	1.5	0.0	0.0	13.9	0.0	1.7	0.0	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			
%ile BackOfQ(50%),veh/ln	3.0	5.3	0.0	0.0	8.8	0.0	1.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	10.2	0.0	0.0	31.4	0.0	18.3	0.0	0.0			
LnGrp LOS	C	B	A	A	C		B	A				
Approach Vol, veh/h		927			588	A		155	A			
Approach Delay, s/veh		14.7			31.4			18.3				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		36.8			12.3	24.5		20.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		35.4			10.3	21.4		15.4				
Max Q Clear Time (g_c+I1), s		17.5			8.2	18.9		5.9				
Green Ext Time (p_c), s		5.2			0.1	0.9		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	421	0	0	697	66	481
Future Volume (veh/h)	421	0	0	697	66	481
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	495	0	0	820	78	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	965	0	0	965	425	
Arrive On Green	0.52	0.00	0.00	0.52	0.24	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	495	0	0	820	78	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	7.3	0.0	0.0	15.8	1.5	0.0
Cycle Q Clear(g_c), s	7.3	0.0	0.0	15.8	1.5	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	965	0	0	965	425	
V/C Ratio(X)	0.51	0.00	0.00	0.85	0.18	
Avail Cap(c_a), veh/h	1177	0	0	1177	990	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	0.0	8.7	12.7	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	5.1	0.2	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	2.0	0.0	0.0	5.4	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	0.0	0.0	13.9	12.9	0.0
LnGrp LOS	A	A	A	B	B	
Approach Vol, veh/h	495			820	78	A
Approach Delay, s/veh	7.1			13.9	12.9	
Approach LOS	A			B	B	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	27.2				27.2	14.7
Change Period (Y+Rc), s	5.6				5.6	4.7
Max Green Setting (Gmax), s	26.4				26.4	23.3
Max Q Clear Time (g_c+I1), s	9.3				17.8	3.5
Green Ext Time (p_c), s	2.9				3.8	0.2

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	702	290	160	620	272	244	507	166	261	459	165
Future Volume (veh/h)	222	702	290	160	620	272	244	507	166	261	459	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.90	1.00		0.91
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	234	739	305	168	653	286	257	534	175	275	483	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	782	334	479	1011	436	311	552	423	301	699	539
Arrive On Green	0.08	0.22	0.22	0.14	0.28	0.28	0.09	0.30	0.30	0.17	0.37	0.37
Sat Flow, veh/h	3456	3554	1517	3456	3554	1534	3456	1870	1434	1781	1870	1442
Grp Volume(v), veh/h	234	739	305	168	653	286	257	534	175	275	483	174
Grp Sat Flow(s),veh/h/ln	1728	1777	1517	1728	1777	1534	1728	1870	1434	1781	1870	1442
Q Serve(g_s), s	8.0	24.6	18.2	5.3	19.3	19.7	8.8	33.8	7.9	18.2	26.2	10.3
Cycle Q Clear(g_c), s	8.0	24.6	18.2	5.3	19.3	19.7	8.8	33.8	7.9	18.2	26.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	782	334	479	1011	436	311	552	423	301	699	539
V/C Ratio(X)	0.81	0.95	0.91	0.35	0.65	0.66	0.83	0.97	0.41	0.91	0.69	0.32
Avail Cap(c_a), veh/h	288	782	334	479	1011	436	826	552	423	426	699	539
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	1.00	1.00	0.64	0.64	0.64	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	46.1	27.4	46.8	37.6	37.8	53.7	41.7	15.4	49.0	31.7	26.8
Incr Delay (d2), s/veh	15.1	21.3	31.6	0.2	3.2	7.5	1.4	22.9	0.2	15.8	2.4	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	4.0	12.9	9.3	2.3	8.6	8.0	3.9	18.9	3.8	9.2	11.7	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.2	67.4	59.0	47.0	40.8	45.2	55.0	64.6	15.6	64.8	34.2	26.9
LnGrp LOS	E	E	E	D	D	D	E	E	B	E	C	C
Approach Vol, veh/h		1278			1107			966			932	
Approach Delay, s/veh		65.7			42.9			53.2			41.8	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	39.8	24.9	40.7	22.3	32.1	15.4	50.1
Change Period (Y+Rc), s	4.6	5.7	4.6	* 5.3	5.7	* 5.7	4.6	5.3
Max Green Setting (Gmax), s	10.0	26.4	28.7	* 35	10.0	* 26	28.7	34.7
Max Q Clear Time (g_c+I1), s	10.0	21.7	20.2	35.8	7.3	26.6	10.8	28.2
Green Ext Time (p_c), s	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	51.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	686	327	147	610	61	390	281	179	81	293	207
Future Volume (veh/h)	135	686	327	147	610	61	390	281	179	81	293	207
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.99	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	738	352	158	656	66	419	302	192	87	315	223
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	1122	482	184	897	383	484	656	549	389	327	231
Arrive On Green	0.16	0.32	0.32	0.10	0.25	0.25	0.10	0.35	0.35	0.07	0.32	0.32
Sat Flow, veh/h	1781	3554	1527	1781	3554	1516	3456	1870	1563	1781	1006	712
Grp Volume(v), veh/h	145	738	352	158	656	66	419	302	192	87	0	538
Grp Sat Flow(s),veh/h/ln	1781	1777	1527	1781	1777	1516	1728	1870	1563	1781	0	1719
Q Serve(g_s), s	8.9	21.5	24.6	10.5	20.3	3.2	9.6	15.0	10.9	3.6	0.0	36.9
Cycle Q Clear(g_c), s	8.9	21.5	24.6	10.5	20.3	3.2	9.6	15.0	10.9	3.6	0.0	36.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.41
Lane Grp Cap(c), veh/h	286	1122	482	184	897	383	484	656	549	389	0	558
V/C Ratio(X)	0.51	0.66	0.73	0.86	0.73	0.17	0.87	0.46	0.35	0.22	0.00	0.96
Avail Cap(c_a), veh/h	286	1122	482	199	897	383	650	690	577	449	0	564
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.0	35.5	36.5	52.9	41.1	22.1	29.1	30.1	28.8	22.1	0.0	39.8
Incr Delay (d2), s/veh	0.6	3.0	9.4	26.0	5.2	1.0	7.4	0.2	0.1	0.1	0.0	28.5
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	3.9	9.6	10.3	5.9	9.3	1.6	4.3	6.7	4.1	1.5	0.0	20.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	38.5	45.9	78.9	46.3	23.1	36.5	30.3	29.0	22.2	0.0	68.3
LnGrp LOS	D	D	D	E	D	C	D	C	C	C	A	E
Approach Vol, veh/h		1235			880			913			625	
Approach Delay, s/veh		41.6			50.5			32.9			61.9	
Approach LOS		D			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	43.2	16.2	43.6	24.6	35.6	13.1	46.7
Change Period (Y+Rc), s	4.6	5.3	4.6	4.6	5.3	* 5.3	4.6	4.6
Max Green Setting (Gmax), s	13.4	30.7	17.4	39.4	13.8	* 30	12.5	44.3
Max Q Clear Time (g_c+I1), s	12.5	26.6	11.6	38.9	10.9	22.3	5.6	17.0
Green Ext Time (p_c), s	0.0	0.5	0.1	0.1	0.0	0.6	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	45.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	373	375	275	469	123	423	827	330	113	474	87
Future Volume (veh/h)	80	373	375	275	469	123	423	827	330	113	474	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	393	395	289	494	129	445	871	347	119	499	92
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	959	788	471	931	241	411	1280	558	146	605	111
Arrive On Green	0.08	0.27	0.27	0.14	0.34	0.34	0.23	0.36	0.36	0.08	0.20	0.20
Sat Flow, veh/h	1781	3554	1564	3456	2777	720	1781	3554	1550	1781	2980	546
Grp Volume(v), veh/h	84	393	395	289	315	308	445	871	347	119	296	295
Grp Sat Flow(s),veh/h/ln	1781	1777	1564	1728	1777	1721	1781	1777	1550	1781	1777	1750
Q Serve(g_s), s	5.0	10.0	0.0	8.7	15.8	16.0	25.4	22.9	13.4	7.2	17.5	17.8
Cycle Q Clear(g_c), s	5.0	10.0	0.0	8.7	15.8	16.0	25.4	22.9	13.4	7.2	17.5	17.8
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		0.31
Lane Grp Cap(c), veh/h	135	959	788	471	596	577	411	1280	558	146	360	355
V/C Ratio(X)	0.62	0.41	0.50	0.61	0.53	0.53	1.08	0.68	0.62	0.82	0.82	0.83
Avail Cap(c_a), veh/h	177	959	788	471	596	577	411	1280	558	241	452	445
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	33.0	18.2	44.8	29.5	29.6	42.3	29.8	12.7	49.7	41.9	42.0
Incr Delay (d2), s/veh	1.3	1.0	1.7	1.7	3.3	3.5	68.1	1.2	1.6	4.2	7.7	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	2.3	4.5	7.0	3.9	7.3	7.2	18.9	10.0	4.8	3.4	8.5	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	33.9	19.9	46.5	32.9	33.1	110.4	31.1	14.3	53.8	49.6	50.5
LnGrp LOS	D	C	B	D	C	C	F	C	B	D	D	D
Approach Vol, veh/h		872			912			1663			710	
Approach Delay, s/veh		29.2			37.3			48.8			50.7	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	33.9	30.0	26.9	12.0	41.1	12.7	44.2
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 9.8	* 30	25.4	28.0	10.9	* 29	14.9	39.4
Max Q Clear Time (g_c+I1), s	10.7	12.0	27.4	19.8	7.0	18.0	9.2	24.9
Green Ext Time (p_c), s	0.0	2.5	0.0	1.4	0.0	2.1	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	42.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	255	76	52	202	50	90	219	60	83	229	255
Future Volume (veh/h)	146	255	76	52	202	50	90	219	60	83	229	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.98		0.94	0.97		0.92
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	277	83	57	220	54	98	238	65	90	249	277
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	203	403	121	92	334	82	180	511	140	370	283	314
Arrive On Green	0.11	0.29	0.29	0.05	0.23	0.23	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1371	411	1781	1440	353	862	1393	381	1042	771	858
Grp Volume(v), veh/h	159	0	360	57	0	274	98	0	303	90	0	526
Grp Sat Flow(s),veh/h/ln	1781	0	1782	1781	0	1793	862	0	1774	1042	0	1629
Q Serve(g_s), s	5.0	0.0	10.4	1.8	0.0	8.0	3.7	0.0	7.6	4.2	0.0	17.5
Cycle Q Clear(g_c), s	5.0	0.0	10.4	1.8	0.0	8.0	21.3	0.0	7.6	11.8	0.0	17.5
Prop In Lane	1.00		0.23	1.00		0.20	1.00		0.21	1.00		0.53
Lane Grp Cap(c), veh/h	203	0	523	92	0	416	180	0	650	370	0	597
V/C Ratio(X)	0.78	0.00	0.69	0.62	0.00	0.66	0.55	0.00	0.47	0.24	0.00	0.88
Avail Cap(c_a), veh/h	310	0	1136	329	0	1051	180	0	650	383	0	618
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	0.0	18.1	26.9	0.0	20.2	27.9	0.0	14.0	18.5	0.0	17.2
Incr Delay (d2), s/veh	7.1	0.0	1.6	6.6	0.0	1.8	3.4	0.0	0.5	0.3	0.0	13.6
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	2.4	0.0	4.1	0.9	0.0	3.3	1.5	0.0	2.8	1.0	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	0.0	19.8	33.5	0.0	22.0	31.3	0.0	14.6	18.9	0.0	30.8
LnGrp LOS	C	A	B	C	A	C	C	A	B	B	A	C
Approach Vol, veh/h		519			331			401			616	
Approach Delay, s/veh		23.5			24.0			18.7			29.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	22.8		27.1	11.7	19.2		27.1				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	10.7	37.0		22.0	10.1	34.0		18.2				
Max Q Clear Time (g_c+I1), s	3.8	12.4		19.5	7.0	10.0		23.3				
Green Ext Time (p_c), s	0.0	2.3		1.0	0.1	1.6		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		24.4
HCM 6th LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	203	0	322	0	0	0	0	496	0	276
Future Volume (veh/h)	0	198	203	0	322	0	0	0	0	496	0	276
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	208	0	0	339	0				522	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	0				2	0	2
Cap, veh/h	0	636		0	636	0				673	0	
Arrive On Green	0.00	0.34	0.00	0.00	0.34	0.00				0.38	0.00	0.00
Sat Flow, veh/h	0	1870	0	0	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	208	0	0	339	0				522	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	0	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	2.4	0.0	0.0	4.3	0.0				7.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.4	0.0	0.0	4.3	0.0				7.6	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	636		0	636	0				673	0	
V/C Ratio(X)	0.00	0.33		0.00	0.53	0.00				0.78	0.00	
Avail Cap(c_a), veh/h	0	1425		0	1425	0				1775	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	7.2	0.0	0.0	7.8	0.0				8.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.7	0.0				2.0	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	1.2	0.0				2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.5	0.0	0.0	8.5	0.0				10.0	0.0	0.0
LnGrp LOS	A	A		A	A	A				B	A	
Approach Vol, veh/h		208	A		339						522	A
Approach Delay, s/veh		7.5			8.5						10.0	
Approach LOS		A			A						B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	14.6	14.8	14.6
Change Period (Y+Rc), s	4.6	3.7	4.6
Max Green Setting (Gmax), s	22.4	29.3	22.4
Max Q Clear Time (g_c+I1), s	4.4	9.6	6.3
Green Ext Time (p_c), s	1.1	1.7	1.8

Intersection Summary	
HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	551	0	0	419	671	243	13	449	0	0	0
Future Volume (veh/h)	142	551	0	0	419	671	243	13	449	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	148	574	0	0	436	0	253	14	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	305	1052	0	0	574		385	21				
Arrive On Green	0.17	0.56	0.00	0.00	0.31	0.00	0.23	0.23	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1692	94	1585			
Grp Volume(v), veh/h	148	574	0	0	436	0	267	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1786	0	1585			
Q Serve(g_s), s	3.3	8.5	0.0	0.0	9.2	0.0	6.0	0.0	0.0			
Cycle Q Clear(g_c), s	3.3	8.5	0.0	0.0	9.2	0.0	6.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.95		1.00			
Lane Grp Cap(c), veh/h	305	1052	0	0	574		407	0				
V/C Ratio(X)	0.49	0.55	0.00	0.00	0.76		0.66	0.00				
Avail Cap(c_a), veh/h	377	1593	0	0	1040		545	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	16.4	6.1	0.0	0.0	13.7	0.0	15.4	0.0	0.0			
Incr Delay (d2), s/veh	1.2	0.4	0.0	0.0	2.1	0.0	1.8	0.0	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			
%ile BackOfQ(50%),veh/ln	1.3	2.3	0.0	0.0	3.5	0.0	2.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.6	6.5	0.0	0.0	15.8	0.0	17.2	0.0	0.0			
LnGrp LOS	B	A	A	A	B		B	A				
Approach Vol, veh/h		722			436	A		267	A			
Approach Delay, s/veh		8.8			15.8			17.2				
Approach LOS		A			B			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		29.3			11.2	18.1		14.6				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		37.4			9.3	24.4		13.4				
Max Q Clear Time (g_c+I1), s		10.5			5.3	11.2		8.0				
Green Ext Time (p_c), s		4.4			0.1	2.2		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	82	0	0	536	24	572
Future Volume (veh/h)	82	0	0	536	24	572
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
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	0	0	1870	1870	1870
Adj Flow Rate, veh/h	93	0	0	609	27	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	0	0	2	2	2
Cap, veh/h	824	0	0	824	491	
Arrive On Green	0.44	0.00	0.00	0.44	0.28	0.00
Sat Flow, veh/h	1870	0	0	1870	1781	1585
Grp Volume(v), veh/h	93	0	0	609	27	0
Grp Sat Flow(s),veh/h/ln	1870	0	0	1870	1781	1585
Q Serve(g_s), s	1.1	0.0	0.0	9.8	0.4	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	9.8	0.4	0.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	824	0	0	824	491	
V/C Ratio(X)	0.11	0.00	0.00	0.74	0.05	
Avail Cap(c_a), veh/h	1717	0	0	1717	805	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.0	0.0	0.0	8.4	9.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	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	0.3	0.0	0.0	2.8	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	0.0	0.0	9.7	9.7	0.0
LnGrp LOS	A	A	A	A	A	
Approach Vol, veh/h	93			609	27	A
Approach Delay, s/veh	6.0			9.7	9.7	
Approach LOS	A			A	A	

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	21.7				21.7	14.6
Change Period (Y+Rc), s	5.7				5.7	4.6
Max Green Setting (Gmax), s	33.3				33.3	16.4
Max Q Clear Time (g_c+I1), s	3.1				11.8	2.4
Green Ext Time (p_c), s	0.5				4.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	1032	327	234	909	314	375	473	136	273	454	160
Future Volume (veh/h)	367	1032	327	234	909	314	375	473	136	273	454	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	386	1086	344	246	957	331	395	498	143	287	478	168
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
Arrive On Green	0.29	0.50	0.50	0.08	0.29	0.29	0.12	0.26	0.26	0.16	0.30	0.30
Sat Flow, veh/h	3456	3554	1574	3456	3554	1554	3456	1870	1563	1781	1870	1538
Grp Volume(v), veh/h	386	1086	344	246	957	331	395	498	143	287	478	168
Grp Sat Flow(s),veh/h/ln	1728	1777	1574	1728	1777	1554	1728	1870	1563	1781	1870	1538
Q Serve(g_s), s	10.7	26.2	16.6	8.4	31.4	20.9	13.6	31.7	8.9	19.3	28.7	7.4
Cycle Q Clear(g_c), s	10.7	26.2	16.6	8.4	31.4	20.9	13.6	31.7	8.9	19.3	28.7	7.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
V/C Ratio(X)	0.39	0.61	0.43	0.85	0.93	0.73	0.93	1.01	0.35	1.00	0.84	0.36
Avail Cap(c_a), veh/h	994	1792	794	288	1034	452	426	494	413	288	566	465
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	1.00	1.00	0.72	0.72	0.72	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	21.2	18.9	54.3	41.3	31.6	52.1	44.1	35.8	50.3	39.2	16.8
Incr Delay (d2), s/veh	0.1	1.5	1.7	20.4	15.0	10.1	20.5	36.3	0.1	52.0	10.7	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	4.4	10.7	6.1	4.4	15.4	8.8	7.1	19.5	3.3	12.5	14.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	22.8	20.6	74.7	56.3	41.6	72.6	80.5	35.9	102.3	49.9	17.0
LnGrp LOS	C	C	C	E	E	D	E	F	D	F	D	B
Approach Vol, veh/h		1816			1534			1036			933	
Approach Delay, s/veh		24.8			56.1			71.3			60.1	
Approach LOS		C			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	40.6	24.0	37.0	14.6	66.3	19.4	41.6
Change Period (Y+Rc), s	5.7	* 5.7	4.6	5.3	4.6	5.7	4.6	5.3
Max Green Setting (Gmax), s	13.3	* 35	19.4	31.7	10.0	38.7	14.8	36.3
Max Q Clear Time (g_c+I1), s	12.7	33.4	21.3	33.7	10.4	28.2	15.6	30.7
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	1.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	49.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1030	311	168	831	63	542	319	149	119	209	175
Future Volume (veh/h)	268	1030	311	168	831	63	542	319	149	119	209	175
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	0.99		0.96
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	276	1062	321	173	857	65	559	329	154	123	215	180
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	301	1196	510	242	1100	470	609	540	443	315	204	171
Arrive On Green	0.17	0.34	0.34	0.14	0.31	0.31	0.14	0.29	0.29	0.07	0.22	0.22
Sat Flow, veh/h	1781	3554	1515	1781	3554	1519	3456	1870	1536	1781	923	773
Grp Volume(v), veh/h	276	1062	321	173	857	65	559	329	154	123	0	395
Grp Sat Flow(s),veh/h/ln	1781	1777	1515	1781	1777	1519	1728	1870	1536	1781	0	1696
Q Serve(g_s), s	18.3	33.9	14.2	11.2	26.3	3.7	14.9	18.2	6.6	5.7	0.0	26.5
Cycle Q Clear(g_c), s	18.3	33.9	14.2	11.2	26.3	3.7	14.9	18.2	6.6	5.7	0.0	26.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	301	1196	510	242	1100	470	609	540	443	315	0	375
V/C Ratio(X)	0.92	0.89	0.63	0.71	0.78	0.14	0.92	0.61	0.35	0.39	0.00	1.05
Avail Cap(c_a), veh/h	303	1196	510	242	1100	470	713	542	445	367	0	375
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.0	37.7	14.7	49.6	37.7	29.9	32.6	36.9	16.2	27.8	0.0	46.8
Incr Delay (d2), s/veh	30.4	9.9	5.8	8.2	5.5	0.6	14.4	1.4	0.2	0.3	0.0	61.6
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	10.5	15.9	5.5	5.4	12.0	1.4	7.3	8.4	3.4	2.5	0.0	17.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	47.6	20.5	57.8	43.2	30.5	47.0	38.3	16.4	28.1	0.0	108.3
LnGrp LOS	E	D	C	E	D	C	D	D	B	C	A	F
Approach Vol, veh/h		1659			1095			1042			518	
Approach Delay, s/veh		47.6			44.7			39.7			89.3	
Approach LOS		D			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	45.7	21.6	31.1	24.9	42.4	13.5	39.2
Change Period (Y+Rc), s	5.3	* 5.3	4.6	4.6	4.6	5.3	4.6	4.6
Max Green Setting (Gmax), s	13.4	* 40	20.6	26.5	20.4	33.4	12.3	34.8
Max Q Clear Time (g_c+I1), s	13.2	35.9	16.9	28.5	20.3	28.3	7.7	20.2
Green Ext Time (p_c), s	0.0	0.9	0.1	0.0	0.0	0.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	50.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	517	689	427	443	66	437	719	368	112	766	51
Future Volume (veh/h)	75	517	689	427	443	66	437	719	368	112	766	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.98	1.00		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	544	725	449	466	69	460	757	387	118	806	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	894	777	914	1399	206	436	1440	627	143	787	53
Arrive On Green	0.07	0.25	0.25	0.26	0.45	0.45	0.25	0.41	0.41	0.08	0.23	0.23
Sat Flow, veh/h	1781	3554	1543	3456	3104	457	1781	3554	1547	1781	3371	226
Grp Volume(v), veh/h	79	544	725	449	266	269	460	757	387	118	425	435
Grp Sat Flow(s),veh/h/ln	1781	1777	1543	1728	1777	1784	1781	1777	1547	1781	1777	1820
Q Serve(g_s), s	5.2	16.2	22.6	13.2	11.6	11.7	29.4	19.3	15.9	7.8	28.0	28.0
Cycle Q Clear(g_c), s	5.2	16.2	22.6	13.2	11.6	11.7	29.4	19.3	15.9	7.8	28.0	28.0
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	124	894	777	914	801	804	436	1440	627	143	415	425
V/C Ratio(X)	0.64	0.61	0.93	0.49	0.33	0.33	1.05	0.53	0.62	0.82	1.02	1.02
Avail Cap(c_a), veh/h	177	894	777	914	801	804	436	1440	627	230	415	425
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)	0.64	0.64	0.64	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	39.7	28.1	37.3	21.3	21.3	45.3	27.0	12.7	54.3	46.0	46.0
Incr Delay (d2), s/veh	1.3	2.0	14.1	0.2	1.1	1.1	58.0	1.4	4.5	5.7	50.6	50.2
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	2.4	7.4	9.1	5.7	5.1	5.2	20.0	8.5	6.3	3.8	18.2	18.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	41.7	42.3	37.4	22.4	22.4	103.3	28.3	17.2	60.0	96.6	96.2
LnGrp LOS	E	D	D	D	C	C	F	C	B	E	F	F
Approach Vol, veh/h		1348			984			1604			978	
Approach Delay, s/veh		42.8			29.3			47.2			92.0	
Approach LOS		D			C			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.3	34.4	34.0	32.6	12.1	58.7	13.4	53.2
Change Period (Y+Rc), s	* 4.2	* 4.2	4.6	4.6	3.7	* 4.2	3.7	4.6
Max Green Setting (Gmax), s	* 15	* 30	29.4	28.0	11.9	* 34	15.5	42.8
Max Q Clear Time (g_c+I1), s	11.2	24.6	31.4	30.0	7.2	13.7	9.8	21.3
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.0	2.2	0.0	3.5

Intersection Summary	
HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	267	405	147	62	205	71	116	267	56	75	269	208
Future Volume (veh/h)	267	405	147	62	205	71	116	267	56	75	269	208
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	0.99		0.97
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	418	152	64	211	73	120	275	58	77	277	214
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	317	502	182	91	342	118	145	475	100	276	307	238
Arrive On Green	0.18	0.39	0.39	0.05	0.26	0.26	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1781	1297	472	1781	1316	455	902	1487	314	1041	963	744
Grp Volume(v), veh/h	275	0	570	64	0	284	120	0	333	77	0	491
Grp Sat Flow(s),veh/h/ln	1781	0	1769	1781	0	1772	902	0	1801	1041	0	1706
Q Serve(g_s), s	10.3	0.0	20.1	2.4	0.0	9.7	3.1	0.0	10.6	4.6	0.0	18.9
Cycle Q Clear(g_c), s	10.3	0.0	20.1	2.4	0.0	9.7	22.0	0.0	10.6	15.2	0.0	18.9
Prop In Lane	1.00		0.27	1.00		0.26	1.00		0.17	1.00		0.44
Lane Grp Cap(c), veh/h	317	0	684	91	0	460	145	0	575	276	0	545
V/C Ratio(X)	0.87	0.00	0.83	0.70	0.00	0.62	0.83	0.00	0.58	0.28	0.00	0.90
Avail Cap(c_a), veh/h	318	0	1020	171	0	875	145	0	575	276	0	545
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	19.1	32.1	0.0	22.5	33.9	0.0	19.6	25.9	0.0	22.4
Incr Delay (d2), s/veh	21.4	0.0	3.9	9.3	0.0	1.3	31.4	0.0	1.5	0.5	0.0	18.0
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	6.1	0.0	8.2	1.3	0.0	4.0	3.2	0.0	4.4	1.1	0.0	9.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	0.0	23.0	41.5	0.0	23.8	65.3	0.0	21.0	26.5	0.0	40.4
LnGrp LOS	D	A	C	D	A	C	E	A	C	C	A	D
Approach Vol, veh/h		845			348			453			568	
Approach Delay, s/veh		31.4			27.1			32.8			38.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	32.4		27.8	17.4	23.7		27.8				
Change Period (Y+Rc), s	5.1	5.8		5.8	5.1	5.8		5.8				
Max Green Setting (Gmax), s	6.6	39.7		22.0	12.3	34.0		22.0				
Max Q Clear Time (g_c+I1), s	4.4	22.1		20.9	12.3	11.7		24.0				
Green Ext Time (p_c), s	0.0	3.7		0.4	0.0	1.7		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		32.8
HCM 6th LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	410	444	0	332	0	0	0	0	421	0	293
Future Volume (veh/h)	0	410	444	0	332	0	0	0	0	421	0	293
Initial Q (Qb), veh	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
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	0				1870	0	1870
Adj Flow Rate, veh/h	0	414	0	0	335	0				425	0	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99				0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	0	2	0				2	0	2
Cap, veh/h	0	693		0	693	0				571	0	
Arrive On Green	0.00	0.37	0.00	0.00	0.37	0.00				0.32	0.00	0.00
Sat Flow, veh/h	0	1870	0	0	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	414	0	0	335	0				425	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	0	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	4.8	0.0	0.0	3.7	0.0				5.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	4.8	0.0	0.0	3.7	0.0				5.7	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	693		0	693	0				571	0	
V/C Ratio(X)	0.00	0.60		0.00	0.48	0.00				0.74	0.00	
Avail Cap(c_a), veh/h	0	2268		0	2268	0				1265	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	6.8	0.0	0.0	6.5	0.0				8.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	0.5	0.0				1.9	0.0	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
%ile BackOfQ(50%),veh/ln	0.0	1.3	0.0	0.0	0.8	0.0				1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.7	0.0	0.0	7.0	0.0				10.1	0.0	0.0
LnGrp LOS	A	A		A	A	A				B	A	
Approach Vol, veh/h		414	A		335						425	A
Approach Delay, s/veh		7.7			7.0						10.1	
Approach LOS		A			A						B	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	14.6	12.3	14.6
Change Period (Y+Rc), s	4.6	3.7	4.6
Max Green Setting (Gmax), s	32.6	19.1	32.6
Max Q Clear Time (g_c+I1), s	6.8	7.7	5.7
Green Ext Time (p_c), s	2.8	1.1	2.1

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	695	0	0	564	511	146	5	425	0	0	0
Future Volume (veh/h)	201	695	0	0	564	511	146	5	425	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	209	724	0	0	588	0	152	5	0			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	272	1061	0	0	654		468	15				
Arrive On Green	0.15	0.57	0.00	0.00	0.35	0.00	0.27	0.27	0.00			
Sat Flow, veh/h	1781	1870	0	0	1870	1585	1727	57	1585			
Grp Volume(v), veh/h	209	724	0	0	588	0	157	0	0			
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	1585	1784	0	1585			
Q Serve(g_s), s	6.4	15.5	0.0	0.0	17.0	0.0	4.0	0.0	0.0			
Cycle Q Clear(g_c), s	6.4	15.5	0.0	0.0	17.0	0.0	4.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.97		1.00			
Lane Grp Cap(c), veh/h	272	1061	0	0	654		483	0				
V/C Ratio(X)	0.77	0.68	0.00	0.00	0.90		0.32	0.00				
Avail Cap(c_a), veh/h	323	1165	0	0	704		483	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	23.1	8.7	0.0	0.0	17.5	0.0	16.6	0.0	0.0			
Incr Delay (d2), s/veh	9.1	1.5	0.0	0.0	13.9	0.0	1.8	0.0	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			
%ile BackOfQ(50%),veh/ln	3.2	5.3	0.0	0.0	8.8	0.0	1.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	10.2	0.0	0.0	31.4	0.0	18.4	0.0	0.0			
LnGrp LOS	C	B	A	A	C		B	A				
Approach Vol, veh/h		933			588	A		157	A			
Approach Delay, s/veh		15.1			31.4			18.4				
Approach LOS		B			C			B				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		36.9			12.4	24.5		20.0				
Change Period (Y+Rc), s		4.6			3.7	4.6		4.6				
Max Green Setting (Gmax), s		35.4			10.3	21.4		15.4				
Max Q Clear Time (g_c+I1), s		17.5			8.4	19.0		6.0				
Green Ext Time (p_c), s		5.2			0.1	0.9		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	21.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

E – ICE Outputs

Intersection	
Intersection Delay, s/veh	68.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	440	0	0	317	631	154	3	342	0	0	0
Future Vol, veh/h	107	440	0	0	317	631	154	3	342	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	458	0	0	330	657	160	3	356	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	53.7	101.4	23.7
HCM LOS	F	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	98%	0%	100%	0%	0%	0%
Vol Thru, %	2%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	157	342	107	440	317	631
LT Vol	154	0	107	0	0	0
Through Vol	3	0	0	440	317	0
RT Vol	0	342	0	0	0	631
Lane Flow Rate	164	356	111	458	330	657
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.382	0.714	0.251	0.97	0.682	1.226
Departure Headway (Hd)	8.763	7.535	8.502	7.986	7.437	6.716
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	414	485	425	458	485	539
Service Time	6.463	5.235	6.202	5.686	5.207	4.485
HCM Lane V/C Ratio	0.396	0.734	0.261	1	0.68	1.219
HCM Control Delay	16.8	26.9	14	63.4	24.8	139.9
HCM Lane LOS	C	D	B	F	C	F
HCM 95th-tile Q	1.8	5.6	1	12	5.1	24.8

Intersection	
Intersection Delay, s/veh	86.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	620	0	0	345	488	71	4	380	0	0	0
Future Vol, veh/h	145	620	0	0	345	488	71	4	380	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	646	0	0	359	508	74	4	396	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	166.1	43.4	31.7
HCM LOS	F	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	75	380	145	620	345	488
LT Vol	71	0	145	0	0	0
Through Vol	4	0	0	620	345	0
RT Vol	0	380	0	0	0	488
Lane Flow Rate	78	396	151	646	359	508
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.184	0.802	0.342	1.369	0.735	0.941
Departure Headway (Hd)	9.024	7.809	8.146	7.631	7.889	7.164
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	400	467	440	478	460	508
Service Time	6.724	5.509	5.939	5.423	5.589	4.864
HCM Lane V/C Ratio	0.195	0.848	0.343	1.351	0.78	1
HCM Control Delay	13.7	35.3	15.2	201.4	29.5	53.2
HCM Lane LOS	B	E	C	F	D	F
HCM 95th-tile Q	0.7	7.4	1.5	29.6	6	11.6

Intersection	
Intersection Delay, s/veh	69.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	440	0	0	317	631	157	3	342	0	0	0
Future Vol, veh/h	111	440	0	0	317	631	157	3	342	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	458	0	0	330	657	164	3	356	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	53.7	102.5	23.7
HCM LOS	F	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	98%	0%	100%	0%	0%	0%
Vol Thru, %	2%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	160	342	111	440	317	631
LT Vol	157	0	111	0	0	0
Through Vol	3	0	0	440	317	0
RT Vol	0	342	0	0	0	631
Lane Flow Rate	167	356	116	458	330	657
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.389	0.714	0.261	0.971	0.684	1.23
Departure Headway (Hd)	8.777	7.549	8.515	7.999	7.456	6.734
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	413	481	424	458	482	539
Service Time	6.477	5.249	6.215	5.699	5.222	4.5
HCM Lane V/C Ratio	0.404	0.74	0.274	1	0.685	1.219
HCM Control Delay	17	26.9	14.2	63.7	25	141.5
HCM Lane LOS	C	D	B	F	C	F
HCM 95th-tile Q	1.8	5.6	1	12	5.1	25

Intersection	
Intersection Delay, s/veh	86.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	148	620	0	0	345	488	73	4	380	0	0	0
Future Vol, veh/h	148	620	0	0	345	488	73	4	380	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	154	646	0	0	359	508	76	4	396	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	165.9	43.6	31.8
HCM LOS	F	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	380	148	620	345	488
LT Vol	73	0	148	0	0	0
Through Vol	4	0	0	620	345	0
RT Vol	0	380	0	0	0	488
Lane Flow Rate	80	396	154	646	359	508
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.189	0.803	0.349	1.37	0.736	0.942
Departure Headway (Hd)	9.033	7.817	8.155	7.639	7.899	7.174
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	399	467	439	478	460	508
Service Time	6.733	5.517	5.948	5.432	5.599	4.874
HCM Lane V/C Ratio	0.201	0.848	0.351	1.351	0.78	1
HCM Control Delay	13.8	35.4	15.3	201.8	29.6	53.5
HCM Lane LOS	B	E	C	F	D	F
HCM 95th-tile Q	0.7	7.4	1.5	29.6	6	11.6

Intersection	
Intersection Delay, s/veh	59.9
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	0	0	453	56	450
Future Vol, veh/h	403	0	0	453	56	450
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	0	0	533	66	529
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	48.8	70	59.8
HCM LOS	E	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	450	403	453
LT Vol	56	0	0	0
Through Vol	0	0	403	453
RT Vol	0	450	0	0
Lane Flow Rate	66	529	474	533
Geometry Grp	7	7	2	2
Degree of Util (X)	0.147	1	0.919	1.016
Departure Headway (Hd)	8.209	6.973	6.978	6.861
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	439	524	517	528
Service Time	5.909	4.673	5.056	4.937
HCM Lane V/C Ratio	0.15	1.01	0.917	1.009
HCM Control Delay	12.3	65.7	48.8	70
HCM Lane LOS	B	F	E	F
HCM 95th-tile Q	0.5	13.9	10.9	14.6

Intersection	
Intersection Delay, s/veh	85.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	473	0	0	353	649	155	3	390	0	0	0
Future Vol, veh/h	107	473	0	0	353	649	155	3	390	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	493	0	0	368	676	161	3	406	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	79.3	118.7	31.6
HCM LOS	F	F	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	98%	0%	100%	0%	0%	0%
Vol Thru, %	2%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	390	107	473	353	649
LT Vol	155	0	107	0	0	0
Through Vol	3	0	0	473	353	0
RT Vol	0	390	0	0	0	649
Lane Flow Rate	165	406	111	493	368	676
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.389	0.825	0.259	1.077	0.772	1.288
Departure Headway (Hd)	8.925	7.695	8.781	8.264	7.806	7.082
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	407	475	411	443	467	521
Service Time	6.625	5.395	6.481	5.964	5.506	4.782
HCM Lane V/C Ratio	0.405	0.855	0.27	1.113	0.788	1.298
HCM Control Delay	17.2	37.4	14.5	93.9	32.3	165.7
HCM Lane LOS	C	E	B	F	D	F
HCM 95th-tile Q	1.8	8	1	15.5	6.7	27.3

Intersection	
Intersection Delay, s/veh	92.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	623	0	0	355	488	75	4	405	0	0	0
Future Vol, veh/h	145	623	0	0	355	488	75	4	405	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	649	0	0	370	508	78	4	422	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	177.2	46.9	37.8
HCM LOS	F	E	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	405	145	623	355	488
LT Vol	75	0	145	0	0	0
Through Vol	4	0	0	623	355	0
RT Vol	0	405	0	0	0	488
Lane Flow Rate	82	422	151	649	370	508
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.194	0.859	0.348	1.4	0.768	0.957
Departure Headway (Hd)	9.088	7.87	8.286	7.769	8.047	7.32
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	464	432	467	451	498
Service Time	6.788	5.57	6.082	5.565	5.747	5.02
HCM Lane V/C Ratio	0.207	0.909	0.35	1.39	0.82	1.02
HCM Control Delay	14	42.5	15.5	214.8	32.7	57.3
HCM Lane LOS	B	E	C	F	D	F
HCM 95th-tile Q	0.7	8.8	1.5	30.7	6.6	12

Intersection	
Intersection Delay, s/veh	61.9
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	403	0	0	455	56	453
Future Vol, veh/h	403	0	0	455	56	453
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	474	0	0	535	66	533
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	50.1	72.6	61.7
HCM LOS	F	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	453	403	455
LT Vol	56	0	0	0
Through Vol	0	0	403	455
RT Vol	0	453	0	0
Lane Flow Rate	66	533	474	535
Geometry Grp	7	7	2	2
Degree of Util (X)	0.147	1.008	0.922	1.023
Departure Headway (Hd)	8.222	6.986	7.216	7.085
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	439	522	507	514
Service Time	5.922	4.686	5.216	5.085
HCM Lane V/C Ratio	0.15	1.021	0.935	1.041
HCM Control Delay	12.3	67.8	50.1	72.6
HCM Lane LOS	B	F	F	F
HCM 95th-tile Q	0.5	14.2	10.9	14.7

Intersection	
Intersection Delay, s/veh	86
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	473	0	0	353	649	158	3	390	0	0	0
Future Vol, veh/h	111	473	0	0	353	649	158	3	390	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	493	0	0	368	676	165	3	406	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	79.4	119.6	31.7
HCM LOS	F	F	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	98%	0%	100%	0%	0%	0%
Vol Thru, %	2%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	390	111	473	353	649
LT Vol	158	0	111	0	0	0
Through Vol	3	0	0	473	353	0
RT Vol	0	390	0	0	0	649
Lane Flow Rate	168	406	116	493	368	676
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.397	0.826	0.269	1.079	0.774	1.291
Departure Headway (Hd)	8.941	7.71	8.796	8.279	7.822	7.098
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	406	471	410	443	467	521
Service Time	6.641	5.41	6.496	5.979	5.522	4.798
HCM Lane V/C Ratio	0.414	0.862	0.283	1.113	0.788	1.298
HCM Control Delay	17.4	37.6	14.7	94.6	32.5	167
HCM Lane LOS	C	E	B	F	D	F
HCM 95th-tile Q	1.9	8	1.1	15.6	6.8	27.4

Intersection	
Intersection Delay, s/veh	92.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	148	623	0	0	355	488	77	4	405	0	0	0
Future Vol, veh/h	148	623	0	0	355	488	77	4	405	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	154	649	0	0	370	508	80	4	422	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	177.3	47.2	37.9
HCM LOS	F	E	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	405	148	623	355	488
LT Vol	77	0	148	0	0	0
Through Vol	4	0	0	623	355	0
RT Vol	0	405	0	0	0	488
Lane Flow Rate	84	422	154	649	370	508
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.199	0.86	0.355	1.402	0.769	0.958
Departure Headway (Hd)	9.098	7.88	8.293	7.777	8.056	7.329
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	464	432	467	451	498
Service Time	6.798	5.58	6.09	5.574	5.756	5.029
HCM Lane V/C Ratio	0.212	0.909	0.356	1.39	0.82	1.02
HCM Control Delay	14	42.7	15.6	215.7	32.9	57.6
HCM Lane LOS	B	E	C	F	D	F
HCM 95th-tile Q	0.7	8.8	1.6	30.8	6.6	12.1

Intersection	
Intersection Delay, s/veh	74.3
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	0	0	463	66	476
Future Vol, veh/h	421	0	0	463	66	476
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	495	0	0	545	78	560
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	60.2	81	79.5
HCM LOS	F	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	476	421	463
LT Vol	66	0	0	0
Through Vol	0	0	421	463
RT Vol	0	476	0	0
Lane Flow Rate	78	560	495	545
Geometry Grp	7	7	2	2
Degree of Util (X)	0.176	1.079	0.967	1.049
Departure Headway (Hd)	8.313	7.076	7.39	7.282
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	434	515	495	501
Service Time	6.013	4.776	5.39	5.282
HCM Lane V/C Ratio	0.18	1.087	1	1.088
HCM Control Delay	12.8	88.8	60.2	81
HCM Lane LOS	B	F	F	F
HCM 95th-tile Q	0.6	17.1	12.3	15.5

Intersection	
Intersection Delay, s/veh	41.6
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	188	197	0	317	0	0	0	0	496	0	244
Future Vol, veh/h	0	188	197	0	317	0	0	0	0	496	0	244
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	198	207	0	334	0	0	0	0	522	0	257
Number of Lanes	0	1	0	0	1	0	0	0	0	1	0	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	23.2	20.2	60.3
HCM LOS	C	C	F

Lane	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	49%	100%	0%	0%
Vol Right, %	51%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	385	317	496	244
LT Vol	0	0	496	0
Through Vol	188	317	0	0
RT Vol	197	0	0	244
Lane Flow Rate	405	334	522	257
Geometry Grp	2	2	7	7
Degree of Util (X)	0.702	0.616	1.057	0.433
Departure Headway (Hd)	6.432	6.859	7.288	6.064
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	567	531	496	593
Service Time	4.432	4.859	5.036	3.811
HCM Lane V/C Ratio	0.714	0.629	1.052	0.433
HCM Control Delay	23.2	20.2	83.3	13.4
HCM Lane LOS	C	C	F	B
HCM 95th-tile Q	5.6	4.1	15.8	2.2

Intersection	
Intersection Delay, s/veh	127.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	551	0	0	419	663	238	13	444	0	0	0
Future Vol, veh/h	132	551	0	0	419	663	238	13	444	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	138	574	0	0	436	691	248	14	463	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	162.7	154.9	49.3
HCM LOS	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	251	444	132	551	419	663
LT Vol	238	0	132	0	0	0
Through Vol	13	0	0	551	419	0
RT Vol	0	444	0	0	0	663
Lane Flow Rate	261	462	138	574	436	691
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.628	0.961	0.342	1.348	0.966	1.394
Departure Headway (Hd)	9.376	8.159	9.515	8.997	8.472	7.743
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	387	449	381	408	432	477
Service Time	7.076	5.859	7.215	6.697	6.172	5.443
HCM Lane V/C Ratio	0.674	1.029	0.362	1.407	1.009	1.449
HCM Control Delay	26.6	62.1	17.1	197.6	64.7	211.9
HCM Lane LOS	D	F	C	F	F	F
HCM 95th-tile Q	4.1	11.6	1.5	25.4	11.5	30.8

Intersection	
Intersection Delay, s/veh	122.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	394	435	0	329	0	0	0	0	424	0	275
Future Vol, veh/h	0	394	435	0	329	0	0	0	0	424	0	275
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	398	439	0	332	0	0	0	0	428	0	278
Number of Lanes	0	1	0	0	1	0	0	0	0	1	0	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	232.5	23.2	39.6
HCM LOS	F	C	E

Lane	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	48%	100%	0%	0%
Vol Right, %	52%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	829	329	424	275
LT Vol	0	0	424	0
Through Vol	394	329	0	0
RT Vol	435	0	0	275
Lane Flow Rate	837	332	428	278
Geometry Grp	2	2	7	7
Degree of Util (X)	1.455	0.639	0.914	0.5
Departure Headway (Hd)	6.255	7.643	8.525	7.286
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	475	428	497
Service Time	4.285	5.643	6.225	4.986
HCM Lane V/C Ratio	1.428	0.699	1	0.559
HCM Control Delay	232.5	23.2	54.2	17.1
HCM Lane LOS	F	C	F	C
HCM 95th-tile Q	40.3	4.4	10	2.8

Intersection	
Intersection Delay, s/veh	153.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	695	0	0	564	502	143	5	422	0	0	0
Future Vol, veh/h	185	695	0	0	564	502	143	5	422	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	193	724	0	0	588	523	149	5	440	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	256.2	126	48.2
HCM LOS	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	97%	0%	100%	0%	0%	0%
Vol Thru, %	3%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	422	185	695	564	502
LT Vol	143	0	185	0	0	0
Through Vol	5	0	0	695	564	0
RT Vol	0	422	0	0	0	502
Lane Flow Rate	154	440	193	724	588	523
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.378	0.934	0.463	1.639	1.277	1.035
Departure Headway (Hd)	9.869	8.64	9.053	8.535	8.572	7.843
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	367	422	401	434	429	465
Service Time	7.569	6.34	6.753	6.235	6.272	5.543
HCM Lane V/C Ratio	0.42	1.043	0.481	1.668	1.371	1.125
HCM Control Delay	18.4	58.6	19.3	319.2	167.5	79.4
HCM Lane LOS	C	F	C	F	F	F
HCM 95th-tile Q	1.7	10.5	2.4	40.1	23.2	14.4

Intersection	
Intersection Delay, s/veh	73.8
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	421	0	0	465	66	479
Future Vol, veh/h	421	0	0	465	66	479
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	495	0	0	547	78	564
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	60.1	82.4	77.1
HCM LOS	F	F	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	479	421	465
LT Vol	66	0	0	0
Through Vol	0	0	421	465
RT Vol	0	479	0	0
Lane Flow Rate	78	564	495	547
Geometry Grp	7	7	2	2
Degree of Util (X)	0.173	1.07	0.967	1.054
Departure Headway (Hd)	8.32	7.082	7.379	7.265
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	434	518	495	503
Service Time	6.02	4.782	5.379	5.265
HCM Lane V/C Ratio	0.18	1.089	1	1.087
HCM Control Delay	12.8	86	60.1	82.4
HCM Lane LOS	B	F	F	F
HCM 95th-tile Q	0.6	16.7	12.3	15.8

Intersection	
Intersection Delay, s/veh	42.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	192	199	0	320	0	0	0	0	496	0	252
Future Vol, veh/h	0	192	199	0	320	0	0	0	0	496	0	252
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	202	209	0	337	0	0	0	0	522	0	265
Number of Lanes	0	1	0	0	1	0	0	0	0	1	0	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	24	20.6	60.8
HCM LOS	C	C	F

Lane	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	49%	100%	0%	0%
Vol Right, %	51%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	320	496	252
LT Vol	0	0	496	0
Through Vol	192	320	0	0
RT Vol	199	0	0	252
Lane Flow Rate	412	337	522	265
Geometry Grp	2	2	7	7
Degree of Util (X)	0.715	0.624	1.061	0.449
Departure Headway (Hd)	6.447	6.879	7.319	6.095
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	564	529	496	589
Service Time	4.447	4.879	5.068	3.843
HCM Lane V/C Ratio	0.73	0.637	1.052	0.45
HCM Control Delay	24	20.6	84.7	13.8
HCM Lane LOS	C	C	F	B
HCM 95th-tile Q	5.8	4.2	15.9	2.3

Intersection	
Intersection Delay, s/veh	127.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	551	0	0	419	663	241	13	444	0	0	0
Future Vol, veh/h	136	551	0	0	419	663	241	13	444	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	142	574	0	0	436	691	251	14	463	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	162.6	155.9	49.7
HCM LOS	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	95%	0%	100%	0%	0%	0%
Vol Thru, %	5%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	254	444	136	551	419	663
LT Vol	241	0	136	0	0	0
Through Vol	13	0	0	551	419	0
RT Vol	0	444	0	0	0	663
Lane Flow Rate	265	462	142	574	436	691
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.637	0.962	0.353	1.35	0.968	1.397
Departure Headway (Hd)	9.401	8.184	9.535	9.016	8.489	7.76
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	386	449	380	408	432	477
Service Time	7.101	5.884	7.235	6.716	6.189	5.46
HCM Lane V/C Ratio	0.687	1.029	0.374	1.407	1.009	1.449
HCM Control Delay	27.2	62.5	17.3	198.5	65.2	213.2
HCM Lane LOS	D	F	C	F	F	F
HCM 95th-tile Q	4.2	11.6	1.6	25.4	11.6	30.9

Intersection	
Intersection Delay, s/veh	124.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	397	436	0	331	0	0	0	0	424	0	280
Future Vol, veh/h	0	397	436	0	331	0	0	0	0	424	0	280
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	401	440	0	334	0	0	0	0	428	0	283
Number of Lanes	0	1	0	0	1	0	0	0	0	1	0	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	236.4	23.4	39.7
HCM LOS	F	C	E

Lane	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	100%	0%
Vol Thru, %	48%	100%	0%	0%
Vol Right, %	52%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	833	331	424	280
LT Vol	0	0	424	0
Through Vol	397	331	0	0
RT Vol	436	0	0	280
Lane Flow Rate	841	334	428	283
Geometry Grp	2	2	7	7
Degree of Util (X)	1.464	0.643	0.915	0.51
Departure Headway (Hd)	6.264	7.658	8.543	7.303
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	581	475	428	498
Service Time	4.294	5.658	6.243	5.003
HCM Lane V/C Ratio	1.448	0.703	1	0.568
HCM Control Delay	236.4	23.4	54.4	17.4
HCM Lane LOS	F	C	F	C
HCM 95th-tile Q	40.9	4.5	10	2.9

Intersection	
Intersection Delay, s/veh	154.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	188	695	0	0	564	502	145	5	422	0	0	0
Future Vol, veh/h	188	695	0	0	564	502	145	5	422	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	196	724	0	0	588	523	151	5	440	0	0	0
Number of Lanes	1	1	0	0	1	1	0	1	1	0	0	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	256.1	126.6	48.3
HCM LOS	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	97%	0%	100%	0%	0%	0%
Vol Thru, %	3%	0%	0%	100%	100%	0%
Vol Right, %	0%	100%	0%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	150	422	188	695	564	502
LT Vol	145	0	188	0	0	0
Through Vol	5	0	0	695	564	0
RT Vol	0	422	0	0	0	502
Lane Flow Rate	156	440	196	724	588	523
Geometry Grp	7	7	7	7	7	7
Degree of Util (X)	0.384	0.935	0.471	1.641	1.279	1.036
Departure Headway (Hd)	9.89	8.662	9.065	8.547	8.583	7.854
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	422	399	434	429	465
Service Time	7.59	6.362	6.765	6.247	6.283	5.554
HCM Lane V/C Ratio	0.426	1.043	0.491	1.668	1.371	1.125
HCM Control Delay	18.6	58.9	19.6	320.1	168.3	79.7
HCM Lane LOS	C	F	C	F	F	F
HCM 95th-tile Q	1.8	10.5	2.4	40.2	23.3	14.4

F – SIDRA Outputs

MOVEMENT SUMMARY

Site: 101 [Int 1 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	24	3.0	26	3.0	0.531	8.9	LOS A	4.0	103.0	0.39	0.21	0.39	28.3
18	R2	572	3.0	622	3.0	0.531	8.9	LOS A	4.0	103.0	0.39	0.21	0.39	27.5
Approach		596	3.0	648	3.0	0.531	8.9	LOS A	4.0	103.0	0.39	0.21	0.39	27.5
East: Harkins Slough Rd														
6	T1	536	3.0	583	3.0	0.447	7.2	LOS A	3.1	80.4	0.18	0.06	0.18	24.8
Approach		536	3.0	583	3.0	0.447	7.2	LOS A	3.1	80.4	0.18	0.06	0.18	24.8
West: Harkins Slough Rd														
2	T1	82	3.0	89	3.0	0.067	3.2	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		82	3.0	89	3.0	0.067	3.2	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1214	3.0	1320	3.0	0.531	7.8	LOS A	4.0	103.0	0.27	0.13	0.27	26.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Back+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	56	3.0	61	3.0	0.657	15.3	LOS C	7.3	186.9	0.80	1.02	1.38	25.1
18	R2	455	3.0	495	3.0	0.657	15.3	LOS C	7.3	186.9	0.80	1.02	1.38	24.0
Approach		511	3.0	555	3.0	0.657	15.3	LOS C	7.3	186.9	0.80	1.02	1.38	24.2
East: Harkins Slough Rd														
6	T1	698	3.0	759	3.0	0.604	10.1	LOS B	5.4	138.6	0.37	0.18	0.37	22.0
Approach		698	3.0	759	3.0	0.604	10.1	LOS B	5.4	138.6	0.37	0.18	0.37	22.0
West: Harkins Slough Rd														
2	T1	403	3.0	438	3.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		403	3.0	438	3.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1612	3.0	1752	3.0	0.657	10.6	LOS B	7.3	186.9	0.42	0.40	0.60	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Back+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	14	3.0	15	3.0	0.493	8.2	LOS A	3.6	90.9	0.34	0.17	0.34	28.8
18	R2	546	3.0	593	3.0	0.493	8.2	LOS A	3.6	90.9	0.34	0.17	0.34	28.0
Approach		560	3.0	609	3.0	0.493	8.2	LOS A	3.6	90.9	0.34	0.17	0.34	28.0
East: Harkins Slough Rd														
6	T1	478	3.0	520	3.0	0.394	6.5	LOS A	2.6	65.8	0.12	0.03	0.12	25.6
Approach		478	3.0	520	3.0	0.394	6.5	LOS A	2.6	65.8	0.12	0.03	0.12	25.6
West: Harkins Slough Rd														
2	T1	71	3.0	77	3.0	0.058	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		71	3.0	77	3.0	0.058	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1109	3.0	1205	3.0	0.493	7.1	LOS A	3.6	90.9	0.23	0.10	0.23	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Back AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	56	3.0	61	3.0	0.654	15.2	LOS C	7.2	184.8	0.80	1.01	1.37	25.2
18	R2	453	3.0	492	3.0	0.654	15.2	LOS C	7.2	184.8	0.80	1.01	1.37	24.1
Approach		509	3.0	553	3.0	0.654	15.2	LOS C	7.2	184.8	0.80	1.01	1.37	24.2
East: Harkins Slough Rd														
6	T1	698	3.0	759	3.0	0.604	10.1	LOS B	5.4	138.6	0.37	0.18	0.37	22.0
Approach		698	3.0	759	3.0	0.604	10.1	LOS B	5.4	138.6	0.37	0.18	0.37	22.0
West: Harkins Slough Rd														
2	T1	403	3.0	438	3.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		403	3.0	438	3.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1610	3.0	1750	3.0	0.654	10.6	LOS B	7.2	184.8	0.41	0.40	0.59	24.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Back PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	14	3.0	15	3.0	0.491	8.1	LOS A	3.5	90.3	0.34	0.17	0.34	28.8
18	R2	544	3.0	591	3.0	0.491	8.1	LOS A	3.5	90.3	0.34	0.17	0.34	28.0
Approach		558	3.0	607	3.0	0.491	8.1	LOS A	3.5	90.3	0.34	0.17	0.34	28.0
East: Harkins Slough Rd														
6	T1	477	3.0	518	3.0	0.393	6.5	LOS A	2.6	65.6	0.12	0.03	0.12	25.6
Approach		477	3.0	518	3.0	0.393	6.5	LOS A	2.6	65.6	0.12	0.03	0.12	25.6
West: Harkins Slough Rd														
2	T1	71	3.0	77	3.0	0.058	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		71	3.0	77	3.0	0.058	3.1	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1106	3.0	1202	3.0	0.491	7.1	LOS A	3.5	90.3	0.22	0.10	0.22	27.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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MOVEMENT SUMMARY

Site: 101 [Int 1 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	66	3.0	72	3.0	0.715	18.0	LOS C	9.2	235.4	0.85	1.15	1.63	24.0
18	R2	479	3.0	521	3.0	0.715	18.0	LOS C	9.2	235.4	0.85	1.15	1.63	22.8
Approach		545	3.0	592	3.0	0.715	18.0	LOS C	9.2	235.4	0.85	1.15	1.63	23.0
East: Harkins Slough Rd														
6	T1	697	3.0	758	3.0	0.610	10.4	LOS B	5.4	139.5	0.41	0.21	0.41	21.8
Approach		697	3.0	758	3.0	0.610	10.4	LOS B	5.4	139.5	0.41	0.21	0.41	21.8
West: Harkins Slough Rd														
2	T1	421	3.0	458	3.0	0.342	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		421	3.0	458	3.0	0.342	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1663	3.0	1808	3.0	0.715	11.7	LOS B	9.2	235.4	0.45	0.46	0.71	23.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	24	3.0	26	3.0	0.529	8.9	LOS A	4.0	102.3	0.39	0.21	0.39	28.4
18	R2	570	3.0	620	3.0	0.529	8.9	LOS A	4.0	102.3	0.39	0.21	0.39	27.5
Approach		594	3.0	646	3.0	0.529	8.9	LOS A	4.0	102.3	0.39	0.21	0.39	27.6
East: Harkins Slough Rd														
6	T1	535	3.0	582	3.0	0.446	7.2	LOS A	3.1	80.1	0.18	0.06	0.18	24.8
Approach		535	3.0	582	3.0	0.446	7.2	LOS A	3.1	80.1	0.18	0.06	0.18	24.8
West: Harkins Slough Rd														
2	T1	82	3.0	89	3.0	0.067	3.2	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		82	3.0	89	3.0	0.067	3.2	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1211	3.0	1316	3.0	0.529	7.7	LOS A	4.0	102.3	0.27	0.13	0.27	26.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 1 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	66	3.0	72	3.0	0.718	18.2	LOS C	9.3	238.2	0.86	1.16	1.64	24.0
18	R2	481	3.0	523	3.0	0.718	18.2	LOS C	9.3	238.2	0.86	1.16	1.64	22.8
Approach		547	3.0	595	3.0	0.718	18.2	LOS C	9.3	238.2	0.86	1.16	1.64	22.9
East: Harkins Slough Rd														
6	T1	697	3.0	758	3.0	0.610	10.4	LOS B	5.4	139.5	0.41	0.21	0.41	21.8
Approach		697	3.0	758	3.0	0.610	10.4	LOS B	5.4	139.5	0.41	0.21	0.41	21.8
West: Harkins Slough Rd														
2	T1	421	3.0	458	3.0	0.342	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
Approach		421	3.0	458	3.0	0.342	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.0
All Vehicles		1665	3.0	1810	3.0	0.718	11.8	LOS B	9.3	238.2	0.45	0.47	0.71	23.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

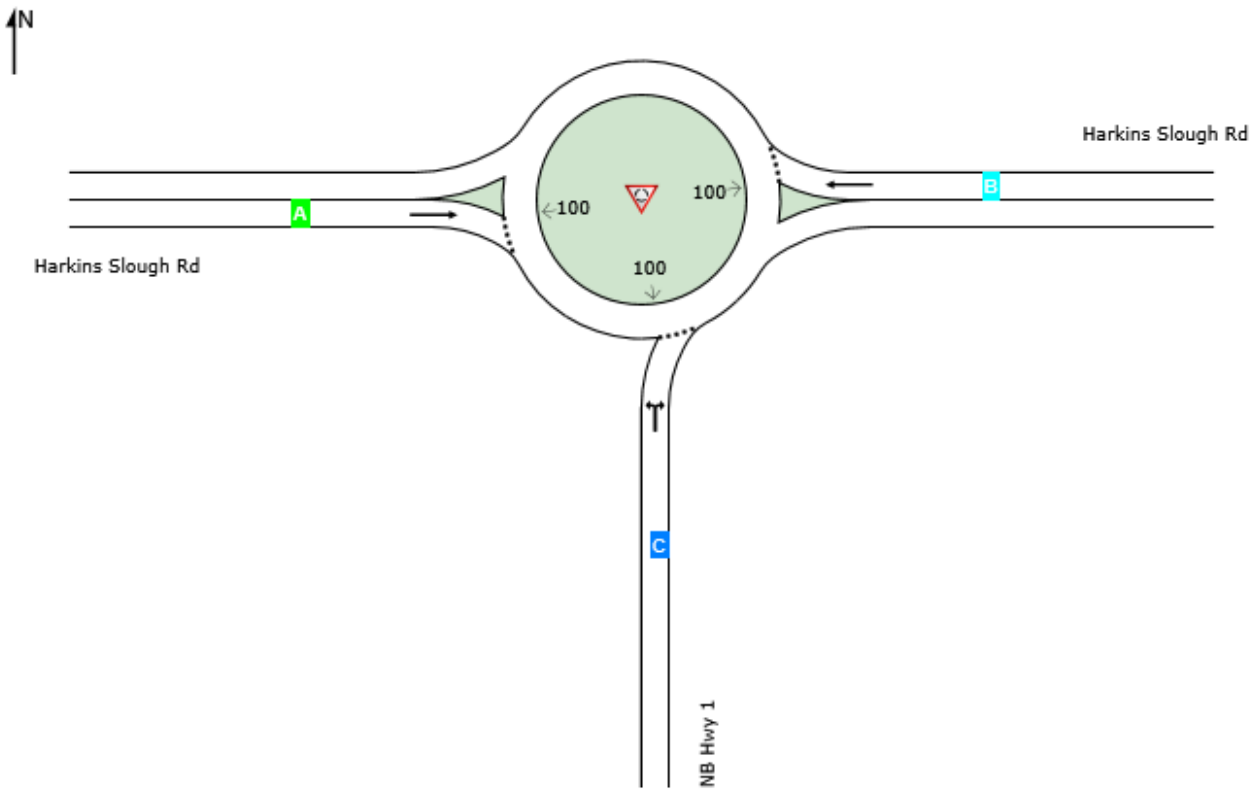
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Back+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	C	B	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

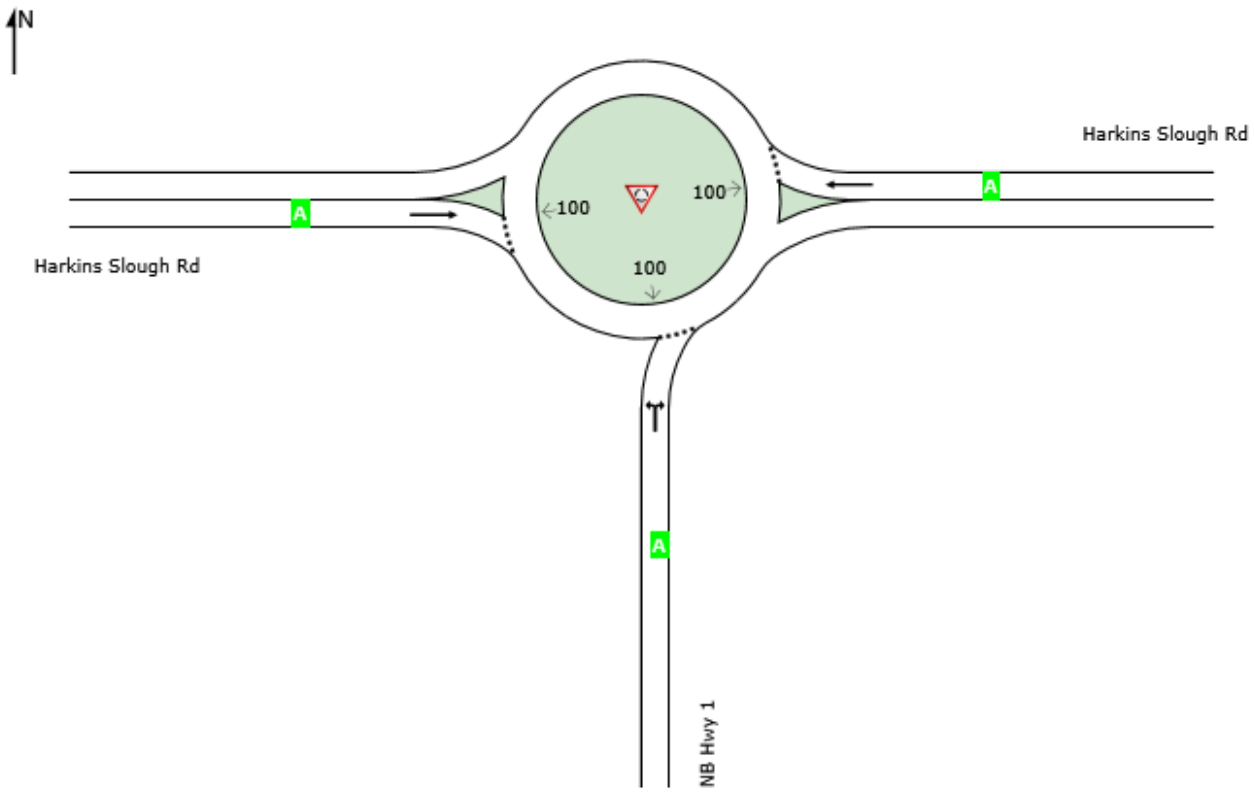
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Back+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



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Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

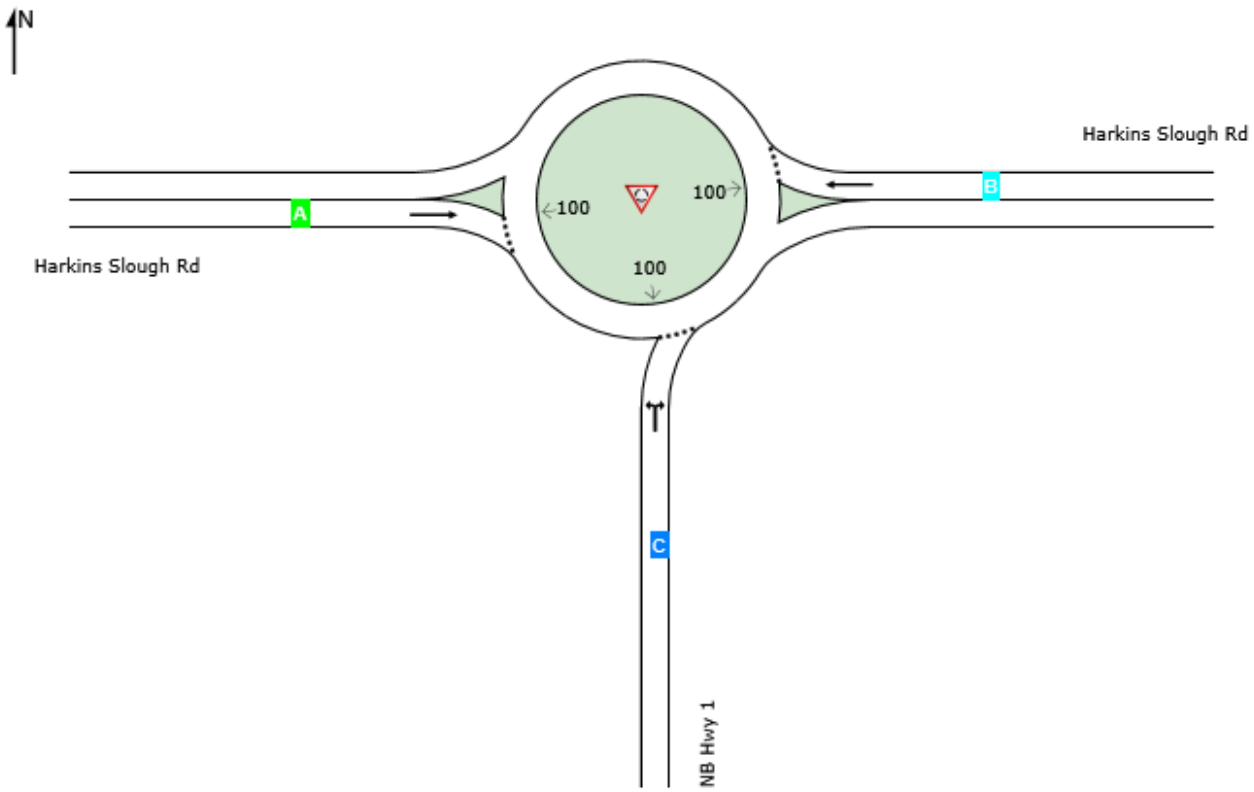
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Back AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	C	B	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

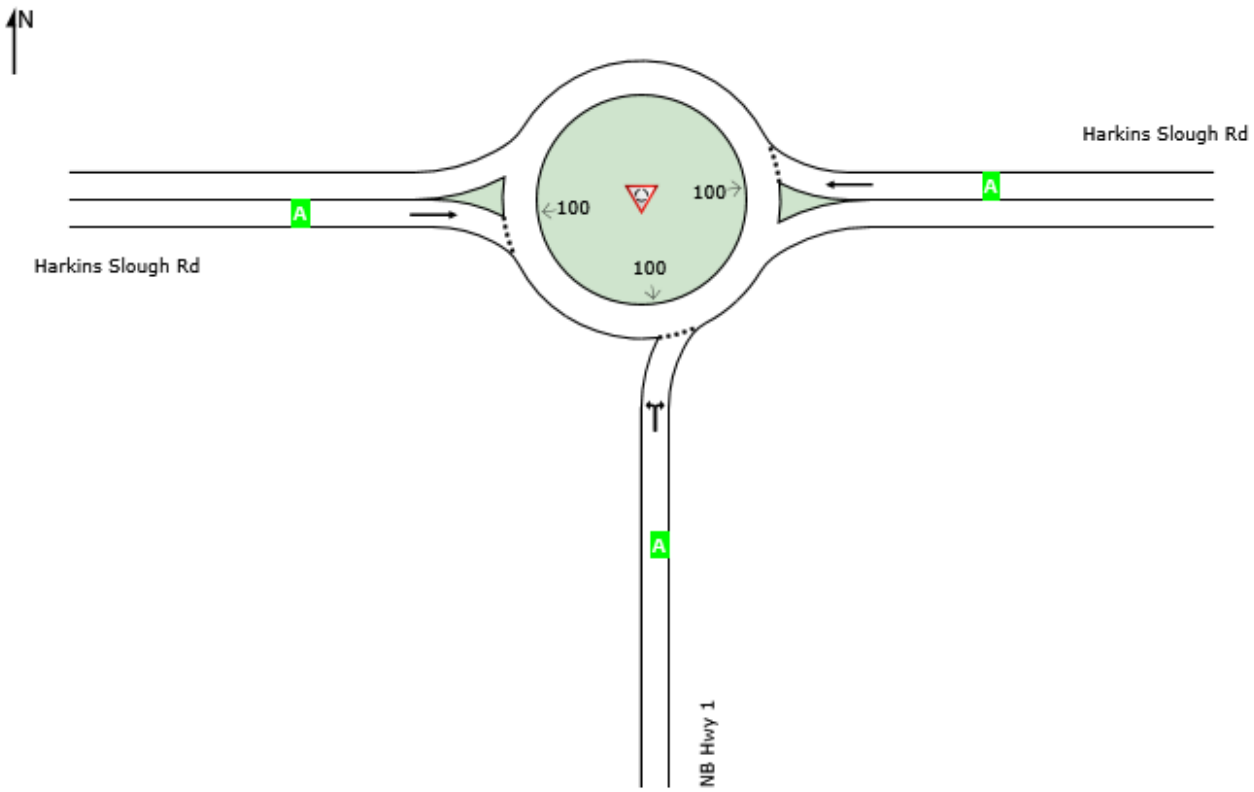
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Back PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



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LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

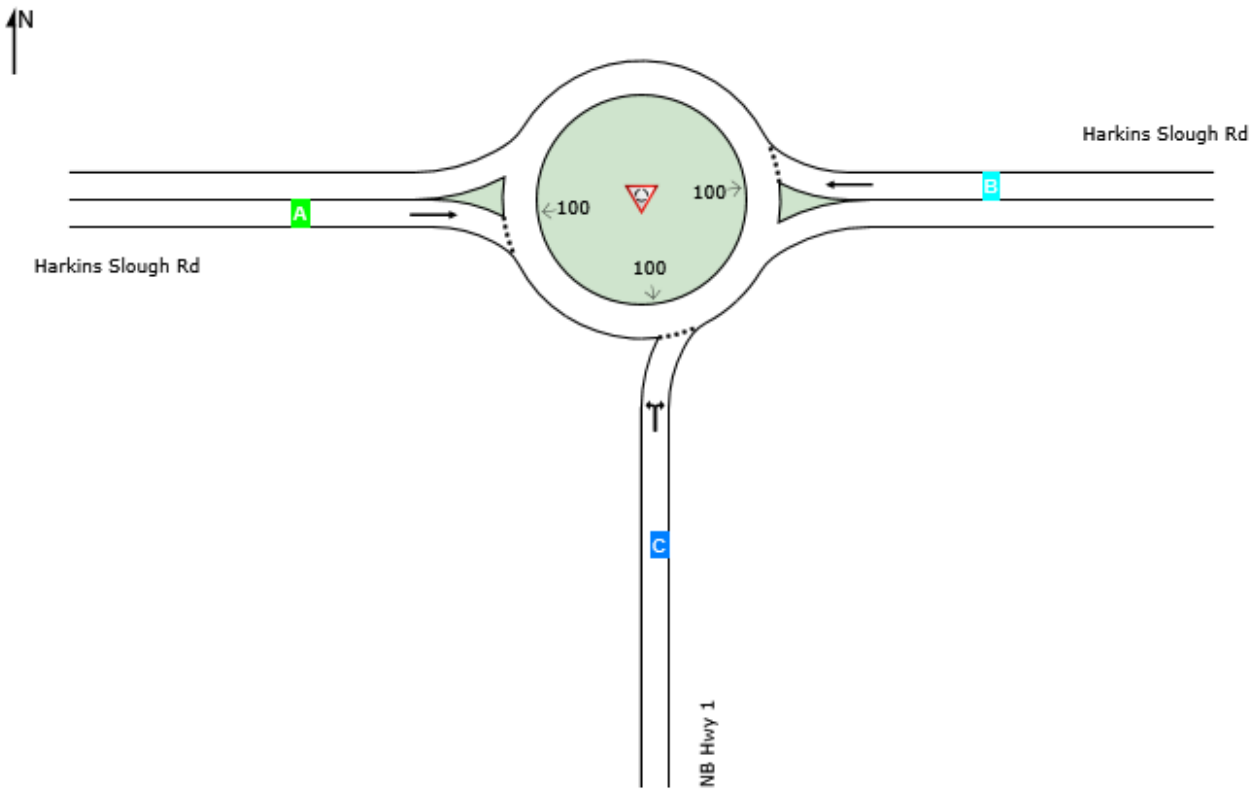
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	C	B	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

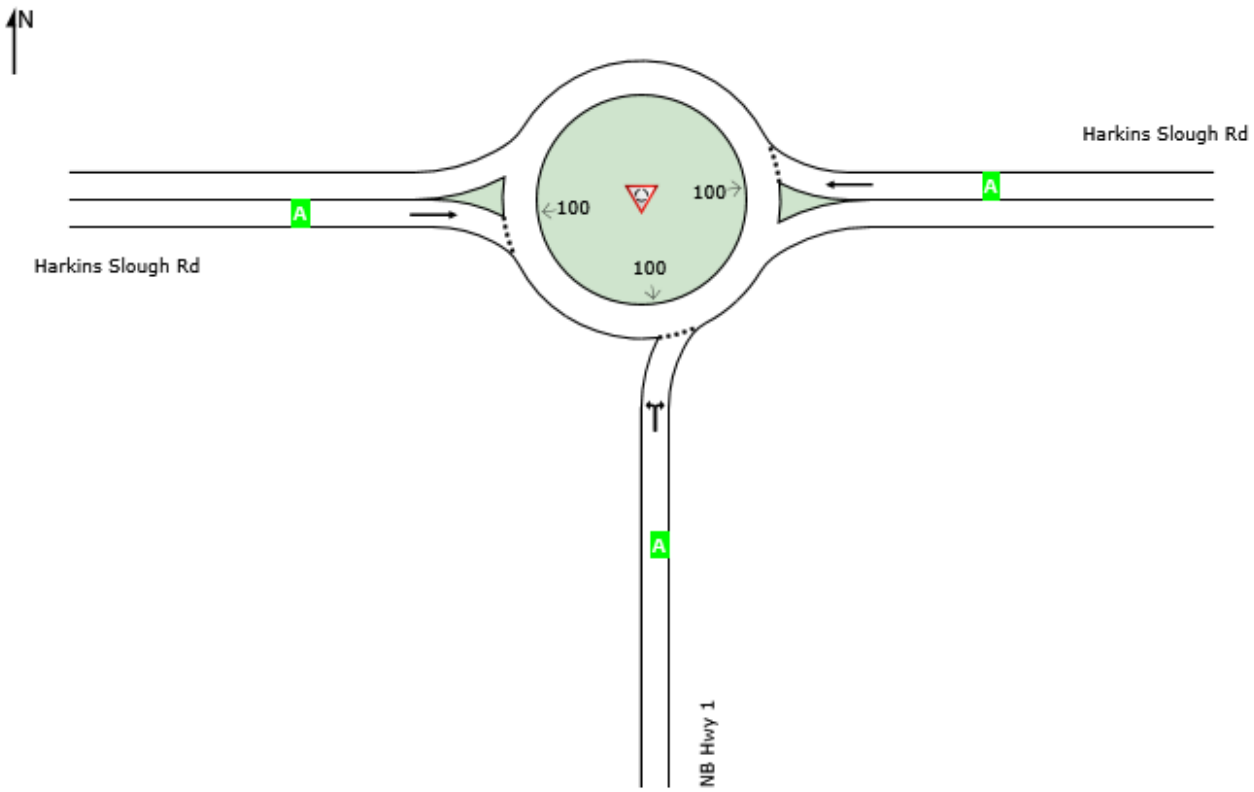
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

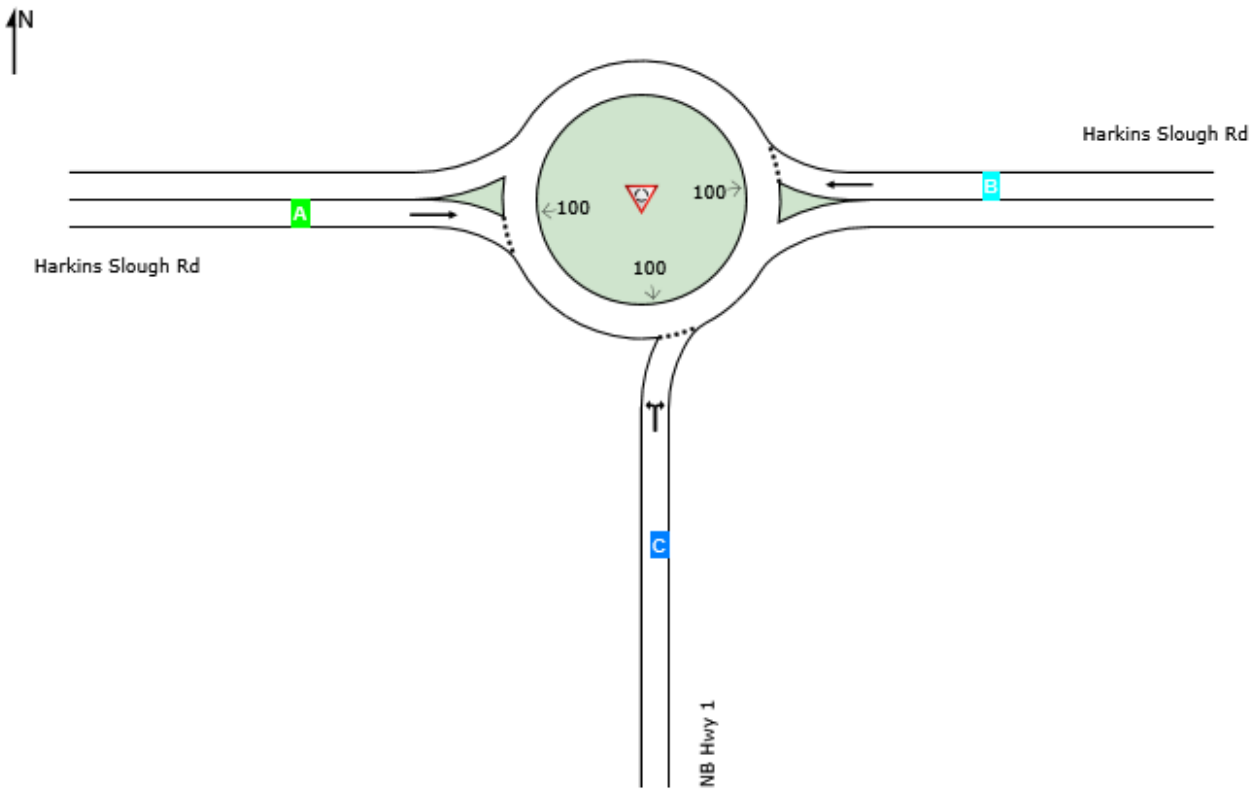
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	C	B	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

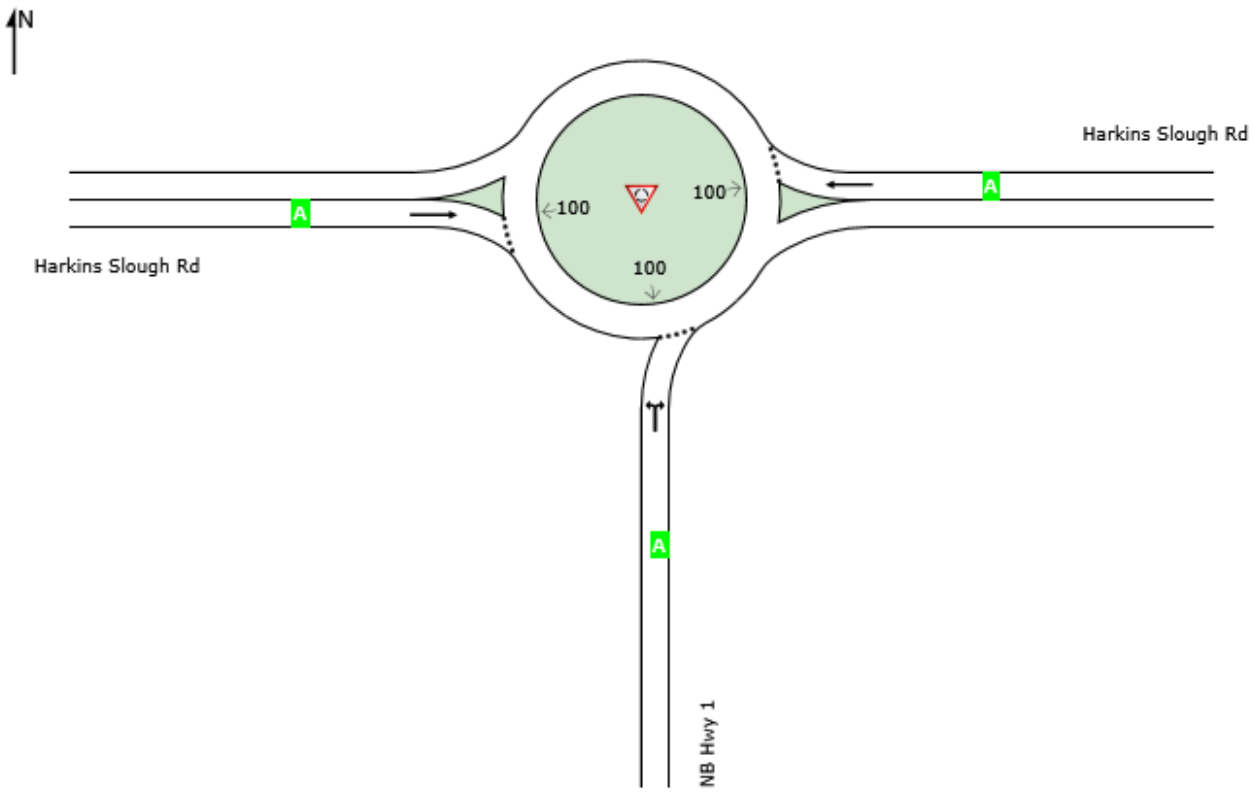
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 1 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 101 [Int 5- Cu AM (Site Folder: General)]

Cu AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	34	2.0	37	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	19.7
8	T1	341	2.0	371	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	26.9
18	R2	20	2.0	22	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	19.9
Approach		395	2.0	429	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	26.0
East: Loma Vista Drive														
1	L2	25	2.0	27	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	20.3
6	T1	1	2.0	1	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	15.5
16	R2	40	2.0	43	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	23.0
Approach		66	2.0	72	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	21.9
North: Ohlone Parkway														
7	L2	29	2.0	32	2.0	0.382	6.5	LOS A	2.4	60.6	0.27	0.12	0.27	19.8
4	T1	339	2.0	368	2.0	0.382	6.5	LOS A	2.4	60.6	0.27	0.12	0.27	27.4
14	R2	75	2.0	82	2.0	0.382	6.5	LOS A	2.4	60.6	0.27	0.12	0.27	24.6
Approach		443	2.0	482	2.0	0.382	6.5	LOS A	2.4	60.6	0.27	0.12	0.27	26.5
West: Loma Vista Drive														
5	L2	116	2.0	126	2.0	0.207	6.3	LOS A	0.9	23.2	0.54	0.47	0.54	23.9
2	T1	15	2.0	16	2.0	0.207	6.3	LOS A	0.9	23.2	0.54	0.47	0.54	14.7
12	R2	34	2.0	37	2.0	0.207	6.3	LOS A	0.9	23.2	0.54	0.47	0.54	21.6
Approach		165	2.0	179	2.0	0.207	6.3	LOS A	0.9	23.2	0.54	0.47	0.54	22.7
All Vehicles		1069	2.0	1162	2.0	0.382	6.6	LOS A	2.4	60.6	0.39	0.26	0.39	25.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 5- Cu PM (Site Folder: General)]

Cu PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	35	2.0	38	2.0	0.515	8.7	LOS A	3.8	95.4	0.44	0.26	0.44	18.8
8	T1	496	2.0	539	2.0	0.515	8.7	LOS A	3.8	95.4	0.44	0.26	0.44	25.6
18	R2	35	2.0	38	2.0	0.515	8.7	LOS A	3.8	95.4	0.44	0.26	0.44	18.6
Approach		566	2.0	615	2.0	0.515	8.7	LOS A	3.8	95.4	0.44	0.26	0.44	24.8
East: Loma Vista Drive														
1	L2	19	2.0	21	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	20.0
6	T1	13	2.0	14	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	15.2
16	R2	37	2.0	40	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	22.6
Approach		69	2.0	75	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	20.5
North: Ohlone Parkway														
7	L2	39	2.0	42	2.0	0.477	7.8	LOS A	3.4	86.9	0.33	0.16	0.33	18.8
4	T1	405	2.0	440	2.0	0.477	7.8	LOS A	3.4	86.9	0.33	0.16	0.33	26.2
14	R2	106	2.0	115	2.0	0.477	7.8	LOS A	3.4	86.9	0.33	0.16	0.33	23.5
Approach		550	2.0	598	2.0	0.477	7.8	LOS A	3.4	86.9	0.33	0.16	0.33	25.3
West: Loma Vista Drive														
5	L2	59	2.0	64	2.0	0.133	5.8	LOS A	0.5	13.9	0.55	0.48	0.55	24.6
2	T1	12	2.0	13	2.0	0.133	5.8	LOS A	0.5	13.9	0.55	0.48	0.55	15.1
12	R2	27	2.0	29	2.0	0.133	5.8	LOS A	0.5	13.9	0.55	0.48	0.55	22.1
Approach		98	2.0	107	2.0	0.133	5.8	LOS A	0.5	13.9	0.55	0.48	0.55	22.9
All Vehicles		1283	2.0	1395	2.0	0.515	8.0	LOS A	3.8	95.4	0.41	0.25	0.41	24.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 5- Cu+P AM (Site Folder: General)]

Cu+P AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	34	2.0	37	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	19.7
8	T1	341	2.0	371	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	26.9
18	R2	20	2.0	22	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	19.9
Approach		395	2.0	429	2.0	0.380	7.0	LOS A	2.2	56.2	0.44	0.29	0.44	26.0
East: Loma Vista Drive														
1	L2	25	2.0	27	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	20.3
6	T1	1	2.0	1	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	15.5
16	R2	40	2.0	43	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	23.0
Approach		66	2.0	72	2.0	0.093	5.6	LOS A	0.4	9.4	0.55	0.48	0.55	21.9
North: Ohlone Parkway														
7	L2	29	2.0	32	2.0	0.389	6.6	LOS A	2.5	62.3	0.27	0.12	0.27	19.8
4	T1	347	2.0	377	2.0	0.389	6.6	LOS A	2.5	62.3	0.27	0.12	0.27	27.4
14	R2	75	2.0	82	2.0	0.389	6.6	LOS A	2.5	62.3	0.27	0.12	0.27	24.6
Approach		451	2.0	490	2.0	0.389	6.6	LOS A	2.5	62.3	0.27	0.12	0.27	26.5
West: Loma Vista Drive														
5	L2	116	2.0	126	2.0	0.209	6.3	LOS A	0.9	23.4	0.55	0.48	0.55	23.9
2	T1	15	2.0	16	2.0	0.209	6.3	LOS A	0.9	23.4	0.55	0.48	0.55	14.7
12	R2	34	2.0	37	2.0	0.209	6.3	LOS A	0.9	23.4	0.55	0.48	0.55	21.5
Approach		165	2.0	179	2.0	0.209	6.3	LOS A	0.9	23.4	0.55	0.48	0.55	22.7
All Vehicles		1077	2.0	1171	2.0	0.389	6.7	LOS A	2.5	62.3	0.39	0.26	0.39	25.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 5- Cu+P PM (Site Folder: General)]

Cu+P PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	35	2.0	38	2.0	0.517	8.8	LOS A	3.8	96.0	0.44	0.27	0.44	18.8
8	T1	498	2.0	541	2.0	0.517	8.8	LOS A	3.8	96.0	0.44	0.27	0.44	25.6
18	R2	35	2.0	38	2.0	0.517	8.8	LOS A	3.8	96.0	0.44	0.27	0.44	18.6
Approach		568	2.0	617	2.0	0.517	8.8	LOS A	3.8	96.0	0.44	0.27	0.44	24.8
East: Loma Vista Drive														
1	L2	19	2.0	21	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	20.0
6	T1	13	2.0	14	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	15.2
16	R2	37	2.0	40	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	22.6
Approach		69	2.0	75	2.0	0.108	6.4	LOS A	0.4	10.8	0.59	0.55	0.59	20.5
North: Ohlone Parkway														
7	L2	39	2.0	42	2.0	0.482	7.9	LOS A	3.5	88.6	0.33	0.16	0.33	18.8
4	T1	411	2.0	447	2.0	0.482	7.9	LOS A	3.5	88.6	0.33	0.16	0.33	26.2
14	R2	106	2.0	115	2.0	0.482	7.9	LOS A	3.5	88.6	0.33	0.16	0.33	23.5
Approach		556	2.0	604	2.0	0.482	7.9	LOS A	3.5	88.6	0.33	0.16	0.33	25.2
West: Loma Vista Drive														
5	L2	59	2.0	64	2.0	0.134	5.9	LOS A	0.6	14.0	0.55	0.49	0.55	24.6
2	T1	12	2.0	13	2.0	0.134	5.9	LOS A	0.6	14.0	0.55	0.49	0.55	15.1
12	R2	27	2.0	29	2.0	0.134	5.9	LOS A	0.6	14.0	0.55	0.49	0.55	22.1
Approach		98	2.0	107	2.0	0.134	5.9	LOS A	0.6	14.0	0.55	0.49	0.55	22.9
All Vehicles		1291	2.0	1403	2.0	0.517	8.1	LOS A	3.8	96.0	0.41	0.25	0.41	24.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

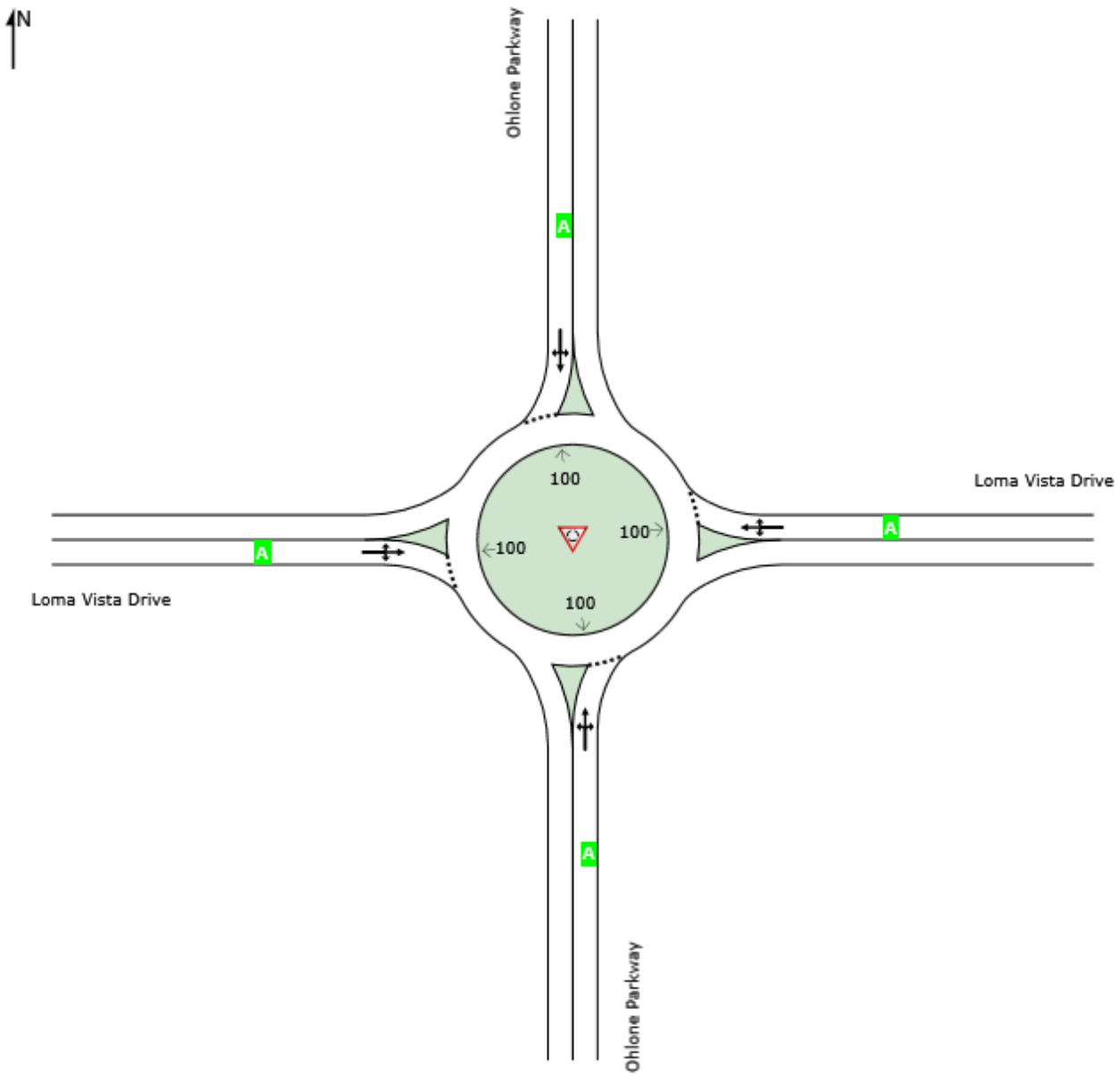
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 5- Cu AM (Site Folder: General)]

Cu AM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

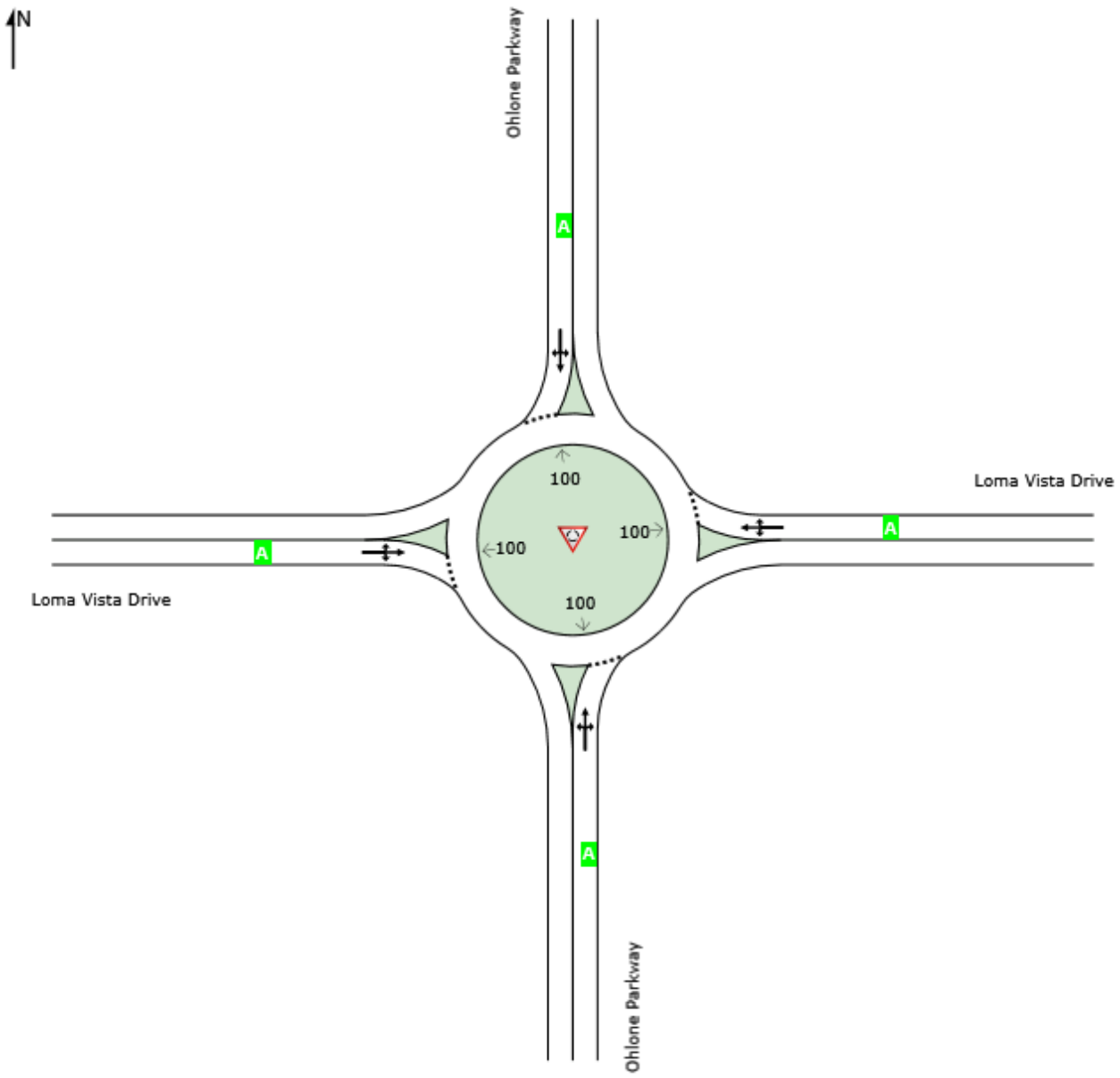
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 5- Cu PM (Site Folder: General)]

Cu PM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

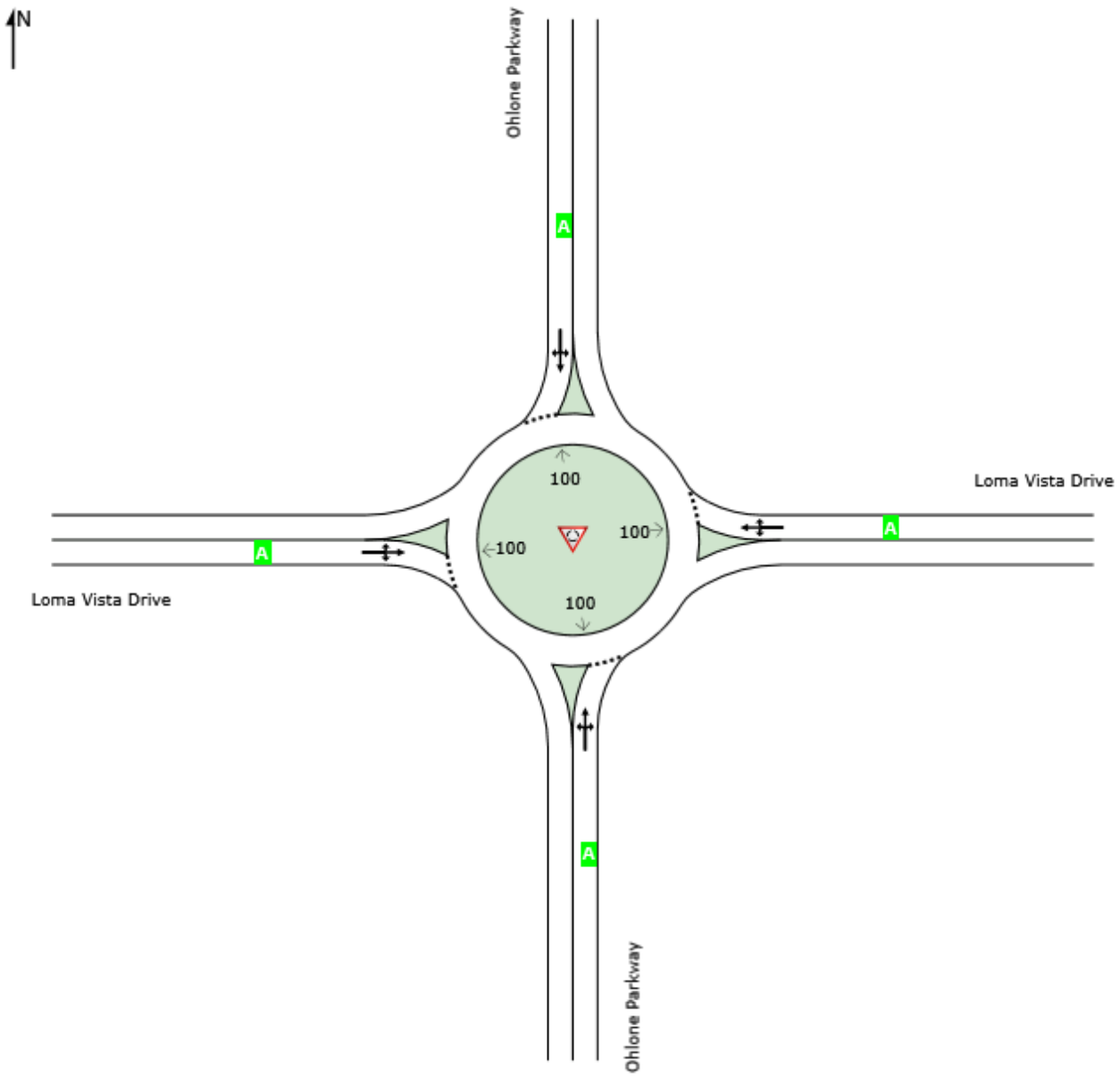
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 5- Cu+P AM (Site Folder: General)]

Cu+P AM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

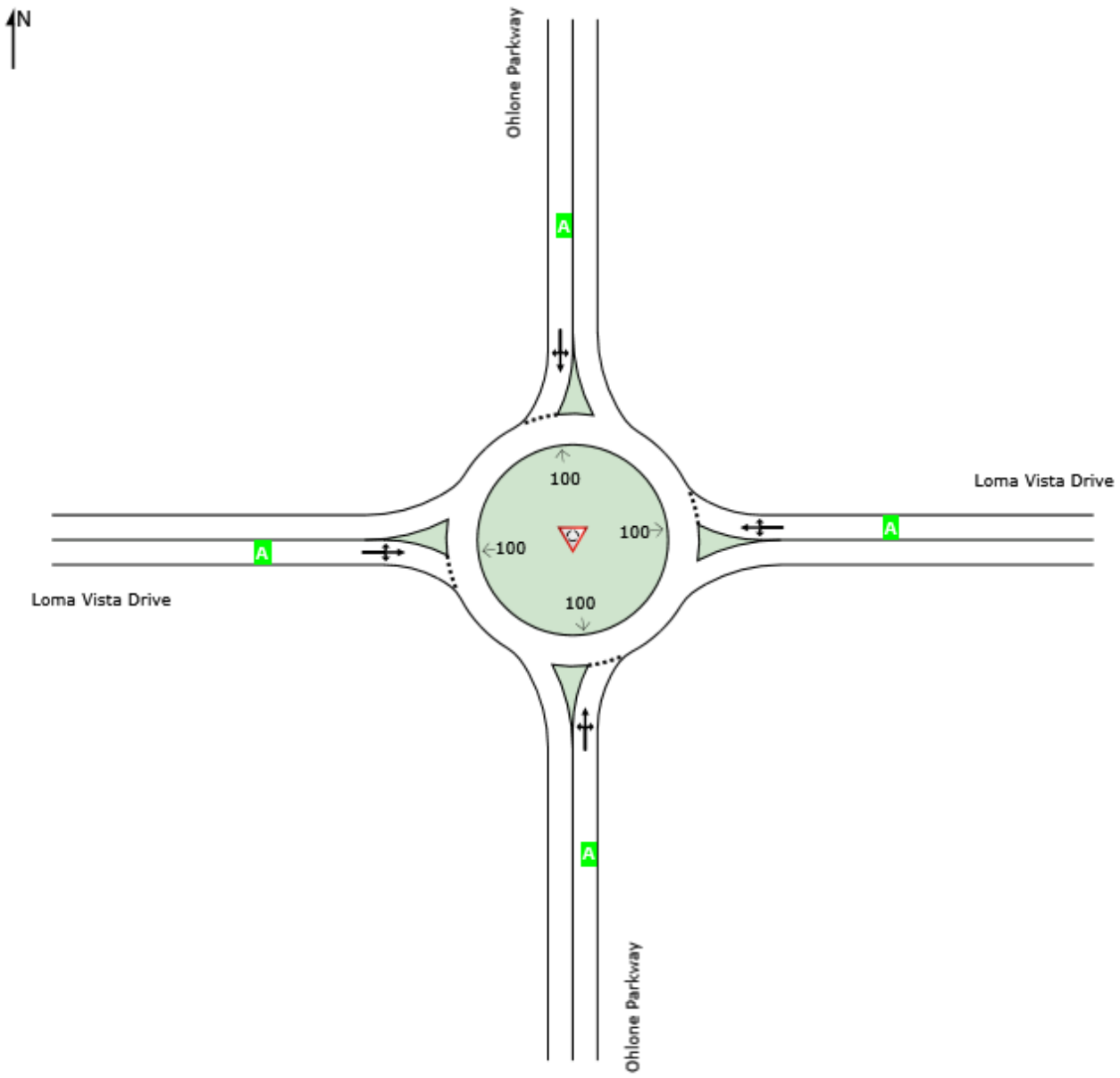
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 5- Cu+P PM (Site Folder: General)]

Cu+P PM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 101 [Int 6- Cu AM (Site Folder: General)]

Cu AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	48	2.0	52	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.0
8	T1	224	2.0	243	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.4
18	R2	30	2.0	33	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	18.2
Approach		302	2.0	328	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.2
East: Lighthouse Drive														
1	L2	38	2.0	41	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	17.6
6	T1	15	2.0	16	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	17.5
16	R2	64	2.0	70	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	16.1
Approach		117	2.0	127	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	16.8
North: Ohlone Parkway														
7	L2	43	2.0	47	2.0	0.338	6.2	LOS A	1.9	48.9	0.33	0.18	0.33	16.0
4	T1	278	2.0	302	2.0	0.338	6.2	LOS A	1.9	48.9	0.33	0.18	0.33	20.0
14	R2	52	2.0	57	2.0	0.338	6.2	LOS A	1.9	48.9	0.33	0.18	0.33	18.4
Approach		373	2.0	405	2.0	0.338	6.2	LOS A	1.9	48.9	0.33	0.18	0.33	19.4
West: Lighthouse Drive														
5	L2	113	2.0	123	2.0	0.250	6.6	LOS A	1.2	29.3	0.54	0.47	0.54	15.9
2	T1	11	2.0	12	2.0	0.250	6.6	LOS A	1.2	29.3	0.54	0.47	0.54	15.7
12	R2	83	2.0	90	2.0	0.250	6.6	LOS A	1.2	29.3	0.54	0.47	0.54	18.1
Approach		207	2.0	225	2.0	0.250	6.6	LOS A	1.2	29.3	0.54	0.47	0.54	16.8
All Vehicles		999	2.0	1086	2.0	0.338	6.2	LOS A	1.9	48.9	0.42	0.30	0.42	18.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 6- Cu PM (Site Folder: General)]

Cu PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	102	2.0	111	2.0	0.435	7.8	LOS A	2.7	68.7	0.46	0.31	0.46	17.5
8	T1	314	2.0	341	2.0	0.435	7.8	LOS A	2.7	68.7	0.46	0.31	0.46	17.8
18	R2	37	2.0	40	2.0	0.435	7.8	LOS A	2.7	68.7	0.46	0.31	0.46	16.6
Approach		453	2.0	492	2.0	0.435	7.8	LOS A	2.7	68.7	0.46	0.31	0.46	17.6
East: Lighthouse Drive														
1	L2	24	2.0	26	2.0	0.106	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	17.3
6	T1	1	2.0	1	2.0	0.106	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	17.2
16	R2	51	2.0	55	2.0	0.106	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	15.8
Approach		76	2.0	83	2.0	0.106	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	16.4
North: Ohlone Parkway														
7	L2	69	2.0	75	2.0	0.500	8.6	LOS A	3.5	87.8	0.46	0.29	0.46	14.1
4	T1	373	2.0	405	2.0	0.500	8.6	LOS A	3.5	87.8	0.46	0.29	0.46	17.9
14	R2	93	2.0	101	2.0	0.500	8.6	LOS A	3.5	87.8	0.46	0.29	0.46	16.3
Approach		535	2.0	582	2.0	0.500	8.6	LOS A	3.5	87.8	0.46	0.29	0.46	17.2
West: Lighthouse Drive														
5	L2	75	2.0	82	2.0	0.196	6.6	LOS A	0.8	21.3	0.57	0.53	0.57	15.9
2	T1	12	2.0	13	2.0	0.196	6.6	LOS A	0.8	21.3	0.57	0.53	0.57	15.7
12	R2	57	2.0	62	2.0	0.196	6.6	LOS A	0.8	21.3	0.57	0.53	0.57	18.1
Approach		144	2.0	157	2.0	0.196	6.6	LOS A	0.8	21.3	0.57	0.53	0.57	16.8
All Vehicles		1208	2.0	1313	2.0	0.500	7.9	LOS A	3.5	87.8	0.48	0.34	0.48	17.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 6- Cu+P AM (Site Folder: General)]

Cu+P AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	48	2.0	52	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.0
8	T1	224	2.0	243	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.4
18	R2	30	2.0	33	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	18.2
Approach		302	2.0	328	2.0	0.293	6.0	LOS A	1.5	39.1	0.40	0.27	0.40	19.2
East: Lighthouse Drive														
1	L2	38	2.0	41	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	17.6
6	T1	15	2.0	16	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	17.5
16	R2	64	2.0	70	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	16.1
Approach		117	2.0	127	2.0	0.146	5.5	LOS A	0.6	15.7	0.51	0.43	0.51	16.8
North: Ohlone Parkway														
7	L2	43	2.0	47	2.0	0.346	6.3	LOS A	2.0	50.4	0.33	0.19	0.33	15.9
4	T1	286	2.0	311	2.0	0.346	6.3	LOS A	2.0	50.4	0.33	0.19	0.33	20.0
14	R2	52	2.0	57	2.0	0.346	6.3	LOS A	2.0	50.4	0.33	0.19	0.33	18.3
Approach		381	2.0	414	2.0	0.346	6.3	LOS A	2.0	50.4	0.33	0.19	0.33	19.3
West: Lighthouse Drive														
5	L2	113	2.0	123	2.0	0.253	6.7	LOS A	1.2	29.7	0.55	0.48	0.55	15.8
2	T1	11	2.0	12	2.0	0.253	6.7	LOS A	1.2	29.7	0.55	0.48	0.55	15.6
12	R2	84	2.0	91	2.0	0.253	6.7	LOS A	1.2	29.7	0.55	0.48	0.55	18.0
Approach		208	2.0	226	2.0	0.253	6.7	LOS A	1.2	29.7	0.55	0.48	0.55	16.7
All Vehicles		1008	2.0	1096	2.0	0.346	6.2	LOS A	2.0	50.4	0.42	0.30	0.42	18.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 6- Cu+P PM (Site Folder: General)]

Cu+P PM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Ohlone Parkway														
3	L2	102	2.0	111	2.0	0.437	7.8	LOS A	2.7	69.2	0.46	0.31	0.46	17.5
8	T1	316	2.0	343	2.0	0.437	7.8	LOS A	2.7	69.2	0.46	0.31	0.46	17.8
18	R2	37	2.0	40	2.0	0.437	7.8	LOS A	2.7	69.2	0.46	0.31	0.46	16.6
Approach		455	2.0	495	2.0	0.437	7.8	LOS A	2.7	69.2	0.46	0.31	0.46	17.6
East: Lighthouse Drive														
1	L2	24	2.0	26	2.0	0.107	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	17.3
6	T1	1	2.0	1	2.0	0.107	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	17.2
16	R2	51	2.0	55	2.0	0.107	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	15.8
Approach		76	2.0	83	2.0	0.107	5.7	LOS A	0.4	10.9	0.55	0.49	0.55	16.4
North: Ohlone Parkway														
7	L2	69	2.0	75	2.0	0.506	8.7	LOS A	3.5	89.5	0.46	0.29	0.46	14.0
4	T1	379	2.0	412	2.0	0.506	8.7	LOS A	3.5	89.5	0.46	0.29	0.46	17.8
14	R2	93	2.0	101	2.0	0.506	8.7	LOS A	3.5	89.5	0.46	0.29	0.46	16.3
Approach		541	2.0	588	2.0	0.506	8.7	LOS A	3.5	89.5	0.46	0.29	0.46	17.1
West: Lighthouse Drive														
5	L2	75	2.0	82	2.0	0.197	6.6	LOS A	0.8	21.4	0.57	0.53	0.57	15.9
2	T1	12	2.0	13	2.0	0.197	6.6	LOS A	0.8	21.4	0.57	0.53	0.57	15.7
12	R2	57	2.0	62	2.0	0.197	6.6	LOS A	0.8	21.4	0.57	0.53	0.57	18.1
Approach		144	2.0	157	2.0	0.197	6.6	LOS A	0.8	21.4	0.57	0.53	0.57	16.8
All Vehicles		1216	2.0	1322	2.0	0.506	8.0	LOS A	3.5	89.5	0.48	0.34	0.48	17.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

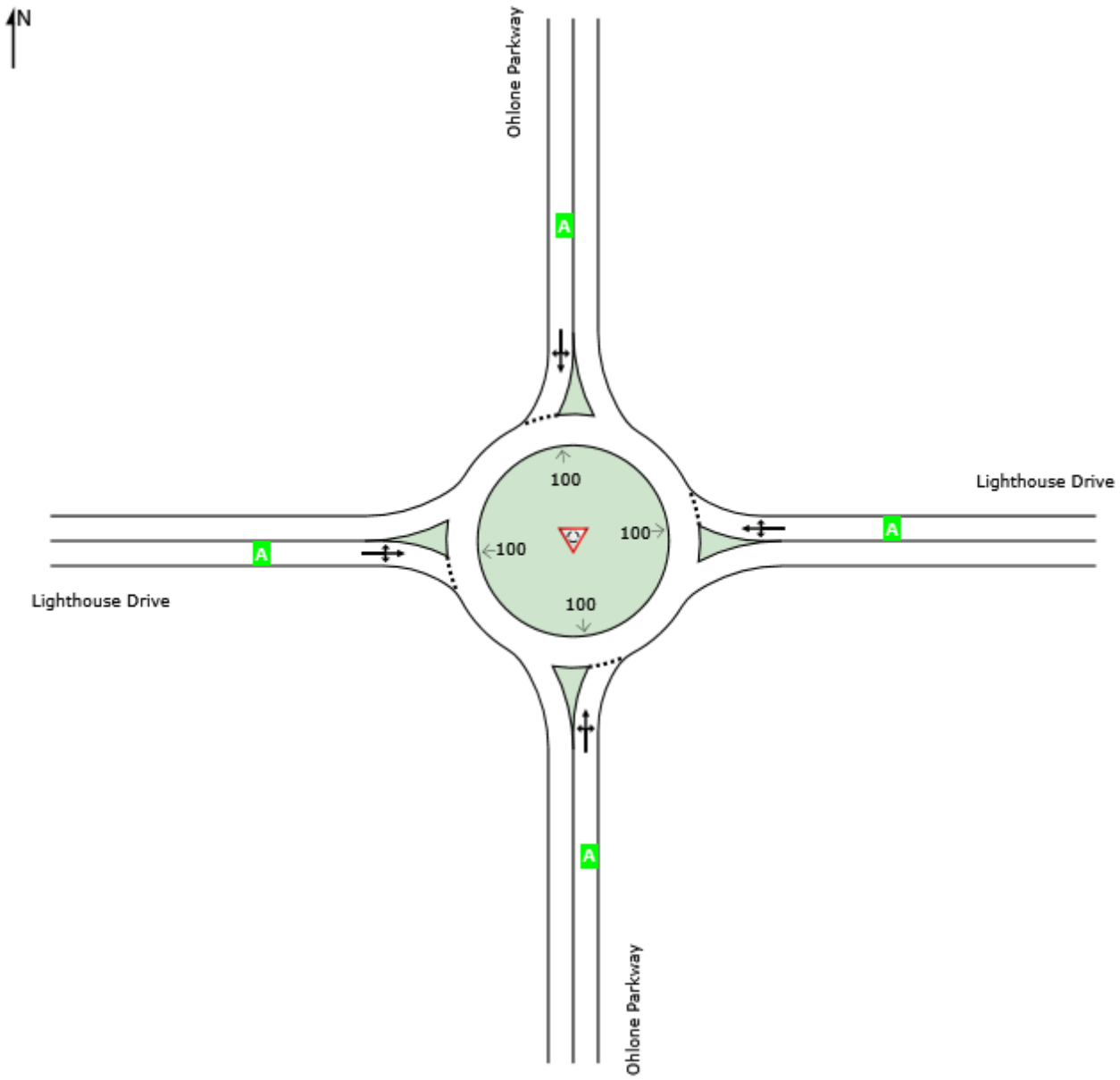
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 6- Cu AM (Site Folder: General)]

Cu AM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

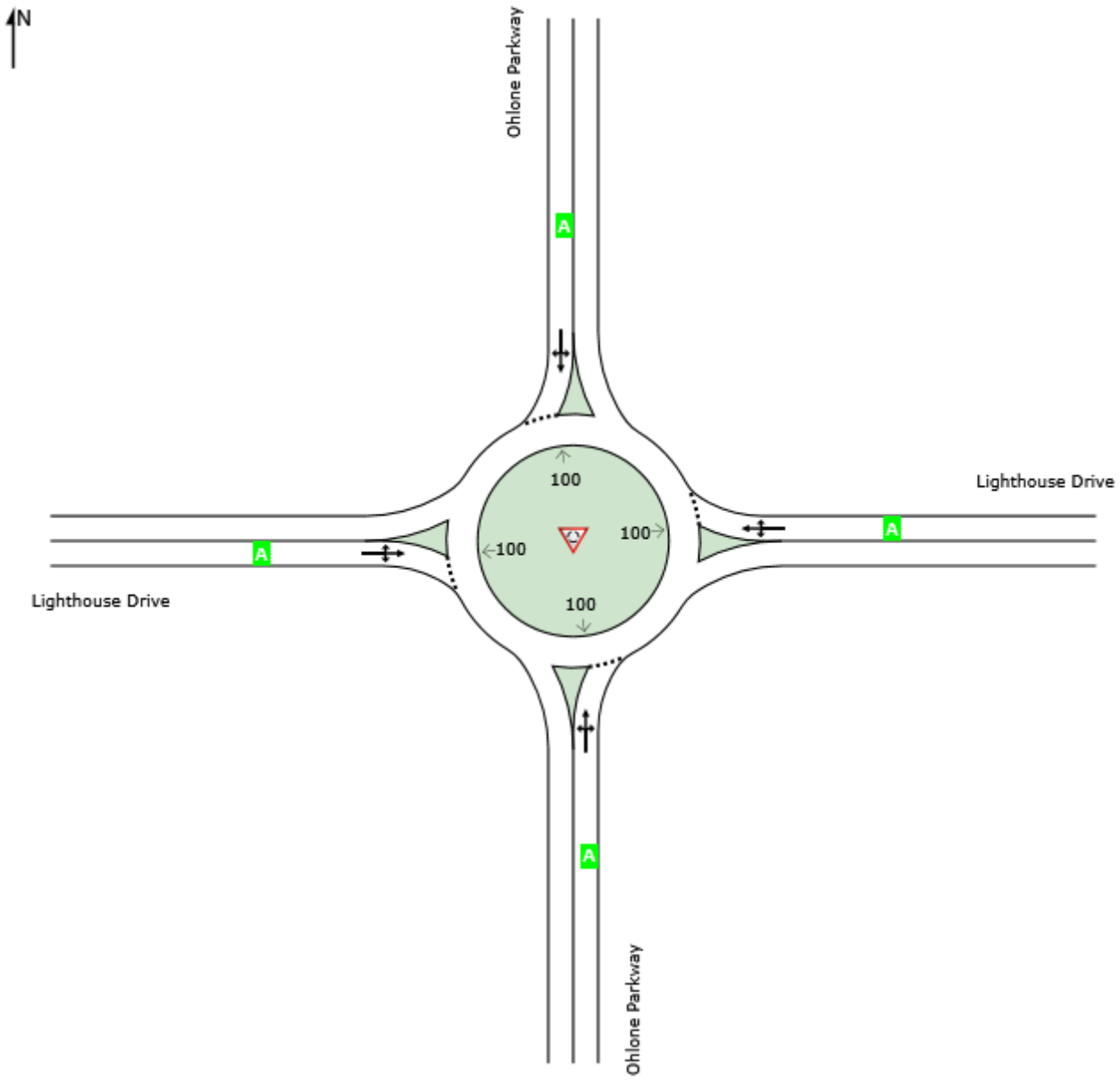
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 6- Cu PM (Site Folder: General)]

Cu PM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

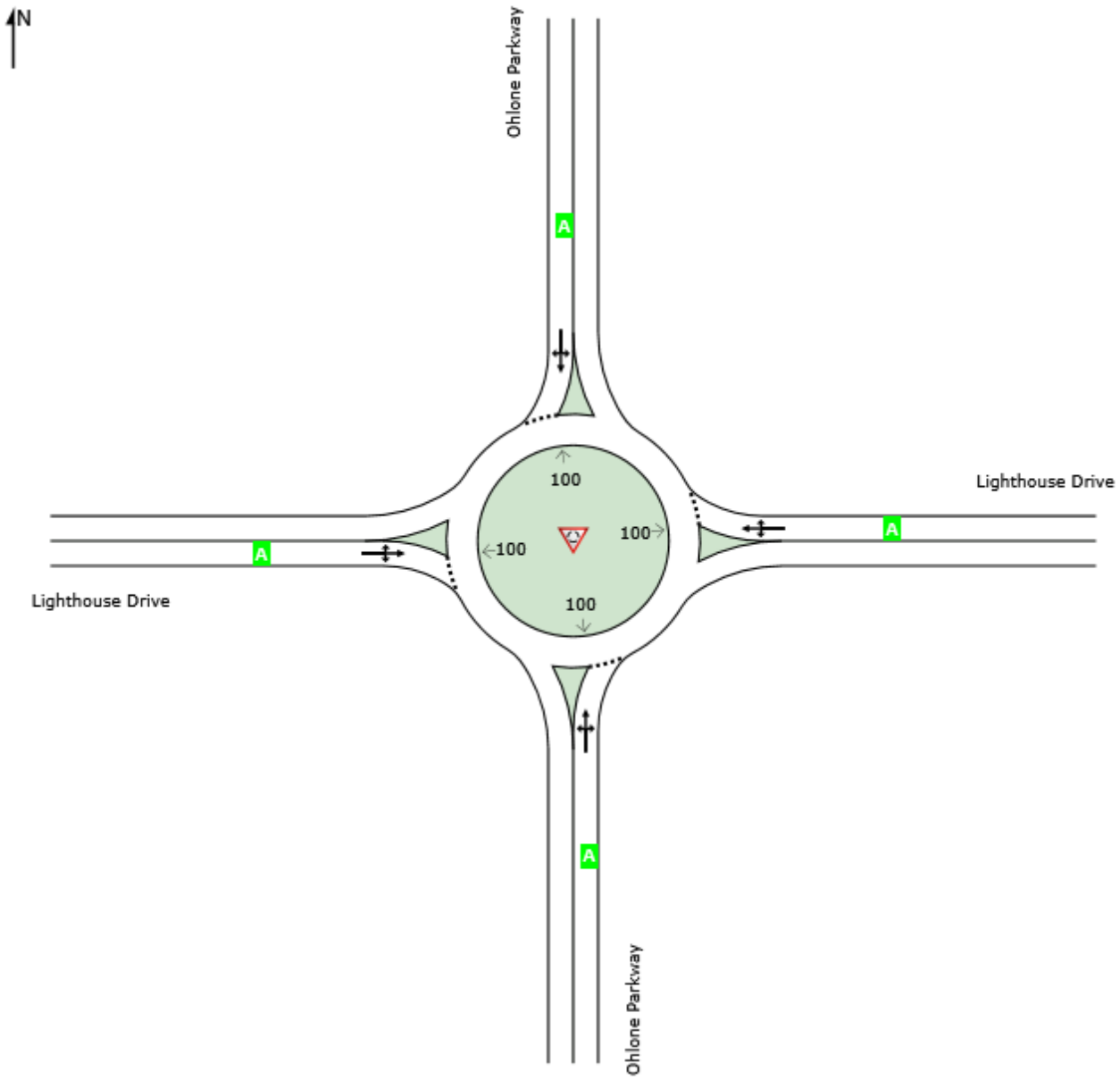
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 6- Cu+P AM (Site Folder: General)]

Cu+P AM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

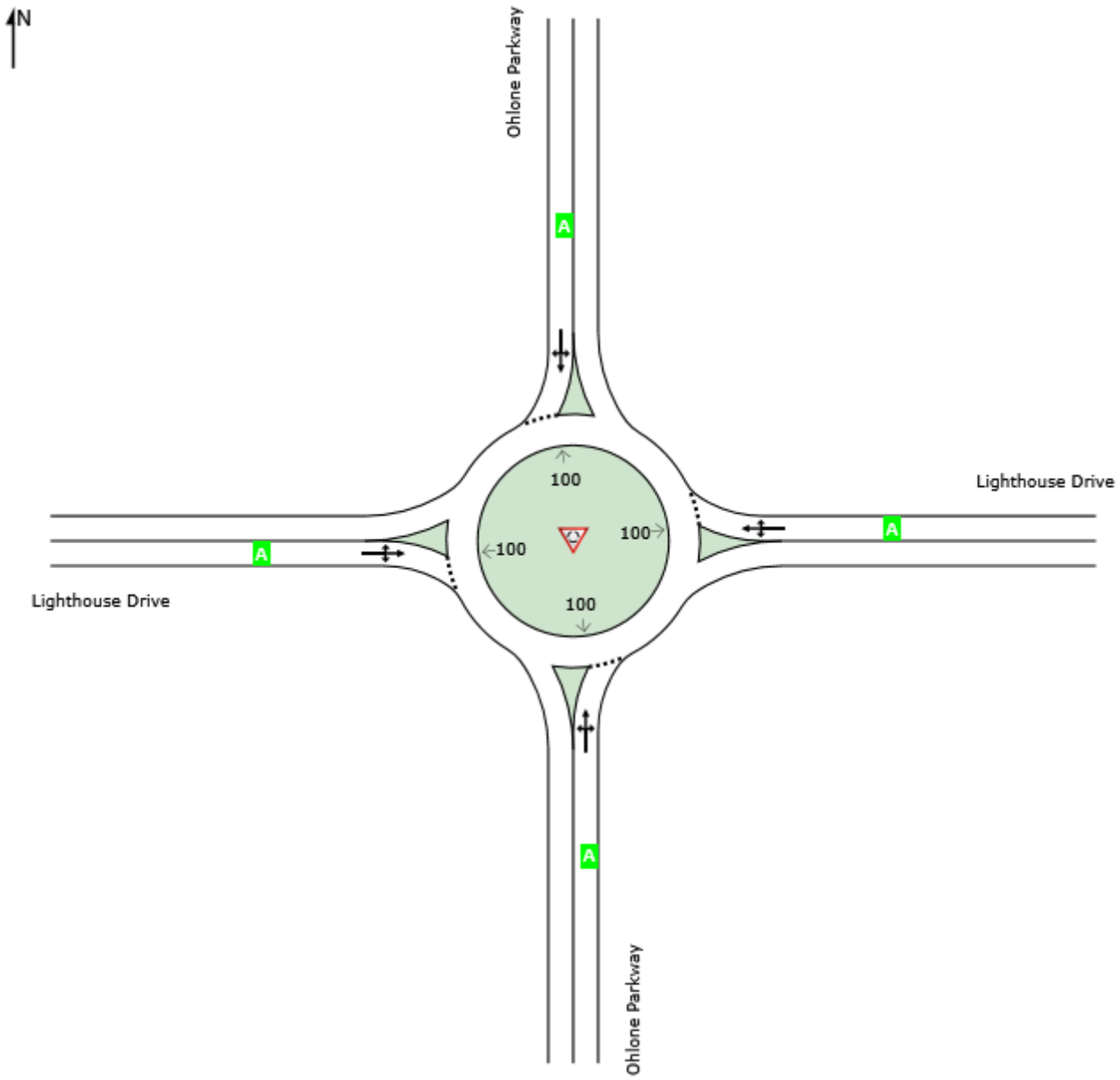
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 6- Cu+P PM (Site Folder: General)]

Cu+P PM
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 101 [Int 9 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Riverside Drive														
6	T1	332	2.0	361	2.0	0.267	5.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
Approach		332	2.0	361	2.0	0.267	5.0	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
North: SB Hwy 1														
7	L2	421	2.0	458	2.0	0.835	24.2	LOS C	19.2	488.4	1.00	1.46	2.22	19.9
14	R2	293	2.0	318	2.0	0.835	24.2	LOS C	19.2	488.4	1.00	1.46	2.22	20.4
Approach		714	2.0	776	2.0	0.835	24.2	LOS C	19.2	488.4	1.00	1.46	2.22	20.1
West: Riverside Drive														
2	T1	410	2.0	446	2.0	0.490	10.1	LOS B	3.3	84.1	0.65	0.71	0.86	16.6
12	R2	444	2.0	483	2.0	0.347	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	35.8
Approach		854	2.0	928	2.0	0.490	7.8	LOS A	3.3	84.1	0.31	0.34	0.41	28.5
All Vehicles		1900	2.0	2065	2.0	0.835	13.5	LOS B	19.2	488.4	0.51	0.70	1.02	23.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 9 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Riverside Drive														
6	T1	320	2.0	348	2.0	0.257	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
Approach		320	2.0	348	2.0	0.257	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
North: SB Hwy 1														
7	L2	496	2.0	539	2.0	0.869	27.3	LOS D	23.4	594.9	1.00	1.55	2.43	18.9
14	R2	257	2.0	279	2.0	0.869	27.3	LOS D	23.4	594.9	1.00	1.55	2.43	19.5
Approach		753	2.0	818	2.0	0.869	27.3	LOS D	23.4	594.9	1.00	1.55	2.43	19.1
West: Riverside Drive														
2	T1	193	2.0	210	2.0	0.249	6.9	LOS A	1.0	26.3	0.57	0.54	0.57	19.1
12	R2	199	2.0	216	2.0	0.155	3.8	LOS A	0.0	0.0	0.00	0.00	0.00	35.8
Approach		392	2.0	426	2.0	0.249	5.4	LOS A	1.0	26.3	0.28	0.27	0.28	29.8
All Vehicles		1465	2.0	1592	2.0	0.869	16.5	LOS C	23.4	594.9	0.59	0.87	1.32	21.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 9 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Riverside Drive														
6	T1	330	2.0	359	2.0	0.265	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
Approach		330	2.0	359	2.0	0.265	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
North: SB Hwy 1														
7	L2	421	2.0	458	2.0	0.820	22.9	LOS C	17.9	455.3	0.97	1.39	2.11	20.2
14	R2	282	2.0	307	2.0	0.820	22.9	LOS C	17.9	455.3	0.97	1.39	2.11	20.8
Approach		703	2.0	764	2.0	0.820	22.9	LOS C	17.9	455.3	0.97	1.39	2.11	20.5
West: Riverside Drive														
2	T1	404	2.0	439	2.0	0.482	10.0	LOS A	3.2	81.0	0.65	0.70	0.84	16.7
12	R2	440	2.0	478	2.0	0.344	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	35.8
Approach		844	2.0	917	2.0	0.482	7.7	LOS A	3.2	81.0	0.31	0.33	0.40	28.6
All Vehicles		1877	2.0	2040	2.0	0.820	12.9	LOS B	17.9	455.3	0.50	0.67	0.97	23.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 9 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Riverside Drive														
6	T1	322	2.0	350	2.0	0.259	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
Approach		322	2.0	350	2.0	0.259	4.9	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
North: SB Hwy 1														
7	L2	496	2.0	539	2.0	0.893	30.2	LOS D	26.4	670.2	1.00	1.63	2.63	18.2
14	R2	276	2.0	300	2.0	0.893	30.2	LOS D	26.4	670.2	1.00	1.63	2.63	18.7
Approach		772	2.0	839	2.0	0.893	30.2	LOS D	26.4	670.2	1.00	1.63	2.63	18.4
West: Riverside Drive														
2	T1	198	2.0	215	2.0	0.255	7.0	LOS A	1.1	27.1	0.57	0.54	0.57	19.0
12	R2	203	2.0	221	2.0	0.158	3.9	LOS A	0.0	0.0	0.00	0.00	0.00	35.8
Approach		401	2.0	436	2.0	0.255	5.4	LOS A	1.1	27.1	0.28	0.27	0.28	29.8
All Vehicles		1495	2.0	1625	2.0	0.893	18.1	LOS C	26.4	670.2	0.59	0.91	1.43	20.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

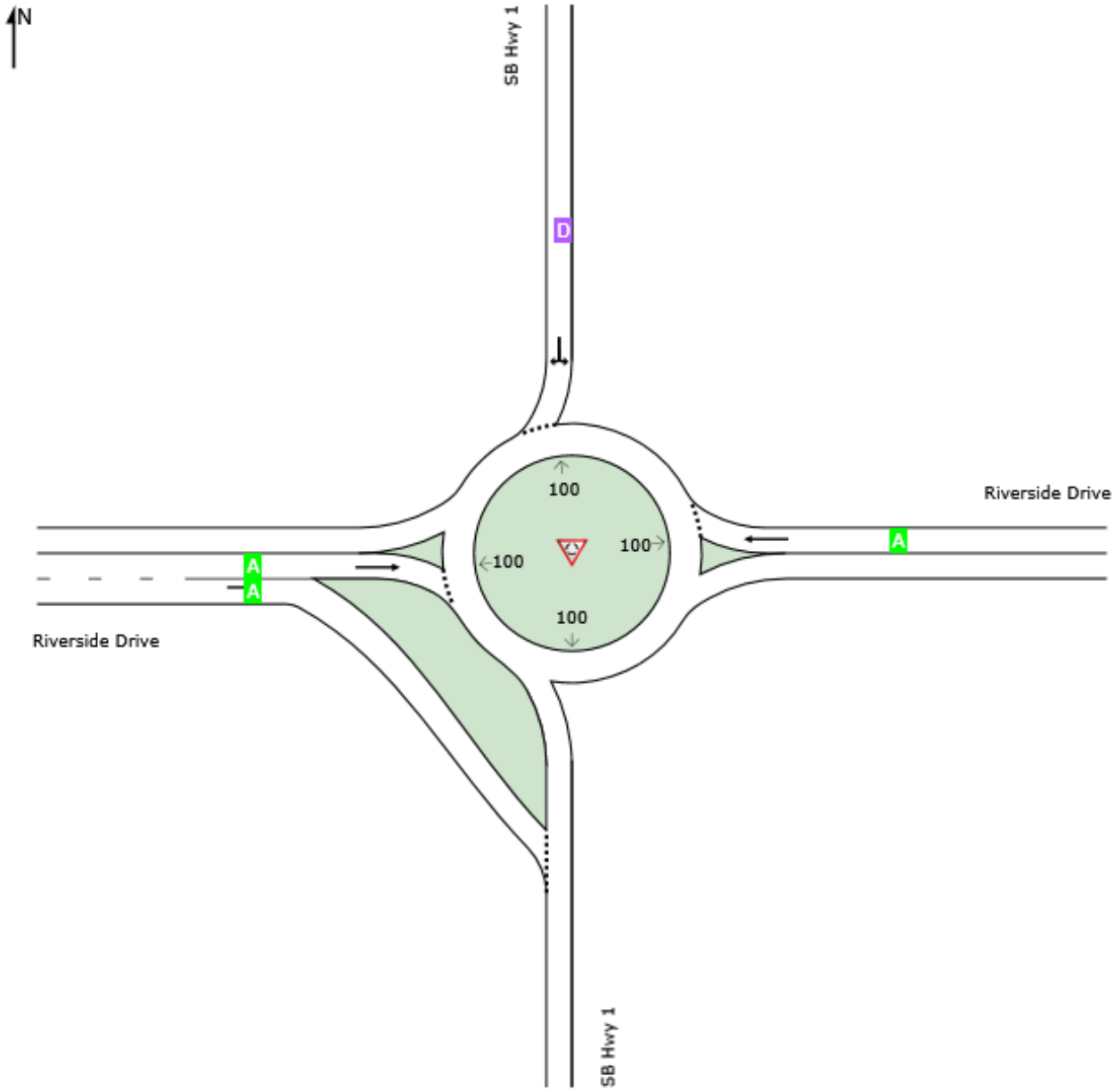
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 9 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	D	A	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

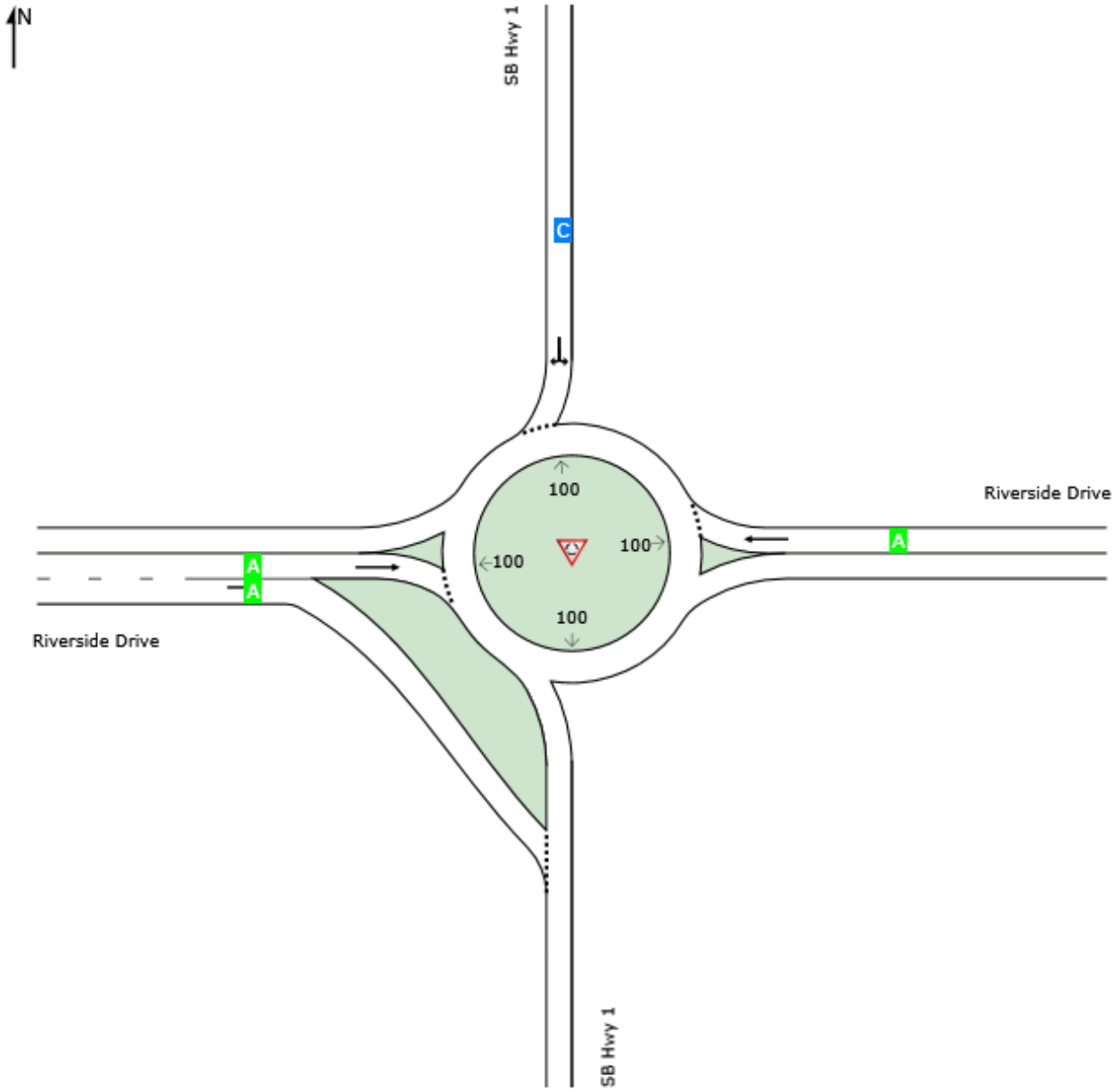
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 9 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	C	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

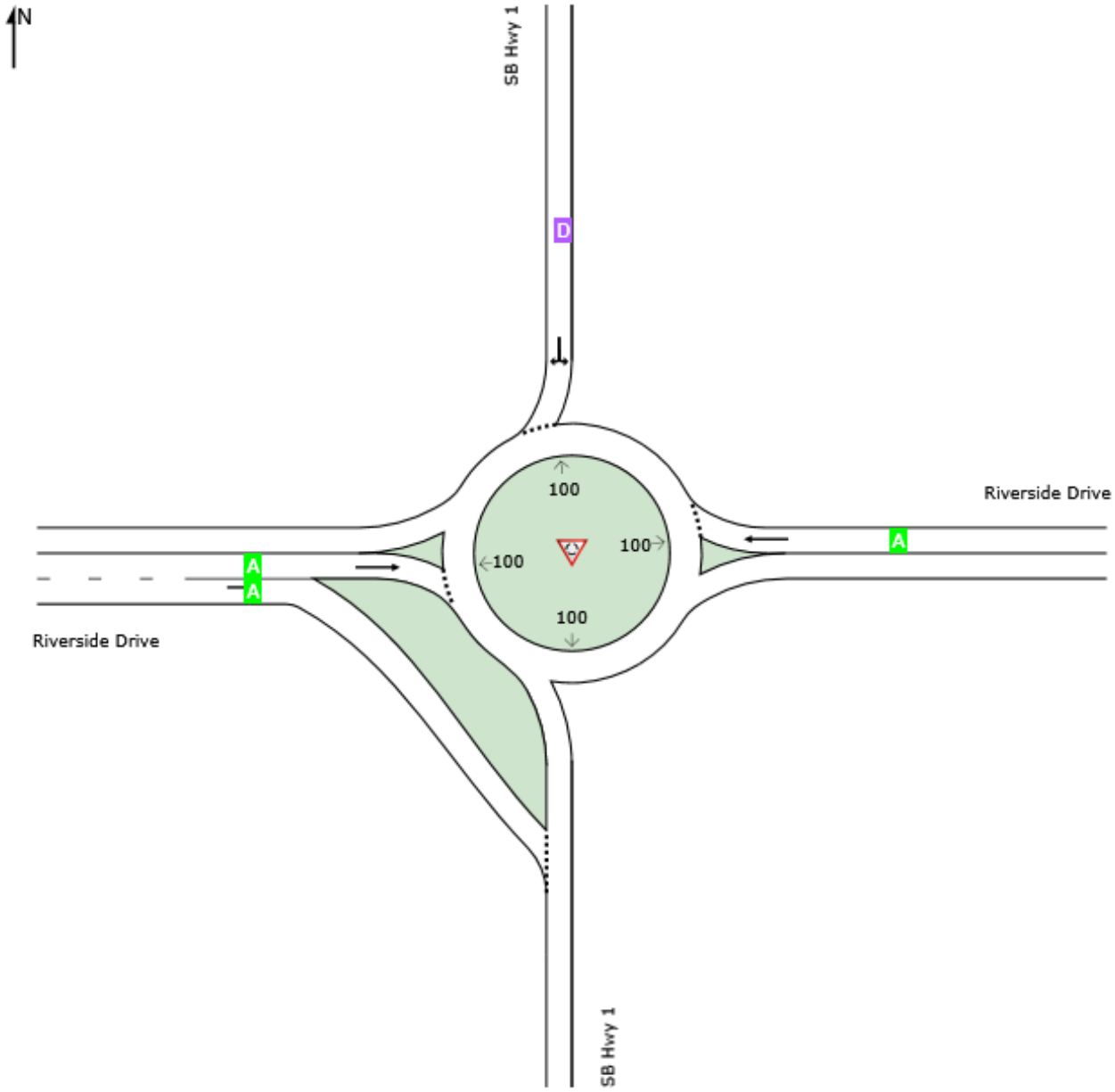
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 9 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	D	A	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

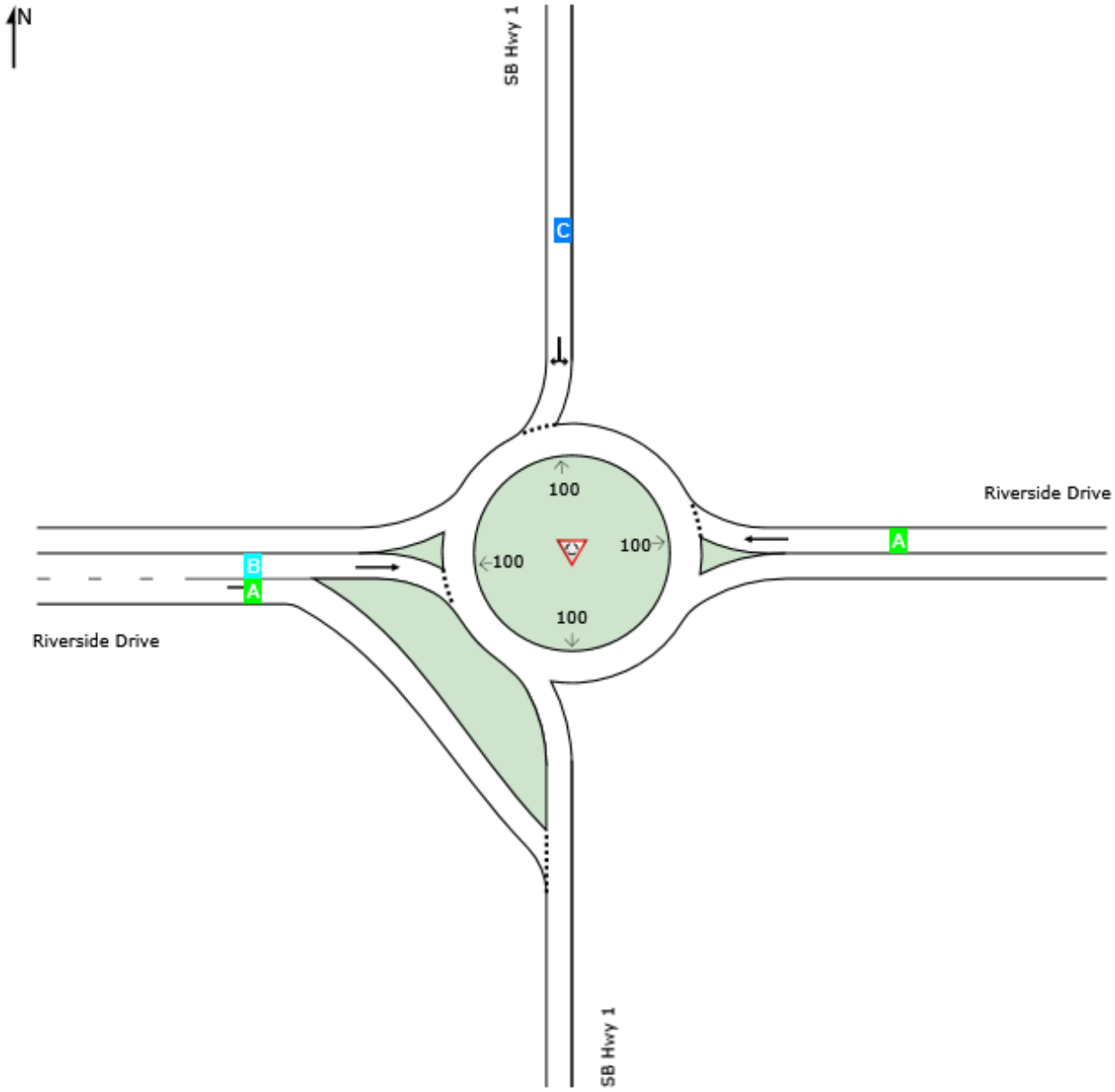
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 9 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	C	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 101 [Int 10 - Ex PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	71	2.0	77	2.0	0.127	7.0	LOS A	0.5	11.7	0.61	0.61	0.61	23.0
8	T1	4	2.0	4	2.0	0.127	7.0	LOS A	0.5	11.7	0.61	0.61	0.61	31.7
18	R2	380	2.0	413	2.0	0.252	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		455	2.0	495	2.0	0.252	1.2	LOS A	0.5	11.7	0.10	0.10	0.10	31.8
East: Riverside Drive														
6	T1	345	2.0	375	2.0	0.336	6.5	LOS A	1.7	42.7	0.44	0.33	0.44	26.8
16	R2	488	2.0	530	2.0	0.323	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		833	2.0	905	2.0	0.336	2.7	LOS A	1.7	42.7	0.18	0.13	0.18	33.4
West: Riverside Drive														
5	L2	145	2.0	158	2.0	0.615	9.9	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	620	2.0	674	2.0	0.615	9.9	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		765	2.0	832	2.0	0.615	9.9	LOS A	0.0	0.0	0.00	0.00	0.00	30.5
All Vehicles		2053	2.0	2232	2.0	0.615	5.0	LOS A	1.7	42.7	0.10	0.08	0.10	32.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Ex AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	154	2.0	167	2.0	0.213	6.8	LOS A	0.9	21.7	0.57	0.55	0.57	23.0
8	T1	3	2.0	3	2.0	0.213	6.8	LOS A	0.9	21.7	0.57	0.55	0.57	31.7
18	R2	342	2.0	372	2.0	0.226	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		499	2.0	542	2.0	0.226	2.2	LOS A	0.9	21.7	0.18	0.17	0.18	29.7
East: Riverside Drive														
6	T1	317	2.0	345	2.0	0.323	6.6	LOS A	1.6	39.6	0.47	0.37	0.47	26.8
16	R2	631	2.0	686	2.0	0.418	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		948	2.0	1030	2.0	0.418	2.3	LOS A	1.6	39.6	0.16	0.12	0.16	34.0
West: Riverside Drive														
5	L2	107	2.0	116	2.0	0.439	6.9	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	440	2.0	478	2.0	0.439	6.9	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		547	2.0	595	2.0	0.439	6.9	LOS A	0.0	0.0	0.00	0.00	0.00	30.5
All Vehicles		1994	2.0	2167	2.0	0.439	3.5	LOS A	1.6	39.6	0.12	0.10	0.12	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Ex+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	156	2.0	170	2.0	0.217	6.8	LOS A	0.9	22.1	0.57	0.56	0.57	23.0
8	T1	3	2.0	3	2.0	0.217	6.8	LOS A	0.9	22.1	0.57	0.56	0.57	31.7
18	R2	346	2.0	376	2.0	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		505	2.0	549	2.0	0.229	2.2	LOS A	0.9	22.1	0.18	0.18	0.18	29.7
East: Riverside Drive														
6	T1	317	2.0	345	2.0	0.325	6.7	LOS A	1.6	39.9	0.48	0.38	0.48	26.7
16	R2	638	2.0	693	2.0	0.422	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		955	2.0	1038	2.0	0.422	2.3	LOS A	1.6	39.9	0.16	0.13	0.16	34.0
West: Riverside Drive														
5	L2	112	2.0	122	2.0	0.443	7.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	440	2.0	478	2.0	0.443	7.0	LOS A	0.0	0.0	0.00	0.00	0.00	26.2
Approach		552	2.0	600	2.0	0.443	7.0	LOS A	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2012	2.0	2187	2.0	0.443	3.5	LOS A	1.6	39.9	0.12	0.10	0.12	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Ex+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	73	2.0	79	2.0	0.131	7.1	LOS A	0.5	12.1	0.61	0.61	0.61	22.9
8	T1	4	2.0	4	2.0	0.131	7.1	LOS A	0.5	12.1	0.61	0.61	0.61	31.7
18	R2	382	2.0	415	2.0	0.253	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		459	2.0	499	2.0	0.253	1.3	LOS A	0.5	12.1	0.10	0.10	0.10	31.8
East: Riverside Drive														
6	T1	345	2.0	375	2.0	0.339	6.6	LOS A	1.7	43.0	0.45	0.34	0.45	26.8
16	R2	492	2.0	535	2.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		837	2.0	910	2.0	0.339	2.8	LOS A	1.7	43.0	0.19	0.14	0.19	33.4
West: Riverside Drive														
5	L2	151	2.0	164	2.0	0.619	10.0	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	620	2.0	674	2.0	0.619	10.0	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		771	2.0	838	2.0	0.619	10.0	LOS A	0.0	0.0	0.00	0.00	0.00	30.5
All Vehicles		2067	2.0	2247	2.0	0.619	5.1	LOS A	1.7	43.0	0.10	0.08	0.10	32.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Back AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	158	2.0	172	2.0	0.227	7.2	LOS A	0.9	23.0	0.59	0.59	0.59	22.8
8	T1	3	2.0	3	2.0	0.227	7.2	LOS A	0.9	23.0	0.59	0.59	0.59	31.6
18	R2	391	2.0	425	2.0	0.259	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		552	2.0	600	2.0	0.259	2.1	LOS A	0.9	23.0	0.17	0.17	0.17	29.9
East: Riverside Drive														
6	T1	353	2.0	384	2.0	0.363	7.1	LOS A	1.8	46.2	0.50	0.40	0.50	26.4
16	R2	650	2.0	707	2.0	0.430	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		1003	2.0	1090	2.0	0.430	2.6	LOS A	1.8	46.2	0.18	0.14	0.18	33.7
West: Riverside Drive														
5	L2	112	2.0	122	2.0	0.470	7.3	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	473	2.0	514	2.0	0.470	7.3	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		585	2.0	636	2.0	0.470	7.3	LOS A	0.0	0.0	0.00	0.00	0.00	30.5
All Vehicles		2140	2.0	2326	2.0	0.470	3.7	LOS A	1.8	46.2	0.13	0.11	0.13	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Back PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	76	2.0	83	2.0	0.137	7.3	LOS A	0.5	12.6	0.61	0.61	0.61	22.9
8	T1	4	2.0	4	2.0	0.137	7.3	LOS A	0.5	12.6	0.61	0.61	0.61	31.6
18	R2	406	2.0	441	2.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		486	2.0	528	2.0	0.269	1.3	LOS A	0.5	12.6	0.10	0.10	0.10	31.8
East: Riverside Drive														
6	T1	355	2.0	386	2.0	0.351	6.8	LOS A	1.8	45.0	0.46	0.35	0.46	26.6
16	R2	493	2.0	536	2.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		848	2.0	922	2.0	0.351	2.9	LOS A	1.8	45.0	0.19	0.15	0.19	33.3
West: Riverside Drive														
5	L2	155	2.0	168	2.0	0.625	10.1	LOS B	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	623	2.0	677	2.0	0.625	10.1	LOS B	0.0	0.0	0.00	0.00	0.00	26.3
Approach		778	2.0	846	2.0	0.625	10.1	LOS B	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2112	2.0	2296	2.0	0.625	5.1	LOS A	1.8	45.0	0.10	0.08	0.10	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Back+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	160	2.0	174	2.0	0.231	7.2	LOS A	0.9	23.5	0.59	0.59	0.59	22.8
8	T1	3	2.0	3	2.0	0.231	7.2	LOS A	0.9	23.5	0.59	0.59	0.59	31.5
18	R2	395	2.0	429	2.0	0.262	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		558	2.0	607	2.0	0.262	2.2	LOS A	0.9	23.5	0.17	0.17	0.17	29.9
East: Riverside Drive														
6	T1	353	2.0	384	2.0	0.366	7.2	LOS A	1.8	46.5	0.50	0.41	0.50	26.3
16	R2	657	2.0	714	2.0	0.435	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		1010	2.0	1098	2.0	0.435	2.6	LOS A	1.8	46.5	0.18	0.14	0.18	33.7
West: Riverside Drive														
5	L2	117	2.0	127	2.0	0.474	7.4	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	473	2.0	514	2.0	0.474	7.4	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		590	2.0	641	2.0	0.474	7.4	LOS A	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2158	2.0	2346	2.0	0.474	3.8	LOS A	1.8	46.5	0.13	0.11	0.13	32.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Back+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	78	2.0	85	2.0	0.141	7.3	LOS A	0.5	13.0	0.62	0.62	0.62	22.8
8	T1	4	2.0	4	2.0	0.141	7.3	LOS A	0.5	13.0	0.62	0.62	0.62	31.6
18	R2	408	2.0	443	2.0	0.270	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		490	2.0	533	2.0	0.270	1.3	LOS A	0.5	13.0	0.10	0.10	0.10	31.7
East: Riverside Drive														
6	T1	355	2.0	386	2.0	0.354	6.9	LOS A	1.8	45.3	0.47	0.36	0.47	26.6
16	R2	497	2.0	540	2.0	0.329	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		852	2.0	926	2.0	0.354	2.9	LOS A	1.8	45.3	0.20	0.15	0.20	33.3
West: Riverside Drive														
5	L2	161	2.0	175	2.0	0.630	10.2	LOS B	0.0	0.0	0.00	0.00	0.00	37.2
2	T1	623	2.0	677	2.0	0.630	10.2	LOS B	0.0	0.0	0.00	0.00	0.00	26.2
Approach		784	2.0	852	2.0	0.630	10.2	LOS B	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2126	2.0	2311	2.0	0.630	5.2	LOS A	1.8	45.3	0.10	0.08	0.10	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	241	2.0	262	2.0	0.397	10.5	LOS B	2.0	50.2	0.68	0.74	0.87	21.7
8	T1	13	2.0	14	2.0	0.397	10.5	LOS B	2.0	50.2	0.68	0.74	0.87	30.3
18	R2	445	2.0	484	2.0	0.295	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		699	2.0	760	2.0	0.397	3.9	LOS A	2.0	50.2	0.25	0.27	0.32	28.4
East: Riverside Drive														
6	T1	419	2.0	455	2.0	0.485	9.8	LOS A	3.2	82.4	0.64	0.67	0.81	24.5
16	R2	664	2.0	722	2.0	0.440	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		1083	2.0	1177	2.0	0.485	3.9	LOS A	3.2	82.4	0.25	0.26	0.31	32.7
West: Riverside Drive														
5	L2	137	2.0	149	2.0	0.553	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	37.3
2	T1	551	2.0	599	2.0	0.553	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	26.3
Approach		688	2.0	748	2.0	0.553	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2470	2.0	2685	2.0	0.553	5.2	LOS A	3.2	82.4	0.18	0.19	0.23	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	144	2.0	157	2.0	0.286	10.3	LOS B	1.1	28.2	0.68	0.69	0.72	21.7
8	T1	5	2.0	5	2.0	0.286	10.3	LOS B	1.1	28.2	0.68	0.69	0.72	30.3
18	R2	423	2.0	460	2.0	0.280	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		572	2.0	622	2.0	0.286	2.7	LOS A	1.1	28.2	0.18	0.18	0.19	29.8
East: Riverside Drive														
6	T1	564	2.0	613	2.0	0.623	12.6	LOS B	6.7	169.7	0.72	0.83	1.13	22.8
16	R2	507	2.0	551	2.0	0.336	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		1071	2.0	1164	2.0	0.623	6.7	LOS A	6.7	169.7	0.38	0.44	0.59	30.0
West: Riverside Drive														
5	L2	195	2.0	212	2.0	0.715	12.6	LOS B	0.0	0.0	0.00	0.00	0.00	37.2
2	T1	695	2.0	755	2.0	0.715	12.6	LOS B	0.0	0.0	0.00	0.00	0.00	26.1
Approach		890	2.0	967	2.0	0.715	12.6	LOS B	0.0	0.0	0.00	0.00	0.00	30.7
All Vehicles		2533	2.0	2753	2.0	0.715	7.8	LOS A	6.7	169.7	0.20	0.23	0.29	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	243	2.0	264	2.0	0.402	10.7	LOS B	2.0	51.3	0.69	0.75	0.88	21.6
8	T1	13	2.0	14	2.0	0.402	10.7	LOS B	2.0	51.3	0.69	0.75	0.88	30.2
18	R2	449	2.0	488	2.0	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		705	2.0	766	2.0	0.402	3.9	LOS A	2.0	51.3	0.25	0.27	0.32	28.3
East: Riverside Drive														
6	T1	419	2.0	455	2.0	0.489	9.9	LOS A	3.3	84.0	0.64	0.68	0.83	24.4
16	R2	671	2.0	729	2.0	0.444	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.5
Approach		1090	2.0	1185	2.0	0.489	3.9	LOS A	3.3	84.0	0.25	0.26	0.32	32.6
West: Riverside Drive														
5	L2	142	2.0	154	2.0	0.557	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	37.2
2	T1	551	2.0	599	2.0	0.557	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	26.2
Approach		693	2.0	753	2.0	0.557	8.7	LOS A	0.0	0.0	0.00	0.00	0.00	30.6
All Vehicles		2488	2.0	2704	2.0	0.557	5.2	LOS A	3.3	84.0	0.18	0.19	0.23	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
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Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Int 10 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Hwy 1														
3	L2	146	2.0	159	2.0	0.291	10.4	LOS B	1.1	29.0	0.68	0.70	0.74	21.7
8	T1	5	2.0	5	2.0	0.291	10.4	LOS B	1.1	29.0	0.68	0.70	0.74	30.3
18	R2	425	2.0	462	2.0	0.281	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	34.6
Approach		576	2.0	626	2.0	0.291	2.8	LOS A	1.1	29.0	0.18	0.18	0.19	29.7
East: Riverside Drive														
6	T1	564	2.0	613	2.0	0.628	12.8	LOS B	6.8	172.8	0.72	0.85	1.16	22.7
16	R2	511	2.0	555	2.0	0.338	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.6
Approach		1075	2.0	1168	2.0	0.628	6.8	LOS A	6.8	172.8	0.38	0.45	0.61	30.0
West: Riverside Drive														
5	L2	201	2.0	218	2.0	0.720	12.8	LOS B	0.0	0.0	0.00	0.00	0.00	37.1
2	T1	695	2.0	755	2.0	0.720	12.8	LOS B	0.0	0.0	0.00	0.00	0.00	26.0
Approach		896	2.0	974	2.0	0.720	12.8	LOS B	0.0	0.0	0.00	0.00	0.00	30.8
All Vehicles		2547	2.0	2768	2.0	0.720	8.0	LOS A	6.8	172.8	0.20	0.23	0.30	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

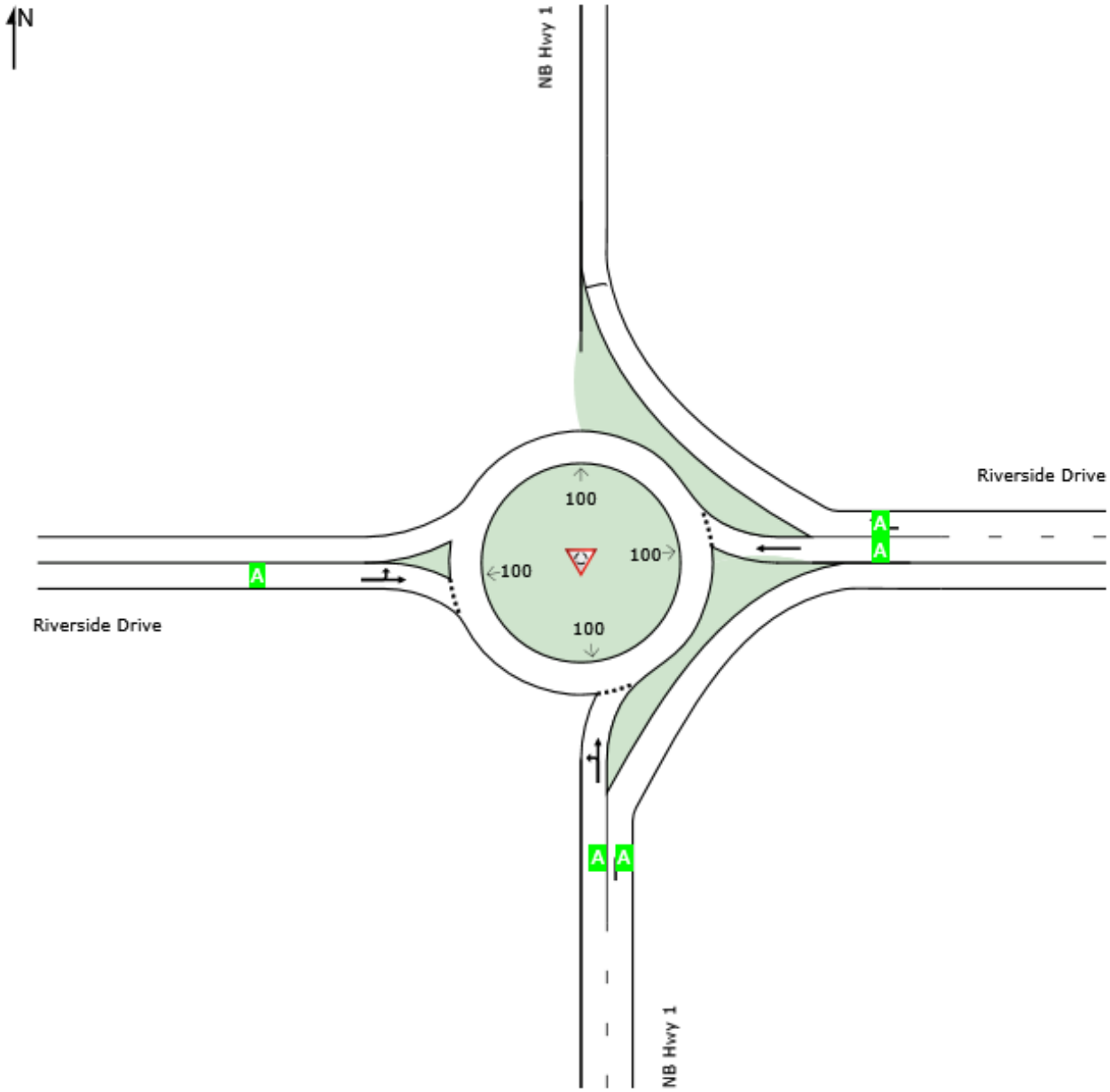
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Ex PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

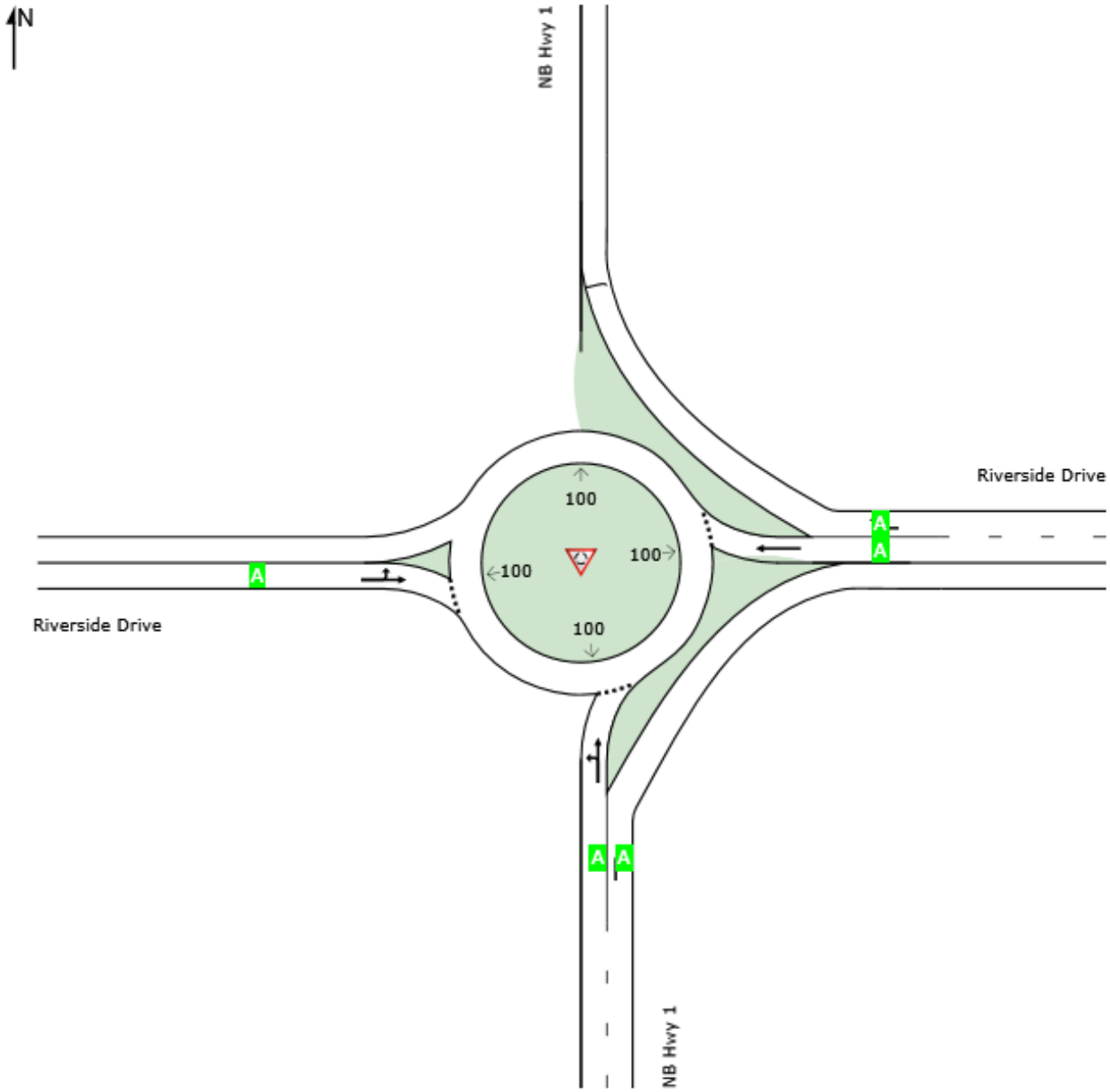
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Ex AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



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Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

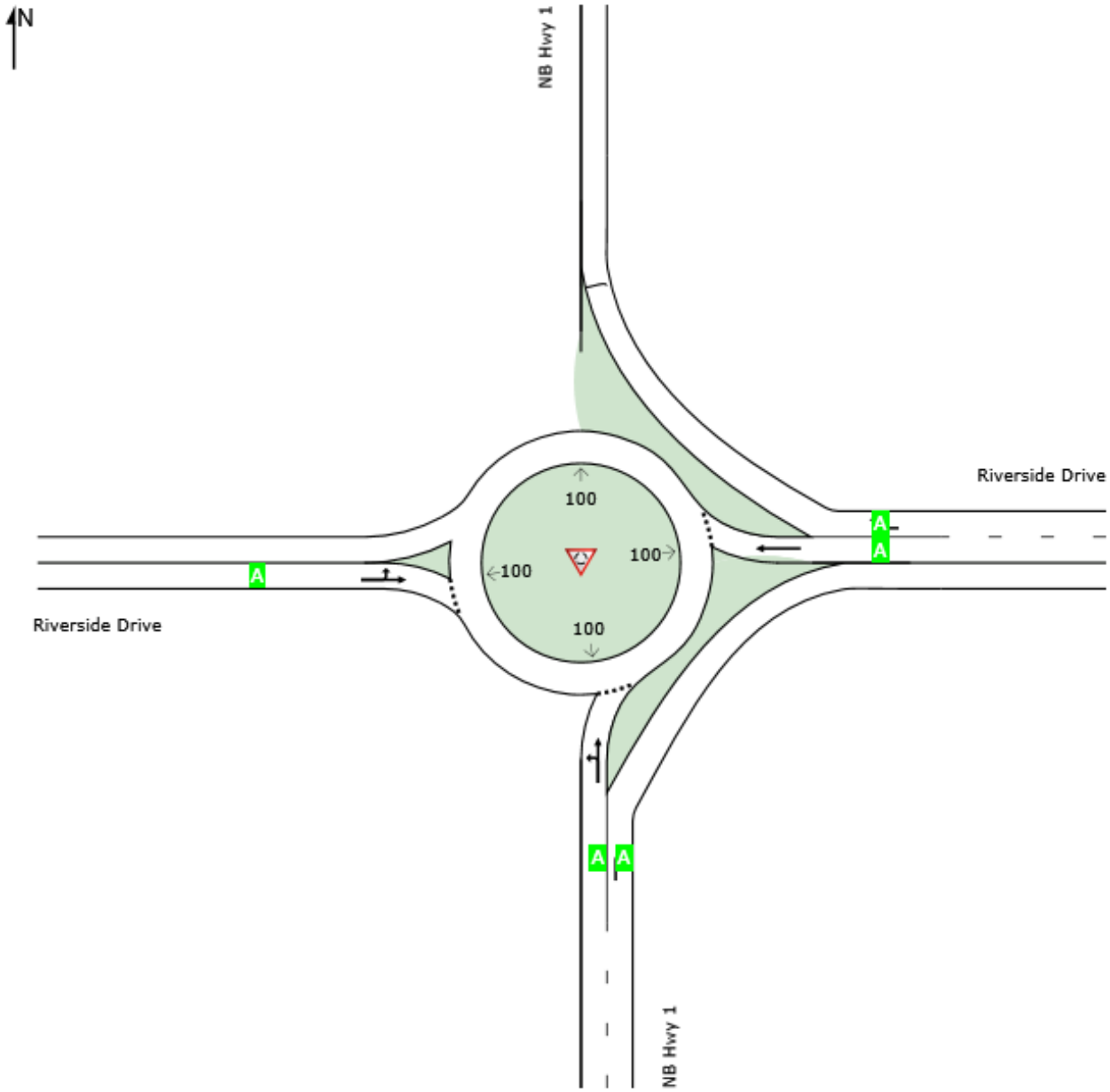
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Ex+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
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LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

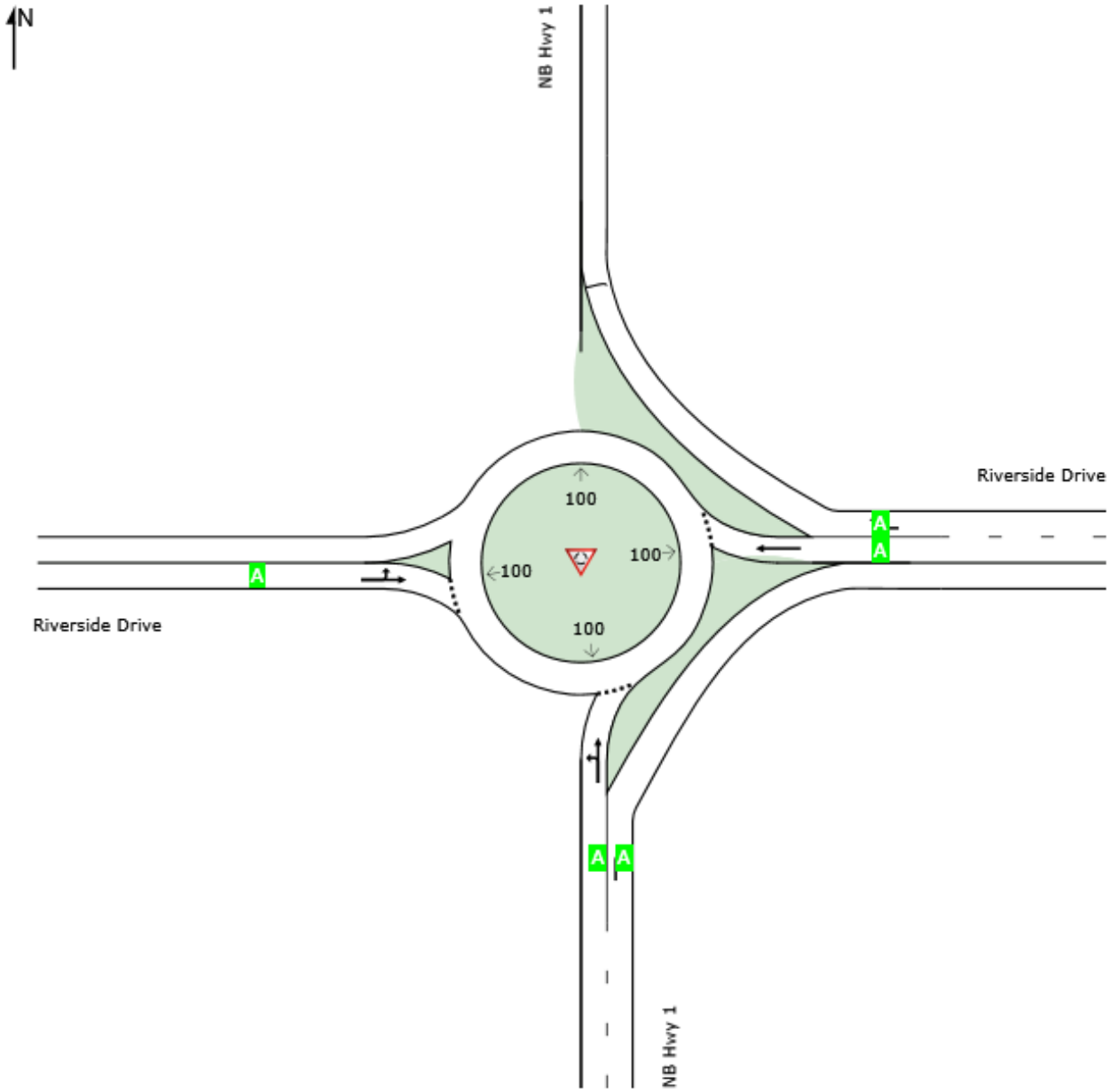
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Ex+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

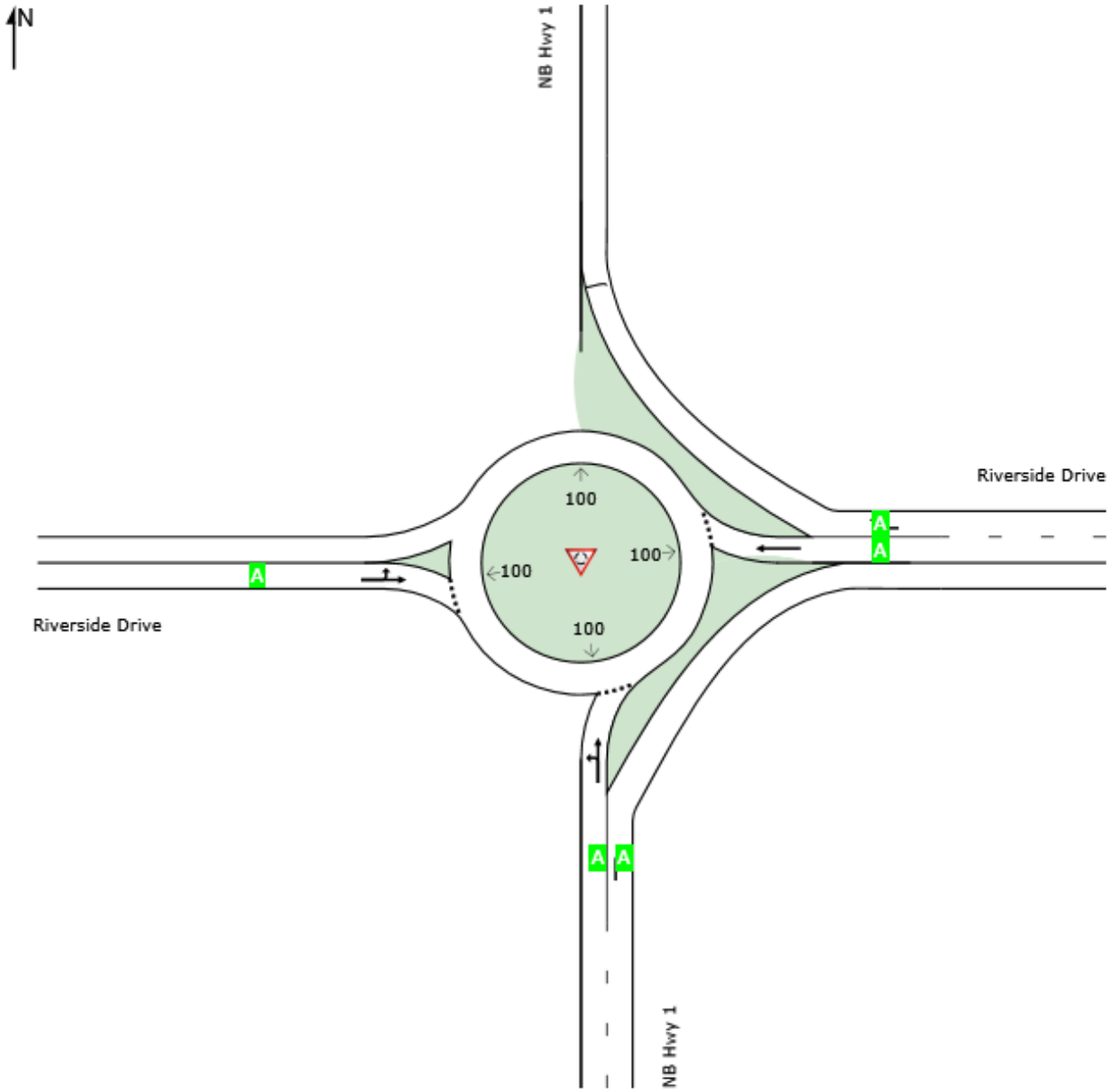
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Back AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

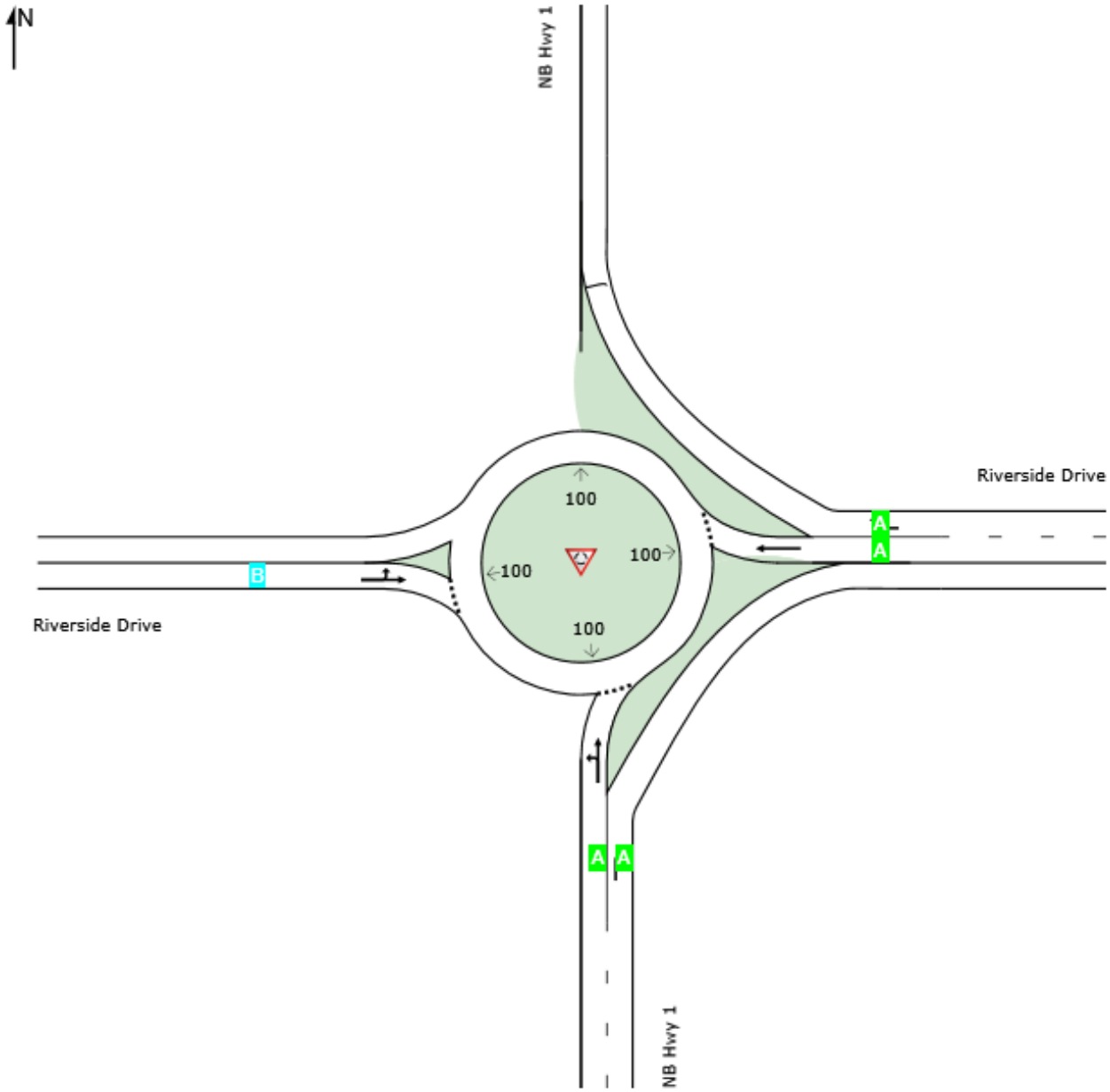
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Back PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	B	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

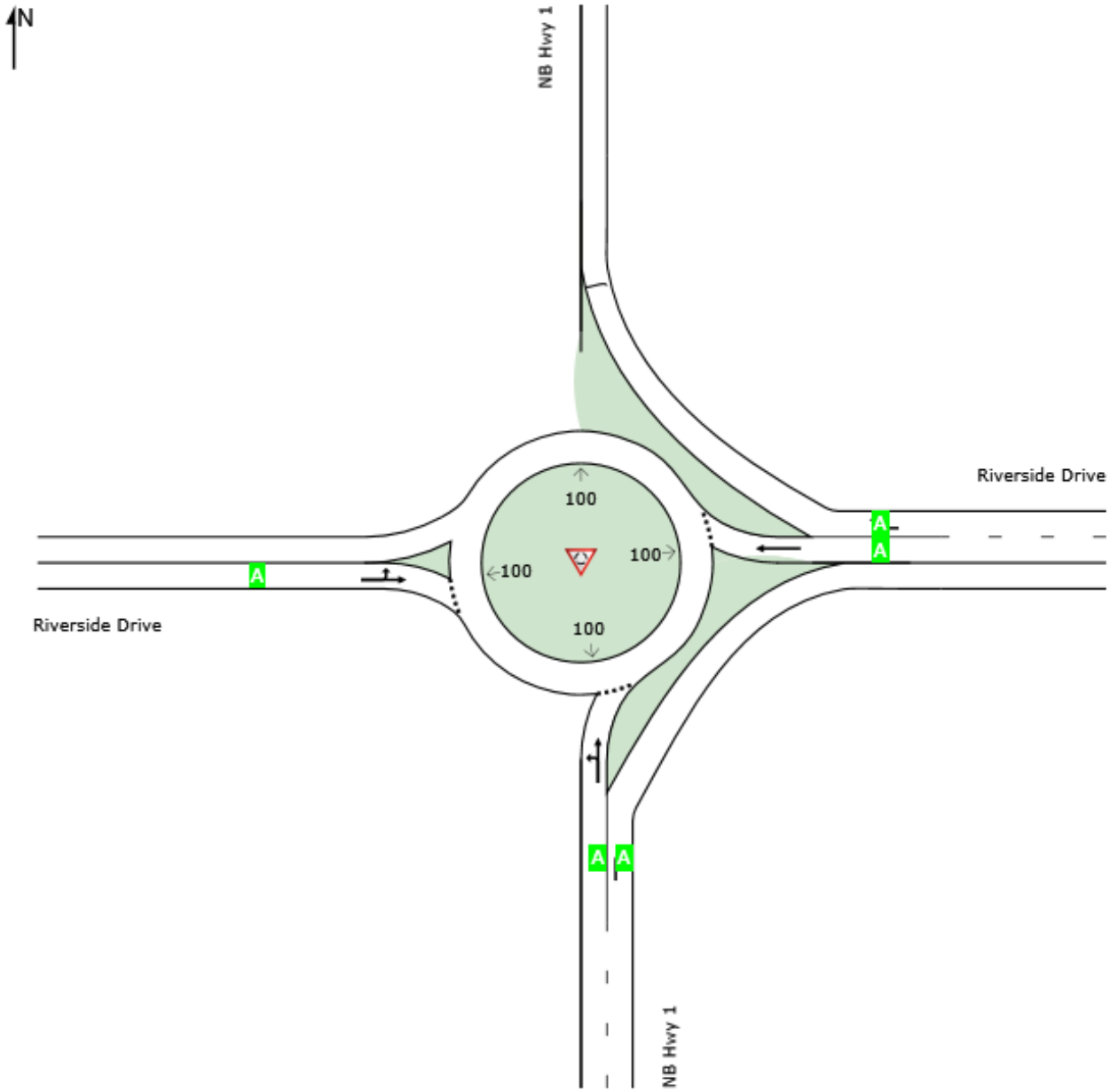
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Back+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

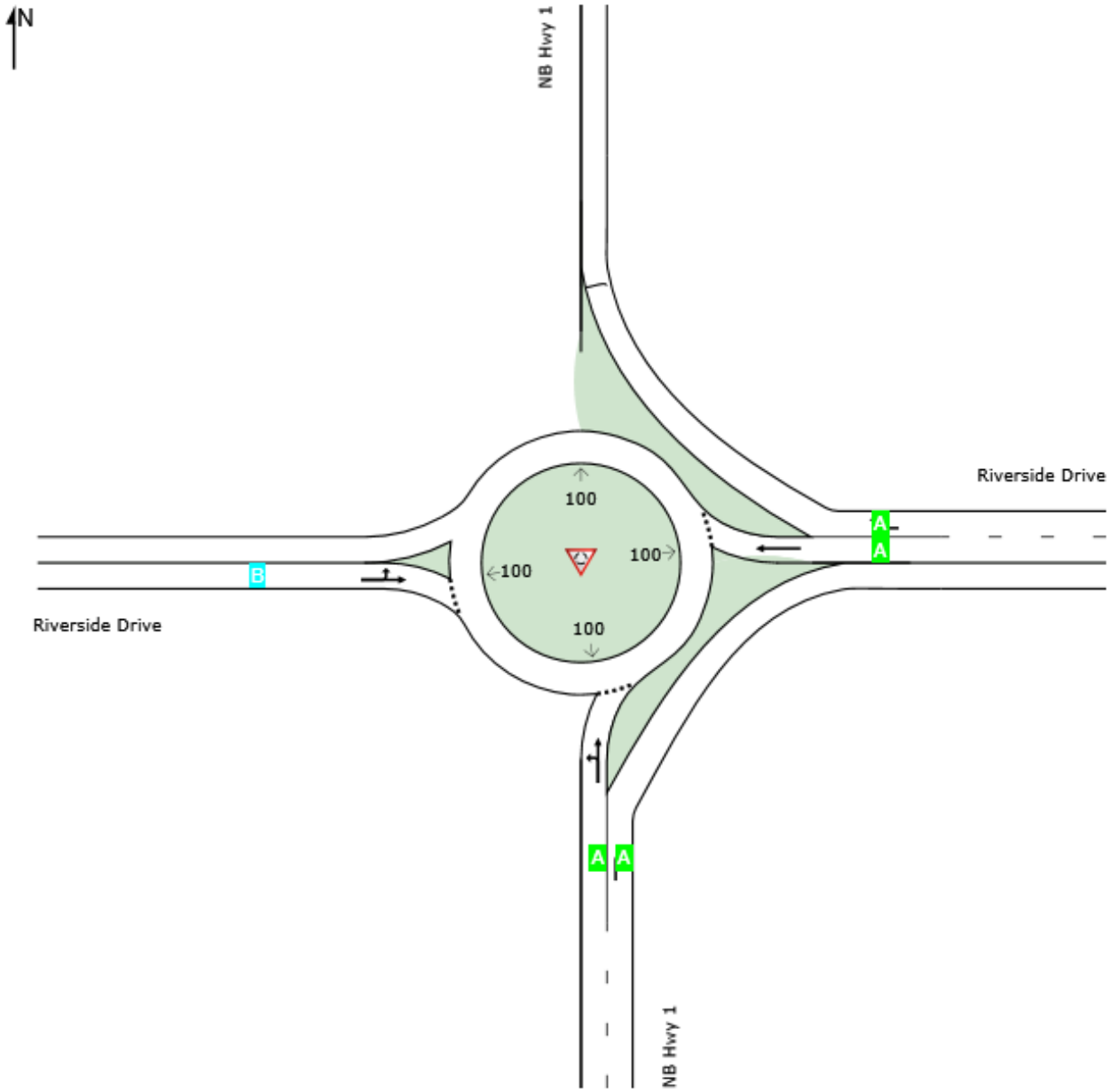
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Back+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	B	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

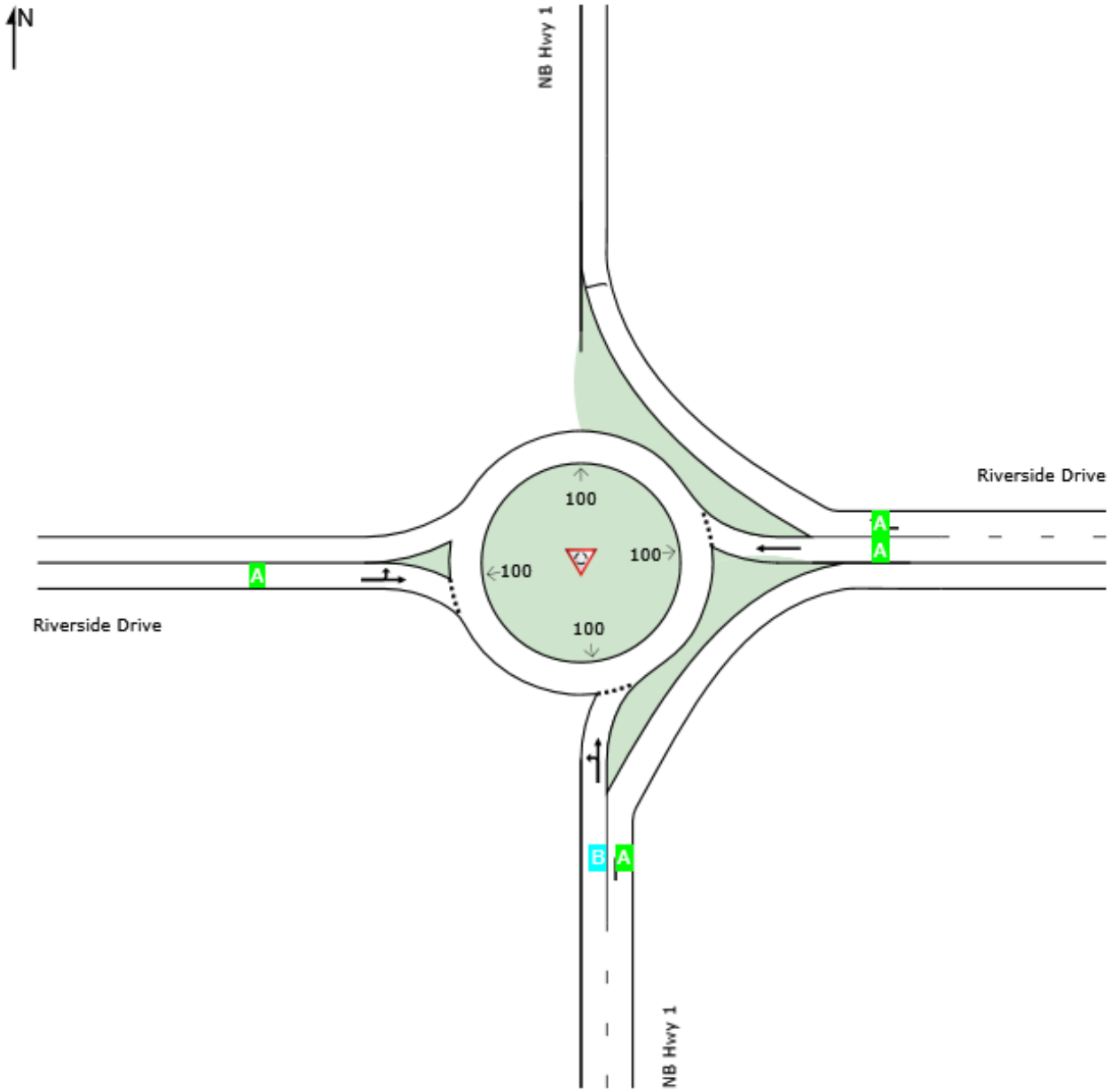
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Cu AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

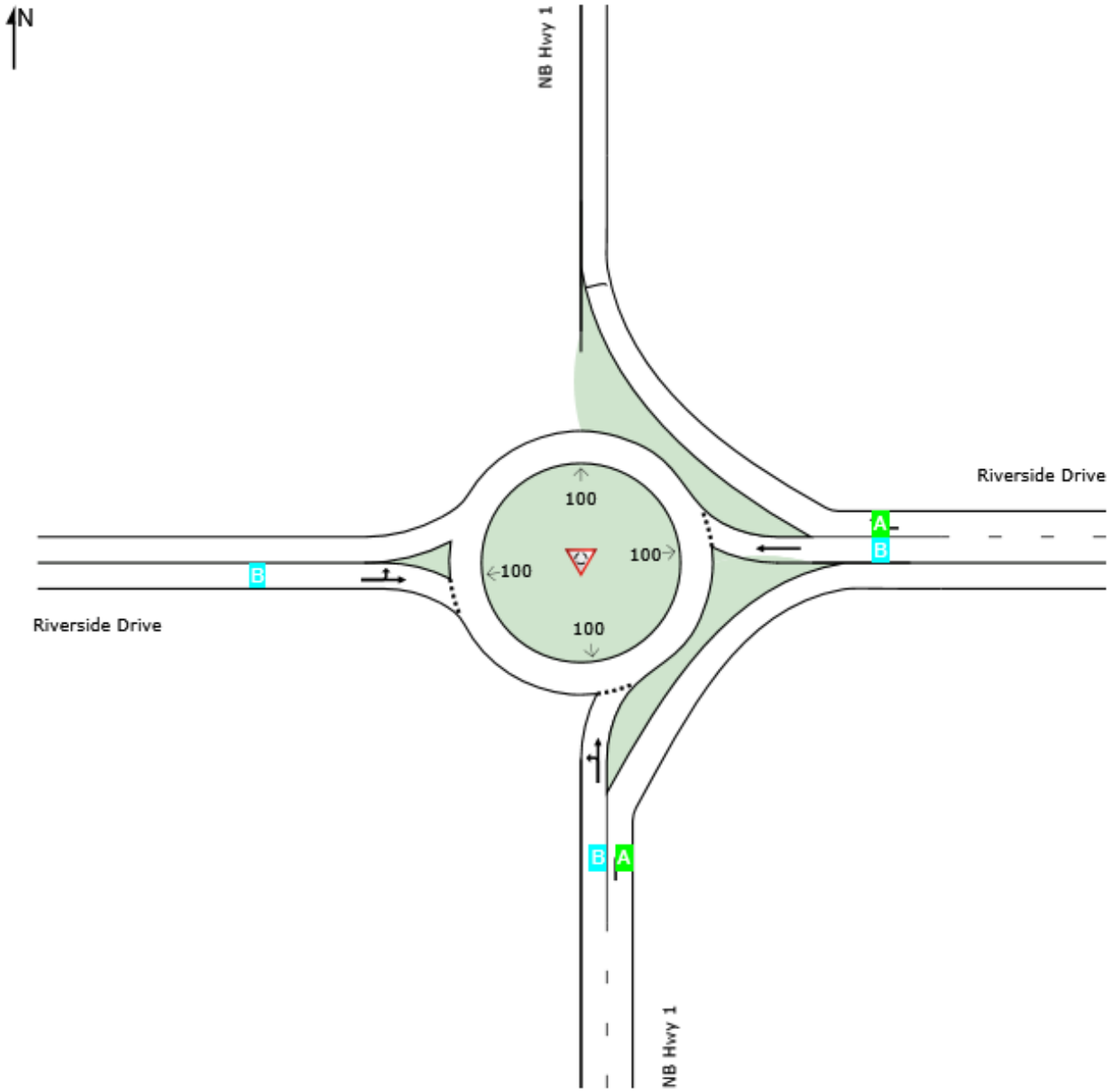
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Cu PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	B	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

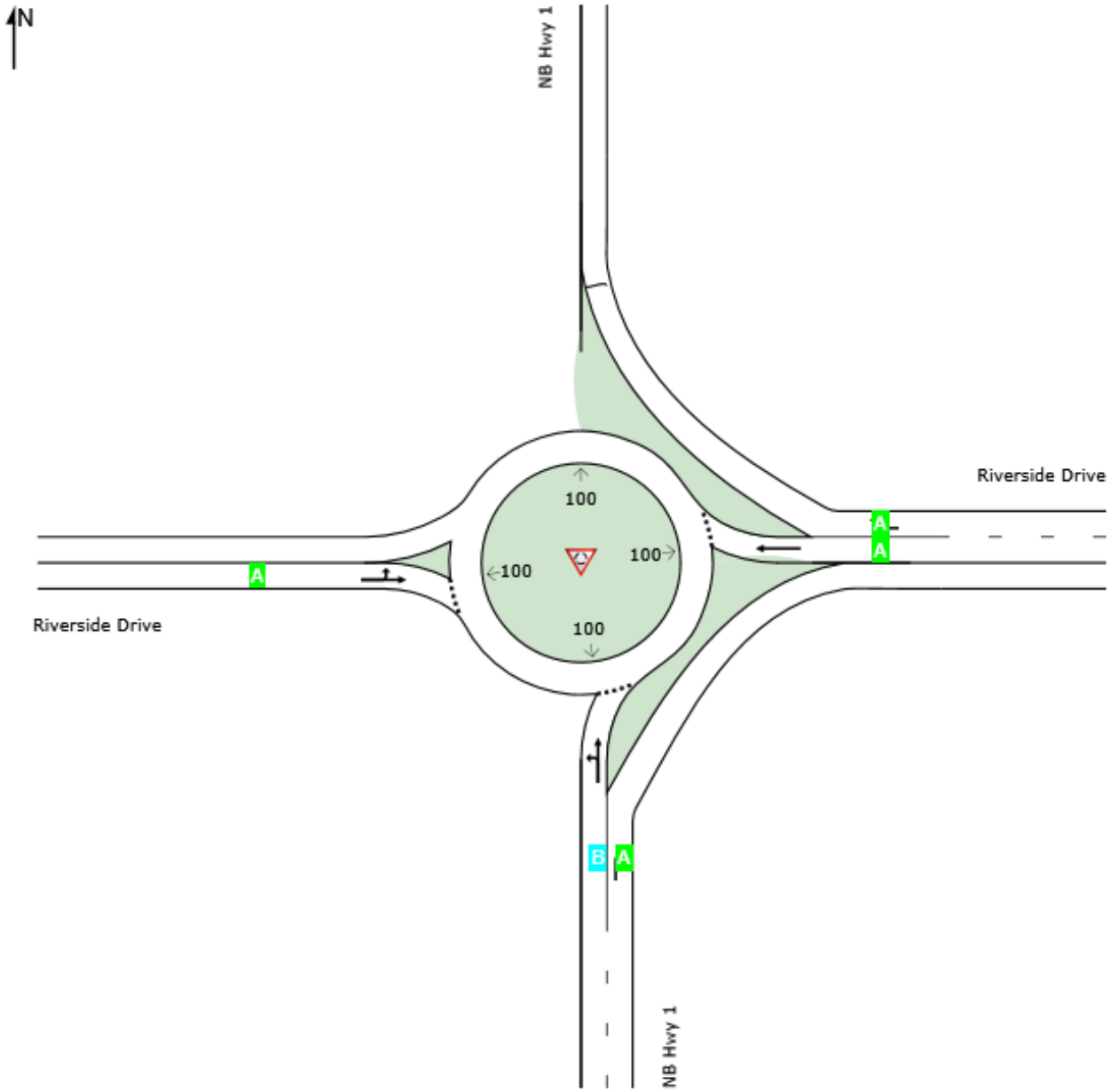
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Cu+P AM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

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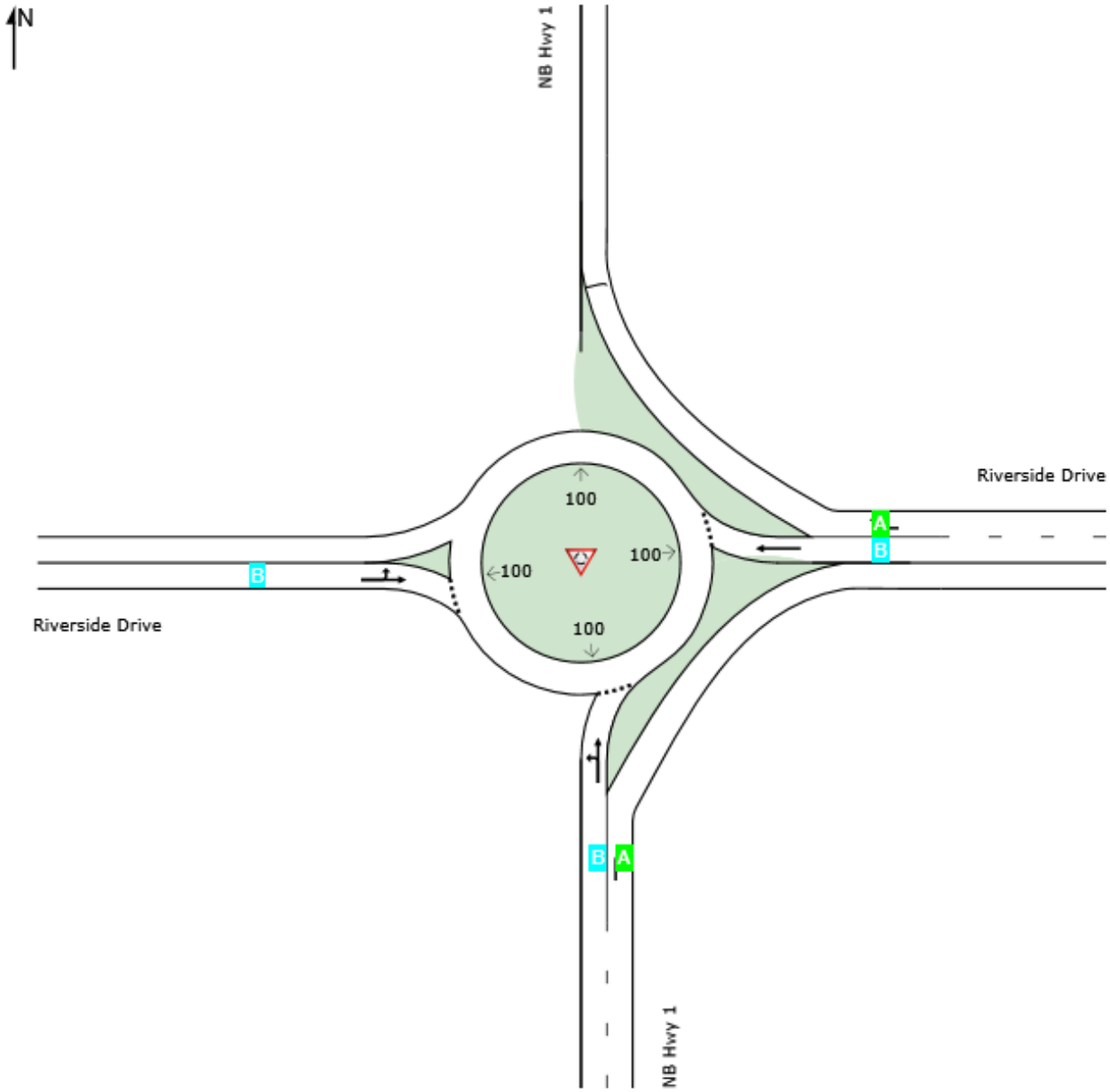
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [Int 10 - Cu+P PM (Site Folder: General)]

New Site
Site Category: (None)
Roundabout

	Approaches			Intersection
	South	East	West	
LOS	A	A	B	A



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Delay Model: HCM Delay Formula (Geometric Delay is not included).

Hexagon Transportation Consultants, Inc.

Memorandum

Date: June 10, 2022

To: Mike Campbell, MIG

From: Trisha Dudala and Robert Del Rio, T.E.

Subject: Review of the Manabe Ow Road Distribution Center in Watsonville, California

This memo presents the results of Hexagon's second review of the Transportation Impact Study (TIS) for the Manabe Ow Road Distribution Center ("Project"), located in Watsonville, California. The initial TIS was prepared by Kimley-Horn dated April 2022 was reviewed by Hexagon. The TIS was revised to address some of the comments of Hexagon's review. Hexagon has the following comments after reviewing the revised TIS dated May 2022 and a table that was provided by Kimley-Horn that summarized their responses to comments. The Kimley-Horn response summary table is provided as an attachment to this memo.

- Comments 1, 2, 6, 8, 10, 11, 19, 21, 23, 24, 26, 27, 28, 29, 30, 31, 32 have been adequately addressed in the revised report
- Comment #3 – The growth factors stated in the report (0.8% during the AM peak hour and 3.5% during the PM peak hour) is not reflected in the AM and PM peak hour volumes shown in Figure 4. Hexagon's comparison of the 2021 counts versus existing volumes shown in Figure 4 indicate that a growth factor of 2.5% to 3.5% was applied to the AM peak hour and 10% to 11% was applied to the PM peak hour. Please check growth factors and revise the report accordingly. Also, on Figure 4, denote the intersections where 2019 counts were used and intersections where 2021 adjusted counts were used.
- Comment #4 – The trip estimates presented and used in the TIS rely only on information provided by the applicant. The information is limited to the number of expected employees, shift times, and number of daily truck trips. Per the trip generation estimates provided in Table 4 (page 18), there will be a total of 48 daily truck trips. Assuming that each truck will arrive and depart the project site on the same day, each truck will represent two daily trips. Thus, Table 4 indicates that there will be a total of 24 trucks that arrive and depart the site each day. The identified 48 daily truck trips is particularly concerning and seems to underestimate the total number of trucks given that the proposed building includes 20 dock doors and 33 truck parking spaces. The TIS should present additional detail regarding the anticipated building operations to support the estimated 48 daily truck trips and need for 20 dock doors and 33 truck parking spaces.

  In addition, the project description on Page #18 states that there will be no delivery vans associated with building operations. However, the project is described as a "last mile" delivery station between the user's fulfillment centers and their customers. The TIS should discuss how product will be delivered to customers.

  Given that the estimated trips for the project are based solely on applicant provided data, the City should consider implementing a trip cap as part of its conditions of approval should they decide to proceed with the trip estimates as provided in Table 4.

- Comment #5 – The "blend" of industrial use trip rates should be presented in detail. What trip rates were used? How were they "blended". Similarly, "other data" should be presented in further detail. The study lacks discussion of basic assumptions leaving the reader to presume that the methodology of blending and other data is correct. Present the calculation and other data.
- Comment #7 and #9 – Please provide the Teralytics and model data that were used to develop the adjustment factors for the external distances and show the VMT calculations of the external to internal, internal external trips and VMT's and the internal trips and internal VMT's of the project. Please describe what Teralytics is (other than just say it's a big data source) and explain how the data is collected, summarized and reported, for the readier to understand that this data is applicable for use in VMT calculations.
- Comments #12, 13, 14, 15 – The responses to these comments refer to an excel file that shows the VMT calculations used in the study. However, there was no excel file provided for review.
- Comment #16 - The report should explicitly state that the VMT analysis for the project excludes truck VMT. Hexagon recommends including a discussion of why truck VMT was excluded. Suggested language "*The objective of the VMT analysis is to reduce VMT for commuting to work, returning home or using retail services within the neighborhood by encouraging alternative modes of travel such as walking, bicycling, transit or carpool. VMT analysis is not intended to evaluate how goods and products are shipped and moved in the marketplace. Even though one particular project may generate a significant amount of truck trips, the number of truck trips and resulting VMT for an individual project, is incidental when compared to the total VMT generated by residential and office uses*".
- Comment #17 - The VMT analysis and required reduction in VMT is based on the conversion to 164 employees. Thus, the 164 employees should be used to calculate the VMT banking Fee instead of 75 employees.
- Comment #18 – The calculation of 6.9% VMT reduction equating to 1.0 VMT per employee uses 164 employees. However, the project's mitigation banking fee calculation uses 75 employees. The report should describe the rationale for using two different employee counts in the VMT calculations.
- Comment #20 – State that the trip estimates and assignments were completed by Kimley-Horn.
- Comment #22 – The response does not address the comment. The comment is in reference to the turn movements indicated in Table 9, not the methodology. There seems to be no correlation between the intersection turning movements to which project traffic is added (shown in Figure 12) and the movements analyzed in Table 9.
- Comment #25 - The calculation of required parking is based on City requirements for both the identified portion of office space in the proposed building and Wholesaling with stock warehousing. Thus, the required parking for the office space would account for typical office employees (admin/sales). However, the employees of the project (which apparently includes sales staff and admin staff) are also used to calculate the required parking for the warehouse space. The study should clarify the number and type of employees used for the calculation of required parking for the warehouse.

- Cumulative Conditions Analysis (Page 37) – The report states that the cumulative traffic volumes were developed by applying an annual growth rate factor to existing (2021) volumes. The City has requested that the cumulative conditions analysis consider the impacts from the two warehouse distribution centers that are currently being considered in close proximity to the project site.

No.	Comment	Agency	Page Number	Action	Response / Discussion
Watsonville Manabe Ow Road Distribution Center, Traffic Study Review					
1	It is not clear whether the SCC travel demand model assumed any development on the project site. If it does, then the volumes from the travel demand model should be used to analyze the cumulative plus project conditions scenario and the project generated traffic should be subtracted from the model volumes to analyze cumulative without project traffic volumes. Confirm whether the SCC travel demand model assumed any development on the project site.	Hexagon	4	Clarification	The SCC travel demand model did not assume any development on the project site. Therefore, we added the project traffic on top of this Cumulative no project scenario.
2	The report states "The 95th percentile queue length represents a condition where 95 percent of the time during the peak hour, traffic queues will be less than or equal to the queue length determine by the analysis. This is referred to as the "95th percentile queue", which is less than the average queuing." Hexagon does not agree that the 95th percentile queue is less than the average queueing. This statement should be reworded to say that the 95th percentile queue is not typical of what an average driver would experience as the 95th percentile queue will rarely be exceeded.	Hexagon	6	Updated	Updated text.
3	Harkins Slough Road/Hwy 1 NB off-ramp – The existing volumes shown in Figure 4 were checked against the 2021 counts multiplied by 1.25 and they don't match. The 2021 counts show that the AM peak hour volume for the SBT movement is 637 vehicles, but the adjusted volume shown in Figure 4 (increased by 25%) shows the SBT volume to be 408 vehicles. Please check all turning movement counts during both the AM and PM peak hours. At all other intersections, it does not appear that a factor of 1.25 was applied to adjust 2021 volumes. The volumes for some movements in Figure 4 are lower than the 2021 counts. Please provide clarification on how the 2021 volumes were adjusted.	Hexagon	9	Updated	Corrected the SBT volume at intersection #1. The 1.25 factor reference was incorrect. The 2019 volume for each location provided was used to be conservative as a Pre-COVID volume. In addition, for the other intersections where there were no 2019 volumes, the average volume difference between 2021 and 2019 was determined and was added to the 2021 counts collected to get the 2019 adjusted volumes. The three intersections with both 2019 and 2021 counts showed an average increase of 0.8% in the AM peak hour and 3.5% in the PM peak hour from 2021 to 2019, so those increases were applied to the remaining intersections without 2019 volumes. This explanation has been included in the report.
4	Based on the employee shift information included in Appendix B, describe the number of employees assumed to commute during the AM and PM peak hours to estimate trip generation shown in Table 4. Describe how the number/percentage of truck trips were estimated for daily and peak hours and the source of this information. The primary trip generation of the project will be associated with trucks and delivery vans. The estimated 37 daily truck trips seem low when considering that there are 20 truck doors and 33 truck parking spaces proposed. There could be 40 large daily truck trips if conservatively assuming that each of the dock doors turns over only once per day. In addition, the project is described as a "last-mile" facility. Operations of last mile facilities typically consist of large trucks that deliver product to the site then smaller delivery vans are used to deliver products to their final destinations. The study should include a description of anticipated site operations which includes a detailed breakdown of the number of employees with shift times, details of the expected number of large trucks and delivery vans along with their delivery frequency to support the trip estimates.	Hexagon	18	Updated	The Client confirmed that there would be 48 daily truck trips and no delivery vans. The truck trip generation was given by the Client. The trip generation and analysis has been updated with the new trip generation. Detailed inbound and outbound trips are included in Attachment B. Details of the site operations and delivery frequency have been added in the report.
5	State the ITE Land Use Code and the rates/calculation that were used to estimate 164 employees in the VMT analysis.	Hexagon	25	Clarification	The employee estimate was developed using the trip generation rates from a blend of industrial land uses using the ITE Trip Generation, 10th Edition rates since those were the latest at the time. This was checked against other data and the land use conversion assumptions used for updating the Santa Cruz County model itself. This process resulted in a ratio that was rounded to approximately 1 employee per 1,000 square feet for industrial employees, consistent with the methodology used to update the Santa Cruz County Model. This resulted in 164 employees for 161.2 KSF.
6	Was the project added to the land use data before running the model?	Hexagon	25	Clarification	Yes, the project was added to the model.

No.	Comment	Agency	Page Number	Action	Response / Discussion
7	How are the "external-internal trips" accounted for in the calculation of regional (Santa Cruz Countywide) VMT's?	Hexagon	25	Updated	As you referred to in your comment letter: "In order to calculate the VMT per Employee produced by the Project, only homebased work trips attracted to the Project's TAZ were multiplied by each individual trip length to obtain the total home-based work VMT. The external VMT for the non-residential land uses was determined by multiplying the calibrated external trip distance by TAZ determined using big data (Teralytics) by the total external internal (X-I) home-based work trips for that TAZ. The share of industrial employee VMT was then calculated by dividing the trips generated by industrial employees by the total trips generated by employees in the Project's TAZ. Thus, the total industrial home-base work VMT was calculated." In addition, we determined the external trip distance using Teralytics (by census tract). Then to calibrate it for the model, we compared the internal trip distances between Teralytics and the model, and came up with an adjustment factor for the external trip distances. We then overlayed the Teralytics average internal trip distance by census tract with the model TAZs to get an average external trip distance for each TAZ.
8	Was the Teralytics method also applied in the calculation of the regional VMT?	Hexagon	25	Updated	Yes.
9	The application and justification of using the Teralytics method and what this method entails needs to be explained	Hexagon	25	Clarification	Because VMT requires looking at external trips, Big Data was a more accurate representation than the model. This is consistent with SCC VMT methodology.
10	Are the HBW VMT's per job in adjacent zones similar to the VMT that was calculated for the project TAZ?	Hexagon	25	Updated	Yes, we checked for this.
11	Is the VMT presented in Table 5 (2,481), total project home-based VMT?	Hexagon	25	Updated	No, it is only the total HBW attraction VMT, not the production VMT.
12	Quantify the total home-based work trips attracted to the project TAZ	Hexagon	25	Updated	The excel file used to calculate the VMT for the project has been provided for Hexagon to review.
13	Quantify the calibrated external trip distance for the home-based work trips	Hexagon	25	Updated	See response from Comment #12.
14	Provide calculation of the total home-based work VMT for the project TAZ	Hexagon	25	Clarification	See response from Comment #12.
15	Provide calculation of the total project home-based VMT (2,481 as shown in Table 5)	Hexagon	25	Clarification	See response from Comment #12.
16	The TDM measures listed above are primarily applicable to general employment such as office employees. It is unclear whether the projected VMT consists of both passenger vehicle and truck trips. Since a significant number of trips and VMT generated by the proposed project will consist of trucks and delivery vans, the TDM measures would be applicable to only the project's office employees and have no applicability to a reduction in the project's VMT associated with trucks and delivery vans. The report must describe the project site operations, specifically in regard to truck and delivery vans, and the applicability of the TDM measures to achieve the described 15% reduction in VMT. The VMT banking fee must be increased and/or the projects impact must be deemed significant unavoidable if it is determined that the TDM measures are not applicable or cannot achieve a 15% reduction in VMT.	Hexagon	26	Updated	The VMT does not include the truck trips and there are no delivery vans.
17	Provide an explanation of why 75 employees were used instead of 164 employees.	Hexagon	27	Clarification	The 164 employees were an estimate based on conversion of the square footage to employees using the ITE rate conversion. The 75 employees are the actual number of employees for the project. Although these two values are different, if 75 employees were used in the model, there likely would not be a significant change in the VMT results. This is because the net difference in employees (164 employees - 75 employees = 89 employees) is insignificant when considering all the other land uses and employees in the adjacent TAZs and the City.
18	The report states that 6.9% VMT reduction equates to 1.0 VMT per employee. Was this calculated by multiplying the total VMT of 2,481 by 6.9% and dividing this by 164 employees? Please provide the calculation in the report.	Hexagon	27	Updated	Yes.
19	Revise footnote #2 in the LOS tables 6, 7 and 8 to state that the average control delay and the delay for the worst approach is reported for SSSC intersections.	Hexagon	28	Updated	Updated text.

No.	Comment	Agency	Page Number	Action	Response / Discussion
20	Provide a brief description of how traffic from background projects was estimated whether it was from their respective traffic studies or based on Kimley-Horn applying ITE trip generation rates and completing trip assignments to the individual projects.	Hexagon	31	Updated	The traffic volumes from pending and approved projects were based on the traffic studies if available. If unavailable, ITE trip generation and trip distribution from studies with similar land uses were used to estimate traffic volumes. This explanation has been added in the report.
21	Reword the sentence to say all intersections except int #7 are expected to operate at unacceptable levels.	Hexagon	37	Updated	Updated text.
22	The queueing analysis in Table 9 should be revised to address the inconsistencies between the movements analyzed and the movements to which the project would add traffic.	Hexagon	42	Updated	The effect of vehicle queuing was analyzed by reporting the 95th percentile queues for all turning movements with existing available storage to identify any potential safety hazards. This explanation has been corrected in the report.
23	In the 4th sentence of the first paragraph, there is a typo in W Sough Road. It is missing an "L".	Hexagon	45	Updated	Updated text.
24	Revise the text to state that the shrubbery on the south side should be maintained at an appropriate height so that drivers exiting the project side will be able to see over them.	Hexagon	47	Updated	Updated text.
25	State the square footage of office space that was assumed in the calculation of 53 spaces for office use. The report states that the project will provide 121 parking stalls which is 30 spaces greater than the required 91 spaces. The project is required to achieve a 15% reduction in VMT with the TDM Plan to reduce its impact. Providing excess vehicular parking could work against the goals of the TDM Plan. Hexagon recommends not providing more than the required number of parking spaces unless justified by the proposed use.	Hexagon	50	Updated	The parking requirement has been recalculated to 93 spaces per the direction from the City. Therefore, parking has been reduced to 93 spaces to not exceed the municipal code requirements.
26	Provide clarification on whether the project's contribution is 1.5% or 2.1% and revise the report accordingly.	Hexagon	54	Updated	The project's contribution is 1.5%. The report has been revised.
27	The report states that the intersection operates at an acceptable LOS A with a roundabout. State whether the LOS is for a one-lane or two-lane roundabout. For all other intersection with ICE analysis, state whether a one-lane or two-lane roundabout was	Hexagon	55	Clarification	Added text to state that the LOS is for a one-lane roundabout.
28	Harkins Slough Road/NB Highway 1 off-ramp: The report states that alternatively, installing a roundabout at this intersection would improve the intersection level of service. If a roundabout is being considered at this location, the impact of eastbound vehicular queues from the downstream signal at Green Valley Road/Harkins Slough Road intersection should be considered as the distance between the two intersections is less than 200 feet.	Hexagon	58	Updated	Text was added to state that further analysis should be conducted concerning the eastbound vehicular queues from the downstream signal at Green Valley Road/Harkins Slough Road intersection in a more comprehensive ICE evaluation.
29	Main Street/S Green Valley Road: The recommended improvements under cumulative conditions include removal of split phasing and adding protected left-turn phasing for the northbound and southbound approaches. Check whether the intersection is wide enough to accommodate simultaneous northbound/southbound left-turn operation. If the intersection geometry does not permit simultaneous northbound and southbound left-turn operation, then check whether lead/lag left-turns would result in acceptable LOS.	Hexagon	61	Clarification	The intersection appears wide enough to accommodate simultaneous northbound/southbound left-turn operation. If the recommended improvement is to be implemented, a signing and striping plan will confirm whether there would be any conflicts. If there is a conflict, then the signal phasing will need to be modified to lead/lag left-turns.
30	Main Street/Ohlone Parkway: The recommended improvements under cumulative conditions include removal of split phasing and adding protected left-turn phasing for the northbound and southbound approaches. Check whether the intersection is wide enough to accommodate simultaneous northbound/southbound left-turn operation. If the intersection geometry does not permit simultaneous northbound and southbound left-turn operation, then check whether lead/lag left-turns would result in acceptable LOS.	Hexagon	62	Clarification	The intersection does not appear wide enough to accommodate simultaneous northbound/southbound left-turn operation. Lead/lag left-turns result in acceptable LOS and are recommended. If the recommended improvement is to be implemented, further analysis will be needed to determine restriping of the southbound left turn lane.
31	Ohlone Parkway/Loma Vista Way: Explain why a trigger analysis was conducted for this intersection and not for the NB Highway 1 Ramps/Riverside Drive intersection, where the project would cause an adverse effect under cumulative conditions.	Hexagon	64	Clarification	The trigger analysis was only done for this intersection because the prior analysis included an improvement to construct a roundabout or install a traffic signal at the Ohlone Parkway / Loma Vista Drive intersection when 650,000 SF of the proposed project has been completed since that was the threshold when the intersection goes from acceptable to unacceptable levels of service. This was the only intersection improvement with a conditional component.
32	Walker Street/ W Beach Street: The report recommends a traffic signal at this intersection. State whether the NB/SB approaches on Walker Street would have exclusive left-turn lanes. If separate left-turn lanes were not considered, then state whether the northbound and southbound approaches were assumes to operate with split phasing or permitted phasing.	Hexagon	65	Clarification	Stated that the northbound and southbound approaches will have exclusive left-turn lanes.