APPENDICES

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Appendix A AIR QUALITY AND GREENHOUSE GAS ASSUMPTIONS AND CALEEMOD RESULTS

Stantec

Memo

To:	Kevin Scudero, Associate Planner City of Antioch Community Development Department	From:	Stantec Consulting Services Inc. Walnut Creek
File:	Acorn Business Park Project	Date:	October 29, 2018

Reference: Acorn Business Park – Air Quality and Greenhouse Gas Assumptions Memorandum

This memorandum provides the air quality and greenhouse gas modeling assumptions used in determining the air quality and greenhouse gas impacts from construction and operation of the Acorn Business Park Project.

CALEEMOD ASSUMPTIONS

CONSTRUCTION MODELING ASSUMPTIONS

Construction Schedule

The project site will be constructed as a planned development with Subsection B, the self-storage facility being constructed initially. Construction of Subsection B would occur as soon as six months from the project approval date and would last approximately 11 months (May 2019 – March 2020). The remaining phases of the project would be constructed as market conditions dictate.

To provide a conservative analysis, the remainder of the project site was assumed to be developed simultaneously within an 18-month construction schedule beginning as early as June 2020 with an estimated completion date of November 2021.

The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines. The construction schedule is provided in Table 1.

Table 1 Construction Schedule

Project Component	Phase	Anticipated Phase Start Date	Anticipated Phase End Date	Total Number of Days
Subsection B	Site Preparation	5/3/2019	5/17/2019	13
	Site Grading	5/20/2019	7/1/2019	37
	Building Construction	7/2/2019	1/30/2020	183
	Paving	1/31/2020	2/28/2020	25
	Architectural Coating	3/2/2020	3/30/2020	25
Source: Personal communication from Jim Moita, JMI Properties, October 22, 2018				

Table 1: Construction Schedule- continued

Project Component	Phase	Anticipated Phase Start Date	Anticipated Phase End Date	Total Number of Days
Subsections A and C	Site Preparation	6/1/2020	6/11/2020	10
	Site Grading	6/12/2020	7/16/2020	30
	Building Construction	7/17/2020	7/1/2021	300
	Paving	7/2/2021	7/24/2021	20
	Architectural Coating	7/25/2021	8/17/2021	20
Source: CalEEMod version 2016.3.2, October 26, 2018				

Construction Off-Road Equipment

The construction equipment list is provided in Table 2.

Table 2: Construction Equipment Assumptions

Project Component	Phase	Equipment	Unit Amount	Hours per Day	Horsepower	Load Factor
Subsection B	Site Preparation	Rubber Tired Dozers	3	8	247	0.4
		Tractors/Loaders/Backhoes	4	8	97	0.37
	Grading	Excavators	1	8	158	0.38
		Graders	1	8	187	0.41
		Rubber Tired Dozers	1	8	247	0.40
		Tractors/Loaders/Backhoes	3	8	97	0.37
	Building Construction	Cranes	1	7	231	0.29
		Forklifts	3	8	89	0.2
		Generator Sets	1	8	84	0.74
		Tractors/Loaders/Backhoes	3	7	97	0.37
		Welders	1	8	46	0.45
	Paving	Pavers	2	8	130	0.42
		Paving Equipment	2	8	132	0.36
		Rollers	2	8	80	0.38
	Architectural Coating	Air Compressors	1	6	78	0.48

Table 2: Construction Equipment Assumptions - continued

Project Component	Phase	Equipment	Unit Amount	Hours per Day	Horsepower	Load Factor
Subsections A and C	Site Preparation	Rubber Tired Dozers	3	8	247	0.4
		Tractors/Loaders/Backhoes	4	8	97	0.37
	Grading	Excavators	2	8	158	0.38
		Graders	1	8	187	0.41
		Rubber Tired Dozers	1	8	247	0.40
		Scrapers	2	8	367	0.48
		Tractors/Loaders/Backhoes	2	8	97	0.37
	Building Construction	Cranes	1	7	231	0.29
		Forklifts	3	8	89	0.2
		Generator Sets	1	8	84	0.74
		Tractors/Loaders/Backhoes	3	7	97	0.37
		Welders	1	8	46	0.45
	Paving	Pavers	2	8	130	0.42
		Paving Equipment	2	8	132	0.36
		Rollers	2	8	80	0.38
	Architectural Coating	Air Compressors	1	6	78	0.48

Source: CalEEMod version 2016.3.2, October 26, 2018

On-Road Construction-Related Vehicle Trips

Off-site construction emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$). Table 3 provides a summary of the construction-related vehicle trips. CalEEMod default values were used to estimate the number of construction-related vehicle trips. CalEEMod quantifies the number of construction workers by multiplying 1.25 times the number of pieces of equipment for all phases (except Building Construction and Architectural Coating). For the Building Construction, the number of workers is derived from a study conducted by the Sacramento Metropolitan Air Quality Management District (SMAQMD) which determined the number of workers needed for various types of land uses and corresponding project size. The number of vendor trips during the Building Construction phase is also derived from a study conducted by the SMAQMD. The SMAQMD trip survey during construction counted cement and water trucks as vendor trips (instead of counting them as off-road vehicle trips) and these trip rates were incorporated into the calculations for the Building Construction phase. The default values for hauling trips are based on the assumption that a truck can haul 20 tons (or 16 cubic yards) of material per load. If one load of material is delivered, CalEEMod assumes that one haul truck importing material will also have a return trip with an empty truck (e.g., 2 one-way trips).

The fleet mix for worker trips is light-duty passenger vehicles to light-duty trucks. The vendor trips fleet mix is composed of a mixture of medium and heavy-duty diesel trucks. The hauling trips are assumed to be 100% heavy-duty diesel truck trips.

CalEEMod default trip lengths were used for the worker (10.8 miles), vendor (7.3 miles), and hauling trips (20 miles).

Table 3 Construction-Related Vehicle Trips

Project Component	Phase Name	Worker Trip Number	Vendor Trip Number	Hauling Trip Number
Subsection B	Site Preparation	18	0	0
	Grading	15	0	700
	Building Construction	53	21	0
	Paving	15	0	0
	Architectural Coating	11	0	0
Subsections A and C	Site Preparation	18	0	0
	Grading	20	0	0
	Building Construction	137	59	0
	Paving	15	0	0
	Architectural Coating	27	0	0

Source: CalEEMod version 2016.3.2, October 26, 2018

OPERATIONAL MODELING ASSUMPTIONS

Operational emissions are those emissions that occur during operation of the proposed project. The primary sources are summarized below.

Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project site.

The proposed project will be developed as a planned development and the only current defined land use is the self-storage facility. There are various alternative site plans that are being considered and that could potentially eventually be developed. The traffic study analyzed the alternatives to develop a “worst-case” scenario of vehicle trips to evaluate transportation impacts, meaning if the site were developed with a different alternative the resulting vehicle trips would be less, and the impacts would be less. The air quality and greenhouse gas analysis used the “worst-case” vehicle trips to estimate impacts. Similarly, if the project were developed with a different alternative that results in fewer vehicle trips the air quality and greenhouse gas impacts would be less. Table 4 provides the vehicle trip information used in the analysis.

Table 4: Traffic Impact Study "Worst-Case" Project Trip Generation Rates

Land Use	Quantity	Units	Average Daily Trips (ADT)	Trip Generation Rate (trips/unit/day)
Retail Shopping Center (820)	33.6	ksf	2,864*	85.24
Mini Warehouse (151)	122.02	ksf	184	1.51
General Office Building (710)	112.90	ksf	1,100	9.74
Total	-	-	4,148	-

Notes:
The traffic study subtracted off 10% of the vehicle trips for pass-by trips for a total of 2,578 trips, however, the air quality and greenhouse gas analysis need to account for those vehicles, so the total trips are shown, but the pass-by percentage is incorporated into the model
Trip Rate Source: Institute of Transportation Engineers (ITE), 10th Edition, 2017 with ITE code in parentheses
ADT = Average Daily Trips
ksf = 1,000 square feet
Source: Stantec Consulting Services Inc., November 2018

Vehicle Fleet Mix

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the proposed project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline- and diesel-powered vehicles). The CalEEMod default vehicle fleet mix was used.

Area Sources

Area sources consist of hearths, consumer products, area architectural coatings, and landscaping emissions. CalEEMod default values were used.

Consumer Products

Consumer products are various solvents used in non-industrial applications that emit ROGs during their product use. The default CalEEMod value was used for this project.

Architectural Coatings (Painting)

Paints release VOC emissions. The building would be repainted on occasion. CalEEMod default values were used for this purpose.

Landscaping Emissions

CalEEMod estimated a total of 180 days for which landscaping equipment would be used to estimate potential emissions for the proposed project.

Energy Use

The emissions associated with the building electricity and natural gas usage (non-hearth) are estimated based on the land use type and size. The electricity energy use is in units of kilowatt hours per size metric for each land use type. Natural gas use is in units of a thousand British Thermal Units per size metric for each land use type. CalEEMod default values were used.

Water and Wastewater Use

Supplying and treating water for car wash facility generates GHG emissions. Depending on the specific water supply used or treatment method used these numbers can vary over a wide range. Supplying water is bringing the water from its primary source such as the ground, river, or snowpack to the treatment plant. Distributing the water is bringing the water from the treatment plant to the end users. The electricity intensity factors are multiplied by the utility GHG emissions intensity factors for the GHGs and are classified as indirect emissions.

Wastewater may also have direct emissions of GHGs. These depend on the type of wastewater treatment system (e.g., septic, aerobic or lagoons) used and therefore the wastewater treatment type percentages are variables. The CalEEMod default water use quantities were used in the analysis.

Solid Waste

GHG emissions are associated with the disposal of solid waste generated by the proposed project into landfills. Solid waste use was based on the CalEEMod default values.

Service Population

The project's service population is calculated as the number of jobs supported by the project (635 employees), and the estimated population (1,185) served daily by the project. The estimated population served by the project was estimated using CalEEMod default data for commercial-customer trips. Therefore, the project is calculated to support a service population of 1,820.

STANTEC CONSULTING SERVICES INC.

Attachment: CalEEMod Outputs

Acorn Business Park - Subsection B - Contra Costa County, Annual

Acorn Business Park - Subsection B

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	122.02	1000sqft	2.80	122,021.00	0
Parking Lot	13.00	Space	0.12	5,200.00	0
Other Non-Asphalt Surfaces	0.51	Acre	0.51	0.00	0
Other Asphalt Surfaces	2.62	Acre	2.01	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	6.1
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblGrading	MaterialExported	0.00	5,600.00
tblLandUse	LandUseSquareFeet	22,215.60	0.00
tblLandUse	LandUseSquareFeet	114,127.20	0.00
tblLandUse	LotAcreage	2.62	2.01

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2418	2.3295	1.6835	3.4200e-003	0.2867	0.1202	0.4069	0.1399	0.1125	0.2524	0.0000	306.9834	306.9834	0.0589	0.0000	308.4562
2020	0.7606	1.1031	0.9891	1.8800e-003	0.0264	0.0579	0.0843	7.1500e-003	0.0544	0.0615	0.0000	165.0112	165.0112	0.0329	0.0000	165.8327
Maximum	**0.7606**	**2.3295**	**1.6835**	**3.4200e-003**	**0.2867**	**0.1202**	**0.4069**	**0.1399**	**0.1125**	**0.2524**	**0.0000**	**306.9834**	**306.9834**	**0.0589**	**0.0000**	**308.4562**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.2418	2.3295	1.6835	3.4200e-003	0.1553	0.1202	0.2755	0.0701	0.1125	0.1826	0.0000	306.9832	306.9832	0.0589	0.0000	308.4559
2020	0.7606	1.1031	0.9891	1.8800e-003	0.0264	0.0579	0.0843	7.1500e-003	0.0544	0.0615	0.0000	165.0111	165.0111	0.0329	0.0000	165.8326
Maximum	**0.7606**	**2.3295**	**1.6835**	**3.4200e-003**	**0.1553**	**0.1202**	**0.2755**	**0.0701**	**0.1125**	**0.1826**	**0.0000**	**306.9832**	**306.9832**	**0.0589**	**0.0000**	**308.4559**

	ROG	NOx	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**	**41.98**	**0.00**	**26.76**	**47.47**	**0.00**	**22.24**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-3-2019	8-2-2019	1.1438	1.1438
2	8-3-2019	11-2-2019	0.8722	0.8722

3	**11-3-2019**	**2-2-2020**	0.8448	0.8448
4	**2-3-2020**	**5-2-2020**	0.7692	0.7692
5	**5-3-2020**	**8-2-2020**	0.8039	0.8039
		Highest	1.1438	1.1438

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	5/3/2019	5/16/2019	5	10	
2	Grading	Grading	5/17/2019	6/13/2019	5	20	
3	Building Construction	Building Construction	6/14/2019	4/30/2020	5	230	
4	Paving	Paving	5/1/2020	5/28/2020	5	20	
5	Architectural Coating	Architectural Coating	5/29/2020	6/25/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 18.5

Acres of Paving: 2.64

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 183,032; Non-Residential Outdoor: 61,011; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40

Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	700.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	53.00	21.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	11.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1174	0.0000	0.1174	0.0646	0.0000	0.0646	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195

Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.1174**	**0.0120**	**0.1294**	**0.0646**	**0.0110**	**0.0756**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.5000e-004	2.5300e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6468	0.6468	2.0000e-005	0.0000	0.6472
Total	**3.3000e-004**	**2.5000e-004**	**2.5300e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6468**	**0.6468**	**2.0000e-005**	**0.0000**	**0.6472**

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					0.0528	0.0000	0.0528	0.0291	0.0000	0.0291	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0528**	**0.0120**	**0.0648**	**0.0291**	**0.0110**	**0.0401**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

Mitigated Construction Off-Site

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

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.5000e-004	2.5300e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6468	0.6468	2.0000e-005	0.0000	0.6472
Total	**3.3000e-004**	**2.5000e-004**	**2.5300e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6468**	**0.6468**	**2.0000e-005**	**0.0000**	**0.6472**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1215	0.0000	0.1215	0.0624	0.0000	0.0624	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6423	26.6423	8.4300e-003	0.0000	26.8530
Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.1215**	**0.0140**	**0.1355**	**0.0624**	**0.0129**	**0.0752**	**0.0000**	**26.6423**	**26.6423**	**8.4300e-003**	**0.0000**	**26.8530**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1700e-003	0.1090	0.0200	2.8000e-004	5.9300e-003	4.3000e-004	6.3600e-003	1.6300e-003	4.1000e-004	2.0400e-003	0.0000	26.8061	26.8061	1.2300e-003	0.0000	26.8370
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	4.1000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0780	1.0780	3.0000e-005	0.0000	1.0787

Total	**3.7200e-003**	**0.1094**	**0.0242**	**2.9000e-004**	**7.1200e-003**	**4.4000e-004**	**7.5600e-003**	**1.9500e-003**	**4.2000e-004**	**2.3600e-003**	**0.0000**	**27.8841**	**27.8841**	**1.2600e-003**	**0.0000**	**27.9157**

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					0.0547	0.0000	0.0547	0.0281	0.0000	0.0281	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0258	0.2835	0.1629	3.0000e-004		0.0140	0.0140		0.0129	0.0129	0.0000	26.6422	26.6422	8.4300e-003	0.0000	26.8530
Total	**0.0258**	**0.2835**	**0.1629**	**3.0000e-004**	**0.0547**	**0.0140**	**0.0687**	**0.0281**	**0.0129**	**0.0409**	**0.0000**	**26.6422**	**26.6422**	**8.4300e-003**	**0.0000**	**26.8530**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1700e-003	0.1090	0.0200	2.8000e-004	5.9300e-003	4.3000e-004	6.3600e-003	1.6300e-003	4.1000e-004	2.0400e-003	0.0000	26.8061	26.8061	1.2300e-003	0.0000	26.8370
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	4.1000e-004	4.2200e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0780	1.0780	3.0000e-005	0.0000	1.0787
Total	**3.7200e-003**	**0.1094**	**0.0242**	**2.9000e-004**	**7.1200e-003**	**4.4000e-004**	**7.5600e-003**	**1.9500e-003**	**4.2000e-004**	**2.3600e-003**	**0.0000**	**27.8841**	**27.8841**	**1.2600e-003**	**0.0000**	**27.9157**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1688	1.5071	1.2272	1.9200e-003		0.0922	0.0922		0.0867	0.0867	0.0000	168.0995	168.0995	0.0410	0.0000	169.1233
Total	**0.1688**	**1.5071**	**1.2272**	**1.9200e-003**		**0.0922**	**0.0922**		**0.0867**	**0.0867**	**0.0000**	**168.0995**	**168.0995**	**0.0410**	**0.0000**	**169.1233**

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	7.4500e-003	0.1910	0.0498	4.1000e-004	9.8700e-003	1.4100e-003	0.0113	2.8500e-003	1.3500e-003	4.2000e-003	0.0000	39.3934	39.3934	2.1000e-003	0.0000	39.4459
Worker	0.0140	0.0104	0.1065	3.0000e-004	0.0301	2.1000e-004	0.0303	7.9900e-003	1.9000e-004	8.1800e-003	0.0000	27.2331	27.2331	7.4000e-004	0.0000	27.2516
Total	**0.0214**	**0.2014**	**0.1563**	**7.1000e-004**	**0.0399**	**1.6200e-003**	**0.0415**	**0.0108**	**1.5400e-003**	**0.0124**	**0.0000**	**66.6265**	**66.6265**	**2.8400e-003**	**0.0000**	**66.6975**

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	0.1688	1.5071	1.2272	1.9200e-003		0.0922	0.0922		0.0867	0.0867	0.0000	168.0993	168.0993	0.0410	0.0000	169.1231
Total	**0.1688**	**1.5071**	**1.2272**	**1.9200e-003**		**0.0922**	**0.0922**		**0.0867**	**0.0867**	**0.0000**	**168.0993**	**168.0993**	**0.0410**	**0.0000**	**169.1231**

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	7.4500e-003	0.1910	0.0498	4.1000e-004	9.8700e-003	1.4100e-003	0.0113	2.8500e-003	1.3500e-003	4.2000e-003	0.0000	39.3934	39.3934	2.1000e-003	0.0000	39.4459
Worker	0.0140	0.0104	0.1065	3.0000e-004	0.0301	2.1000e-004	0.0303	7.9900e-003	1.9000e-004	8.1800e-003	0.0000	27.2331	27.2331	7.4000e-004	0.0000	27.2516
Total	**0.0214**	**0.2014**	**0.1563**	**7.1000e-004**	**0.0399**	**1.6200e-003**	**0.0415**	**0.0108**	**1.5400e-003**	**0.0124**	**0.0000**	**66.6265**	**66.6265**	**2.8400e-003**	**0.0000**	**66.6975**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0922	0.8346	0.7329	1.1700e-003		0.0486	0.0486		0.0457	0.0457	0.0000	100.7503	100.7503	0.0246	0.0000	101.3648
Total	**0.0922**	**0.8346**	**0.7329**	**1.1700e-003**		**0.0486**	**0.0486**		**0.0457**	**0.0457**	**0.0000**	**100.7503**	**100.7503**	**0.0246**	**0.0000**	**101.3648**

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	3.6600e-003	0.1048	0.0269	2.5000e-004	6.0100e-003	5.4000e-004	6.5400e-003	1.7400e-003	5.1000e-004	2.2500e-003	0.0000	23.8289	23.8289	1.1700e-003	0.0000	23.8581
Worker	7.7300e-003	5.5900e-003	0.0579	1.8000e-004	0.0183	1.2000e-004	0.0184	4.8600e-003	1.1000e-004	4.9800e-003	0.0000	16.0415	16.0415	3.9000e-004	0.0000	16.0513
Total	**0.0114**	**0.1104**	**0.0849**	**4.3000e-004**	**0.0243**	**6.6000e-004**	**0.0250**	**6.6000e-003**	**6.2000e-004**	**7.2300e-003**	**0.0000**	**39.8703**	**39.8703**	**1.5600e-003**	**0.0000**	**39.9094**

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	0.0922	0.8346	0.7329	1.1700e-003		0.0486	0.0486		0.0457	0.0457	0.0000	100.7502	100.7502	0.0246	0.0000	101.3647
Total	**0.0922**	**0.8346**	**0.7329**	**1.1700e-003**		**0.0486**	**0.0486**		**0.0457**	**0.0457**	**0.0000**	**100.7502**	**100.7502**	**0.0246**	**0.0000**	**101.3647**

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	3.6600e-003	0.1048	0.0269	2.5000e-004	6.0100e-003	5.4000e-004	6.5400e-003	1.7400e-003	5.1000e-004	2.2500e-003	0.0000	23.8289	23.8289	1.1700e-003	0.0000	23.8581
Worker	7.7300e-003	5.5900e-003	0.0579	1.8000e-004	0.0183	1.2000e-004	0.0184	4.8600e-003	1.1000e-004	4.9800e-003	0.0000	16.0415	16.0415	3.9000e-004	0.0000	16.0513
Total	**0.0114**	**0.1104**	**0.0849**	**4.3000e-004**	**0.0243**	**6.6000e-004**	**0.0250**	**6.6000e-003**	**6.2000e-004**	**7.2300e-003**	**0.0000**	**39.8703**	**39.8703**	**1.5600e-003**	**0.0000**	**39.9094**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	2.7900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0164**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

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	5.0000e-004	3.6000e-004	3.7700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0437	1.0437	3.0000e-005	0.0000	1.0443
Total	**5.0000e-004**	**3.6000e-004**	**3.7700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0437**	**1.0437**	**3.0000e-005**	**0.0000**	**1.0443**

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	2.7900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0164**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

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	5.0000e-004	3.6000e-004	3.7700e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0437	1.0437	3.0000e-005	0.0000	1.0443
Total	**5.0000e-004**	**3.6000e-004**	**3.7700e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0437**	**1.0437**	**3.0000e-005**	**0.0000**	**1.0443**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6374					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.6398**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	2.7600e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7654	0.7654	2.0000e-005	0.0000	0.7658
Total	**3.7000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**8.7000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7654**	**0.7654**	**2.0000e-005**	**0.0000**	**0.7658**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6374					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	**0.6398**	**0.0168**	**0.0183**	**3.0000e-005**		**1.1100e-003**	**1.1100e-003**		**1.1100e-003**	**1.1100e-003**	**0.0000**	**2.5533**	**2.5533**	**2.0000e-004**	**0.0000**	**2.5582**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.7000e-004	2.7600e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.8000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7654	0.7654	2.0000e-005	0.0000	0.7658
Total	**3.7000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**8.7000e-004**	**1.0000e-005**	**8.8000e-004**	**2.3000e-004**	**1.0000e-005**	**2.4000e-004**	**0.0000**	**0.7654**	**0.7654**	**2.0000e-005**	**0.0000**	**0.7658**

Acorn Business Park - Subsections A and C

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	112.90	1000sqft	2.59	112,896.00	0
Other Asphalt Surfaces	2.62	Acre	5.59	0.00	0
Other Non-Asphalt Surfaces	0.51	Acre	0.51	0.00	0
Parking Lot	539.00	Space	4.85	215,600.00	0
Regional Shopping Center	33.60	1000sqft	0.77	33,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	11/12/2021	8/17/2021
tblConstructionPhase	PhaseEndDate	9/17/2021	7/1/2021
tblConstructionPhase	PhaseEndDate	7/24/2020	7/16/2020
tblConstructionPhase	PhaseEndDate	10/15/2021	7/24/2021
tblConstructionPhase	PhaseEndDate	6/12/2020	6/11/2020
tblConstructionPhase	PhaseStartDate	10/16/2021	7/25/2021
tblConstructionPhase	PhaseStartDate	7/25/2020	7/17/2020
tblConstructionPhase	PhaseStartDate	6/13/2020	6/12/2020
tblConstructionPhase	PhaseStartDate	9/18/2021	7/2/2021
tblLandUse	LandUseSquareFeet	112,900.00	112,896.00
tblLandUse	LandUseSquareFeet	114,127.20	0.00
tblLandUse	LandUseSquareFeet	22,215.60	0.00
tblLandUse	LotAcreage	2.62	5.59

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2912	2.8586	2.1829	5.0100e-003	0.3297	0.1271	0.4568	0.1333	0.1186	0.2519	0.0000	447.3575	447.3575	0.0797	0.0000	449.3501
2021	1.0350	2.0039	1.8328	4.4300e-003	0.1184	0.0841	0.2025	0.0322	0.0790	0.1112	0.0000	396.7526	396.7526	0.0575	0.0000	398.1891
Maximum	**1.0350**	**2.8586**	**2.1829**	**5.0100e-003**	**0.3297**	**0.1271**	**0.4568**	**0.1333**	**0.1186**	**0.2519**	**0.0000**	**447.3575**	**447.3575**	**0.0797**	**0.0000**	**449.3501**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.2912	2.8586	2.1829	5.0100e-003	0.3297	0.1271	0.4568	0.1333	0.1186	0.2519	0.0000	447.3572	447.3572	0.0797	0.0000	449.3498
2021	1.0350	2.0039	1.8328	4.4300e-003	0.1184	0.0841	0.2025	0.0322	0.0790	0.1112	0.0000	396.7524	396.7524	0.0575	0.0000	398.1888
Maximum	**1.0350**	**2.8586**	**2.1829**	**5.0100e-003**	**0.3297**	**0.1271**	**0.4568**	**0.1333**	**0.1186**	**0.2519**	**0.0000**	**447.3572**	**447.3572**	**0.0797**	**0.0000**	**449.3498**

	ROG	NOx	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2020**	**8-31-2020**	1.6132	1.6132
2	**9-1-2020**	**11-30-2020**	1.1360	1.1360
3	**12-1-2020**	**2-28-2021**	1.0556	1.0556
4	**3-1-2021**	**5-31-2021**	1.0380	1.0380
5	**6-1-2021**	**8-31-2021**	1.3546	1.3546
		Highest	1.6132	1.6132

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	6/1/2020	6/11/2020	6	10	
2	Grading	Grading	6/12/2020	7/16/2020	6	30	
3	Building Construction	Building Construction	7/17/2020	7/1/2021	6	300	
4	Paving	Paving	7/2/2021	7/24/2021	6	20	
5	Architectural Coating	Architectural Coating	7/25/2021	8/17/2021	6	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 10.95

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 219,744; Non-Residential Outdoor: 73,248; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	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	1	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	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	137.00	59.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	27.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0903**	**0.0110**	**0.1013**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.2000e-004	2.2600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6262	0.6262	2.0000e-005	0.0000	0.6266
Total	**3.0000e-004**	**2.2000e-004**	**2.2600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6262**	**0.6262**	**2.0000e-005**	**0.0000**	**0.6266**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	**0.0204**	**0.2121**	**0.1076**	**1.9000e-004**	**0.0903**	**0.0110**	**0.1013**	**0.0497**	**0.0101**	**0.0598**	**0.0000**	**16.7153**	**16.7153**	**5.4100e-003**	**0.0000**	**16.8505**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.2000e-004	2.2600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6262	0.6262	2.0000e-005	0.0000	0.6266
Total	**3.0000e-004**	**2.2000e-004**	**2.2600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6262**	**0.6262**	**2.0000e-005**	**0.0000**	**0.6266**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0668	0.7530	0.4794	9.3000e-004		0.0326	0.0326		0.0300	0.0300	0.0000	81.7264	81.7264	0.0264	0.0000	82.3872
Total	**0.0668**	**0.7530**	**0.4794**	**9.3000e-004**	**0.1301**	**0.0326**	**0.1627**	**0.0540**	**0.0300**	**0.0840**	**0.0000**	**81.7264**	**81.7264**	**0.0264**	**0.0000**	**82.3872**

Unmitigated Construction Off-Site

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

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0100e-003	7.3000e-004	7.5400e-003	2.0000e-005	2.3800e-003	2.0000e-005	2.4000e-003	6.3000e-004	1.0000e-005	6.5000e-004	0.0000	2.0874	2.0874	5.0000e-005	0.0000	2.0887
Total	**1.0100e-003**	**7.3000e-004**	**7.5400e-003**	**2.0000e-005**	**2.3800e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**1.0000e-005**	**6.5000e-004**	**0.0000**	**2.0874**	**2.0874**	**5.0000e-005**	**0.0000**	**2.0887**

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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0668	0.7530	0.4794	9.3000e-004		0.0326	0.0326		0.0300	0.0300	0.0000	81.7263	81.7263	0.0264	0.0000	82.3871
Total	**0.0668**	**0.7530**	**0.4794**	**9.3000e-004**	**0.1301**	**0.0326**	**0.1627**	**0.0540**	**0.0300**	**0.0840**	**0.0000**	**81.7263**	**81.7263**	**0.0264**	**0.0000**	**82.3871**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0100e-003	7.3000e-004	7.5400e-003	2.0000e-005	2.3800e-003	2.0000e-005	2.4000e-003	6.3000e-004	1.0000e-005	6.5000e-004	0.0000	2.0874	2.0874	5.0000e-005	0.0000	2.0887
Total	**1.0100e-003**	**7.3000e-004**	**7.5400e-003**	**2.0000e-005**	**2.3800e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**1.0000e-005**	**6.5000e-004**	**0.0000**	**2.0874**	**2.0874**	**5.0000e-005**	**0.0000**	**2.0887**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1526	1.3814	1.2131	1.9400e-003		0.0804	0.0804		0.0756	0.0756	0.0000	166.7592	166.7592	0.0407	0.0000	167.7763
Total	**0.1526**	**1.3814**	**1.2131**	**1.9400e-003**		**0.0804**	**0.0804**		**0.0756**	**0.0756**	**0.0000**	**166.7592**	**166.7592**	**0.0407**	**0.0000**	**167.7763**

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	0.0170	0.4873	0.1252	1.1600e-003	0.0279	2.4900e-003	0.0304	8.0800e-003	2.3800e-003	0.0105	0.0000	110.8101	110.8101	5.4300e-003	0.0000	110.9459
Worker	0.0331	0.0239	0.2478	7.6000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0213	0.0000	68.6329	68.6329	1.6900e-003	0.0000	68.6750
Total	**0.0501**	**0.5112**	**0.3730**	**1.9200e-003**	**0.1062**	**3.0100e-003**	**0.1092**	**0.0289**	**2.8600e-003**	**0.0318**	**0.0000**	**179.4429**	**179.4429**	**7.1200e-003**	**0.0000**	**179.6209**

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	0.1526	1.3814	1.2131	1.9400e-003		0.0804	0.0804		0.0756	0.0756	0.0000	166.7590	166.7590	0.0407	0.0000	167.7761
Total	**0.1526**	**1.3814**	**1.2131**	**1.9400e-003**		**0.0804**	**0.0804**		**0.0756**	**0.0756**	**0.0000**	**166.7590**	**166.7590**	**0.0407**	**0.0000**	**167.7761**

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	0.0170	0.4873	0.1252	1.1600e-003	0.0279	2.4900e-003	0.0304	8.0800e-003	2.3800e-003	0.0105	0.0000	110.8101	110.8101	5.4300e-003	0.0000	110.9459
Worker	0.0331	0.0239	0.2478	7.6000e-004	0.0782	5.2000e-004	0.0788	0.0208	4.8000e-004	0.0213	0.0000	68.6329	68.6329	1.6900e-003	0.0000	68.6750
Total	**0.0501**	**0.5112**	**0.3730**	**1.9200e-003**	**0.1062**	**3.0100e-003**	**0.1092**	**0.0289**	**2.8600e-003**	**0.0318**	**0.0000**	**179.4429**	**179.4429**	**7.1200e-003**	**0.0000**	**179.6209**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1483	1.3597	1.2929	2.1000e-003		0.0748	0.0748		0.0703	0.0703	0.0000	180.6771	180.6771	0.0436	0.0000	181.7668
Total	**0.1483**	**1.3597**	**1.2929**	**2.1000e-003**		**0.0748**	**0.0748**		**0.0703**	**0.0703**	**0.0000**	**180.6771**	**180.6771**	**0.0436**	**0.0000**	**181.7668**

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	0.0151	0.4757	0.1208	1.2400e-003	0.0303	1.0700e-003	0.0313	8.7500e-003	1.0200e-003	9.7700e-003	0.0000	118.9638	118.9638	5.5200e-003	0.0000	119.1019
Worker	0.0331	0.0231	0.2447	7.9000e-004	0.0848	5.5000e-004	0.0853	0.0225	5.1000e-004	0.0231	0.0000	71.7163	71.7163	1.6300e-003	0.0000	71.7570
Total	**0.0482**	**0.4988**	**0.3656**	**2.0300e-003**	**0.1150**	**1.6200e-003**	**0.1166**	**0.0313**	**1.5300e-003**	**0.0328**	**0.0000**	**190.6801**	**190.6801**	**7.1500e-003**	**0.0000**	**190.8589**

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	0.1483	1.3597	1.2929	2.1000e-003		0.0748	0.0748		0.0703	0.0703	0.0000	180.6769	180.6769	0.0436	0.0000	181.7666
Total	**0.1483**	**1.3597**	**1.2929**	**2.1000e-003**		**0.0748**	**0.0748**		**0.0703**	**0.0703**	**0.0000**	**180.6769**	**180.6769**	**0.0436**	**0.0000**	**181.7666**

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	0.0151	0.4757	0.1208	1.2400e-003	0.0303	1.0700e-003	0.0313	8.7500e-003	1.0200e-003	9.7700e-003	0.0000	118.9638	118.9638	5.5200e-003	0.0000	119.1019
Worker	0.0331	0.0231	0.2447	7.9000e-004	0.0848	5.5000e-004	0.0853	0.0225	5.1000e-004	0.0231	0.0000	71.7163	71.7163	1.6300e-003	0.0000	71.7570
Total	**0.0482**	**0.4988**	**0.3656**	**2.0300e-003**	**0.1150**	**1.6200e-003**	**0.1166**	**0.0313**	**1.5300e-003**	**0.0328**	**0.0000**	**190.6801**	**190.6801**	**7.1500e-003**	**0.0000**	**190.8589**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0262**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.2000e-004	3.4400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0067	1.0067	2.0000e-005	0.0000	1.0073
Total	**4.6000e-004**	**3.2000e-004**	**3.4400e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0067**	**1.0067**	**2.0000e-005**	**0.0000**	**1.0073**

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	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	0.0137					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0262**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.2000e-004	3.4400e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	1.0067	1.0067	2.0000e-005	0.0000	1.0073
Total	**4.6000e-004**	**3.2000e-004**	**3.4400e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**1.0067**	**1.0067**	**2.0000e-005**	**0.0000**	**1.0073**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8089					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.8110**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.8000e-004	6.1800e-003	2.0000e-005	2.1400e-003	1.0000e-005	2.1600e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8120	1.8120	4.0000e-005	0.0000	1.8131
Total	**8.4000e-004**	**5.8000e-004**	**6.1800e-003**	**2.0000e-005**	**2.1400e-003**	**1.0000e-005**	**2.1600e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.8120**	**1.8120**	**4.0000e-005**	**0.0000**	**1.8131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8089					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.8110**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.4000e-004	5.8000e-004	6.1800e-003	2.0000e-005	2.1400e-003	1.0000e-005	2.1600e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.8120	1.8120	4.0000e-005	0.0000	1.8131
Total	**8.4000e-004**	**5.8000e-004**	**6.1800e-003**	**2.0000e-005**	**2.1400e-003**	**1.0000e-005**	**2.1600e-003**	**5.7000e-004**	**1.0000e-005**	**5.8000e-004**	**0.0000**	**1.8120**	**1.8120**	**4.0000e-005**	**0.0000**	**1.8131**

Acorn Business Park - Buildout - Contra Costa County, Annual

Acorn Business Park - Buildout

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	33.60	1000sqft	0.77	33,600.00	0
Office Park	112.90	1000sqft	2.59	112,896.00	0
Other Asphalt Surfaces	4.54	Acre	4.54	197,762.40	0
Other Non-Asphalt Surfaces	4.08	Acre	4.08	177,724.80	0
Parking Lot	552.00	Space	4.97	220,800.00	0
Unrefrigerated Warehouse-No Rail	122.02	1000sqft	2.80	122,020.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	112,900.00	112,896.00
tblVehicleTrips	PB_TP	11.00	10.00
tblVehicleTrips	PR_TP	54.00	55.00

tblVehicleTrips	ST_TR	49.97	85.23
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	1.64	9.74
tblVehicleTrips	SU_TR	25.24	85.23
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	0.76	9.74
tblVehicleTrips	WD_TR	42.70	85.23
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	11.42	9.74

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2404	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158
Energy	0.0156	0.1415	0.1189	8.5000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	1,048.4354	1,048.4354	0.0434	0.0112	1,052.8553
Mobile	1.0642	4.6916	11.4733	0.0371	3.1348	0.0325	3.1673	0.8412	0.0304	0.8716	0.0000	3,391.1596	3,391.1596	0.1310	0.0000	3,394.4340
Waste						0.0000	0.0000		0.0000	0.0000	51.7586	0.0000	51.7586	3.0589	0.0000	128.2298
Water						0.0000	0.0000		0.0000	0.0000	16.1077	93.9970	110.1046	1.6587	0.0399	163.4743
Total	**2.3202**	**4.8332**	**11.5999**	**0.0379**	**3.1348**	**0.0433**	**3.1781**	**0.8412**	**0.0412**	**0.8824**	**67.8663**	**4,533.6067**	**4,601.4730**	**4.8919**	**0.0511**	**4,739.0092**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2404	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158

Energy	0.0156	0.1415	0.1189	8.5000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	1,030.1079	1,030.1079	0.0426	0.0110	1,034.4561
Mobile	1.0256	4.4070	10.5292	0.0330	2.7649	0.0293	2.7942	0.7419	0.0274	0.7693	0.0000	3,023.8376	3,023.8376	0.1211	0.0000	3,026.8654
Waste						0.0000	0.0000		0.0000	0.0000	25.8793	0.0000	25.8793	1.5294	0.0000	64.1149
Water						0.0000	0.0000		0.0000	0.0000	12.8861	77.1541	90.0402	1.3270	0.0320	132.7436
Total	**2.2816**	**4.5486**	**10.6558**	**0.0339**	**2.7649**	**0.0401**	**2.8049**	**0.7419**	**0.0382**	**0.7801**	**38.7654**	**4,131.1144**	**4,169.8799**	**3.0202**	**0.0430**	**4,258.1958**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.66**	**5.89**	**8.14**	**10.61**	**11.80**	**7.57**	**11.74**	**11.80**	**7.47**	**11.60**	**42.88**	**8.88**	**9.38**	**38.26**	**15.92**	**10.15**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0256	4.4070	10.5292	0.0330	2.7649	0.0293	2.7942	0.7419	0.0274	0.7693	0.0000	3,023.8376	3,023.8376	0.1211	0.0000	3,026.8654
Unmitigated	1.0642	4.6916	11.4733	0.0371	3.1348	0.0325	3.1673	0.8412	0.0304	0.8716	0.0000	3,391.1596	3,391.1596	0.1310	0.0000	3,394.4340

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	2,863.73	2,863.73	2863.73	5,099,779	4,498,005
Unrefrigerated Warehouse-No Rail	184.25	184.25	184.25	537,921	474,446
Office Park	1,099.65	1,099.65	1099.65	2,755,985	2,430,779
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		

Parking Lot	0.00	0.00	0.00		
Total	4,147.62	4,147.62	4,147.62	8,393,684	7,403,229

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
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	55	35	10
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Office Park	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Other Asphalt Surfaces	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Other Non-Asphalt Surfaces	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871

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	876.0250	876.0250	0.0396	8.2000e-003	879.4575
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	894.3524	894.3524	0.0404	8.3700e-003	897.8568
NaturalGas Mitigated	0.0156	0.1415	0.1189	8.5000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	154.0829	154.0829	2.9500e-003	2.8200e-003	154.9986
NaturalGas Unmitigated	0.0156	0.1415	0.1189	8.5000e-004		0.0108	0.0108		0.0108	0.0108	0.0000	154.0829	154.0829	2.9500e-003	2.8200e-003	154.9986

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					
Office Park	2.38436e+006	0.0129	0.1169	0.0982	7.0000e-004		8.8800e-003	8.8800e-003		8.8800e-003	8.8800e-003	0.0000	127.2387	127.2387	2.4400e-003	2.3300e-003	127.9948
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
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	79632	4.3000e-004	3.9000e-003	3.2800e-003	2.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	4.2495	4.2495	8.0000e-005	8.0000e-005	4.2747
Unrefrigerated Warehouse-No Rail	423409	2.2800e-003	0.0208	0.0174	1.2000e-004		1.5800e-003	1.5800e-003		1.5800e-003	1.5800e-003	0.0000	22.5947	22.5947	4.3000e-004	4.1000e-004	22.7290
Total		**0.0156**	**0.1415**	**0.1189**	**8.4000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**	**0.0000**	**154.0829**	**154.0829**	**2.9500e-003**	**2.8200e-003**	**154.9986**

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					
Office Park	2.38436e+006	0.0129	0.1169	0.0982	7.0000e-004		8.8800e-003	8.8800e-003		8.8800e-003	8.8800e-003	0.0000	127.2387	127.2387	2.4400e-003	2.3300e-003	127.9948
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
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	79632	4.3000e-004	3.9000e-003	3.2800e-003	2.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	4.2495	4.2495	8.0000e-005	8.0000e-005	4.2747
Unrefrigerated Warehouse-No	423409	2.2800e-003	0.0208	0.0174	1.2000e-004		1.5800e-003	1.5800e-003		1.5800e-003	1.5800e-003	0.0000	22.5947	22.5947	4.3000e-004	4.1000e-004	22.7290
Total		**0.0156**	**0.1415**	**0.1189**	**8.4000e-004**		**0.0108**	**0.0108**		**0.0108**	**0.0108**	**0.0000**	**154.0829**	**154.0829**	**2.9500e-003**	**2.8200e-003**	**154.9986**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Office Park	2.20712e+006	642.0756	0.0290	6.0100e-003	644.5914
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	77280	22.4816	1.0200e-003	2.1000e-004	22.5697
Regional Shopping Center	359184	104.4907	4.7200e-003	9.8000e-004	104.9002
Unrefrigerated Warehouse-No	430731	125.3045	5.6700e-003	1.1700e-003	125.7955
Total		**894.3524**	**0.0404**	**8.3700e-003**	**897.8568**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Office Park	2.19662e+006	639.0210	0.0289	5.9800e-003	641.5249
Other Asphalt Surfaces	-10500	-3.0546	-0.0001	0.0000	-3.0665
Other Non-Asphalt Surfaces	-10500	-3.0546	-0.0001	0.0000	-3.0665
Parking Lot	66780	19.4271	8.8000e-004	1.8000e-004	19.5032
Regional Shopping Center	348684	101.4362	4.5900e-003	9.5000e-004	101.8336
Unrefrigerated Warehouse-No Rail	420231	122.2499	5.5300e-003	1.1400e-003	122.7289
Total		**876.0250**	**0.0396**	**8.1900e-003**	**879.4575**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2404	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158
Unmitigated	1.2404	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158

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	0.1525					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0872					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.1000e-004	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158
Total	**1.2404**	**7.0000e-005**	**7.6500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0148**	**0.0148**	**4.0000e-005**	**0.0000**	**0.0158**

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	0.1525					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0872					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.1000e-004	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0148	0.0148	4.0000e-005	0.0000	0.0158
Total	**1.2404**	**7.0000e-005**	**7.6500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0148**	**0.0148**	**4.0000e-005**	**0.0000**	**0.0158**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	90.0402	1.3270	0.0320	132.7436
Unmitigated	110.1046	1.6587	0.0399	163.4743

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Office Park	20.0661 / 12.2986	50.4749	0.6559	0.0159	71.5950
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.48884 / 1.52542	6.2605	0.0814	1.9700e-003	8.8800
Unrefrigerated Warehouse-No	28.2171 / 0	53.3692	0.9215	0.0221	82.9993
Total		**110.1046**	**1.6587**	**0.0400**	**163.4743**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Office Park	16.0529 / 11.5484	42.1205	0.5248	0.0127	59.0234
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.99107 / 1.43237	5.2243	0.0651	1.5700e-003	7.3208
Unrefrigerated Warehouse-No Rail	22.5737 / 0	42.6954	0.7372	0.0177	66.3994
Total		**90.0402**	**1.3270**	**0.0320**	**132.7436**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.8793	1.5294	0.0000	64.1149

Unmitigated	51.7586	3.0589	0.0000	128.2298

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Office Park	105	21.3141	1.2596	0.0000	52.8047
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	35.28	7.1615	0.4232	0.0000	17.7424
Unrefrigerated Warehouse-No Rail	114.7	23.2831	1.3760	0.0000	57.6828
Total		**51.7586**	**3.0588**	**0.0000**	**128.2298**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Office Park	52.5	10.6570	0.6298	0.0000	26.4023
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000

Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	17.64	3.5808	0.2116	0.0000	8.8712
Unrefrigerated Warehouse-No Rail	57.35	11.6415	0.6880	0.0000	28.8414
Total		**25.8793**	**1.5294**	**0.0000**	**64.1149**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Acorn Business Park - Buildout

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	33.60	1000sqft	0.77	33,600.00	0
Office Park	112.90	1000sqft	2.59	112,896.00	0
Other Asphalt Surfaces	4.54	Acre	4.54	197,762.40	0
Other Non-Asphalt Surfaces	4.08	Acre	4.08	177,724.80	0
Parking Lot	552.00	Space	4.97	220,800.00	0
Unrefrigerated Warehouse-No Rail	122.02	1000sqft	2.80	122,020.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Vehicle Trips - Traffic Study

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	112,900.00	112,896.00
tblVehicleTrips	PB_TP	11.00	10.00

tblVehicleTrips	PR_TP	54.00	55.00
tblVehicleTrips	ST_TR	49.97	85.23
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	1.64	9.74
tblVehicleTrips	SU_TR	25.24	85.23
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	0.76	9.74
tblVehicleTrips	WD_TR	42.70	85.23
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	11.42	9.74

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8007	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935
Energy	0.0853	0.7756	0.6515	4.6500e-003		0.0589	0.0589		0.0589	0.0589		930.6704	930.6704	0.0178	0.0171	936.2009
Mobile	5.7216	26.2955	66.6128	0.2012	17.8297	0.1800	18.0097	4.7705	0.1684	4.9389		20,289.8517	20,289.8517	0.8182		20,310.3054
Total	**12.6076**	**27.0719**	**67.3493**	**0.2059**	**17.8297**	**0.2392**	**18.0689**	**4.7705**	**0.2276**	**4.9981**		**21,220.7035**	**21,220.7035**	**0.8365**	**0.0171**	**21,246.6999**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8007	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935
Energy	0.0853	0.7756	0.6515	4.6500e-003		0.0589	0.0589		0.0589	0.0589		930.6704	930.6704	0.0178	0.0171	936.2009
Mobile	5.5078	24.6627	61.4182	0.1793	15.7258	0.1619	15.8877	4.2076	0.1514	4.3590		18,084.5994	18,084.5994	0.7587		18,103.5656
Total	**12.3938**	**25.4390**	**62.1546**	**0.1840**	**15.7258**	**0.2211**	**15.9469**	**4.2076**	**0.2107**	**4.4183**		**19,015.4512**	**19,015.4512**	**0.7770**	**0.0171**	**19,039.9601**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.70**	**6.03**	**7.71**	**10.63**	**11.80**	**7.55**	**11.74**	**11.80**	**7.43**	**11.60**	**0.00**	**10.39**	**10.39**	**7.11**	**0.00**	**10.39**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Diversity

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5078	24.6627	61.4182	0.1793	15.7258	0.1619	15.8877	4.2076	0.1514	4.3590		18,084.5994	18,084.5994	0.7587		18,103.5656
Unmitigated	5.7216	26.2955	66.6128	0.2012	17.8297	0.1800	18.0097	4.7705	0.1684	4.9389		20,289.8517	20,289.8517	0.8182		20,310.3054

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	2,863.73	2,863.73	2863.73	5,099,779	4,498,005
Unrefrigerated Warehouse-No Rail	184.25	184.25	184.25	537,921	474,446
Office Park	1,099.65	1,099.65	1099.65	2,755,985	2,430,779
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	4,147.62	4,147.62	4,147.62	8,393,684	7,403,229

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
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	55	35	10
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00	92	5	3
Office Park	9.50	7.30	7.30	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Office Park	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Other Asphalt Surfaces	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Other Non-Asphalt Surfaces	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871

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	lb/day										lb/day					
NaturalGas Mitigated	0.0853	0.7756	0.6515	4.6500e-003		0.0589	0.0589		0.0589	0.0589		930.6704	930.6704	0.0178	0.0171	936.2009
NaturalGas Unmitigated	0.0853	0.7756	0.6515	4.6500e-003		0.0589	0.0589		0.0589	0.0589		930.6704	930.6704	0.0178	0.0171	936.2009

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Office Park	6532.5	0.0705	0.6404	0.5380	3.8400e-003		0.0487	0.0487		0.0487	0.0487		768.5297	768.5297	0.0147	0.0141	773.0967
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
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	218.17	2.3500e-003	0.0214	0.0180	1.3000e-004		1.6300e-003	1.6300e-003		1.6300e-003	1.6300e-003		25.6670	25.6670	4.9000e-004	4.7000e-004	25.8196
Unrefrigerated Warehouse-No Rail	1160.03	0.0125	0.1137	0.0955	6.8000e-004		8.6400e-003	8.6400e-003		8.6400e-003	8.6400e-003		136.4736	136.4736	2.6200e-003	2.5000e-003	137.2846
Total		**0.0853**	**0.7756**	**0.6515**	**4.6500e-003**		**0.0589**	**0.0589**		**0.0589**	**0.0589**		**930.6704**	**930.6704**	**0.0178**	**0.0171**	**936.2009**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Office Park	6.5325	0.0705	0.6404	0.5380	3.8400e-003		0.0487	0.0487		0.0487	0.0487		768.5297	768.5297	0.0147	0.0141	773.0967
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
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.21817	2.3500e-003	0.0214	0.0180	1.3000e-004		1.6300e-003	1.6300e-003		1.6300e-003	1.6300e-003		25.6670	25.6670	4.9000e-004	4.7000e-004	25.8196
Unrefrigerated Warehouse-No	1.16003	0.0125	0.1137	0.0955	6.8000e-004		8.6400e-003	8.6400e-003		8.6400e-003	8.6400e-003		136.4736	136.4736	2.6200e-003	2.5000e-003	137.2846
Total		**0.0853**	**0.7756**	**0.6515**	**4.6500e-003**		**0.0589**	**0.0589**		**0.0589**	**0.0589**		**930.6704**	**930.6704**	**0.0178**	**0.0171**	**936.2009**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8007	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935
Unmitigated	6.8007	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.9575					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9400e-003	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935
Total	**6.8007**	**7.8000e-004**	**0.0850**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**		**0.1815**	**0.1815**	**4.8000e-004**		**0.1935**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.9575					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.9400e-003	7.8000e-004	0.0850	1.0000e-005		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004		0.1815	0.1815	4.8000e-004		0.1935
Total	**6.8007**	**7.8000e-004**	**0.0850**	**1.0000e-005**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**		**0.1815**	**0.1815**	**4.8000e-004**		**0.1935**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

How to Use the Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities (GDF)

This distance multiplier tool refines the screening values for cancer risk and chronic hazard index found in the District's Stationary Source Screening Analysis Tool to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions (GDF's).

1. Obtain the GDF cancer risk and/or chronic hazard index from the District's Stationary Source Screening Analysis tool for facilities where the Plant No. is preceded with a 'G'. If the distance to the nearest receptor is less than 20 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk and/or chronic hazard index estimate.

2. Determine the shortest distance from the GDF to the nearest receptor.

3. In the table below, enter the cancer risk and/or chronic hazard index found in step 1 for the GDF in the row which aligns with the shortest distance from each GDF to the nearest receptor (found in step 2). If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 300 meters, use the multiplier 0.015. The resulting product is the adjusted cancer risk in a million or the adjusted chronic hazard index for the GDF.

Note: These distance adjustment multipliers may be used only for the screening level health risk values indicated in the District's Stationary Source Screening Analysis tool for gasoline dispensing facilities. This distance multiplier tool may not be used to adjust values from an HRA if an HRA for the facility was conducted.

Distance meters	Distance feet	Distance adjustment multiplier	Enter Cancer Risk	Adjusted Cancer Risk	Enter Chronic Hazard Index	Adjusted Chronic Hazard Index
130	426	0.058	12.65	0.73489249	0.018	0.001045697
135	443	0.055		0		0
140	459	0.052		0		0

Diesel Fuel Consumption Rates

Formula:

$$LPMH = (K \times GHP \times LF) \div KPL$$

Constants:

Desc	Symbol	Quantity	Units			
fuel consumption	K =	0.17	kg/brake hp-hour	1 Liter =	0.264172	gallons
weight	KPL =	0.84	kg/liter			

Construction Equipment

Phase / Type	GHP	LF	LPMH	GPH	Quantity	hrs/day	Total Days	Total Fuel (gals)
Site Preparation								
Rubber Tired Dozer	247	0.40	20.00	75.69	3	8	13	23,615
Tractor/loader/backhoe	97	0.37	7.26	27.50	4	8	13	11,438
Subtotal								*35,053*
Site Grading								
Excavators	158	0.38	12.15	46.00	1	8	37	13,615
Graders	187	0.41	15.52	58.74	1	8	37	17,386
Rubber Tired Dozers	247	0.4	20.00	75.69	1	8	37	22,404
Tractors/Loaders/Backhoes	97	0.37	7.26	27.50	3	8	37	24,416
Subtotal								*77,821*
Building Construction								
Cranes	231	0.29	13.56	51.32	1	7	183	65,742
Forklifts	89	0.2	3.60	13.64	3	8	183	59,891
Generator Sets	84	0.74	12.58	47.62	1	8	183	69,716
Tractors/Loaders/Backhoes	97	0.37	7.26	27.50	3	7	183	105,664
Welders	46	0.45	4.19	15.86	1	8	183	23,216
Subtotal								*324,230*
Paving								
Pavers	130	0.42	11.05	41.83	2	8	25	16,732
Paving Equipment	132	0.36	9.62	36.40	2	8	25	14,562
Rollers	80	0.38	6.15	23.29	2	8	25	9,316
Subtotal								*40,609*
Architectural Coating								
Air Compressors	78	0.48	7.58	28.68	1	6	25	*4,302*

Total Diesel Consumption ***482,016***

Diesel Fuel Consumption Rates

Formula:

$$LPMH = (K \times GHP \times LF) \div KPL$$

Constants:

Desc	Symbol	Quantity	Units			
fuel consumption	K =	0.17	kg/brake hp-hour	1 Liter =	0.264172	gallons
weight	KPL =	0.84	kg/liter			

Construction Equipment

Phase / Type	GHP	LF	LPMH	GPH	Quantity	hrs/day	Total Days	Total Fuel (gals)
Site Preparation								
Rubber Tired Dozer	247	0.40	20.00	75.69	3	8	10	18,166
Tractor/loader/backhoe	97	0.37	7.26	27.50	4	8	10	8,798
Subtotal								*26,964*
Site Grading								
Excavators	158	0.38	12.15	46.00	2	8	30	22,078
Graders	187	0.41	15.52	58.74	1	8	30	14,097
Rubber Tired Dozers	247	0.4	20.00	75.69	1	8	30	18,166
Scrapers	367	0.48	35.65	134.96	2	8	30	64,779
Tractors/Loaders/Backhoes	97	0.37	7.26	27.50	2	8	30	13,198
Subtotal								*132,317*
Building Construction								
Cranes	231	0.29	13.56	51.32	1	7	300	107,774
Forklifts	89	0.2	3.60	13.64	3	8	300	98,183
Generator Sets	84	0.74	12.58	47.62	1	8	300	114,289
Tractors/Loaders/Backhoes	97	0.37	7.26	27.50	3	7	300	173,219
Welders	46	0.45	4.19	15.86	1	8	300	38,060
Subtotal								*531,525*
Paving								
Pavers	130	0.42	11.05	41.83	2	8	20	13,385
Paving Equipment	132	0.36	9.62	36.40	2	8	20	11,650
Rollers	80	0.38	6.15	23.29	2	8	20	7,453
Subtotal								*32,487*
Architectural Coating								
Air Compressors	78	0.48	7.58	28.68	1	6	20	*3,442*

Total Diesel Consumption ***726,735***

Total Diesel Fuel Consumption

Project Component	Phase	Fuel Consumption (gallons)
Subsection B	Site Preparation	35,053
	Site Grading	77,821
	Building Construction	324,230
	Paving	40,609
	Architectural Coating	4,302
	Subtotal Fuel Consumption	**482,016**
Subsections A and C	Site Preparation	26,964
	Site Grading	132,317
	Building Construction	531,525
	Paving	32,487
	Architectural Coating	3,442
	Subtotal Fuel Consumption	**726,735**
Total Construction Fuel Consumption		**1,208,751**

Subsection B

Phase	Worker Trips per day	Vendor Trips per Day	Total Hauling Trips	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Total Days	Worker Vehicle Miles Traveld	Vendor Vehicle Miles Traveld	Hauling Vehicle Miles Traveled	Worker Fuel Economy	Vendor Fuel Economy	Hauling Fuel Economy	Total Annual Fuel Consumption (gallons)
Site Preparation	18	0	0	10.8	7.3	20	13	2527.2	0	0	26.2	6.1	6.1	96
Grading	15	0	700	10.8	7.3	20	37	5994	0	14000	26.2	6.1	6.1	2524
Building Construction	53	21	0	10.8	7.3	20	183	104749.2	28053.9	0	26.2	6.1	6.1	8597
Paving	15	0	0	10.8	7.3	20	25	4050	0	0	26.2	6.1	6.1	155
Architectural Coating	11	0	0	10.8	7.3	20	25	2970	0	0	26.2	6.1	6.1	113
Total														11,485

Subsections A and C

Phase	Worker Trips per day	Vendor Trips per Day	Total Hauling Trips	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Total Days	Worker Vehicle Miles Traveld	Vendor Vehicle Miles Traveld	Hauling Vehicle Miles Traveled	Worker Fuel Economy	Vendor Fuel Economy	Hauling Fuel Economy	Total Annual Fuel Consumption (gallons)
Site Preparation	18	0	0	10.8	7.3	20	10	1944	0	0	26.2	6.1	6.1	74
Grading	20	0	0	10.8	7.3	20	30	6480	0	0	26.2	6.1	6.1	247
Building Construction	137	59	0	10.8	7.3	20	300	443880	129210	0	26.2	6.1	6.1	38124
Paving	15	0	0	10.8	7.3	20	20	3240	0	0	26.2	6.1	6.1	124
Architectural Coating	27	0	0	10.8	7.3	20	20	5832	0	0	26.2	6.1	6.1	223
Total														38,792

Total **50,277**

Operational Fuel Use

Vehicle Type	Percent of Vehicle Trips	Daily Vehicle Miles Traveled	Annual Vehicle Miles Traveled	Average Fuel Economy (miles/gallon)	Total Daily Fuel Consumption (gallons)	Total Annual Fuel Consumption (gallons)
Passenger Cars	58.2%	11,811	4,310,885	34.2	345	126,049
Light Trucks	34.9%	7,069	2,580,314	26.2	270	98,485
Light-Heavy to Heavy-Heavy Diesel Trucks	5.7%	1,150	419,585	6.1	188	68,784
Other	0.7%	143	52,060	6.1	23	8,534
Motorcycles	0.5%	111	40,377	50	2	808
Total	100%	20,283	7,403,229	-	829	302,661

Land Use	Size	Title 24 Electricity Energy Intensity (KWhr/size/year)	Nontitle 24 Electricity Energy Intensity (KWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)
Office Park	112.9	7.28	8.40	3.87
Warehouse	122.02	0.32	1.07	2.14
Retail	33.6	2.76	2.68	5.25
Total				

Total Electricity Energy Demand (KWhr/size/year)	Total Electricity Demand (KWhr/year)
19.55	2,207
3.4	415
2.37	80
	2,702

Land Use	Size	Title 24 Natural Gas Energy Intensity (KBTU/size/year)	Nontitle 24 Natural Gas Energy Intensity (KBTU/size/year)	Total Natural Gas Energy Demand (KBTU/size/year)	Total Natural Gas Demand (KBTU/year)
Office Park	112.9	21.04	0.08	21.12	2,384
Warehouse	122.02	3.4	0.07	3.47	423
Retail	33.6	2.37	0	2.37	80
					2,887

Appendix B BIOLOGICAL RESOURCES

C.1 BIOLOGICAL RESOURCES ASSESSMENT

C.2 ADDITIONAL SPECIES ANALYZED LIST

APPENDIX B-1: BIOLOGICAL RESOURCES ASSESSMENT (REVISED)

Biological Resources Assessment
Acorn Business Park Property
City of Antioch, Contra County, California

Antioch, California, USGS 7.5-Minute Topographic Quadrangle Map
Section 21, Township 2N, Range 2E

PREPARED FOR:
ACORN SELF STORAGE
J.M.I. PROPERTIES CORPORATION
8117 Marsh Creek Road
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(925) 788-9571
Contact: Jim Moita, Owner

Prepared by:

Touré Environmental Engineering

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Contact: T'Shaka Touré, Project Biologist

October 15, 2018
(revised)

TABLE OF CONTENTS

LIST OF EXHIBITS

SECTION 1: SUMMARY

A biological resource assessment survey was conducted by Touré Environmental Engineering within the 19.75-acre Acorn Business Park Property (Project) on June 10, 2018. The location of the project site corresponds to Antioch, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle. This report contains results of the presence/absence survey conducted for general and special-status wildlife and plant species during the June 10, 2018 field season by ***Touré Environmental Engineering*** biologist, T'Shaka Toure.

SECTION 2: INTRODUCTION

On behalf of Acorn Self Storage, Touré Environmental Engineering conducted a biological resources assessment to document existing biological conditions within the 19.75-acre property located in the City of Antioch, Contra Costa County, California. The field survey results presented in this report provides information regarding the potential impacts to biological resources associated with the project site. The environmental policies and regulations pertinent to the project site are also discussed in this report.

The purpose of the biological resources assessment survey is listed below:

- Generally, characterize all habitat types within the project site.
- Determine the presence or absence of habitat suitable for special-status plant and wildlife species.
- Determine the presence or absence of waters of the U.S. and waters of the State, including wetlands.
- Determine the presence or absence of other sensitive resources within the project site.
- Provide compliance with the California Environmental Quality Act (CEQA).

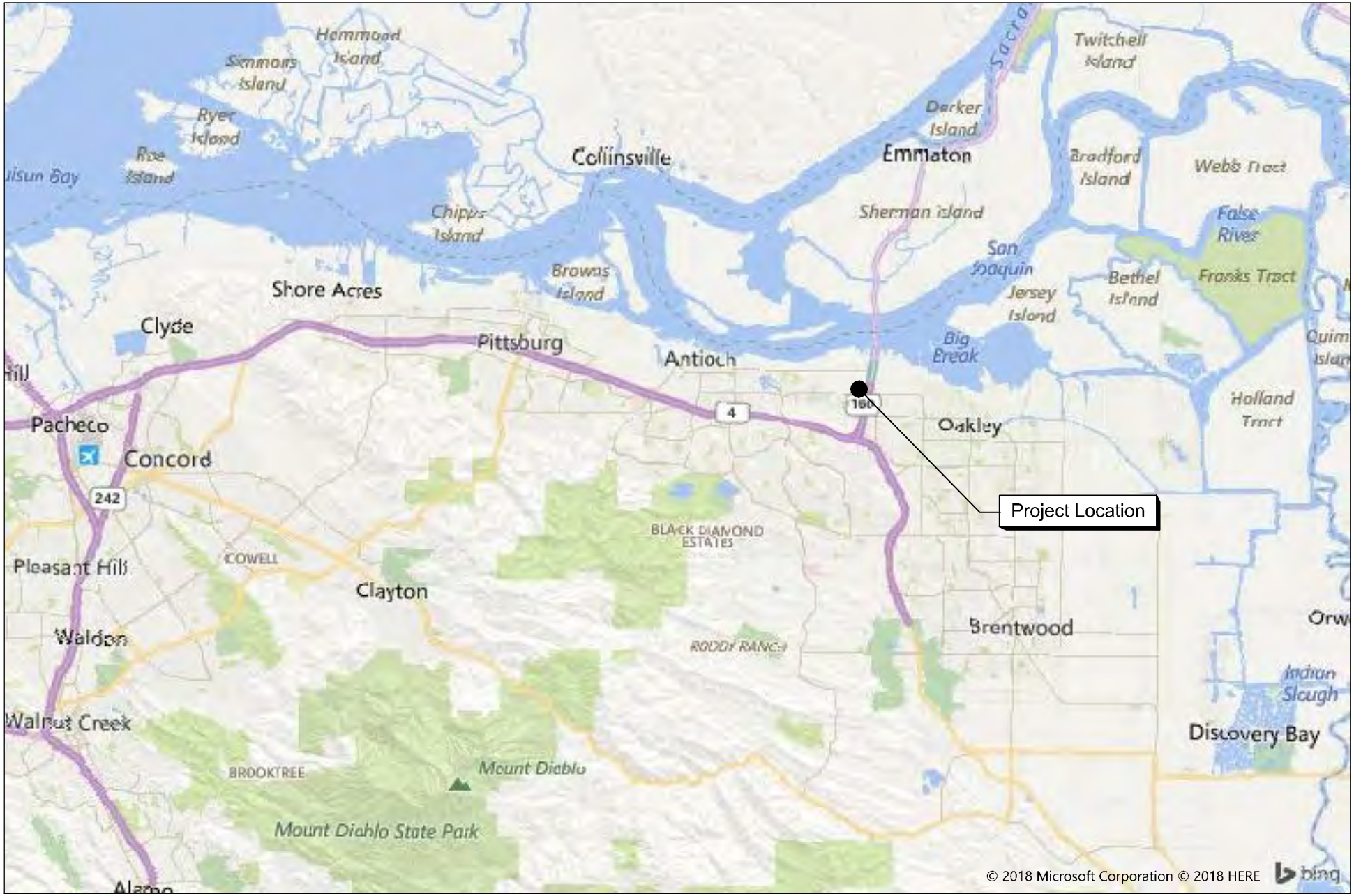
2.1 - Project Site Location

The location of the project site corresponds to Section 21, Township 2N, Range 2E Antioch, *California* USGS 7.5-minute topographic quadrangle [Exhibits 1-3]. The project site is specifically located north of Eighteenth Street and east of Drive-In Way in the City of Antioch. The approximate center of the project site has a latitude/longitude corresponding to 38°00' 19"N and 121°46' 39"W.

The project site occurs west of State Route (SR-4). The project site is undeveloped ruderal flat land with non-native low-lying vegetation. The project site is frequently used by local residents for off-highway vehicle (OHV) recreational activities. Motorcycle and quad recreational activities were observed during the field site visit. The surrounding area consists of residential, commercial, major roadways, and a homeless encampment located adjacent the sidewalk along Eighteenth Street.

2.2 - Project Description

The project proposes to construct a self-storage facility for residents within the vicinity of the property. Construction activities will occur on the approximately 19.75-acres of undeveloped ruderal flat land. There are no building structures, trees, native vegetation, wetlands, riparian, drainage features, or wildlife movement corridors on the property.



Toure Associates

Specializing in biological & regulatory services

0 15000 30000 Feet

N

Exhibit 1
Regional Location Map

Acorn III Site Development Project
City of Antioch, Contra Costa County

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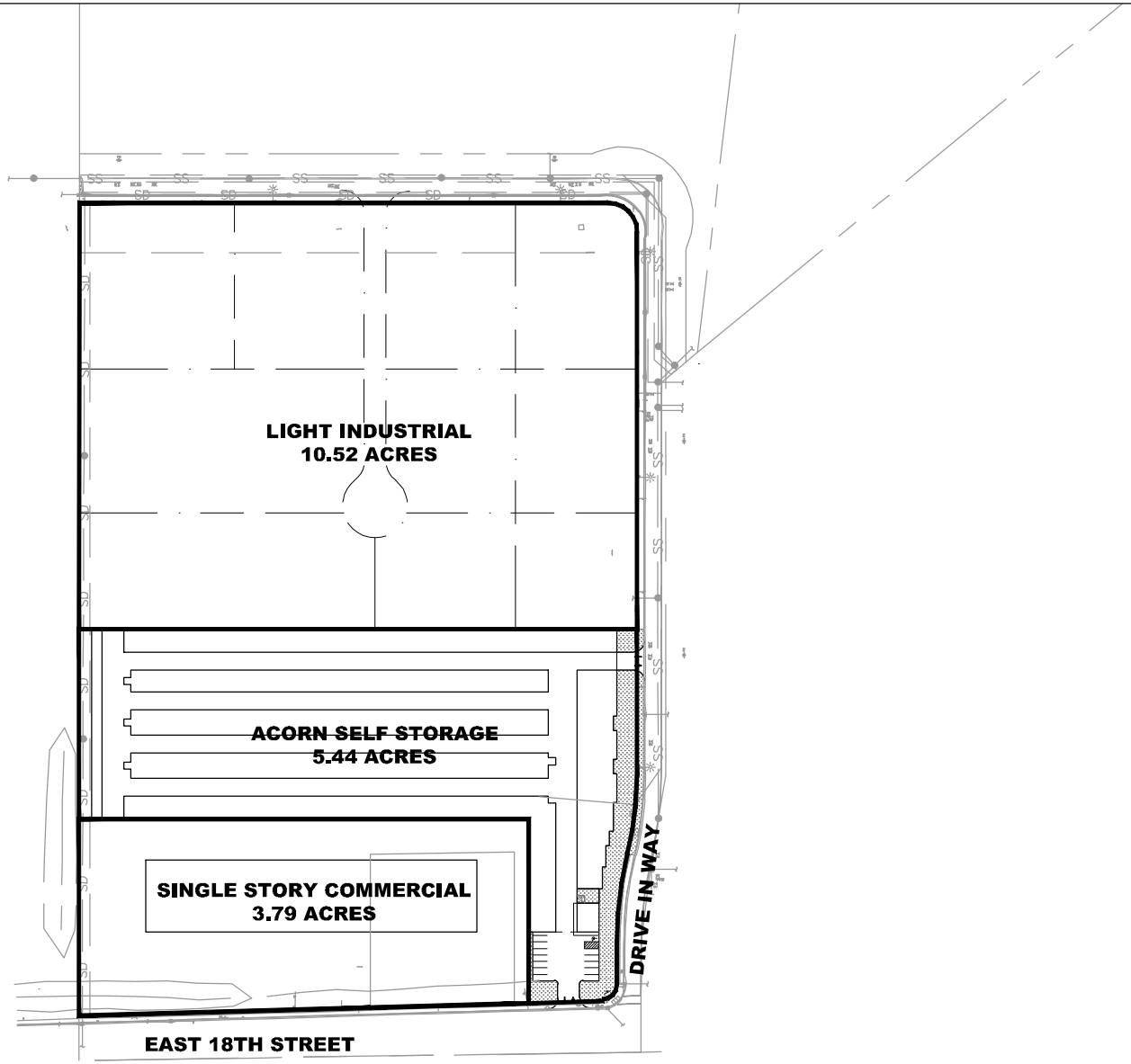
0 2000 4000 Feet

N

Exhibit 2
Vicinity Map

Acorn III Site Development Project
City of Antioch, Contra Costa County



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0 240 480 Feet

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Exhibit 3
Site Plan Map (Topographic)

Acorn III Site Development Project
City of Antioch, Contra Costa County

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0 240 480 Feet

N

Exhibit 4
Site Plan (Aerial)

Acorn III Site Development Project
City of Antioch, Contra Costa County

SECTION 3: METHODOLOGY

Analysis of the biological resources associated with the project site consisted of a review of previous literature recorded for the project area, relevant literature research, and a field site survey. The objective of the biological resources assessment were to (1) evaluate the 19.75-acre project site, (2) conduct presence/absence surveys for special-status species, and (3) conduct general biological survey on the project site. The entire project site was canvassed on foot by qualified Touré Environmental Engineering biologist, T'Shaka Touré. Prior to conducting the field study on the project site, the following information sources were reviewed:

- The Antioch, California USGS 7.5-minute topographic quadrangle, see Exhibits 1 and 2.
- Aerial photography of the project site (Google Earth 2018), see Exhibit 4.
- Natural Resource Conservation Service (NRCS) soils map of the project site, see Exhibit 5.
- California Natural Diversity Data Base (CNDDB) records for Antioch South, Contra Costa County, California and the surrounding eight quadrangles (Antioch North, Clayton, Honker Bay, Denverton, Birds Landing, Rio Vista, Jersey Island, and Brentwood).
- The California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants of California.

Pertinent literature review included the *Jepson Manual, Higher Plants of California* (Hickman 1993), *Amphibian and Reptile Species of Special Concern in California* (Jennings and Hayes 1994), *California Birds: Their Status and Distribution* (Small 1994), *Bird Species of Special Concern in California* (Remsen 1978), and *Mammalian Species of Special Concern in California* (Williams 1986).

3.1 - Literature Review

Sensitive biological resources present, or potentially present, were identified through a literature review and the CNDDB to include the reference material listed above, see Section 3. Evaluation of the property included a review of plant and wildlife species and their habitat preferences as it relates to the project site.

3.1.1 - Existing Environmental Documentation

As part of the literature reviews, Touré Environmental Engineering biologists examined existing environmental documentation for the project site and local vicinity. This documentation included previous biological studies conducted within the vicinity of the project site, literature pertaining to habitat requirements of special-status species potentially occurring in the vicinity, federal register listings, protocols, and species data provided by USFWS and CDFW.

3.1.2 - Topographic Maps and Aerial Photographs

Touré Environmental Engineering biologist reviewed current USGS 7.5-minute topographic quadrangle map(s) and aerial photographs as a preliminary analysis of the existing conditions within the project site and immediate vicinity. Information obtained from the review of the topographic maps included elevation range, general watershed information, and potential drainage feature locations. Aerial photographs provide a view of the most current site conditions related to onsite and offsite land-use, plant community locations, and potential wildlife movement corridors.

3.1.3 - Soil Surveys

Many sensitive plant species have a limited distribution based exclusively on soil type. The United States Department of Agriculture (USDA) has published soil surveys that describe the soil series that occur within a particular area. A soil series is a group of soils with similar profiles. These profiles include major horizons with similar thickness, arrangement, and other important characteristics. These series are further subdivided into soil mapping units, which provide specific information regarding soil characteristics. Pertinent USDA soil survey maps were reviewed to determine the existing soil mapping units within the project site and to establish if soil conditions onsite are suitable for any sensitive plant species. See Exhibit 5 for the USDA Soils Map reviewed for this project site.

3.2 - Field Surveys

During June 10th, 2018 Touré Environmental Engineering biologist, T'Shaka Toure conducted a general biological survey on the property site. The site visit consisted of conducting the following surveys; migratory nesting bird, burrowing owl, general biological, and presence/absence surveys for special-status species known to occur within the vicinity of the project site based on CNDDB records. The entire 19.75-acre property site was surveyed on foot with the aid of binoculars, a GPS unit, and field notebook. The biologist walked at a slow pace carefully around suitable habitat to detect the presence/absence of the special-status plant and wildlife species. All wildlife and plant species observed during the surveys were recorded and a compendium of observed species in provided in Appendix A.

3.2.1 - Plant Community

The documentation of plant species consisted of conducting linear transects, presence/absence surveys, visual encounters and other diagnostic signs to identify plant species presence/absence. Field notations were recorded regarding suitable habitat for those sensitive species determined to potentially occur within the project site. Appropriate field guides were used to assist with species identification. Common plant species observed during the surveys were identified in the field and recorded in a field book. A list of all plant species observed on the project site is provided in Appendix A and representative photographs of the project site in Appendix B. In this report, scientific names are provided immediately following common names of plant species for the first reference only.

3.2.2 - Wildlife Community

The documentation of wildlife species consisted of conducting presence/absence surveys, visual encounters, patch sampling, wildlife tracks, scat, and other diagnostic signs to identify wildlife species. Field notations were recorded regarding suitable habitat for those sensitive species determined to potentially occur within the project site. Appropriate field guides were used to assist with species identification. Common wildlife species observed during the survey were identified in the field and recorded in a field book. A list of all wildlife species observed on the project site is provided in Appendix A and representative photographs of the project site in Appendix B. In this report, scientific names are provided immediately following common names of wildlife species for the first reference only.

SECTION 4: EXISTING CONDITIONS

4.1 - Environmental Setting

The project site consists of approximately 19.75-acres of undeveloped ruderal land with the surrounding area consisting of residential and commercial property to the south, southwest, north and northeast. The property is surrounded by major roadways to the south (Eighteen Street), and east (Drive-In Way and State Route 4). Additionally, there was a homeless encampment and OHV recreational motorcycling occurring on the project site during the field survey. The property does not have any blue-line features, drainages, riparian, wetlands, waterbodies, trees or native vegetation. As such, the property does not require a jurisdictional delineation. The soil substrate consists of sandy loam and low-lying non- native vegetation. The project site has an average elevation of approximately 46 feet above mean sea level (msl).

4.1.1 - Topographic Features

Topographically, the property occurs on relatively flat undeveloped land. The property is undeveloped and disturbed ruderal habitat with an average elevation of 46 feet above mean sea level (msl). There are no drainage features on the property.

4.1.2 - Soils

The NRCS Web Soil Survey shows one soil series mapped within the project site (Exhibit 5). Detailed information about the soil and its location is provided. Delhi sand (DaC) soils are brown and yellowish-brown sand throughout. Slopes are 2 to 9 percent with elevations ranging 10 feet to 150 feet. This sandy soil is widespread throughout the project site. There are no classified hydric soils as described in the USDA-NRCS Official Soils Series Description (OSD) http://soils.usda.gov/technical/classification/osd/index.html, present on the property.

4.2 - Plant Communities

There are no native plant communities within the property. The property includes the following non-native plants species, wild oats (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceaus*), Hare barley (*Horduem murinum*), and Perennial ryegrass (*Lolium perenne*). Representative photos of the project site are depicted in Appendix B.

4.2.1 - Ruderal

The entire project site (19.75 acres) consists of ruderal sandy substrate with disturbed and non-native vegetation. The project area has dense to sparse non-native grass and herb plant cover that is approximately 1.5 feet high. The ruderal and non-native annual grassland include wild oats, ripgut brome, soft chess, Italian ryegrass (*Lolium multiflorum*), filaree (*Erodium botrys and E. cicutarium*), and small fescue (*Vulpia microstachys*).

4.3 - Wildlife Community

The property does not provide suitable habitat for special status wildlife species. Species observed on the property included cottontail rabbit (*Sylvilagus auduboni*), American crow (*Corvus brachyrhynchos*), and northern mockingbird (*Mimus polyglottos*). A single Swainson's hawk (*Buteo swainsoni*) was observed flying overhead within the vicinity of the project site. The Swainson's hawk observed was not circling directly above the project site. The hawk was only observed flying overhead within the vicinity of the project site. A complete list of wildlife species observed during the field survey is provided in Appendix A.

4.3.1 - Amphibians

There were no amphibians observed on the property.

4.3.2 - Reptiles

Although no snakes were observed the golpher snake (*Pituophis catenifer*) would be expected to occur within the project site.

4.3.3 - Birds

The project site does not have trees only low-lying non-native vegetation. Bird species commonly observed flying immediately overhead the property included common crow, mocking bird, and a Swainson's hawk was detected circling overhead within the vicinity of the property. There were no suitable Swainson's hawk nesting ground detected within the immediate vicinity of the project site. Swainson's hawks are known to travel up to three miles away from their nesting sites to forage

4.3.4 - Mammals

California ground squirrel burrow and a cottontail rabbit were the only small mammals detected on the property. Additionally, feral cats and domestic dogs were common within the project area.

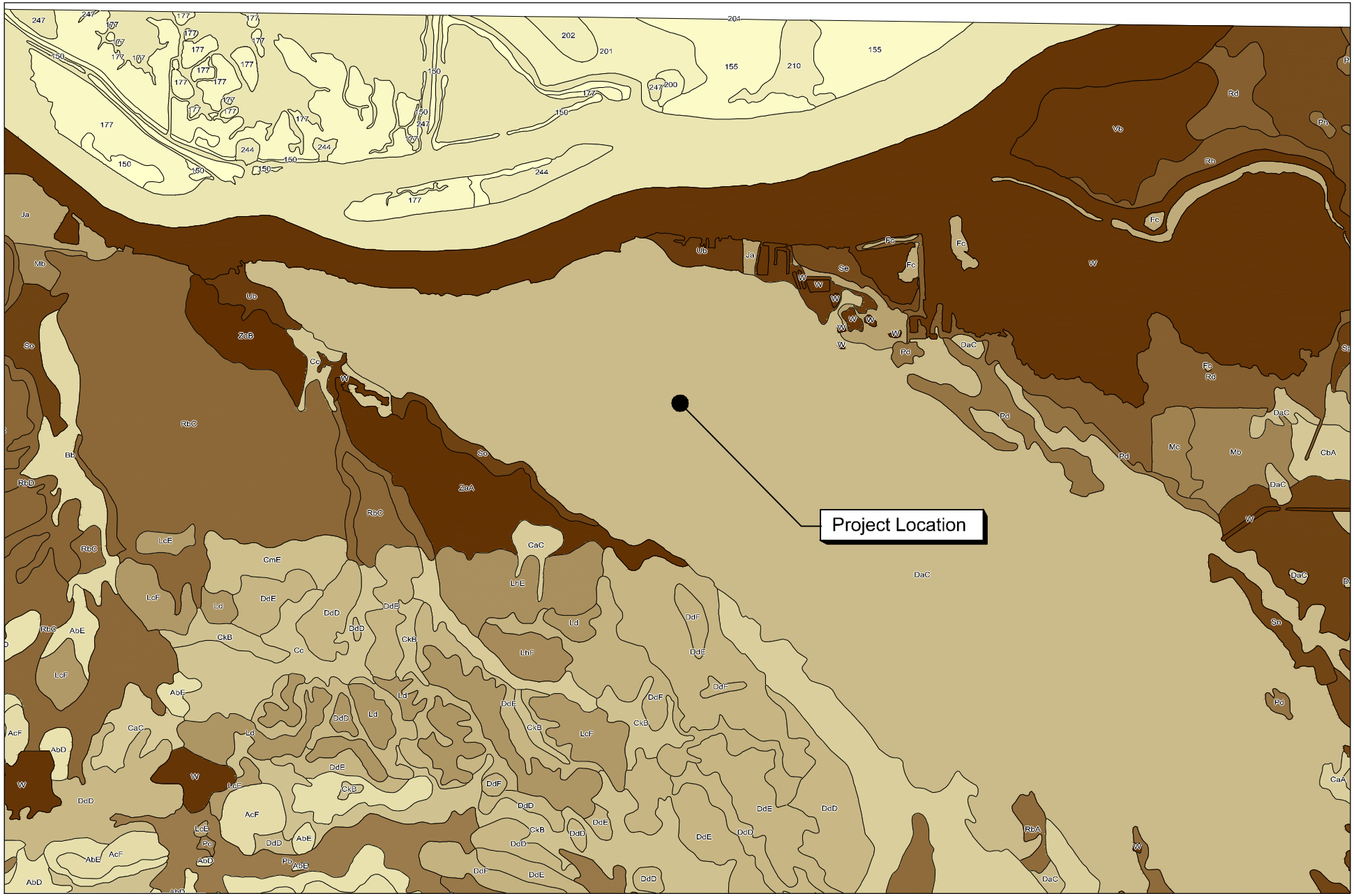

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Exhibit 5
Soils Map

Acorn III Site Development Project
City of Antioch, Contra Costa County

SECTION 5: SENSITIVE BIOLOGICAL RESOURCES

5.1.1 - Sensitive Species Database Search

The CNDDB (2018) database was used to determine the distance between known recorded occurrences of sensitive species and the project site. Based on the results of the literature review and field site survey conducted on June 10, 2018, ***Touré Environmental Engineers,*** biologist documented the existing site conditions to determine if sensitive biological species occur on the project site. Although there were 144 species listed throughout the nine quadrangles reviewed, only 31 were special-status species. Of the 31 special-status species, only two species (Swainson's hawk and Prairie falcon) have a moderate potential of occurring (foraging only) on the project site. See attachment

5.2 - Sensitive Plant Communities

There were no sensitive plant communities detected on the project site.

5.3 - Sensitive Plant Species

The CNDDB (2018) database, East Contra Costa County covered and no-take plants, and ArcGIS software, was used to determine the distance between known recorded occurrences of sensitive species and the project site. Based on the results of the literature review and site survey conducted there is no suitable habitat for sensitive plant on the project site. Due to the lack of suitable habitat sensitive plant species were not detected nor are they expected to occur on the property.

5.3.1 - Threatened or Endangered Species

There were no threatened or endangered plant species documented on the project site.

5.4 - Sensitive Wildlife Species

Sensitive wildlife species were documented within a five-mile radius of the project site. Based on lack of vernal pools, ponds, and suitable habitat no sensitive wildlife species are expected to occur on the project site. A discussion of these sensitive wildlife species is provided below. There were no sensitive wildlife species observed on the property site during the 2018 field survey.

Alameda whipsnake

Alameda whipsnake (*Masticophis lateralis*) is a federally-listed threatened species that occurs in chaparral and scrub plant communities. The species preys upon a variety of live animals including insects, lizards, snakes, birds, and small mammals. This species commonly moves over and through brush and trees in order to avoid predation and to capture prey. The project site does not provide suitable habitat for the species and it was not observed during field survey. Additionally, due to the frequent use of recreational motorcycle activity detected and observed while onsite the likelihood for this species to occur on the project site is unlikely. The project site is used by the local residents for recreational activities (i.e., motorcycles and quad motor vehicles). As such, no impact to the species is likely to occur.

Berkeley kangaroo rat

Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*) are adapted to arid conditions, have nocturnal foraging habits and other physiological adaptations to conserve water. Little is known about the favored habitat of the Berkeley kangaroo rat, they have been found on ridges near rocky outcrops and on thin soils with scattered chaparral and annual grasses. Due to the lack of suitable habitat the species is not likely to occur. As such, no impact to the species is likely to occur.

Burrowing owl

Burrowing owl (*Athene cunicularia*) is a California species of special concern and typical associated with short-grass prairies, grasslands, lowland scrub, agricultural lands, coastal dunes, and desert floors. There were no California ground squirrels observed onsite. Although, two small burrows were observed along the eastern boundary of the property there were no indication the burrows were utilized by burrowing owls. The burrows were located immediately adjacent the cemented sidewalk along Drive In Way which is not a suitable burrowing location for the species. Additionally, there were no wildlife signs that indicated borrowing owl activity (i.e., white wash, prey items, berm slopes). Moreover, due to the frequent use of OHV recreational activity (i.e., motorcycles and quad vehicles) observed while onsite the likelihood for this species to occur on the project site is unlikely. The project site is frequently used by the local residents for recreational activities (i.e., motorcycles and quad vehicles). As such, no impact to the species is likely to occur.

Blennosperma vernal pool andrenid bee

Blennosperma vernal pool andrenid bee (*Andrena blennospermatis*) is a solitary, ground-nesting bee. Adults emerge early in the spring, with males emerging slightly earlier and dying off sooner than females. After emergence, the females mate, and then begin excavating nests in the upland areas near vernal pools. The flight period for females ranges from late February to late April. There are no vernal pools located on the uplands of the project site. As such, no impact to the species is likely to occur.

Bridge's coast range shoulderband

Bridge's coast range shoulderband (*Helminthoglypta nickliniana bridgesii*) is typically found in moist, often riparian areas under rocks, logs, woody debris, or accumulations of leaf mold. Habitat for this species does not occur on the project site. There are no moist areas with riparian, rocks, logs, woody debris, and leaf mold habitats within the project site. As such, no impact to the species is likely to occur.

California red-legged frog

California red-legged frog (*Rana aurora draytonii*) is a federally-listed endangered and state-listed threatened species. Usually found near ponds or other permanent water with extensive vegetation. The species is also observed during rain events traveling over land between ponds or other water bodies. Breeding occurs from December to March with egg masses laid in permanent bodies of water. Due to the lack of drainage features and suitable habitat the species is not likely to occur. As such, no impact to the

species is likely to occur.

California tiger salamander

California tiger salamander (*Ambystoma californiense*) is both a federally-listed threatened and state-listed endangered species. The species depends on vernal pools for reproduction; its habitat is limited to the vicinity of large, fishless vernal pools or similar water bodies. Adults migrate at night from upland habitats to aquatic breeding sites during major rainfall events of fall and early winter and return to upland habitats after breeding. Based on lack of drainage features, standing water, and vernal pool habitat the species is not expected to occur on the site. As such, no impact to the species is likely to occur.

Coast horned lizard

Coast horned lizard (*Phrynosoma coronatum*)) is a California species of special concern. This species inhabits open country, especially sandy areas, washes, flood plains and wind-blown deposits in a wide variety of habitats. Found chiefly below 2,000 feet in the north and 3,000 feet in the south. Although, sandy soils exist on the project site there are no anthills, sandy washes, and flood plain habitat. The lack of an adequate prey item (i.e., native ants) would also hinder the ability for the species to exist within the sandy soil substrate that occurs on the project site. The project site consists of ruderal vegetation, disturbed land, urban surroundings, domestic pets, and frequent OHV activity. Although, sandy soil substrate occurs the existing site conditions (i.e., domestic dogs, feral cats, OHV activity, urban surroundings, etc) are not suitable for the horned lizard and the species would not be expected to occur. As such, no impact to the species is likely to occur.

San Bruno elfin butterfly

San Bruno elfin butterfly (*Callophrys mossii bayensis*) is a federally-listed endangered species. The species is endemic to foggy cliff edges and rocky outcrops on steep, north-facing slopes. The butterfly's host plant is stonecrop (*Sedum spathulifolium*), a species endemic to coastal scrub communities. Adults emerge from pupae from late February to mid-April, with a peak in late March. In June, the larvae have matured and they descend to the ground and pupate in leaf litter. They lie dormant until the following February or March. At the end of this stage, new adults emerge, starting the cycle of life over again. During the field site survey the host plant was not detected. Based on lack of detection for the host plant, *Sedum spathulifolium*, the San Bruno elfin butterfly is not expected to occur on the project site. Additionally, the project site is below the elevation range for the host plant. The host plant (i.e., *S. spathulifolium)* has an elevation range of 50 - 2,500 meters while the project site has an average elevation of 14 meters. As such, no impact to the San Bruno elfin butterfly is likely to occur.

San Joaquin kit fox

San Joaquin kit fox (*Vulpes macrotis mutica*) is federally-listed endangered and state-listed threatened species and the smallest species of the Canidae family in North America. They have large ears that help the fox lower its body temperature and give it exceptional hearing. The species populations rise and fall with

the amount of annual rainfall: more rain means more kit foxes. Reproductive females clean and enlarge natal or pupping dens in September and October. Mating occurs in late December or early January. Litters of three to five are born in late February or early March. Typical SJKF dens have several chambers and entrance ways with the main entrance being large and shaped like a keyhole. Active dens may be littered with prey remains, scat, matted vegetation, and fresh paw prints. Although, two burrows were located on the project site there were no SJKF wildlife signs indicating the presence of the species (i.e., small bone fragments from prey items, vegetation mats, and scat). Additionally there is no wildlife movement corridor onsite. The burrows detected onsite were located near the cemented sidewalk adjacent Drive In Way and not within the low-lying vegetation. Additionally, there were no SJKF foot prints detected at the entrance way of the burrows. The small burrows detected onsite were not burrows used by SJKF. Moreover, due to the frequent use of OHV recreational activity (i.e., motorcycles and quad vehicles) observed while onsite the likelihood for this species to occur on the project site is unlikely. The project site is frequently used by the local residents for recreational activities (i.e., motorcycles and quad vehicles). As such, no impact to the species is likely to occur.

San Joaquin pocket mouse

San Joaquin pocket mouse (*Perognathus inornatus*) lives in arid habitats. The foraging habits of the pocket mouse tend to occur under the cover of shrubs and even above the ground within shrubs. The species range elevation is from 350 to 600 meters. They generally do not travel far to forage and stay out of relatively open areas. The breeding season for the species is from March to July and the females have at least two litters of four to six young per litter. The only small burrows detected onsite were located near the cemented sidewalk adjacent Drive In Way and not within the low-lying vegetation. Based on the project site being outside of the species elevation range the species is unlikely to occur on the project site. The species is nocturnal; however, there were no nocturnal surveys conducted during the site visit because the project site is outside of the species elevation range. The project site has an elevation of approximately 14 meters which is well below the average range for this species. As such, no impact to the species is likely to occur.

Golden eagle

The Golden eagle (*Aquila chrysaetos*) is a fully protected species. Golden eagles build nests on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat. The species avoids nesting near urban habitat and does not generally nest in densely forested habitat. Individuals will occasionally nest near semi-urban areas where housing density is low and in farmland habitat. Based on the lack of detection and suitable habitat to include the urbanized surrounding area this species is unlikely to occur on the project site.

Swainson's hawk

Swainson's hawk (*Buteo swainsoni*) is a state-listed threatened species and breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural, ranch land, and fallow fields. This species requires suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations. The project site consists of an open field with low-lying dense ruderal vegetation that provides marginal foraging habitat for the species. The species was observed flying overhead within the vicinity of the project site. However the species was not observed foraging within or directly above the project site. Based on the absence of trees, riparian corridor, and marginal foraging habitat (i.e., not a fallow field) no direct impact to the species is likely to occur.

Pallid bat

Pallid bat (*Antrozous pallidus*) is a California species of special concern. The species relies heavily on trees for roosts and occurs in a variety of habitats from desert to coniferous forest; most closely associated with oak, yellow pine, redwood, and giant sequoia habitats in northern California and oak woodland, grassland, and desert scrub in southern California. During the day time, the species typically roost in cracks and crevices, which may include tile roofs, exfoliating bark of trees, or rocky outcrops. The project site does not exhibit any habitat type utilized by this species. The surrounding area consists of residential development, commercial buildings and major roadways. Although, the species could utilize commercial or residential building, highway bridge structures and tree cavities within the vicinity of the project, there was no suitable roosting or foraging habitat on the project site. Sources of water are often found in their habitat type. There are no waterbodies on the project site. As such, the likelihood for the species to forage on the property is low. Based on the absence of trees, roosting locations, onsite building structures, and water sources the species is not likely to occur on the project site and no nocturnal bat survey was conducted. The project site and immediately surrounding area does not provide suitable foraging habitat. As such, no impact to the species is likely to occur.

Prairie falcon

Prairie falcon (*Agelaius tricolor*) is a California species of special concern. These falcons prey chiefly on small birds and mammals, and on a variety of reptiles and insects. Prairie falcons hunt using low, rapid, searching flight, usually capturing prey on or near the ground. Nesting occurs in mid-April through July. Their nests are often found in rock crevices and sometimes in vacated stick nests left by other birds. An uncommon permanent resident distributed from annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Based on lack of trees, suitable nesting location and marginal foraging habitat no impact to the species is likely to occur.

Western pond turtle

Western pond turtle (*Emys marmorata*) is a California species of special concern. This species is aquatic and often seen basking above the water, but will quickly slide into the water when it feels threatened. Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. It hibernates underwater, often in the muddy bottom of a pool and estivates during summer droughts by burying itself in soft bottom mud. Breeding occurs primarily from February through November and warm periods during winter months. Based on the absence of drainage features the species is not expected to occur onsite. As such, no impact to the species is likely to occur and no further action for these species is required.

Threatened or Endangered Species

There were no threatened or endangered species detected on the project site.

Table 4: Sensitive Wildlife Species

Species		Status			Preferred Habitat	Potential to Occur/ Known Occurrence/ Suitable Habitat
Scientific Name	Common Name	ESA	CESA	CDFW		
Callophrys mossii bayensis	San Bruno elfin butterfly	FE	—	—	Endemic to foggy cliff edges and rocky outcrops on steep, north facing slopes. The butterfly's host plant is the stonecrop, a species found in coastal scrub communities.	**No Potential to Occur-** Butterfly's host plant (*Sedum spathulifolium)* is not found on site.
Andrena blennospermatis	Blennosperm a vernal pool andrenid bee	—	—	—	A solitary, ground nesting bee associated with upland vernal pools.	**No Potential to Occur-** Habitat for this species does not occur on site.
Helminthoglypta nicklinigna bridgesii	Bridge's coast range shoulderband	—	—	—	Associated with moist, often riparian areas under rocks, logs, woody debris and accumulations of leaf cold.	**No Potential to Occur-** Habitat for this species does not occur on site.
Birds/Raptors						
Athene cunicularia	Burrowing owl	—	—	CSC	Associated with open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Low Potential to Occur –** Low potential and unlikely to occur onsite due to the frequent residential OHV recreational motorcycle activity. Too much human disturbance at this location.
Falcon mexicanus	Prairie falcon	—	—	CSC	Nests often found in rock crevices and sometimes in vacated stick nests left by other birds. Primarily associated with perennial grasslands, savannahs, rangeland, agricultural fields and desert scrub areas.	**Moderate Potential to Occur-** Open field with ruderal vegetation provide potential foraging habitat for the species.
Aquila chrysaetos	Golden eagle	—	—	FP	Nests found on cliffs but also trees, and rarely telephone poles. They are found primarily in mountains up to 12,000 feet canyonlands, rimrock terrain, and riverside cliffs and bluffs.	**Low Potential to Occur –** No suitable surrounding habitat.
Buteo swainsoni	Swainson's hawk	—	—	ST	Found in open country such as grassland, shrubland, and agricultural areas.	**Moderate Potential to Occur-** Observed foraging off-site within the vicinity overhead. Open field with ruderal vegetation provide potential foraging habitat for the species.

Table 4: Sensitive Wildlife Species (continued)

Species		Status			Preferred Habitat	Potential to Occur/ Known Occurrence/ Suitable Habitat
Scientific Name	**Common Name**	**ESA**	**CESA**	**CDFW**		
Reptiles						
Masticophis lateralis	Alameda whipsnake	FT	—	—	Often found in chaparral and scrub plant communities.	**Low Potential to Occur-** Lack of suitable habitat. The species is unlikely to utilize a site that is frequently used for motorcycle recreational activity. Too much motorcycle activity at this location.
Emys marmorata	Western pond turtle	—	—	CSC	An aquatic species, it is found in ponds, lakes, rivers, streams, creeks, marshes and irrigation ditches with abundant vegetation and either rocky or muddy bottoms in woodland, forest and grassland. Logs, rocks, cattail mats and exposed banks are required for basking.	**No Potential to Occur-** Lack of standing water and/or pooling locations on site.
Phrynosoma coronatum	Coast horned lizard	—	—	CSC	Associated with open country, especially sandy areas, washes, flood plains and wind-blown deposits in a wide variety of habitats usually below 2000 ft in the north and 3000 ft in the south.	**No Potential to Occur-** Lack of suitable habitat. The species is unlikely to utilize a site that is frequently used for motorcycle recreational activity. Too much motorcycle activity at this location.
Amphibians						
Rana aurora draytonii	California red-legged frog	FE	ST	—	Often found near sheltered ponds or other permanent water with extensive vegetation. Also found traveling between ponds during rain.	**No Potential to Occur-** Habitat for this species does not occur on site.
Ambystoma californiense	Calfornia tiger salamander	FT/FE	—	—	Found in vicinity of large, fishless vernal pools or similar bodies of water. Require vernal pools for reproduction	**No Potential to Occur-** Habitat for this species does not occur on site.

Table 4: Sensitive Wildlife Species (continued)

Species		Status			Preferred Habitat	Potential to Occur/ Known Occurrence/ Suitable Habitat
Scientific Name	**Common Name**	**ESA**	**CESA**	**CDFW**		
Mammals						
Antrozous pallidus	Pallid bat	—	—	CSC	Associated with a variety of habitats from desert to coniferous forest; usually found in vicinity of oak, yellow pine, redwood and giant sequoia habitats in northern California.	**Low Potential to Occur-** There are no trees, buildings, roosting locations, and lack of water resources on the property. Unlikely foraging habitat for the species.
Perognathus inornatus	San Joaquin pocket mouse	—	—	—	Found in arid habitats, under vegetation. Rarely found in open areas.	**No Potential to Occur-** Habitat for this species does not occur because the project elevation is well below the species elevation range of 350-600 meters. Project site elevation range is only 14 meters.
Vulpes macrotis mutica	San Joaquin kit fox	FE	ST	—	Associated with native or non-native grassland and associated scrub, oak savannah adjacent to grassland, agricultural lands adjacent to foothill grassland, valley grassland, farm land, and ruderal land.	**Low Potential to Occur-** Lack of SJKF signs, wildlife movement corridors, grassland, and denning locations.
Dipodomys heermanni berkeleynsis	Berkeley kangaroo rat	—	—	—	Little is known about the favored habitat of the Berkeley kangaroo rat, but specimens have been found frequently on bare ridges near rocky outcrops and on soils with scattered chaparral species and small annual grasses.	**Low Potential to Occur-** Habitat for this species does not occur on the project site.

5.5 - Nesting Birds

There are no trees on the property however the low-lying vegetation may provide potential nesting habitat for ground-dwelling avian species protected by the Migratory Bird Treaty Act (MBTA). The project site was surveyed for burrowing owl and ground nesting birds. Based on the results of the avian survey there were no burrowing owls or ground-dwelling nesting bird species detected on the property.

5.6 - Wildlife Movement Corridor

Non-native grasslands with undeveloped flatland characterize the overall property. There are no trees, native vegetation, and drainage features (vernal pool, wetland, waterbodies) within the property. The project site is situated in a heavily urbanized area and does not provide a suitable corridor for wildlife movement. The property, in its current state, does not provide wildlife movement locally and regionally. Although, wildlife species were not frequently detected, domestic dogs and feral cats were frequently observed. Commonly observed wildlife movement on the property consisted of cottontail rabbit, ground squirrel, domestic dogs and feral cats. The general area does not provide a contiguous wildlife corridor beneficial for wildlife species.

5.7 - Jurisdictional Waters and Wetlands

Based on the site assessment conducted June 10th, 2018 there is no U.S. Army Corps of Engineers (USACE) jurisdiction associated with the property. The property does not include USACE or CDFW jurisdictional features. There are no wetlands, riparian, waters of the U.S., waters of the State, or other waters on the property. The property does not require the following: CDFW 1602 Streambed Alteration Agreement, USACE, and Regional Water Quality Control Board (RWQCB) permit authorizations for jurisdictional features within or in the vicinity of the property.

SECTION 6: RECOMMENDATIONS

This report was prepared to document the biological resources within the project site and for compliance with the California Environmental Quality Act (CEQA) guidelines. The proposed project impacts are not likely to have a significant impact on the biological resources that exist on the project site.

6.1 - Special-Status Wildlife Species

Western pond turtle

The project site does not contain suitable habitat for the western pond turtle. There are no waterbodies on the project site to support habitat for the species. No further action for the species is required.

Burrowing owl

Although the burrowing owl was not detected during the site visit, prior to ground-disturbing activities, a qualified biologist may be required to conduct a pre-construction survey pursuant the Migratory Bird Treaty Act (MBTA) for migratory nesting birds. CDFW routinely require and recommend pre-construction surveys prior to ground disturbing activity on project sites that have any potential to provide burrowing owl and avian species activity during the nesting bird season (i.e., February through August, general nesting season). However, the frequent OHV recreational activities on the property reduce the likelihood of the occurrence of the species.

Prairie falcon

There are no trees or potential nesting locations for the species on the project site. Although potential foraging habitat occurs on the undeveloped ruderal land this species is unlikely to be impacted by the project. The frequent OHV recreational activities on the property reduce the likelihood of the occurrence of the species and utilization for foraging activity.

Swainson's hawk

There are no trees or potential nesting locations for the species on the project site. This species was observed overhead in the vicinity of the project site but not foraging on the property. Swainson's hawks prefer fallow fields, alfalfa, irrigated pastures, beet, tomato, and other agricultural field crops (Bradbury 2014). The project site exhibits marginal foraging habitat for the species. Although potential foraging habitat occurs on the undeveloped ruderal land this species is unlikely to be impacted by the project.

6.2 - Nesting Birds

Although there are no trees or building structures on the property this project site has low-lying vegetation that could potential provide coverage and nesting habitat for ground-dwelling birds. During the nesting bird season (i.e., February through August, in general), CDFW routinely require and recommend pre-construction surveys prior to ground disturbing construction activities when potential habitat exists for nesting birds, pursuant the Migratory Bird Treaty Act (MBTA). Although, there were no ground-dwelling birds detected during the site visit the potential for nesting within the low-lying vegetation is possible. As such, if construction activities were to occur during the nesting bird season (i.e., February through August), a pre-construction survey for ground-dwelling nesting birds may be required up to 14-days prior to ground disturbing activities.

If you have further questions concerning this Biological Resources Assessment report, please contact me at (559) 470-5586 or email: tshaka@toureassociates.com.

TOURE ENVIRONMENTAL ENGINEERING

Sincerely,
T'Shaka Touré, Senior Biologist

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Appendix A: Floral and Faunal Compendia

FLORAL COMPENDIUM

Asteraceae	**Sunflower Family**
* *Centaurea solstitialis*	Yellow star thistle
Conyza Canadensis	Horseweed
Brassicaceae	**Mustard Family**
Brassica sp.	Mustard
**Hirschfeldia incana*	Short pod mustard
Boraginaceae	**Borge Family**
Heliotropium heliotrope	Seaside heliotrope
Convolvulaceae	**Morning Glory Family**
* *Convolvulus arvensis*	Field bindweed
Poaceae	**Grass Family**
**Avena fatua*	Wild oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Cynodon dactylon*	Bermuda grass
**Hordeum murinum*	Hare barley
* *Lolium perenne*	Perennial ryegrass

* Indicates non-native species

FAUNAL COMPENDIUM

Birds and Raptors	
Corvus brachyrhynchos	American crow
Euphagus cyanocephalus	Brewer's blackbird
Mimus polyglottos	Northern mockingbird
Buteo swainsoni	Swainson's hawk (foraging in vicinity)
Mammals	
Spermophilus beecheyi	California ground squirrel (burrow only)
Sylvilagus auduboni	Cottontail rabbit

Appendix B: Site Photographs

PHOTOGRAPHS 1-2

Photograph 1. View of property facing southeast direction. Non-native grasses and sandy substrate soil is depicted in this photograph.

Photograph 2. View of property facing northwest direction with commercial building and non-native grasses depicted in the photograph.

PHOTOGRAPHS 3-4

Photograph 3. View of property facing westward direction. Non-native grassland, residential, and commercial property depicted in this photograph.

Photograph 4. View of property facing in the northeast direction. The unpaved dirt trail and project site is frequently driven on by recreational motorcyclists.

Appendix C: CNDDB 9-Quadrangle Query

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Antioch North (3812117) OR Antioch South (3712187) OR Clayton (3712188) OR Honker Bay (3812118) OR Denverton (3812128) OR Birds Landing (3812127) OR Rio Vista (3812126) OR Jersey Island (3812116) OR Brentwood (3712186))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Candidate Endangered	G2G3	S1S2	SSC
Alkali Meadow Alkali Meadow	CTT45310CA	None	None	G3	S2.1	
Alkali Seep Alkali Seep	CTT45320CA	None	None	G3	S2.1	
Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	WL
Amsinckia grandiflora large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Anniella pulchra northern California legless lizard	ARACC01020	None	None	G3	S3	SSC
Anomobryum julaceum slender silver moss	NBMUS80010	None	None	G5?	S2	4.2
Anthicus antiochensis Antioch Dunes anthicid beetle	IICOL49020	None	None	G1	S1	
Anthicus sacramento Sacramento anthicid beetle	IICOL49010	None	None	G1	S1	
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Apodemia mormo langei Lange's metalmark butterfly	IILEPH7012	Endangered	None	G5T1	S1	
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Archoplites interruptus Sacramento perch	AFCQB07010	None	None	G2G3	S1	SSC
Arctostaphylos auriculata Mt. Diablo manzanita	PDERI04040	None	None	G2	S2	1B.3
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
Ardea herodias great blue heron	ABNGA04010	None	None	G5	S4	
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T2	S2	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Bombus caliginosus obscure bumble bee	IIHYM24380	None	None	G4?	S1S2	
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Bombus occidentalis western bumble bee	IIHYM24250	None	None	G2G3	S1	
Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Callophrys mossii bayensis San Bruno elfin butterfly	IILEPE2202	Endangered	None	G4T1	S1	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Campanula exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2	None	None	G3T2	S2	1B.2
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2S3	SSC
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Chloropyron molle ssp. molle soft salty bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAPI0M051	None	None	G5T4	S2	2B.1
Cirsium hydrophilum var. hydrophilum Suisun thistle	PDAST2E1G1	Endangered	None	G2T1	S1	1B.1
Cismontane Alkali Marsh Cismontane Alkali Marsh	CTT52310CA	None	None	G1	S1.1	
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal Brackish Marsh Coastal Brackish Marsh	CTT52200CA	None	None	G2	S2.1	
Coelus gracilis San Joaquin dune beetle	IICOL4A020	None	None	G1	S1	
Cordylanthus nidularius Mt. Diablo bird's-beak	PDSCR0J0F0	None	Rare	G1	S1	1B.1
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2	SSC
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Cryptantha hooveri Hoover's cryptantha	PDBOR0A190	None	None	GH	SH	1A
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G3G4T1	S1	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Dumontia oregonensis hairy water flea	ICBRA23010	None	None	G1G3	S1	
Efferia antiochi Antioch efferian robberfly	IIDIP07010	None	None	G1G2	S1S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened	None	G1	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eriastrum ertterae Lime Ridge eriastrum	PDPLM030F0	None	None	G1	S1	1B.1
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	PDPGN0849Q	None	None	G5T1	S1	1B.1
Eriogonum truncatum Mt. Diablo buckwheat	PDPGN085Z0	None	None	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Eryngium jepsonii Jepson's coyote-thistle	PDAPI0Z130	None	None	G2	S2	1B.2
Erysimum capitatum var. angustatum Contra Costa wallflower	PDBRA16052	Endangered	Endangered	G5T1	S1	1B.1
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eucerceris ruficeps redheaded sphecid wasp	IIHYM18010	None	None	G1G3	S1S2	
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco peregrinus anatum American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	FP
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Fritillaria liliacea fragrant fritillary	PMLIL0V0C0	None	None	G2	S2	1B.2
Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A	None	None	G5T3	S3	SSC
Grimmia torenii Toren's grimmia	NBMUS32330	None	None	G2	S2	1B.3
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Helminthoglypta nickliniana bridgesi Bridges' coast range shoulderband	IMGASC2362	None	None	G3T1	S1S2	
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hygrotus curvipes curved-foot hygrotus diving beetle	IICOL38030	None	None	G1	S1	
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Idiostatus middlekauffi Middlekauff's shieldback katydid	IIORT31010	None	None	G1G2	S1	
Isocoma arguta Carquinez goldenbush	PDAST57050	None	None	G1	S1	1B.1
Juglans hindsii Northern California black walnut	PDJUG02040	None	None	G1	S1	1B.1
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lasiurus blossevillii western red bat	AMACC05060	None	None	G5	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered	None	G1	S1	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2	None	None	G5T2	S2	1B.2
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Lytta molesta molestan blister beetle	IICOL4C030	None	None	G2	S2	
Madia radiata showy golden madia	PDAST650E0	None	None	G3	S3	1B.1
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia song sparrow ("Modesto" population)	ABPBXA3010	None	None	G5	S3?	SSC
Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K	None	None	G5T3	S3	SSC
Metapogon hurdi Hurd's metapogon robberfly	IIDIP08010	None	None	G1G2	S1S2	
Microseris paludosa marsh microseris	PDAST6E0D0	None	None	G2	S2	1B.2
Monolopia gracilens woodland woollythreads	PDAST6G010	None	None	G3	S3	1B.2
Myrmosula pacifica Antioch multilid wasp	IIHYM15010	None	None	GH	SH	
Navarretia gowenii Lime Ridge navarretia	PDPLM0C120	None	None	G1	S1	1B.1
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Navarretia nigelliformis ssp. radians shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
Neotoma fuscipes annectens San Francisco dusky-footed woodrat	AMAFF08082	None	None	G5T2T3	S2S3	SSC
Northern Claypan Vernal Pool Northern Claypan Vernal Pool	CTT44120CA	None	None	G1	S1.1	
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	PDONA0C0B4	Endangered	Endangered	G5T1	S1	1B.1
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perdita scitula antiochensis Antioch andrenid bee	IIHYM01031	None	None	G1T1	S1	
Perognathus inornatus San Joaquin Pocket Mouse	AMAFD01060	None	None	G2G3	S2S3	
Phacelia phacelioides Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G2	S2	1B.2
Phalacrocorax auritus double-crested cormorant	ABNFD01020	None	None	G5	S4	WL
Philanthus nasalis Antioch specid wasp	IIHYM20010	None	None	G1	S1	
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Plagiobothrys hystriculus bearded popcornflower	PDBOR0V0H0	None	None	G2	S2	1B.1
Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020	None	None	GNR	S3	SSC
Potamogeton zosteriformis eel-grass pondweed	PMPOT03160	None	None	G5	S3	2B.2
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G3	S2	1B.2
Rallus obsoletus obsoletus California Ridgway's rail	ABNME05016	Endangered	Endangered	G5T1	S1	FP
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sanicula saxatilis rock sanicle	PDAPI1Z0H0	None	Rare	G2	S2	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Serpentine Bunchgrass Serpentine Bunchgrass	CTT42130CA	None	None	G2	S2.2	
Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered	None	G2	S2	1B.1
Sorex ornatus sinuosus Suisun shrew	AMABA01103	None	None	G5T1T2Q	S1S2	SSC
Sphecodogastra antiochensis Antioch Dunes halcitid bee	IIHYM78010	None	None	G1	S1	
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	SSC
Stabilized Interior Dunes Stabilized Interior Dunes	CTT23100CA	None	None	G1	S1.1	
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	PDBRA2G012	None	None	G2T2	S2	1B.2
Streptanthus hispidus Mt. Diablo jewelflower	PDBRA2G0M0	None	None	G2	S2	1B.3
Stuckenia filiformis ssp. alpina slender-leaved pondweed	PMPOT03091	None	None	G5T5	S2S3	2B.2
Symphyotrichum lentum Suisun Marsh aster	PDASTE8470	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	
Triquetrella californica coastal triquetrella	NBMUS7S010	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	
Viburnum ellipticum oval-leaved viburnum	PDCPR07080	None	None	G4G5	S3?	2B.3
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S2	

Record Count: 144

APPENDIX B-2: ADDITIONAL WILDLIFE SPECIES ANALYZED

Common Name	*Scientific Name*	Federal Listing	State Listing
Invertebrates			
Lange's metalmark butterfly	*Apodemia mormo langei*	Endangered	None
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	None
Vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	None
Valley elderberry longhorn beetle	*Desmocerus californicus*	Threatened	None
Delta green ground beetle	*Elaphrus viridis*	Threatened	None
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	None
Fish			
Sacramento perch	*Archoplites interruptus*	None	Species of Special Concern
Delta smelt	*Hypomesus transpacificus*	Threatened	Endangered
Steelhead – Central Valley Distinct Population Segment	*Oncorhynchus mykiss irideus pop. 11*	Threatened	None
Sacramento splittail	*Pogonichthys macrolepidotus*	None	Species of Special Concern
Longfin smelt	*Spirinchus thaleichthys*	Candidate	Threatened, Species of Special Concern
Amphibians			
California tiger salamander	*Ambystoma californiense*	Threatened	Threatened
Foothill yellow-legged frog	*Rana boylii*	None	Candidate Threatened, Species of Special Concern
Reptiles			
Northern California legless lizard	*Anniella pulchra*	None	Species of Special Concern
California glossy snake	*Arizona elegans occidentalis*	None	Species of Special Concern
Giant gartersnake	*Thamnophis gigas*	Threatened	Threatened
Birds			
Tricolored blackbird	*Agelaius tricolor*	None	Candidate Endangered, Species of Special Concern
Short-eared owl	*Asio flammeus*	None	Species of Special Concern
Mountain plover	*Charadrius montanus*	None	Species of Special Concern
Yellow rail	*Coturnicops noveboracensis*	None	Species of Special Concern
White-tailed kite	*Elanus leucurus*	None	Fully Protected
American peregrine falcon	*Falco peregrinus anatum*	Delisted	Delisted, Fully Protected
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	None	Species of Special Concern
Loggerhead shrike	*Lanius ludovicianus*	None	Species of Special Concern
California black rail	*Laterallus jamaicensis coturniculus*	None	Threatened, Fully Protected
Song sparrow ("Modesto" population)	*Melospiza melodia*	None	Species of Special Concern
Suisun song sparrow	*Melospiza melodia maxillaris*	None	Species of Special Concern
California Ridgway's rail	*Rallus obsoletus obsoletus*	Endangered	Endangered, Fully Protected
Bank swallow	*Riparia riparia*	None	Threatened
California least tern	*Sternula antillarum browni*	Endangered	Endangered, Fully Protected
Mammals			
Townsend's big-eared bat	*Corynorhinus townsendii*	None	Species of Special Concern
Western red bat	*Lasiurus blossevillii*	None	Species of Special Concern
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	None	Species of Special Concern
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	Endangered	Endangered, Fully Protected
Suisun shrew	*Sorex ornatus sinuosus*	None	Species of Special Concern
American badger	*Taxidea taxus*	None	Species of Special Concern

APPENDIX B-2: ADDITIONAL WILDLIFE SPECIES ANALYZED

Common Name	*Scientific Name*	Federal Listing	State Listing
Invertebrates			
Lange's metalmark butterfly	*Apodemia mormo langei*	Endangered	None
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	None
Vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	None
Valley elderberry longhorn beetle	*Desmocerus californicus*	Threatened	None
Delta green ground beetle	*Elaphrus viridis*	Threatened	None
Vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	None
Fish			
Sacramento perch	*Archoplites interruptus*	None	Species of Special Concern
Delta smelt	*Hypomesus transpacificus*	Threatened	Endangered
Steelhead – Central Valley Distinct Population Segment	*Oncorhynchus mykiss irideus pop. 11*	Threatened	None
Sacramento splittail	*Pogonichthys macrolepidotus*	None	Species of Special Concern
Longfin smelt	*Spirinchus thaleichthys*	Candidate	Threatened, Species of Special Concern
Amphibians			
California tiger salamander	*Ambystoma californiense*	Threatened	Threatened
Foothill yellow-legged frog	*Rana boylii*	None	Candidate Threatened, Species of Special Concern
Reptiles			
Northern California legless lizard	*Anniella pulchra*	None	Species of Special Concern
California glossy snake	*Arizona elegans occidentalis*	None	Species of Special Concern
Giant gartersnake	*Thamnophis gigas*	Threatened	Threatened
Birds			
Tricolored blackbird	*Agelaius tricolor*	None	Candidate Endangered, Species of Special Concern
Short-eared owl	*Asio flammeus*	None	Species of Special Concern
Mountain plover	*Charadrius montanus*	None	Species of Special Concern
Yellow rail	*Coturnicops noveboracensis*	None	Species of Special Concern
White-tailed kite	*Elanus leucurus*	None	Fully Protected
American peregrine falcon	*Falco peregrinus anatum*	Delisted	Delisted, Fully Protected
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	None	Species of Special Concern
Loggerhead shrike	*Lanius ludovicianus*	None	Species of Special Concern
California black rail	*Laterallus jamaicensis coturniculus*	None	Threatened, Fully Protected
Song sparrow ("Modesto" population)	*Melospiza melodia*	None	Species of Special Concern
Suisun song sparrow	*Melospiza melodia maxillaris*	None	Species of Special Concern
California Ridgway's rail	*Rallus obsoletus obsoletus*	Endangered	Endangered, Fully Protected
Bank swallow	*Riparia riparia*	None	Threatened
California least tern	*Sternula antillarum browni*	Endangered	Endangered, Fully Protected
Mammals			
Townsend's big-eared bat	*Corynorhinus townsendii*	None	Species of Special Concern
Western red bat	*Lasiurus blossevillii*	None	Species of Special Concern
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	None	Species of Special Concern
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	Endangered	Endangered, Fully Protected
Suisun shrew	*Sorex ornatus sinuosus*	None	Species of Special Concern
American badger	*Taxidea taxus*	None	Species of Special Concern

Appendix C CULTURAL RESOURCES

C.1 TECHNICAL REPORT

C.2 ADDITIONAL CITY OF ANTIOCH HISTORY

Acorn Business Park Project Cultural Resources Records Search and Survey Report, City of Antioch, Contra Costa County, California

Prepared for:
The City of Antioch

Prepared by:
Stantec Consulting Services Inc.

October 24, 2018

Sign-off Sheet

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Prepared by 

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Reviewed by 

(signature)

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Acronyms and Abbreviations

APN	Assessor's Parcel Number
BLM	Bureau of Land Management
CHRIS	California Historical Resources Information System
City	City of Antioch
CRHR	California Register of Historical Resources
GLO	General Land Office
DPR	Department of Parks and Recreation
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
PRC	Public Resources Code
USGS	U.S. Geological Survey

1.0 PROJECT DESCRIPTION

The City of Antioch (City) and JMI Properties Corporation (Applicant) proposed Acorn Business Park Project (Project) consists of seeking entitlements to allow for the development of a business park located within the City of Antioch, Contra Costa County, California. The proposed project would be located on undeveloped land at the northwest corner of East 18th Street and North Drive-In (see Figure 1.0-1 and Figure 1.0-2) on Assessor Parcel Numbers (APNs) 051-052-112 and APN 051-052-113.

The Project Area of Potential Effect (APE), which encompasses all areas directly impacted by the proposed Project including potential staging areas, excavations, and the proposed access road, can be found on the Antioch North, CA United States Geological Survey (USGS) Topographic Quadrangle Map, at Township 2N, Range 2E Section 2. The proposed project is in northeast Antioch near the City's boarder with Oakley, west of Highway 160 (Figure 1.01).

The project would consist of developing the vacant land into a business park which could include a range of uses (e.g. hotel, commercial/retail, office, and self-storage facilities (see Figure 1.0-3). The 19.75-acre project site would be subdivided into 12 lots from the existing two parcels and developed in three subsections as briefly described below:

- Subsection A totals 3.79 acres of the overall project site. Two alternative conceptual site plans are provided for this subsection: 1) Alternative A-1 would develop two commercial buildings of 16,800 square feet each with associated parking 2) Alternative A-2 would develop a 4-story, 95-room hotel of approximately 43,195 square feet and an 11,088 square foot commercial building with associated parking. At this stage the applicant is only seeking entitlements. Future marketing of Subsection A would be constructed by a separate developer.

- Subsection B development would consist of a 122,021 square foot self-storage facility on the 5.44 acres. Additionally, there are two alternative site plans that are being considered for this subsection both include the self-storage facility; however, one would consist of rooftop solar on top of the building and the other would not.

- Subsection C consists of nine lots totaling 10.52 acres of the overall project site. There are two alternative plans for this project site both of which includes the development of a bioretention basin and parking. Alternative C-1 would develop eight buildings of 14,112 square feet each for a total of 112,896 square feet whereas Alternative C-2 would develop one large building of 71,880 square feet. At this stage the applicant is only seeking entitlements. Future marketing of Subsection A would be constructed by a separate developer.

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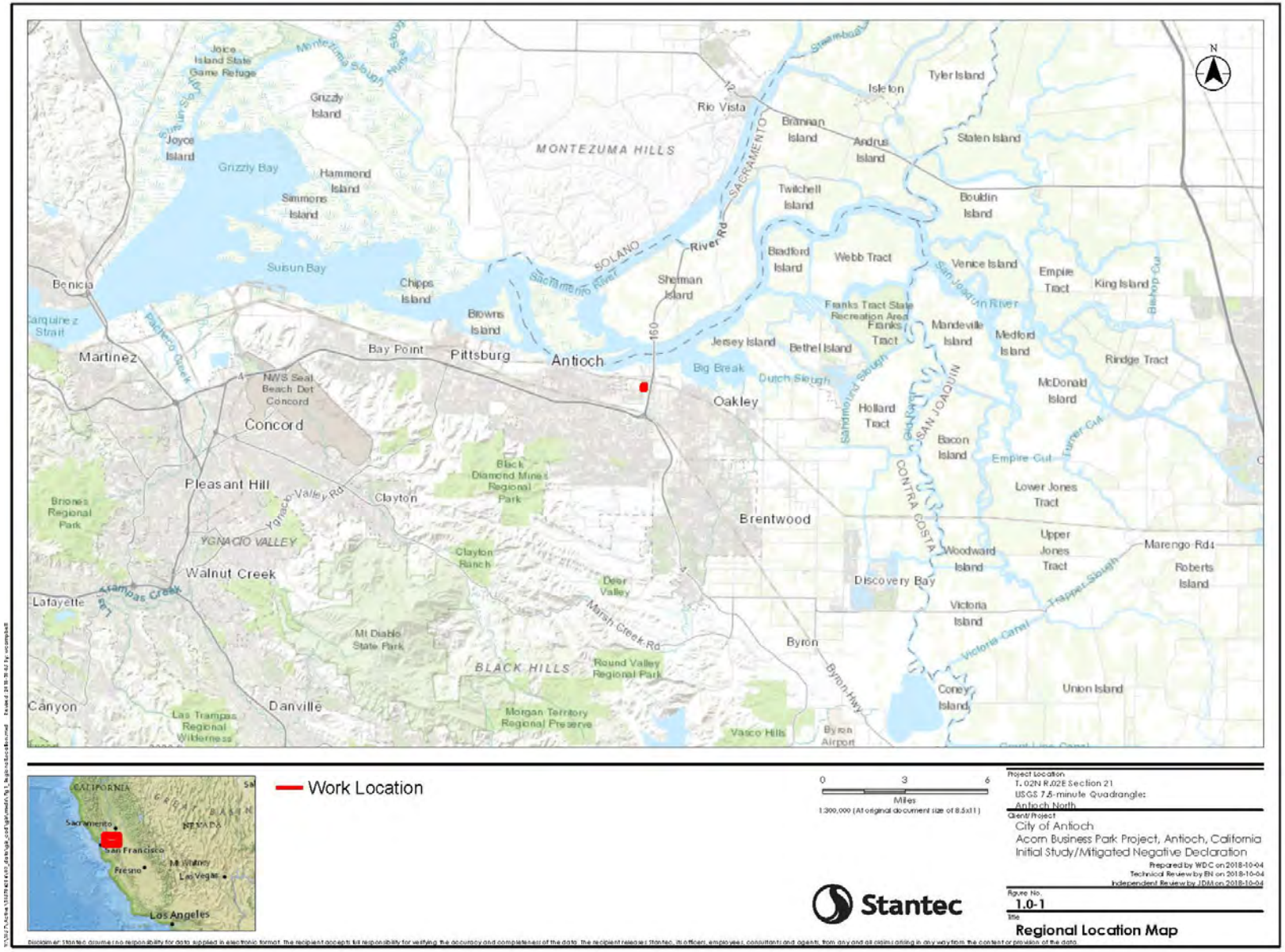

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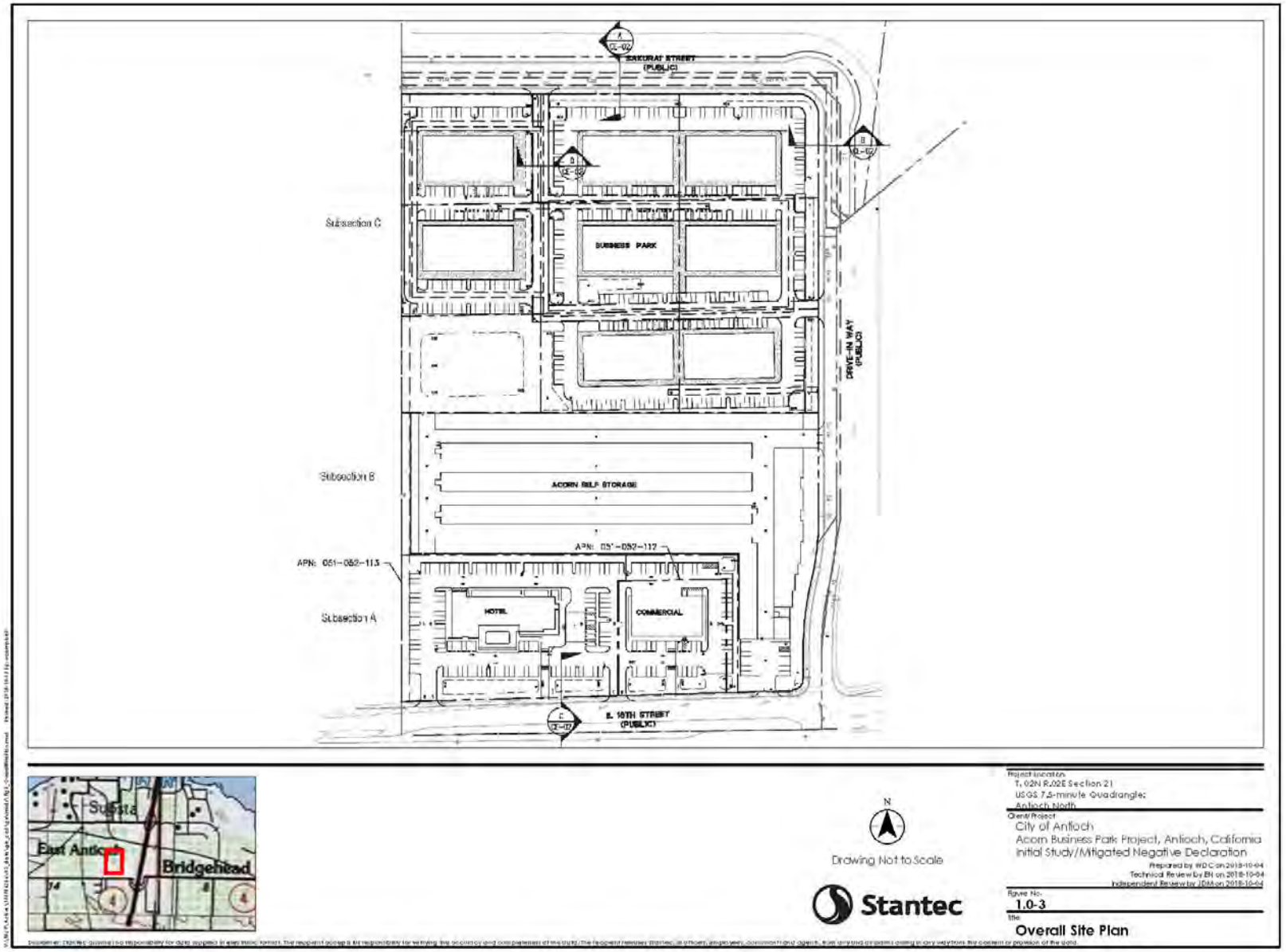

2.0 RECORD SEARCH AND LITERATURE REVIEW

On October 5, 2018, Stantec Archaeologist, Leven Kraushaar, performed a records search at the Northwest Information Center (NWIC) (NWIC File No. 18-0692) of the California Historic Resources Information Center (CHRIS) located in Rohnert Park, California. As an affiliate of the State of California Office of Historic Preservation, the NWIC is the official state repository of cultural resource records and reports for the region that includes Contra Costa County. The search included the entire PA as well as a quarter-mile buffer around the PA. The following inventories were reviewed:

- California Inventory of Historic Resources (California Department of Parks and Recreation);
- California Historical Landmarks (California Office of Historic Preservation);
- California Points of Historical Interest;
- Directory of Properties in the Historic Property Data File (California Office of Historic Preservation);
- All available historic maps, including historic topographic maps and Bureau of Land Management (BLM) General Land Office (GLO) maps.

Three cultural resources studies have been conducted within the APE. Of the three previous studies two included an archaeological survey that overlaps portions of the APE (S-010040 and S-023674); the other study was an overview study (see Table 1). Additionally, seven studies were conducted within a half-mile search radius of the APE.

Table 1: Previous Studies Identified Through the NWIC Records Search

Author(s)	Year	Report Title	Study Results	Report Reference No.	Distance from Project
Werner, R. H.	1986	Cultural Resources Survey of the Proposed Bare IV Site, East of Antioch in Contra Costa County, California.	Negative	S-008832	Within ¼ mile. Outside PA
Bramlette, A., Praetzellis, M., Praetzellis, A., and D. Fredrickson	1988	Archaeological and Historical Resources Within the Los Vaqueros/Kellogg Study Area, Contra Costa and Alameda Counties, California.	Positive	S-010040	Approximately 1% of the PA along East 18th Street.
Baker, S. and M. Smith	1990	Archaeological Reconnaissance of the Highway 4 Widening Project Near	Negative	S-011385	Within ¼ mile. Outside PA

		Oakley, Contra Costa County, California.			
Theodoratus, D., Peters, M., Blount, C., McGuire, J., Ambro, R., Crist, M., Peak, B., and M. Saxe	1980	Montezuma I and II Cultural Resources.	Positive	S-011826 (cross reference S-049013)	Overlaps 100% of the PA
West, G., and P. Welch	1996	Class II Archaeological Survey of the Contra Costa Canal, Contra Costa County, California.	Positive	S-018440	Within ¼ mile. Outside PA
Moratto et al.	1994	Archaeological Investigations, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California: volume 1 Project Overview, Research Design and Archaeological Inventory.	Positive	S-023674	Approximately 25% of the northern PA.
Busby, C.	2004	Cultural Resources Report, Delta Energy Center Site (DEC) and Associated Linears, Cities of Pittsburg and Antioch, Contra Costa County, California, California Energy Commission (CEC) Project 98-AFC-3C.	Positive	S-030579	Within ¼ mile. Outside PA
Siskin, B.	2005	Historical Resources Compliance Report, State Route 4/Main Street between SR 160 and Big Break Road in Oakley, 04-CC-4, KP 50.1/50.2, PM 31.1/32.3, 04-275-2A17000.	Positive	S-030624	Within ¼ mile. Outside PA
Tang, B.	2009	Historic Property Survey Report, Proposed Undertaking to Upgrade the Capacity of the Burlington Northern Santa Fe (BNSF) Railway's Mainline from Mile Post (MP) 1146.1 to MP 1164.4, Between the City of Oakley and the Port Chicago Naval Weapons Station in Contra Costa County.	Positive	S-035861 (cross reference S-30387)	Within ¼ mile. Outside PA
Whitaker, A.	2010	PG&E Contra-Costa to Moraga Reconductoring Project (letter report).	Positive	S-038392	Within ¼ mile. Outside PA

No previously recorded cultural resources were identified within the APE and one historic-era resource was identified within a quarter-mile of the APE (Table 2). The cultural resource consists of the historic-era Atchison, Topeka, and Santa Fe Railroad (San Francisco & San Joaquin Valley Railroad) (P-07-000806). This resource has not been evaluated for inclusion on the National

Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR); however, it was recommended as ineligible for both (Smallwood 2004).

Table 2: Previously Recorded Cultural Resources Within the ½ Mile of the PA

Primary No.	Quad (7.5")	Component	Description	NRHP Status Code	Distance from Project PA
P-07-000806	Antioch	Historic	Atchison, Topeka, and Santa Fe Railroad (San Francisco & San Joaquin Valley Railroad)	Unknown	566 feet north of the PA

Archival research did not identiy cultural resources within the proposed APE. According to historic aerials and topographic maps the APE was depicted as vacant land prior to 1949 (Nationwide Environmental Title Research [NETR] 1949) and then as agricultural fields from 1953 to 1978 (USGS Antioch North 1953 and 1978; USGS Pittsburgh 1953). From 1979 to today the PA has remained undeveloped (NETR 1979, 1987, 1993, 2002, 2005, 2009, 2010, 2012, 2014, and 2018).

3.0 FIELD SURVEY

3.1 ARCHAEOLOGICAL SURVEY

On October 11, 2018 Stantec Archaeologists, Esme Hammerle and Kelsey Scott, conducted an archaeological pedestrian reconnaissance survey of the APE (Figure 2).

3.1.1 Methods

The APE consists of level terrain with only slight modifications in height near each edge of the PA due to recent tilling/mowing of the PA and the buildup of soils at the turning points (slopes varying between 0.4 and 1.5 percent). Vegetation that was visible consisted of pockets of grass, thistle, and morning glories.

The survey consisted of walking parallel 15-meter-wide transects, oriented to a bearing that followed the long axis of the Project APE footprint (north to south). During the field survey rodent burrows and recent ground disturbance consisting of a bore hole (measuring 40 cm in diameter and 90 cm deep), and off-road vehicle activity were examined for color and texture changes that would indicate buried deposits. Periodic trowel and boot scrapings were employed to clear small patches of vegetation in areas with poor ground visibility. The archaeologists did not observe any evidence of prehistoric archaeological site indicators such as obsidian or chert flakes, grinding and mashing implements (i.e. groundstone, mortars, pestles, handstones, and millingslicks), bone, and discolored soils, which could contain lithics, bone, shell, other organics, and/or fire-affected rocks. Similarly, evidence of historic period-site indicators such as glass and ceramic fragments, metal objects, milled and split lumber, and the remnants of structures or features such as building foundations, fence posts, and discrete trash deposits such as wells, privy pits, or dumps were not observed in the APE.

Digital photographs were taken of the survey area and visible ground surface (see Appendix A). All observations were recorded in field notes and locations were mapped with a Geographic Positioning System (GPS) unit with sub-meter accuracy.

3.1.2 Findings

The APE is located within a vacant lot on level terrain with a maximum elevation of 34 feet above mean sea level. The soil visibility (ranged from 95 to 100 percent) due to the recent vegetation clearing and was clear and unobstructed by development (Attachment A). The soils consisted of sandy loam topsoil (consistent with a mix of native soils with imported fill) with fragments of concrete, pavement, and debris from modern dumping scattered throughout. No prehistoric archaeological sites or artifacts were observed, and no indicators of buried cultural deposits (e.g. changes in soil color or texture or fragments of carbon, bone, shell, flaked stone, ceramic, historic

glass, or brick, etc.) were identified. Potentially historic-era cobalt glass was observed during the survey; however, the fragments were freshly broken and nondiagnostic. All other items identified during the survey were modern (e.g. golf balls, sewer pipe fragments, asphalt fragments, red brick, car parts, modern ceramic, and beer cans and bottles).

4.0 CONCLUSIONS AND RECOMMENDATIONS

The records search did not identify previously recorded cultural resources within the project area. Additionally, the survey did not identify new resources within the APE. The APE is located within areas that have been disturbed due to heavy tilling of the soil during vegetation management and past agricultural activities. Stantec proposes the following inadvertent discovery procedures be followed in the event that buried resources are encountered during construction.

4.1 INADVERTENT DISCOVERY PROCEDURES

4.1.1 Archaeological Deposits

The archival records search performed as part of the cultural resources analysis resulted in the identification of no known prehistoric archaeological resources within or near the APE. Additionally, there were no signs of previously unidentified subsurface archaeological resources within the PA during the field survey. Thus, the proposed project is not anticipated to have an impact on any known or potentially buried archaeological resources.

However, subsurface construction activities such as trenching and grading associated with the proposed project could potentially damage or destroy previously undiscovered historical resources and/or unique archaeological resources. If any cultural resource (e.g., sites or artifacts) is encountered during ground disturbance or subsurface construction activities (e.g., trenching, grading), all construction activities within a 50-foot radius of the identified resource shall cease until a, archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in archaeology and/ or history evaluates the resource for its significance and records the resource on the appropriate State Department of Parks and Recreation (DPR) 523 series forms. If the qualified archaeologist determines that the cultural resource appears eligible for inclusion on the CRHR the archaeologist shall develop a plan for the treatment of the resource. This shall contain appropriate mitigation measures, including avoidance, preservation in place, data recovery excavation, or other appropriate measures outlined in Public Resources Code Section 21083.2.

4.1.2 Human Remains

There are no known human remains within the project area, and no indications that the project location has been used for burial purposes in the past. Therefore, it is unlikely that human remains would be encountered during construction. However, ground disturbance and subsurface construction activities such as trenching and grading associated with the proposed project could potentially disturb previously undiscovered human burial sites. If ground-disturbing activities uncover previously unknown human remains, Section 7050.5 of the California Health and Safety Code applies, and the following procedures shall be followed.

There shall be no further excavation or disturbance of the area where the human remains were found or within 50 feet of the find until the Contra Costa County Coroner and the appropriate City representative are contacted. Duly authorized representatives of the Coroner and the City shall be permitted onto the project site and shall take all actions consistent with Health and Safety Code Section 7050.5 and Government Code Sections 27460, et seq. Excavation or disturbance of the area where the human remains were found or within 50 feet of the find shall not be permitted to re-commence until the Coroner determines that the remains are not subject to the provisions of law concerning investigation of the circumstances, manner, and cause of any death. If the Coroner determines the remains are Native American, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours, and the NAHC shall identify the person or persons it believes to be the "most likely descendant" (MLD) of the deceased Native American. The MLD may make recommendations 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 goods as provided in PRC Section 5097.98. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from further disturbance. If the landowner does not accept the MLD's recommendations, the owner or the MLD may request mediation by NAHC.

5.0 REFERENCES

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1908 Pittsburg, CA Quadrangle, 1:62500 (reprinted 1943). Washington, D.C.

1953 Pittsburg, CA Quadrangle, 1:62500. Washington, D.C.

1918 Antioch North, Quadrangle, 1:31680. Washington, D.C.

1953 Antioch North, CA Quadrangle, 7.5-minute Series (surveyed, reprinted 1968, and 1978). Washington, D.C.

October 24, 2018

APPENDICES

October 24, 2018

Appendix A SURVEY PHOTOGRAPHS

Photograph 1. Overview of PA towards East 18th Street. View facing south. E. Hammerle. 10/11/2018.

Photograph 2. Bore hole located within the northwest portion of the PA. Excavation is 40 cm in diameter and 90 cm deep. Plan View facing south. E. Hammerle. 10/11/2018.

Photograph 3. Overview of PA. View facing north. E. Hammerle. 10/11/2018.

Photograph 4. Overview of PA with modern concrete fragments scattered. View facing northwest. E. Hammerle. 10/11/2018.

Photograph 5. Overview of PA with no dumping sign and discarded modern rubbish scattered. View facing south. E. Hammerle. 10/11/2018.

Photograph 6. Overview of PA with Mount Diablo in the backdrop. View facing southwest. E. Hammerle. 10/11/2018.

Photograph 7. Close-up of exposed soil. View facing down. E. Hammerle. 10/11/2018.

Photograph 8. Detail of first cobalt glass fragment. View facing down. E. Hammerle. 10/11/2018.

Photograph 9. Detail of second cobalt glass fragment. View facing down. E. Hammerle. 10/11/2018.

Photograph 10. Close-up of exposed soil, tire treads, and gravel. View facing down. E. Hammerle. 10/11/2018.

Photograph 11. Overview of PA with E 18th Street in the background. View facing southeast. E. Hammerle. 10/11/2018.

Photograph 12. Overview of PA. View facing west. E. Hammerle. 10/11/2018.

ACORN BUSINESS PARK PROJECT CULTURAL RESOURCES RECORDS SEARCH AND SURVEY REPORT, CITY OF ANTIOCH, CONTRA COSTA COUNTY, CALIFORNIA

October 24, 2018

APPENDIX C-2: ANTIOCH HISTORY

HISTORY OF THE CITY OF ANTIOCH

The City is in the northeastern portion of Contra Costa County and shares a border with the City of Oakley to the east, the City of Pittsburg to the west, and the City of Brentwood to the southeast. The north side of the City faces the Sacramento-San Joaquin Delta. In general, the City is urbanized with residential, commercial, and industrial land uses. Open space is scattered throughout the northern and southern portions of the City and accounts for approximately 50 percent of the land within the City.

Antioch is located within the traditional territory of the Bay Miwok and archaeological materials discovered during the cultural resources clearance of the Los Vaqueros Reservoir about 12 miles south of the City were dated to around 9500 years before present (BP) (Erlandson et al. 2007). The initial Spanish and Mexican development in the area consisted of ranching activities, while early American development consisted of coal mining and agriculture (Samuelson et al. 1994).

Prehistoric Context

The City is in the Delta which formed an interface zone between the San Francisco Bay Area and the Central Valley culture regions (Moratto 1984). Californian Native Americans within the Delta area developed a sophisticated material culture, became central figures within an extensive trade system incorporating distant and neighboring regions, and achieved population densities equaled only by agricultural societies in the American Southwest and Southeast. In this area, prehistory is generally broken up into five periods: the Paleoindian Period (13,500–10,500 BP), the Lower Archaic Period (10,500-7,500 BP), the Middle Archaic Period (7,500-2,500 BP), the Upper Archaic Period (2,500-850 BP), and the Emergent Period (850-150 BP) (Rosenthal et al. 2007).

The oldest identified archaeological sites near Antioch date to the Lower Archaic. Archaeological deposits from this period are dominated by large projectile points and stone milling implements for the processing of plant foods, primarily acorns. By the Middle Archaic, rising sea levels pushed inland caused the formation of the Delta. The resulting wetlands provided inhabitants with abundant food resources and led to the establishment of long-term village sites. The early part of the Middle Archaic in Contra Costa County is not well understood due to considerable soil accumulation in the area, but more sites have been found dating to after 4,500 BP. These sites contain elaborate and diverse assemblages of artifacts that reflect complex societies focused on resources available along rivers and in marshes, called the Windmiller Pattern. One of the important indicators of Windmiller Pattern sites is burials wherein the individuals were placed in an extended position facing west. The Upper Archaic is characterized by increasingly complex material culture and the establishment of large mounded village sites surrounding the Delta (Rosenthal et al. 2007). This cultural expression is called the Berkeley Pattern and likely represents the entry of Miwok-speaking people into the area from the northern Bay Area and southern North Coastal Ranges, displacing the Windmiller Pattern around 2,500 BP (Moratto 1984; Rosenthal et al. 2007). The presence of mortars and pestles indicate the people's reliance on acorns as a staple

food source. The cultural traditions observed during the time of European contact developed during the Emergent Period. This highly complex culture is referred to as the Augustine Pattern and was most likely brought to the area by Patwin speakers from the north. This pattern included use of the bow and arrow and complex societies with large, populous villages focused on both riverine resources and extensive gathering of acorns (Moratto 1984; Rosenthal et al. 2007).

Spanish Period

The recorded history of Contra Costa County began with the arrival of the Fages-Crespi expedition in 1772, which expanded the exploration initiated by the Spanish in the Bay Area in 1769 (Kyle 2002). Subsequently, the Abella expedition (1811), the Arguello expedition (1813), and the Duran and Arguello expedition (1817) passed near the project area (Beck and Haase 1974). Batismal records show that Native Californians from near the project area were removed to both Misión San Francisco de Asís and Misión San José in the late 18th and early 19th centuries (Levy 1978). The relations between the Spanish colonists and the Bay Miwok groups were generally hostile, leading to a series of small-scale wars.

Mexican Period

Once Mexico gained independence from Spain in 1821, lands once allocated for the missions and for the Native California inhabitants of the missions were redistributed and granted as land grants or ranchos to citizens in Mexican California. Neither of the two land grants in the City covered the project site, but Rancho Los Meganos, granted to Jose Noriega in 1835, was located a short distance to the west. The other land grant, Rancho Los Medanos, was located to the south and was granted to Colonel Johnathan Drake Stevenson in 1839 (Beck and Haase 1974). Generally, the area was used for grazing livestock, primarily cattle for the hide and tallow trade.

American Period

In 1837, John Marsh, an early settler, bought the Rancho Los Meganos land grant from Noriega and established Marsh's Landing, to the west of present-day Antioch. Marsh's Landing was an important commercial center for trade along the San Joaquin River during the Gold Rush. Eventually, the Smith brothers of New Hampshire acquired the Los Medanos land grant from Stevenson and established Smith's landing, west of Marsh's Landing. On July 4, 1851, Smith's Landing was renamed Antioch after the biblical city (Kyle 2002).

From the 1850s to the 1880s five boomtowns developed within the vicinity of the City. The coal mining industry developed in the City with the establishment of the Black Diamond, Cumberland, Mount Hope, Empire, and Central Mines in the Mount Diablo coal field, south of Antioch (Kyle 2002). The closest mine to the project site is the Empire Mine and in 1878 the Empire Railroad was established, running from the coalfields to the Antioch waterfront. However, due to rising costs, diminishing profits, and played out coal deposits, these towns and mines eventually disappeared in the late 19th century, with the last, the Black Diamond Mine, closing in 1907 (Samuelson et al. 1994). Throughout the historic district in Antioch and the Black Diamond Mines Regional Park, there are numerous monuments, and plaques acknowledging the City's once thriving coal mining industry.

By 1909, the Oakland and Antioch Railway connected Antioch to the greater Bay Area by rail. As a result, Antioch became a manufacturing center for diversified industries such as pottery, a distillery, canneries, brickyards, and paper mills. In the 1920s, the Black Diamond Mining area started to be mined for silica sand for use in glassmaking and foundry casting. This continued until the late 1940s when most of the area was converted to ranching (Samuelson et al. 1994). Today, the City is experiencing dramatic growth as housing is developed for the increasing population of the San Francisco Bay Area.

Ethnographic Context

The inhabitants of eastern Contra Costa County spoke dialects of Bay Miwok. This language belongs to the Eastern Miwok division of the Miwok language family, part of the wider Penutian linguistic stock (Golla 2011). The Bay Miwok ethnoliguistic group was organized into a number of different "tribelets," small social and political entities that occupied a distinct territory. Each tribelet contained a principal village surrounded by several smaller villages and numerous campsites used during the seasonal gathering of different resources (Levy 1978). There have been different interpretations of the locations of Bay Miwok villages, however current ethnohistorical research indicates that the southeastern portions of the City, including the project site, was in the territory of the Julpun tribelet (Levy 1978). The Bay Miwok economy was based on fishing, gathering, and hunting in both the Delta wetlands and the surrounding hills. These areas provided diverse set of resources including acorns, various seeds, salmon, deer, rabbits, insects, and quail (Levy 1978). The Bay Miwok primarily lived in conical thatch houses made of tules but may have also constructed semi-subterranean earth-covered houses (Levy 1978). According to the City of Antioch General Plan Environmental Impact Report (EIR) (LSA 2003), it is estimated that 1,700 Bay Miwok were living in five tribelets in northeastern Contra Costa County at the time of arrival of the Spanish. Aggressive missionization of the Native Californians in Contra Costa County took place as the indigenous coastal populations declined, with most ending up in Misión San José. This resulted in Bay Miwok resistance to the Spanish colonist, culminating in a series of small-scale wars between the Spanish and the Miwok peoples. In the 1830s and 1840s, American and British trappers brought diseases into the Central Valley, decimating the indigenous populations (Levy 1978).

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Appendix D STORMWATER CONTROL PLAN

STORMWATER CONTROL PLAN
for
ACORN BUSINESS PARK
DEVELOPMENT PLANS

SEPTEMBER 14, 2018

prepared by:

BKF Engineers
James McCurdy, P.E.
Associate
(916) 556-5855

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TABLES

FIGURES

I. PROJECT DATA [Complete the following table and include in Stormwater Control Plan.]

Table 1. Project Data

Project Name/Number	Acorn Business Park
Application Submittal Date	June 12, 2018
Project Location	Northwest 18th Street Drive-In Way
Name of Developer	JMI Properties Corporation
Project Phase No.	N/A
Project Type and Description	Site development associated with new self-storage, business park, commercial and hospitality business.
Project Watershed	
Total Project Site Area (acres)	19.75 acres
Total Area of Land Disturbed (acres)	19.75 acres
Total New Impervious Surface Area (sq. ft.)	675,403 sq. ft.
Total Replaced Impervious Surface Area	0 sq. ft.
Total Pre-Project Impervious Surface Area	0 sq. ft.
Total Post-Project Impervious Surface Area	675,403 sq. ft.
50% Rule[*]	Does not apply
Applicable Special Project Categories [Complete even if all treatment is LID]	None
Percent LID and non LID treatment	Treatment elements treating 100% of the site will be provided as well as elements designed for flow-control.
HMP Compliance [†]	Applies

[*50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

Acorn Business Park project site is located at the northwest corner of 18th Street and Drive-in Way in Antioch, CA (APN 051-052-112/051-052-113). The site area analyzed within this report for stormwater control is 19.75 acres. The project proposes to develop new self-storage, a business park as well as commercial and hospitality business.

See Vicinity Map **(Figure 1)** for project location.

II.B. Existing Site Features and Conditions

The project site being analyzed for stormwater control is approximately 19.75 acres of currently undeveloped land. The pre-project condition is relatively flat with wild grasses and no indications of construction debris or undocumented fills, see Existing Conditions **(Figure 2).** The current topography of the existing site drains from south west to north east. Elevations range from 37 to 25. The property is bounded by Drive-In Way along the eastern and northern perimeter with 18th Street to the south. The majority of the adjacent parcel to the west is currently undeveloped with an existing business center along 18th Street.

Per the project geotechnical report, prepared by Bear Engineering Group, Inc. dated May 25 2018, young alluvial sediments with granular material classified as poorly to well-graded sand was encountered onsite. Per the Geotechnical Engineer, the site consists of NRCS Soil Group A. For a complete geotechnical analysis, refer to project geotechnical report.

II.C. Opportunities and Constraints for Stormwater Control

The existing site topography was a constraint, as the slopes are relatively mild.

The density of each lot also serves as a constraint. Each lot requires adequate parking which limits space available for treatment. The proposed landscape areas throughout each lot are utilized as much as possible to serve as bio-treatment.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope – This is achieved by incorporated as much landscape as possible while maintaining parking requirements for each proposed building size.

III.A.2. Preservation of natural drainage features-N/A.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats-N/A

III.A.4. Minimization of imperviousness- This is achieved by incorporated as much landscape as possible while maintaining parking requirements for each proposed building size.

III.A.5. Use of drainage as a design element-Rainwater is being directed to bio-retention areas by surface runoff.

III.B. Use of Permeable Pavements-N/A

III.C. Dispersal of Runoff to Pervious Areas-Site runoff is being directed to bio-retention areas for treatment.

III.D. Integrated Management Practices

Proposed bio-retention areas will be used to provide treatment and flow-control for the site.

IV. DOCUMENTATION OF DRAINAGE DESIGN

A system of proposed bio-retention areas and storm drains will collect, treat, and convey stormwater runoff from the project site to the existing stormwater system. Stormwater runoff from roofs, pavement surface, and landscaping will flow into bio-retention areas to be treated. The bio-retention areas will be comprised of a minimum of 18-inches of soil (sand) above a perforated drain pipe, which will be surrounded by Class II permeable rock.

The bio-retention areas have been sized to function as stormwater treatment and flow control. Sizing of all bio-retention areas is based on technical design requirements written in the *Stormwater C.3 Guidebook, 6th Edition* by the Contra Costa Clean Water Program. The IMP Sizing Tool referenced in the *Stormwater C.3 Guidebook* was used in sizing the bio-retention areas.

Each lot on the proposed site is designed to direct runoff to a bio-treatment area. Stormwater runoff from impervious surfaces runoff to a bio-treatment area sized per the CCC IMP Sizing Calculator.

See **Figure 3** for pervious & impervious areas.

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table of Drainage Management Areas

DMA Name	*Surface Type*	*Area (square feet)*
DMA1	*Asphalt or Pavement*	*64,218*
DMA2	*Conventional Roof*	*12,136*
DMA3	*Landscape*	*25,674*
DMA4	*Asphalt or Pavement*	*32,673*
DMA5	*Conventional Roof*	*10,708*
DMA6	*Landscape*	*10,127*
DMA7	*Asphalt or Pavement*	*132,793*
DMA8	*Conventional Roof*	*136,095*
DMA9	*Landscape*	*45,870*
DMA10	*Asphalt or Pavement*	*25,494*
DMA11	*Conventional Roof*	*14,112*
DMA12	*Landscape*	*5,198*
DMA 13	*Asphalt or Pavement*	*26,367*
DMA 14	*Conventional Roof*	*14,112*
DMA 15	*Landscape*	*5,618*
DMA 16	*Asphalt or Pavement*	*31,206*
DMA 17	*Conventional Roof*	*14,112*
DMA 18	*Landscape*	*4,189*

DMA 19	*Asphalt or Pavement*	*27,310*
DMA 20	*Conventional Roof*	*14,112*
DMA 21	*Landscape*	*8,574*
DMA 22	*Asphalt or Pavement*	*27,963*
DMA 23	*Conventional Roof*	*14,112*
DMA 24	*Landscape*	*7,404*
DMA 25	*Asphalt or Pavement*	*27,659*
DMA 26	*Conventional Roof*	*14,112*
DMA 27	*Landscape*	*6,494*
DMA 28	*Asphalt or Pavement*	*23,615*
DMA 29	*Conventional Roof*	*14,112*
DMA 30	*Landscape*	*9,409*

IV.A.2. Drainage Management Area Descriptions

DMA 1, totaling 64,218 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 1. DMA 1 drains to IMP 1.

DMA 2, totaling 12,136 square feet, includes runoff from the proposed hotel building located in Lot 1. DMA 2 drains to IMP 1.

DMA 3, totaling 25,674 square feet, includes the proposed landscape planters contained within Lot 1. DMA 3 is self-treating.

DMA 4, totaling 32,673 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 2. DMA 4 drains to IMP 2.

DMA 5, totaling 10,708 square feet, includes runoff from the proposed commercial building located in Lot 2. DMA 5 drains to IMP 2.

DMA 6, totaling 10,127 square feet, includes the proposed landscape planters contained within Lot 2. DMA 6 is self-treating.

DMA 7, totaling 132,793 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 3 and Lot 6. DMA 7 drains to IMP 3.

DMA 8, totaling 136,095 square feet, includes runoff from the proposed self-storage buildings located in Lot 3 and the proposed commercial building in Lot 6. DMA 8 drains to IMP 3.

DMA 9, totaling 45,870 square feet, includes the proposed landscape planters contained within Lot 3 and Lot A. DMA 9 is self-treating.

DMA 10, totaling 25,494 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 4. DMA 10 drains to IMP 4.

DMA 11, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 4. DMA 11 drains to IMP 4.

DMA 12, totaling 5,198 square feet, includes the proposed landscape planters contained within Lot 4 and is self-treating.

DMA 13, totaling 26,367 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 5. DMA 13 drains to IMP 5.

DMA 14, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 5. DMA 14 drains to IMP 5.

DMA 15, totaling 5,618 square feet, includes the proposed landscape planters contained within Lot 5 and is self-treating.

DMA 16, totaling 31,206 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 7. DMA 16 drains to IMP 6.

DMA 17, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 7. DMA 17 drains to IMP 6.

DMA 18, totaling 4,189 square feet, includes the proposed landscape planters contained within Lot 7 and is self-treating.

DMA 19, totaling 27,310 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 8. DMA 19 drains to IMP 7.

DMA 20, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 8. DMA 20 drains to IMP 7.

DMA 21, totaling 8,574 square feet, includes the proposed landscape planters contained within Lot 8 and is self-treating.

DMA 22, totaling 27,963 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 9. DMA 22 drains to IMP 8.

DMA 23, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 9. DMA 23 drains to IMP 8.

DMA 24, totaling 7,404 square feet, includes the proposed landscape planters contained within Lot 9 and is self-treating.

DMA 25, totaling 27,659 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 10. DMA 25 drains to IMP 9.

DMA 26, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 10. DMA 26 drains to IMP 9.

DMA 27, totaling 6,494 square feet, includes the proposed landscape planters contained within Lot 10 and is self-treating.

DMA 28, totaling 23,615 square feet, includes runoff from the proposed asphalt and/or concrete of Lot 11. DMA 28 drains to IMP 10.

DMA 29, totaling 14,112 square feet, includes runoff from the proposed commercial building located in Lot 11. DMA 29 drains to IMP 10.

DMA 30, totaling 9,409 square feet, includes the proposed landscape planters contained within Lot 11 and is self-treating.

IV.B.Tabulation and Sizing Calculations

IV.B.1. Information Summary for IMP Design

Total Project Area (Square Feet)	860,299
Mean Annual Precipitation	12.5
IMPs Designed For:	Treatment and Flow Control

IV.B.2. Self-Treating Areas

DMA Name	*Area (square feet)*
DMA 3	*25,674*
DMA 6	*10,127*
DMA 9	*45,870*
DMA 12	*5,198*
DMA 15	*5,618*
DMA 18	*4,189*
DMA 21	*8,574*
DMA 24	*7,404*
DMA 27	*6,494*
DMA 30	*9,409*

IV.B.3. Areas Draining to IMPs

See **Figure 5** for Contra Costa Cleanwater Program IMP Sizing Calculator Table.

V. SOURCE CONTROL MEASURES

V.A. Site activities and potential sources of pollutants

Post-construction activities related to the project development will create few sources of stormwater pollutants. The following are the most likely sources to be controlled:

- Dumping of wash water, petroleum products, or other liquids into the storm drain inlets,
- Fertilizer and pesticides used in common area landscape maintenance,
- Outdoor trash and recycling refuse bins.

V.B. Source Control Table

Potential source of runoff pollutants	*Permanent source control BMPs*	*Operational source control BMPs*
Storm Drain Inlets	Public inlets will be stenciled with the words "NO DUMPING–DRAINS TO BAY" with a thermoplastic material	The warnings will be regularly inspected and re-stenciled. Inlets and pipes conveying stormwater will be regularly inspected and maintained as part of BMP operation and Maintenance Plan. Provide information to site employees on the effects of illegal dumping.
Landscape Maintenance	Final landscape plans will be designed to: Minimize irrigation water use. Minimize the need for fertilizers and pesticides. Include pest-resistant plants. Include planting appropriate to site soils, slope, climate, sun, wind, rain, land use, air movement, and ecological consistency and plant interactions.	Maintain a water-efficient irrigation system. Maintain landscaping using minimum or no fertilizers or pesticides. Provide information to new owners, lessees and operators on the use of fertilizers and pesticides.

Private Drive Aisles, Parking Lot, & Sidewalks		Pavement shall be swept regularly to prevent the accumulation of litter and debris.

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

See **Figure 4** for details of proposed treatment area.

VI. STORMWATER FACILITY MAINTENANCE

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

1. Commitment to Execute any Necessary Agreements

TBD agrees to provide necessary easements or rights of entry to Contra Costa County for access and inspection of stormwater IMPs and to make provision of easement or rights of entry a condition of sale.

2. Statement Accepting Responsibility for Operation and Maintenance of IMPs Until that Responsibility is Formally Transferred

TBD agrees to operate and maintain the bio-retention areas on the project until one of the following occurs; (1) Acceptance of maintenance responsibility by the County, including the filing of all required easements and establishment of a special district or other permanent funding mechanism or (2) Legal incorporation of a private entity to be responsible for maintenance, execution of Codes, Covenants, and Responsibilities or other agreement that runs with the land and requires future owners to provide and pay for maintenance of stormwater IMPs, and execution of a Stormwater Management Facilities Operation and Maintenance Agreement and Right of Entry in the form provided by the County.

3. Stormwater Facilities Operation and Maintenance Plan

TBD will submit, with the application for building permits, a draft Stormwater Facilities Operation and Maintenance Plan including detailed maintenance requirements and a maintenance schedule for each of the treatment and control IMPs.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

1. Bio-retention maintenance requires inspection at periodic intervals and following major storms to ensure that inlets and outlets have not clogged.
2. Remove any accumulated trash or sediment.
3. Clear any obstructions and remove any accumulation of sediment.
4. Examine rock or other material used as a splash pad and replenish if necessary.
5. Inspect outlets for erosion or plugging.
6. Observe soil at the bottom of the bio-retention area for uniform percolation throughout. If portions of the planer do not drain within 48 hours after the end of a storm, the soil should be tilled and replanted.
7. Examine the vegetation to ensure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. When mowing, remove no more than 1/3 height of grasses. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove noxious and invasive vegetation.
8. Abate any potential vectors by filling holes in the ground in and around the planters and by insuring that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the Contra Costa Mosquito and Vector Control District for information and advice. Mosquito larvicides should be applied only

when absolutely necessary and then only by a licensed individual or contractor.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

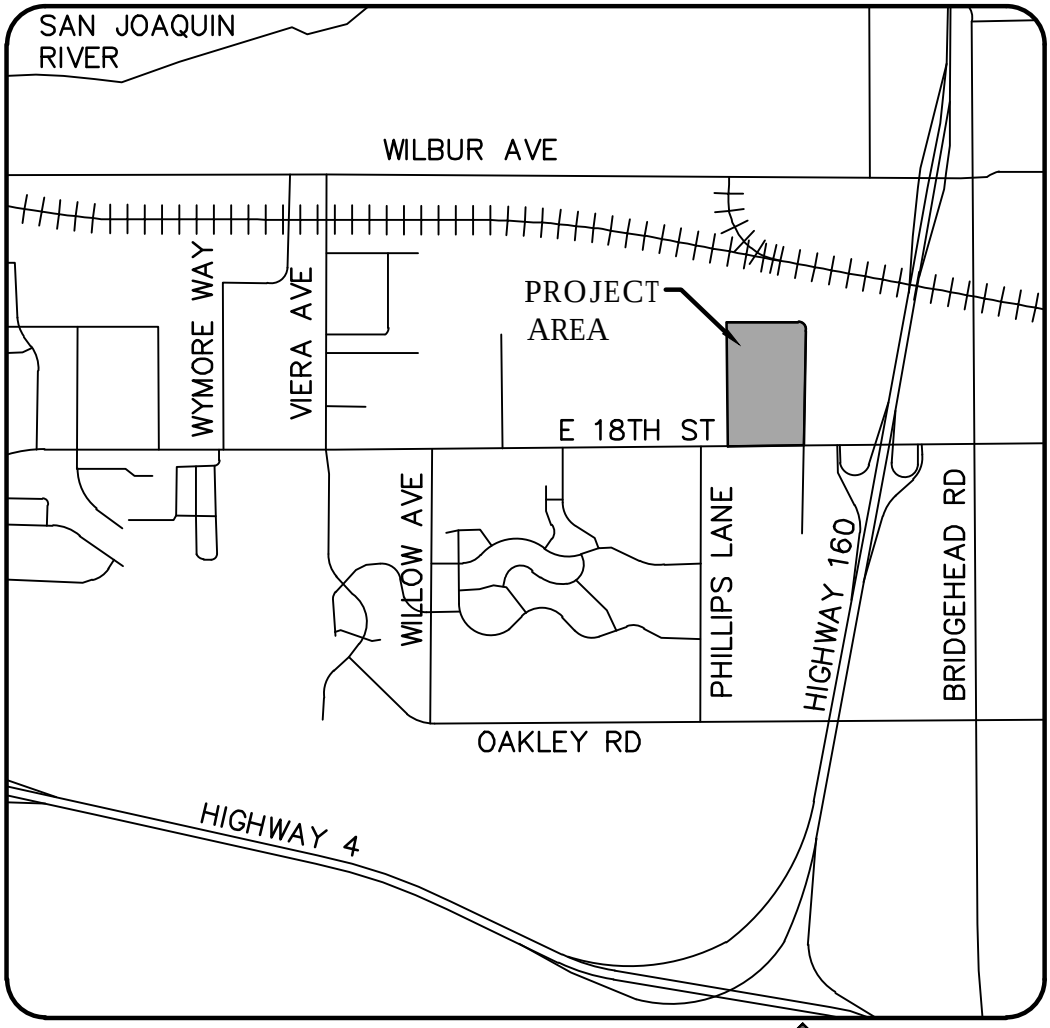
BMP Description	*See Plan Sheet #s*
Area DMA-3, 6, 9, 12, 15, 18, 21, 24, 27 & 30 are self-treating areas.	CE-09 & CE-10
Area DMA-1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28 & 29, drainage from roof & paved area drains to bio-retention area IMP-1, 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11 (54,614 SF) to be treated before entering the existing stormwater system.	CE-09 & CE-10
The final grading plan conforms to the delineation of drainage areas in the SWCP.	CE-07 & CE-08
The final drainage plan conforms to the SWCP; drainage from impervious areas, including building roof, is routed to bio-treatment areas as shown in the SWCP.	CE-09 & CE-10
Plants have been selected to minimize use of fertilizers and pesticides.	Landscape Plans

VIII. CERTIFICATIONS

The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074 and Order R2-2011-0083.

FIGURE 1

VICINITY MAP

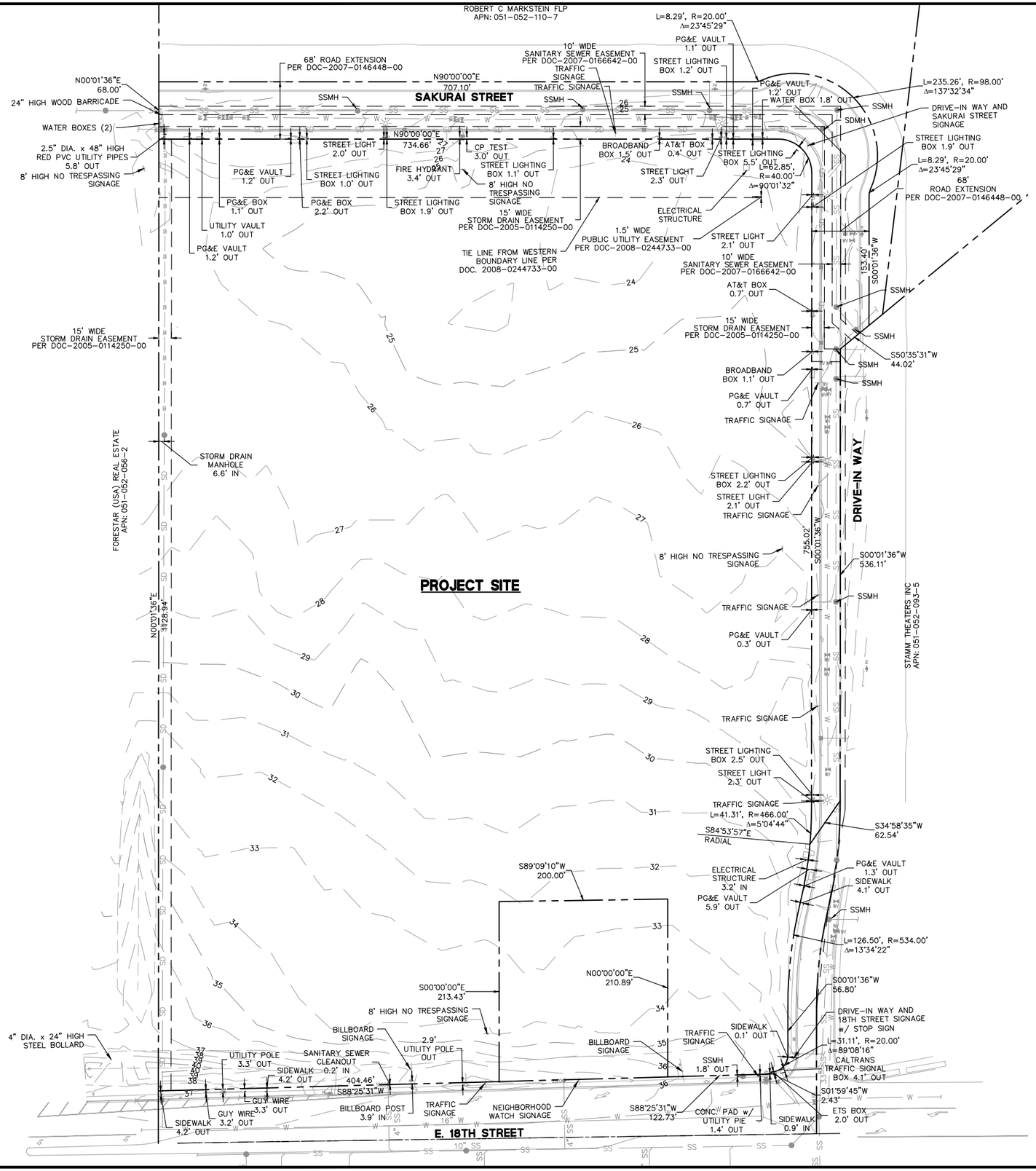


VICINITY MAP

N.T.S

FIGURE 2

EXISTING CONDITIONS



ABBREVIATIONS:

AC	ASPHALT CEMENT
AD	AREA DRAIN
AWSS	AUXILIARY WATER SUPPLY SYSTEM
BDC	BUILDING CORNER
BLDG	BUILDING
BW	BACK OF WALK
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CONC	CONCRETE
COR	CORNER
DI	DRAIN INLET
DIP	DUCTILE IRON PIPE
DW	DOMESTIC WATER
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FG	FUTURE GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FW	FIRE WATER
G	GAS
GB	GRADE BREAK
PG&E	PACIFIC GAS & ELECTRIC
PM	PARKING METER
RCP	REINFORCED CONCRETE PIPE
RET	RETURN
RIM	ELEVATION
SF	SQUARE FEET
SLD	SLOT DRAIN
SW	SIDEWALK
T	TREE
TC	TOP OF CURB
TELE	TELEPHONE
TYP	TYPICAL
UB	UTILITY BOX
UNK	UNKNOWN
UPS	UNITED PARCEL SERVICE
UTIL	UTILITY
VCP	VITRIFIED CLAY PIPE
W	WATER
WM	WATER METER
WV	WATER VALVE

LEGEND:

- PROPERTY LINE
- SD — STORM DRAIN PIPE
- SS — SANITARY SEWER PIPE
- W — WATER PIPE
- FIRE HYDRANT
- WATER VALVE
- CURB DRAIN INLET
- STORM DRAIN MANHOLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- STREET LIGHT
- JOINT POLE
- GUY LINE

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DEVELOPMENT PLANS FOR ACORN BUSINESS PARK

ALTA SURVEY AND BOUNDARY

CITY OF ANTIOCH CALIFORNIA

No.	Revisions

Date: 07.27.2018
Scale: AS SHOWN
Design: CLM/MMB
Drawn: ADL/CN
Approved: JTM
Job No: C2018059-10

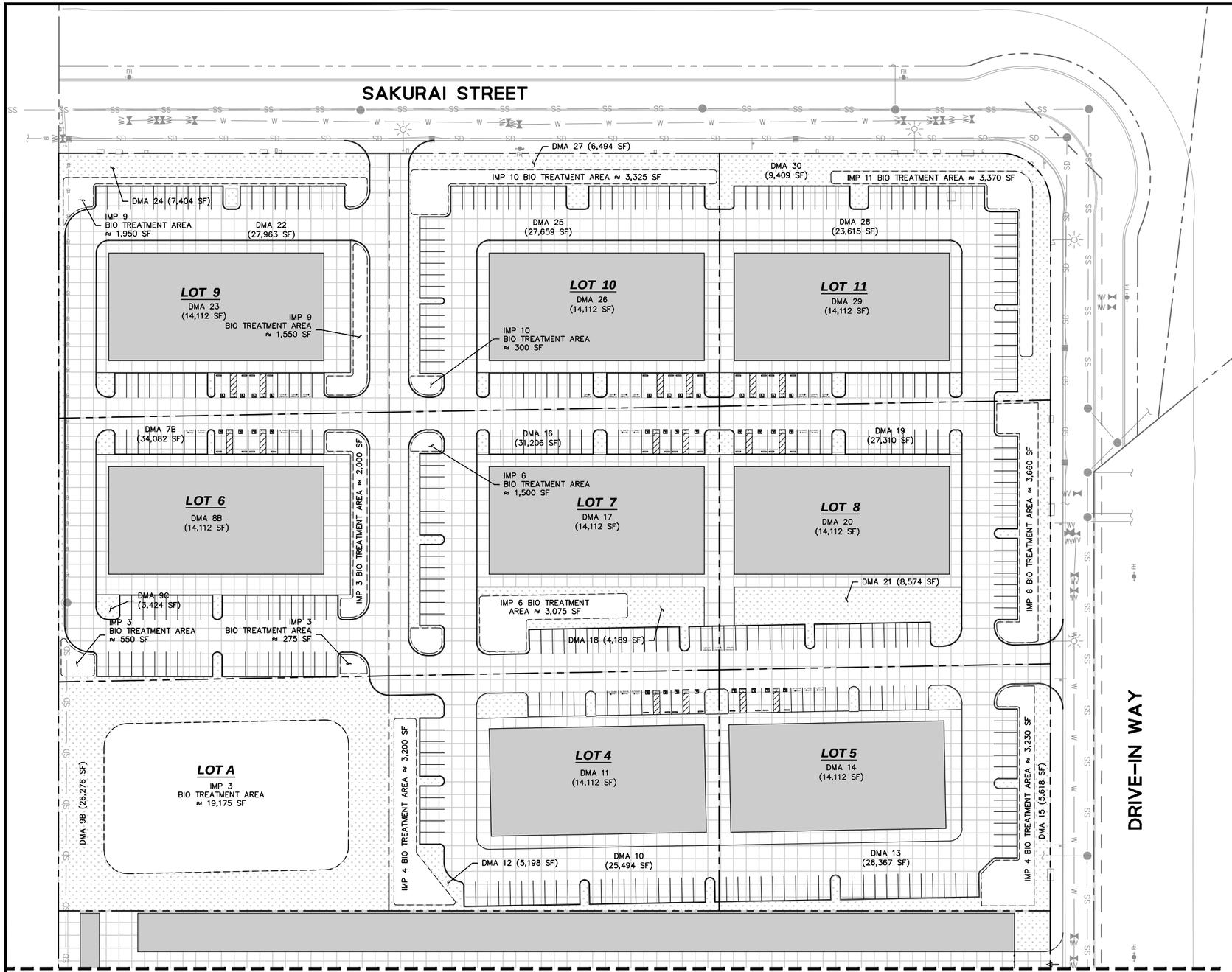
Drawing Number:

CE-03

3 OF 13

FIGURE 3

STORM WATER CONTROL PLAN



CONTINUATION LINE, SEE SHEET CE-10

PRE-IMPROVEMENT						
PROJECT SITE AREA:	860,299	(ft)2				
PERVIOUS AREAS:				IMPERVIOUS AREAS:		
DESCRIPTION	AREA	UNITS		DESCRIPTION	AREA	UNITS
UNDEVELOPED/LANDSCAPE	860,299	(ft)2		ROOF + PAVED AREA'S	0	(ft)2
TOTAL	860,299	(ft)2		TOTAL	0	(ft)2
POST-IMPROVEMENT						
PROJECT SITE AREA:	860,299	(ft)2		% IMPERVIOUS AREA INCREASE		8.3%
PERVIOUS AREAS:				IMPERVIOUS AREAS:		
DESCRIPTION	AREA	UNITS		DESCRIPTION	AREA	UNITS
LANDSCAPE + PERVIOUS PAVEMENT + BIORETENTION AREAS	178,091	(ft)2		ROOF + PAVED AREAS	682,208	(ft)2
TOTAL	178,091	(ft)2		TOTAL	682,208	(ft)2

C.3 STORMWATER MANAGEMENT EXHIBIT NOTES:

1. THIS PROJECT IS REGULATED BY THE MUNICIPAL REGIONAL STORMWATER NPDES PERMIT, ORDER NO. R2-2015-0049 DATED NOVEMBER 19, 2015. CALCULATIONS ARE BASED ON THE CONTRA COSTA CLEAN WATER PROGRAMS "STORMWATER C.3 GUIDEBOOK" 7TH EDITION MAY 17, 2017 (GUIDEBOOK).
2. THE PROJECT TOTAL SITE AREA IS 19.75 ACRES AND THE TOTAL AREA OF LAND DISTURBED IS 19.75 ACRES.
3. THIS PROJECT PROPOSES TO REDUCE IMPERVIOUS SURFACE AREA BY 682,208 SQUARE FEET AND WILL REPLACE 682,208 SQUARE FEET OF EXISTING IMPERVIOUS SURFACE AREA. THE TOTAL PRE-PROJECT IMPERVIOUS SURFACE AREA IS 860,299 SQUARE FEET. THE TOTAL POST-PROJECT IMPERVIOUS SURFACE AREA IS 71,152 SQUARE FEET.
4. PROVISION C.3 PROJECT REQUIREMENTS INCLUDE: NEW/REDEVELOPED AREA SUBJECT TO STORMWATER TREATMENT AND FLOW CONTROL.
5. COMPLIANCE WITH FLOW CONTROL REQUIREMENTS ARE MET THROUGH: OPTION 2 : INTEGRATED MANAGEMENT PRACTICES PER THE GUIDEBOOK.
6. DESIGN CRITERIA
   a) MEAN ANNUAL PRECIPITATION = 12.5 INCHES PER HOUR CCCPWD MEAN SEASONAL ISOHYETS, FIGURE B-166
   b) SOIL GROUP A
   c) HYDRAULIC DESIGN CRITERIA: 0.2 INCHES PER HOUR RAINFALL INTENSITY
   d) BIORETENTION SOIL LOADING RATE: 5INCHES PER HOUR
   e) BIORETENTION SOIL MIX PER APPENDIX B OF THE GUIDEBOOK
8. THE PROJECT SITE IS DELINEATED INTO 30 DRAINAGE MANAGEMENT AREAS (DMAS) AS SHOWN ON THIS SHEET. DATA OUTPUT FROM THE CONTRA COSTA CLEAN WATER PROGRAM IMP SIZING CALCULATOR IS INCLUDED ON SHEET CE-11.
9. THE ESTIMATED AREA OF DISTURBANCE DURING CONSTRUCTION IS 860,299 SF.

STORM QUALITY SUMMARY TABLE

LOT NUMBER	IMP NUMBER	DMA NAME (SURFACE TYPE)	TOTAL DMA AREA (SF)	REQUIRED IMP SIZE (SF)	PROPOSED IMP SIZE (SF)
1	1	DMA 1 (AC/CONC) DMA 2 (ROOF) DMA 3 (LANDSCAPE)	64,218 12,136 25,674	4,978	6,170
2	2	DMA 4 (AC/CONC) DMA 5 (ROOF) DMA 6 (LANDSCAPE)	32,673 10,708 10,127	2,800	3,500
3/6/A	3	DMA 7 (AC/CONC) DMA 8 (ROOF) DMA 9 (LANDSCAPE)	132,793 136,095 45,870	17,248	22,000
4	4	DMA 10 (AC/CONC) DMA 11 (ROOF) DMA 12 (LANDSCAPE)	25,494 14,112 5,198	2,531	3,150
5	5	DMA 13 (AC/CONC) DMA 14 (ROOF) DMA 15 (LANDSCAPE)	26,367 14,112 5,616	2,588	3,201
7	6	DMA 16 (AC/CONC) DMA 17 (ROOF) DMA 18 (LANDSCAPE)	31,206 14,112 4,189	2,885	3,650
8	7	DMA 19 (AC/CONC) DMA 20 (ROOF) DMA 21 (LANDSCAPE)	27,310 14,112 857	2,667	3,300
9	8	DMA 22 (AC/CONC) DMA 23 (ROOF) DMA 24 (LANDSCAPE)	27,963 14,112 740	2,700	3,350
10	9	DMA 25 (AC/CONC) DMA 26 (ROOF) DMA 27 (LANDSCAPE)	27,659 14,112 6,494	2,675	3,350
11	10	DMA 28 (AC/CONC) DMA 29 (ROOF) DMA 30 (LANDSCAPE)	23,615 14,112 9,409	2,439	3,050

* NOTE: THE LETTERS (A,B,C) FOLLOWNG THE DMA NUMBER IN PLAN VIEW DENOTE A PORTION OF THE TOTAL DMA.

STORM WATER LEGEND

- ROOF AREA
- HARDSCAPE AREA
- LANDSCAPE AREA

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CONCEPTUAL STORMWATER CONTROL PLAN
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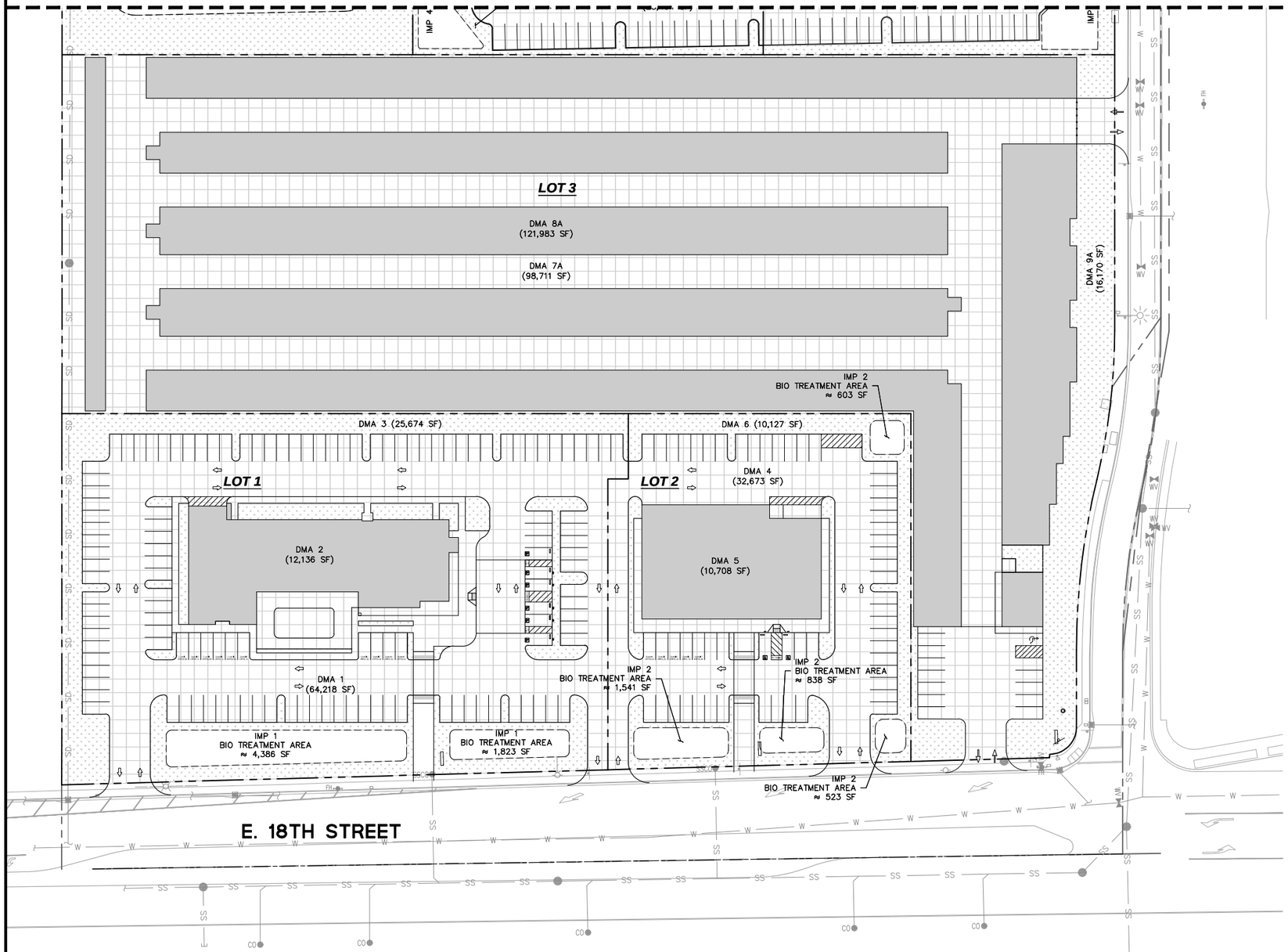
Job No: C20180059-10

Drawing Number:
CE-09
9 OF 13

CONTINUATION LINE, SEE SHEET CE-09



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8	7	DMA 19 (AC/CONC) DMA 20 (ROOF) DMA 21 (LANDSCAPE)	27,310 14,112 857	2,667	3,300
9	8	DMA 22 (AC/CONC) DMA 23 (ROOF) DMA 24 (LANDSCAPE)	27,963 14,112 740	2,700	3,350
10	9	DMA 25 (AC/CONC) DMA 26 (ROOF) DMA 27 (LANDSCAPE)	27,659 14,112 6,494	2,675	3,350
11	10	DMA 28 (AC/CONC) DMA 29 (ROOF) DMA 30 (LANDSCAPE)	23,615 14,112 9,409	2,439	3,050

* NOTE: THE LETTERS (A,B,C) FOLLOWNG THE DMA NUMBER IN PLAN VIEW DENOTE A PORTION OF THE TOTAL DMA.

STORM WATER LEGEND

ROOF AREA

HARDSCAPE AREA

LANDSCAPE AREA

GRAPHIC SCALE
40 0 40 80

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REGISTERED PROFESSIONAL ENGINEER
JAMES T. McCULLOUGH
C 64859
EXP. 6/30/19
CIVIL
STATE OF CALIFORNIA

DEVELOPMENT PLANS FOR
ACORN BUSINESS PARK
CONCEPTUAL STORMWATER CONTROL PLAN
CITY OF ANTIOCH, CALIFORNIA

Revisions

No.	

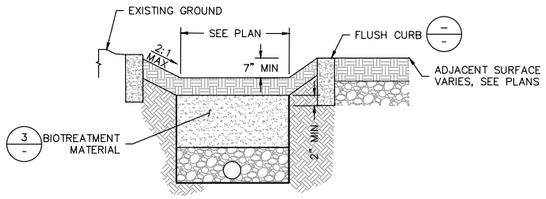
Date: 07.27.2018
Scale: AS SHOWN
Design: CLM/AMB
Drawn: ADL/CN
Approved: JTM
Job No: C2018059-10

Drawing Number:
CE-10
10 OF 13

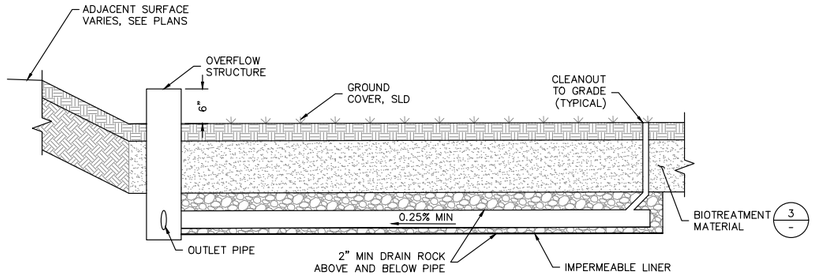
DRAWING NAME: S:\2018\C2018059_Acorn_Industrial\Civil\Plans\GRADING\SHEETS\GR_UP.dwg
PLOT DATE: 7/27/2018
PLOTTED BY: Nick

FIGURE 4

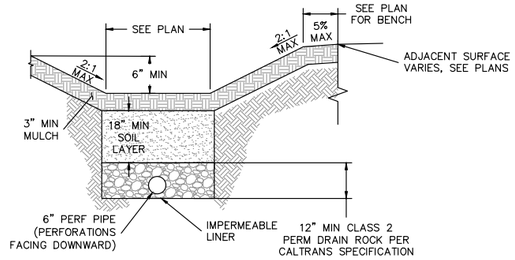
STORM WATER CONTROL DETAILS



1 FLUSH CONDITION AT BIOTREATMENT
NTS



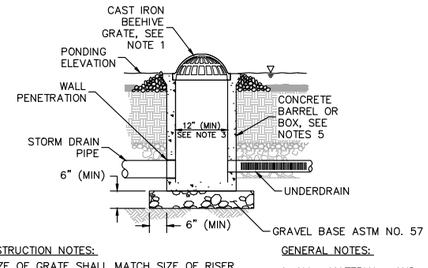
2 BIOTREATMENT LONGITUDINAL CROSS-SECTION
NTS



3 BIOTREATMENT MATERIAL
NTS

BIORETENTION NOTES

1. BIORETENTION AREAS WILL VARY AS TO LOCATION OF HIGH AND LOW POINTS BUT BASIC MATERIALS AND CONSTRUCTION METHODS SHOWN ABOVE SHALL REMAIN THE SAME.
2. SOIL LAYER SHALL CONSIST OF A UNIFORM MIX OF 60%–70% CONSTRUCTION SAND AND 30%–40% COMPOST, FREE OF STONES, STUMPS, ROOTS, OR SIMILAR OBJECTS AND FREE OF NOXIOUS WEEDS.SOIL LAYER SHALL CONSIST OF A UNIFORM MIX OF 60%–70% CONSTRUCTION SAND AND 30%–40% COMPOST, FREE OF STONES, STUMPS, ROOTS, OR SIMILAR OBJECTS AND FREE OF NOXIOUS WEEDS. BIOTREATMENT SOIL MIX SHALL MEET THE SAN MATEO COUNTYWIDE WATER POLLUTION PREVENTION PROGRAM (SMCWPPP) SPECIFICATIONS. CONTRACTOR SHALL REFER TO SMCWPPP FOR BIOTREATMENT MIX SUPPLIERS.
3. DRAIN ROCK LAYER SHALL CONSIST OF CLASS 2 PERMEABLE MATERIAL PER CALTRANS SPECIFICATION SECTION 68–1.025.
4. TOP SOIL SHALL CONSIST OF MULCH OR LARGE BARK AND SHALL RESIST FLOATING.



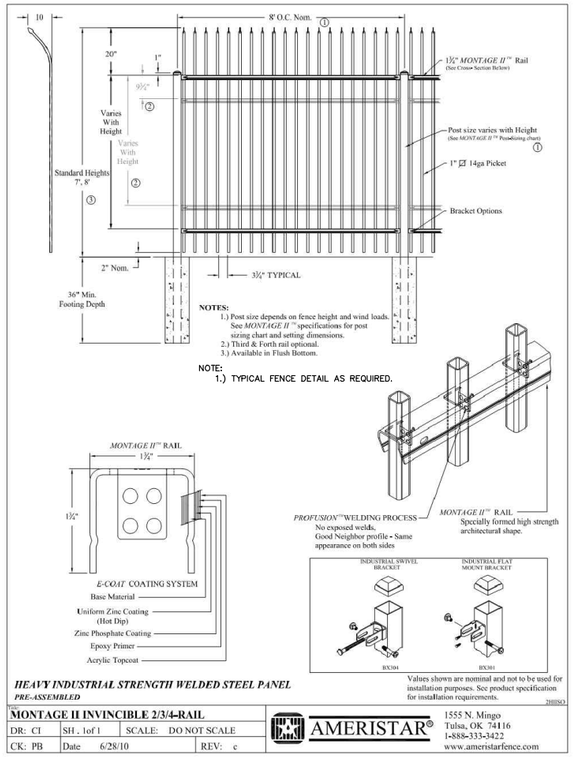
CONSTRUCTION NOTES:

1. SIZE OF GRATE SHALL MATCH SIZE OF RISER SPECIFIED IN PLANS, SHALL BE REMOVABLE TO PROVIDE MAINTENANCE ACCESS, AND SHALL BE BOLTED IN PLACE OR OUTFITTED WITH APPROVED TAMPER–RESISTANT LOCKING MECHANISM. MAXIMUM GRATE OPENING SHALL BE 4 INCHES.
2. IF INTERIOR DEPTH OF OVERFLOW STRUCTURE EXCEEDS 5 FEET, A PERMANENT BOLTED LADDER AND MINIMUM CLEAR SPACE OF 30 IN BY 30 IN SHALL BE PROVIDED FOR MAINTENANCE ACCESS.
3. 12 INCH (MIN) CLEARANCE WITHIN OVERFLOW STRUCTURE SHALL BE PROVIDED FOR MAINTENANCE ACCESS.
4. INSTALL CAST IRON TRAP/HOOD PER MANUFACTURER'S RECOMMENDATIONS.
5. BARREL/BOX AND BASE OF CATCH BASIN MAY BE PRE–CAST WITH REINFORCING STEEL PER MANUFACTURER'S RECOMMENDATIONS, OR POURED IN PLACE CONCRETE WITHOUT STEEL PER SAN FRANCISCO STANDARD PLANS AND SPECIFICATIONS.

GENERAL NOTES:

1. ALL MATERIAL AND WORKMANSHIP FOR OVERFLOW STRUCTURES SHALL CONFORM TO SAN FRANCISCO STANDARD SPECIFICATIONS AND APPLICABLE CODES PER SAN FRANCISCO DBI.
2. GROUT ALL PENETRATIONS, CRACKS, SEAMS, AND JOINTS WITH CLASS "C" MORTAR.
3. OVERFLOW PIPES MUST BE LOCATED AT AN ELEVATION HIGHER THAN THE SEWER HYDRAULIC GRADE LINE TO PREVENT BACKFLOW INTO THE BIORETENTION FACILITY.

4 OVERFLOW STRUCTURE
NTS



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JAMES T. McCULLOUGH
C 64858
EXP. 6/30/19
CIVIL
STATE OF CALIFORNIA

DEVELOPMENT PLANS FOR
ACORN BUSINESS PARK
DETAILS

CITY OF ANTIOCH
CALIFORNIA

No.	Revisions

Date: 07.27.2018
Scale: AS SHOWN
Design: CLM/MMB
Drawn: ADL/CN
Approved: JTM
Job No: C2016059-10

Drawing Number:
CE–13
13 OF 13

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FIGURE 5

IMP SIZING CALCULATOR TABLE

Project Name: Acon Business Park
Project Type: Treatment and Flow Control
APN: 051-052-112, 113
Drainage Area: 860,299
Mean Annual Precipitation: 12.5

IV. Areas Draining to IMPs

IMP Name: IMP1
IMP Type: Bioretention Facility
Soil Group: IMP1

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA1	64,218	Concrete or Asphalt	1.00	64,218
DMA2	12,136	Conventional Roof	1.00	12,136
DMA3	25,675	Landscape	0.10	2,568
			Total	78,922

IMP Sizing			
IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	4,978	6,170
Surface Volume	0.058	0.901	4,124	4,134

IMP Name: IMP2
IMP Type: Bioretention Facility
Soil Group: IMP2

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA4	32,673	Concrete or Asphalt	1.00	32,673
DMA5	10,708	Conventional Roof	1.00	10,708
DMA6	10,172	Landscape	0.10	1,017
			Total	44,398

IMP Sizing			
IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,800	3,500
Surface Volume	0.058	0.901	2,320	2,345

IMP Name: IMP3
IMP Type: Bioretention Facility
Soil Group: IMP3

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA7	132,793	Concrete or Asphalt	1.00	132,793
DMA8	136,095	Conventional	1.00	136,095

IMP Sizing			
IMP Sizing Factor	Rain Adjustment	Minimum Area or	Proposed Area or

		Roof		
DMA9	45,870	Landscape	0.10	4,587
			Total	273,475

	Factor	Volume	Volume
Area	0.070	0.901	17,248	22,000
Surface Volume	0.058	0.901	14,291	14,740

IMP Name: IMP4
IMP Type: Bioretention Facility
Soil Group: IMP4

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA10	25,494	Concrete or Asphalt	1.00	25,494
DMA11	14,112	Conventional Roof	1.00	14,112
DMA12	5,198	Landscape	0.10	520
			Total	40,126

IMP Sizing

	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,531	3,150
Surface Volume	0.058	0.901	2,097	2,111

IMP Name: IMP5
IMP Type: Bioretention Facility
Soil Group: IMP5

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA13	26,367	Concrete or Asphalt	1.00	26,367
DMA14	14,112	Conventional Roof	1.00	14,112
DMA15	5,618	Landscape	0.10	562
			Total	41,041

IMP Sizing

	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,588	3,201
Surface Volume	0.058	0.901	2,145	2,145

IMP Name: IMP6
IMP Type: Bioretention Facility
Soil Group: IMP6

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA16	31,206	Concrete or Asphalt	1.00	31,206
DMA17	14,112	Conventional Roof	1.00	14,112
DMA18	4,189	Landscape	0.10	419
			Total	45,737

IMP Sizing

	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume

Area	0.070	0.901	2,885	3,650
Surface Volume	0.058	0.901	2,390	2,446

IMP Name: IMP7
IMP Type: Bioretention Facility
Soil Group: IMP7

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA19	27,310	Concrete or Asphalt	1.00	27,310
DMA20	14,112	Conventional Roof	1.00	14,112
DMA21	8,574	Landscape	0.10	857
			Total	42,279

IMP Sizing			
IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,667	3,300
Surface Volume	0.058	0.901	2,209	2,211

IMP Name: IMP8
IMP Type: Bioretention Facility
Soil Group: IMP8

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA22	27,963	Concrete or Asphalt	1.00	27,963
DMA23	14,112	Conventional Roof	1.00	14,112
DMA24	7,404	Landscape	0.10	740
			Total	42,815

IMP Sizing			
IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,700	3,350
Surface Volume	0.058	0.901	2,237	2,245

IMP Name: IMP9
IMP Type: Bioretention Facility
Soil Group: IMP9

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA25	27,659	Concrete or Asphalt	1.00	27,659
DMA26	14,112	Conventional Roof	1.00	14,112
DMA27	6,494	Landscape	0.10	649
			Total	42,420

IMP Sizing			
IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.070	0.901	2,675	3,350
Surface Volume	0.058	0.901	2,217	2,245

IMP Name: IMP10

IMP Type: Bioretention Facility
Soil Group: IMP10

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA28	23,615	Concrete or Asphalt	1.00	23,615
DMA29	14,112	Conventional Roof	1.00	14,112
DMA30	9,409	Landscape	0.10	941
			Total	38,668

IMP Sizing			
IMP Sizing Factor	**Rain Adjustment Factor**	**Minimum Area or Volume**	**Proposed Area or Volume**
Area	0.070	0.901	2,439	3,050
Surface Volume	0.058	0.901	2,021	2,044

Report generated on 6/13/2018 12:00:00 AM by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.3.1.0).

Appendix E NOISE MODELING RESULTS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/23/2018
Case Description: Acorn Business Park Worst Case Construction Noise to Motel

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
Riverview Motel	Commercial	60	60	60

			Equipment			
	Impact		Spec Lmax	Actual Lmax	Receptor Distance	Estimated Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Grader	No	40	85		527	0
Pneumatic Tools	No	50		85.2	527	0
Tractor	No	40	84		527	0

	Calculated (dBA)		Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night							
Equipment	**Lmax**	**Leq**	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader	64.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools	64.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	63.5	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**69**	**65.5**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/1/2018
Case Description: Construction Noise to Future Residential Development

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Future Residential Development	Residential	60	60	60

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Tractor	No	40	84		175	0
Grader	No	40	85		175	0
Pneumatic Tools	No	50		85.2	175	0

		Results													
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pneumatic Tools		74.3	71.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78.6	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Appendix F EMPLOYMENT ESTIMATES

Acorn Business Park -Employee Estimate

The proposed project would develop the project site in three different subsections. The proposed project is proposed as a planned development with various potential uses that would be allowed in Subsections A and C. Subsection B would be developed as a self-storage facility.

The following employee estimate was developed to allow an evaluation of potential impacts on population and housing.

Assumptions

4.17 employees per 1000 sf office space

4.3 employees per 1000 sf of medical office space

2.5 employees per 1000 sf of retail space

1 employee per hotel room

Source: LAUSD School Facilities Plan, February 24, 1998. Table 6-1, "Employees per Square Foot of Building Area," Page 6-2.

Subsection A

Alternative A-1

33.6 ksf of retail x 2.5 employees/ksf = 84 employees

33.6 ksf of office x 4.3 employees/ksf = **144 employees**

Alternative A-2

95 room hotel x 1 employee per room = 95 employees

11.088 ksf of retail x 2.5 employees/ksf = 28 employees

11.088 ksf of office x 4.3 employees/ksf = 48 employees

Subsection B

Self-storage facility

122.021 ksf x 0.05 employee/ksf = **6 employees**

Subsection C

Alternative C-1

112.896 ksf of retail x 2.5 employees/ksf = 282 employees

112.896 ksf of medical office x 4.3 employees/ksf = **485 employees**

112.896 ksf of office x 4.17 employees/ksf = 471 employees

Alternative C-2

Acorn Business Park -Employee Estimate

71.880 ksf of retail x 2.5 employees/ksf = 180 employees

71.880 ksf of medical office x 4.3 employees/ksf = 309 employees

71.880 ksf of office x 4.17 employees/ksf = 299 employees

"Worst-case" Estimate = 635 employees

Appendix G TRAFFIC IMPACT ANALYSIS

Acorn Business Park Traffic Impact Analysis

Antioch, California

January 11, 2019

Prepared for:

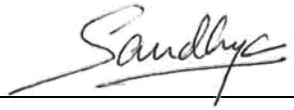
City of Antioch

Prepared by:

Stantec Consulting Services Inc.

Sign-off Sheet

This document entitled Acorn Business Park Traffic Impact Analysis was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of City of Antioch (the “Client”).

Prepared by 

(signature)

Sandhya Perumalla, EIT

Senior Transportation Planner

(949) 923–6074

Reviewed by 

(signature)

Daryl Zerfass, PE, PTP

Principal, Transportation Planning and Traffic Engineering

(949) 923–6058

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1.0 INTRODUCTION

This report presents the findings of a traffic study conducted to determine the potential traffic impacts of the proposed Acorn Business Park Project (Project) located in the City of Antioch. The proposed Project is located on a 19.75-acre vacant site on the northwest corner of Drive-in Way and East 18th Street. The Project site location is illustrated in Figure 1-1. The specific uses for the site have not been determined, but could generally include uses such as a hotel, commercial retail and office space, and self-storage units. Currently, the following two alternatives are being proposed for consideration:

- Alternative 1 would include 33,600 square feet of commercial retail space, 122,021 square feet of self-storage with rooftop solar, and 112,896 square feet of office space.
- Alternative 2 would include 11,088 square feet of commercial retail space, a hotel with 95 rooms, 122,021 square feet of self-storage, and 71,880 square feet of office space.

Note that the project could also consist of a combination of Alternatives 1 and 2. For the purpose of the traffic study, the highest combination of traffic generating uses is evaluated as a worst-case condition. The Project's site plan is illustrated in Figure 1-2, which depicts Alternative 2.

Access to the Project site will be via three proposed new driveways on East 18th Street, two new driveways on Drive-in Way and one new driveway on Sakurai Street as shown on the Project's site plan.

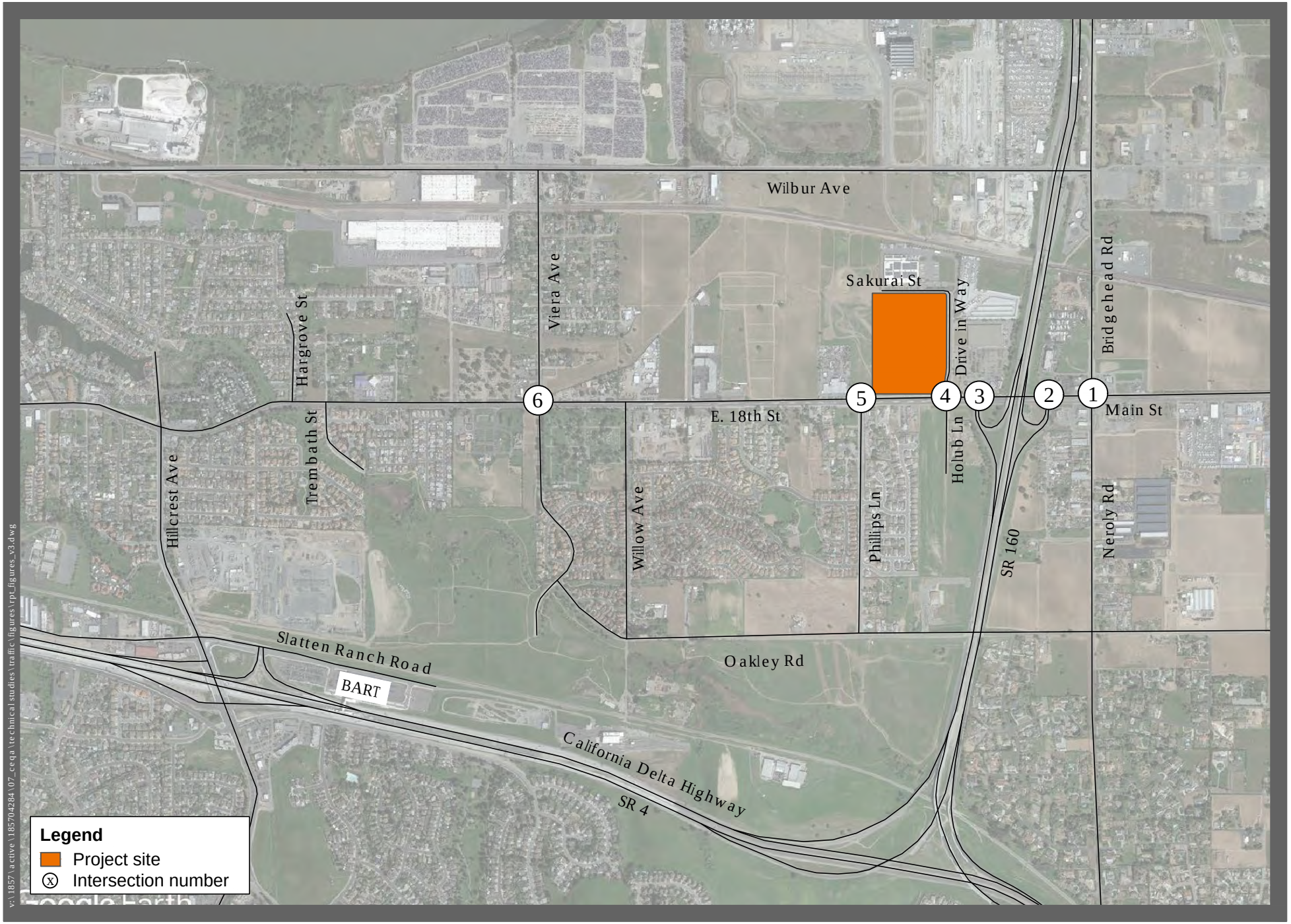
1.1 STUDY AREA

In consultation with City staff, the following five signalized intersections and one unsignalized intersection in the vicinity of the Project site were selected to be analyzed in the traffic study:

1. Bridgehead Road/Neroly Road & Main Street
2. SR 160 NB Ramps & Main Street
3. SR 160 SB Ramps & East 18th Street
4. Drive-in Way/Holub Ln & East 18th Street (unsignalized)
5. Phillips Lane & East 18th Street
6. Viera Avenue & East 18th Street

The study area for the local roadway network is shown in the previously referenced Figure 1-1. The analysis includes evaluation of the AM and PM peak hour traffic conditions consistent with the City's traffic impact study requirements. The study also includes an analysis of transit, bicycle, and pedestrian access.

The potential impacts of the project were evaluated in accordance with the standards of the City of Antioch and other regional agencies, as discussed in the following section.



Stantec

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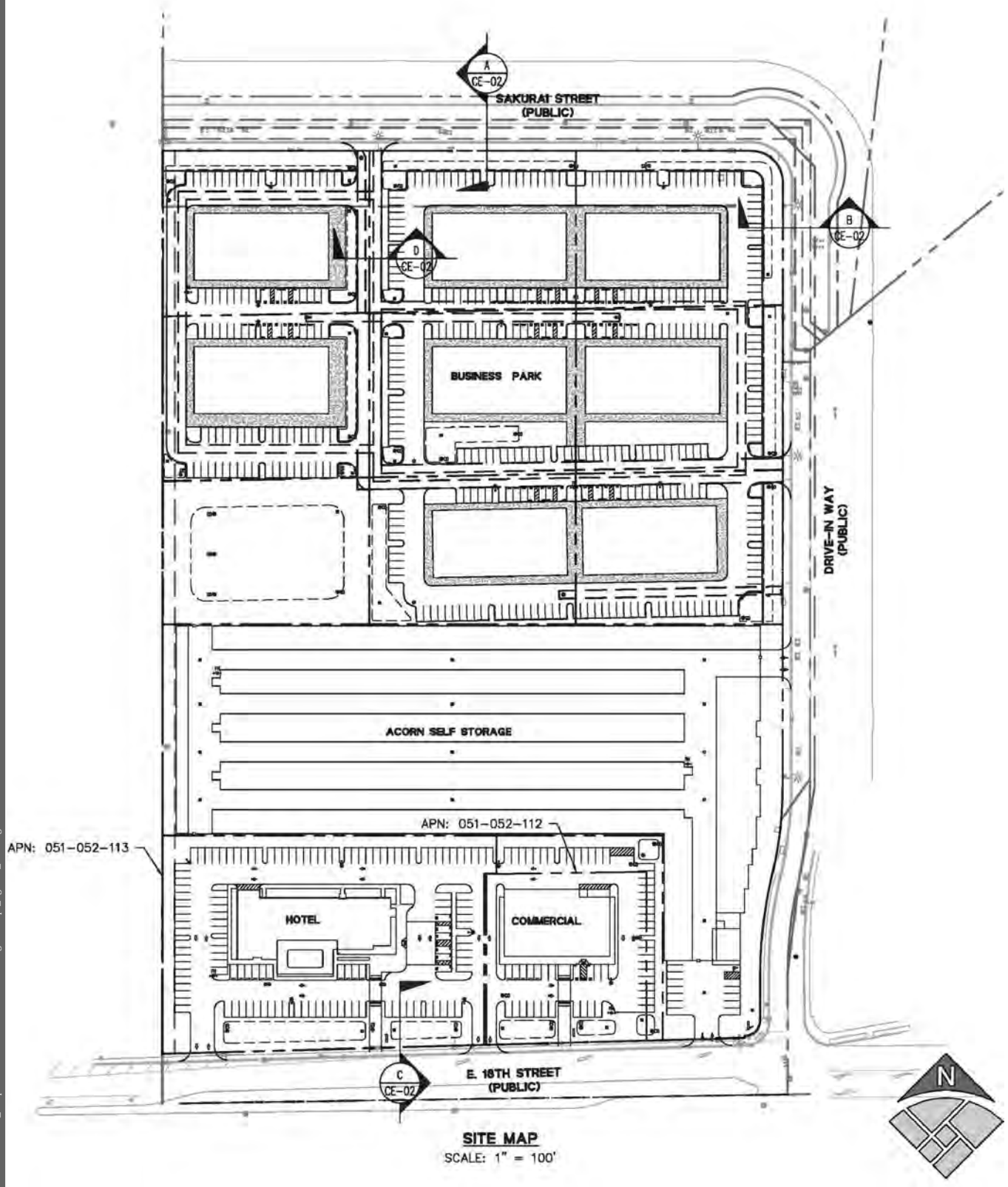
Figure 1-1
Project Site and Study Area
1.2



Source: BKF

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Stantec

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Figure 1-2
Project Site Plan

1.2 METHODOLOGY

This traffic study evaluates the proposed Project in accordance with the standards of the City of Antioch and the Contra Costa Transportation Authority (CCTA), which serves as the Congestion Management Agency (CMA) for Contra Costa County. The suburban arterial routes within the study area were evaluated in accordance with the East County Action Plan (ECAP). The scenarios analyzed in the study are as follows:

1. Existing Conditions (2018)
2. Near-Term without-Project (Existing Plus Approved and Pending Development Projects)
3. Near-Term with-Project (Existing Plus Approved and Pending Development Projects with-Project)
4. Cumulative (2040) without-Project
5. Cumulative (2040) with-Project

The existing conditions scenario utilizes observed AM and PM peak hour traffic counts collected in 2018 for study area intersections. Traffic counts for five locations were obtained from the City and were also utilized for the traffic study prepared for the 3530-3560 East 18th Street Project located across the street from the proposed Project (see Reference 4 in Section 1.5). Traffic counts for the Bridgehead Road/Neroly Road and Main Street intersection were collected for the purpose of this study, as were 24-hour mid-block Average Daily Traffic (ADT) counts for key study area roadways.

The City has identified one approved or pending development project to apply to this analysis, which is the 3530-3560 East 18th Street Project referenced above. Traffic volume forecasts for the 3530-3560 East 18th Street Project were obtained from its traffic study, which was completed in 2018. Traffic volume forecasts for Cumulative (2040) conditions were also obtained from that same study.

None of the study intersections are part of the CMP network, therefore a County Congestion Management Program (CMP) analysis is not required.

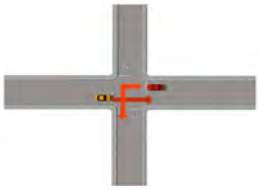
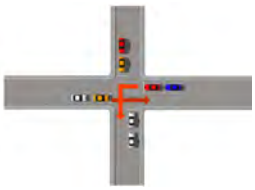
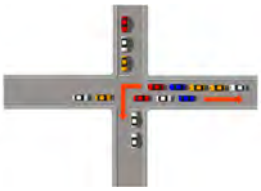
1.3 PERFORMANCE CRITERIA

The impact analysis is based on specific performance criteria which are outlined in the following paragraphs. Where appropriate, mitigation measures are identified for those scenarios in which significant impacts are determined based on the established impact thresholds.

Defined performance criteria are utilized to determine if a proposed project would cause a significant impact. Performance criteria are typically based on two primary measures. The first is “capacity”, which establishes the vehicle carrying ability of a roadway, and the second is “volume.” The volume measure is either a traffic count (in the case of existing volumes) or a forecast for a future point in time. For arterial roadways in an urban or suburban setting, the intersection of two roadways will typically be the limiting factor in regard to the overall capacity of the roadway network.

Methodology outlined in the 2010 Highway Capacity Manual (HCM 2010) produces estimates of average vehicle delay as a function of intersection capacity and the volume of traffic passing through the intersection. From this a corresponding level of service (LOS) is defined. Traffic LOS is designated “A” through “F” with LOS “A” representing free-flow conditions and LOS “F” representing severe traffic congestion. Table 1-1 summarizes the ranges of vehicle

Table 1-1 Level of Service Descriptions for Signalized and Unsignalized Intersections

LOS	Traffic Flow Description	Signal Control Delay	Stop Control Delay
A	 Minimal or no vehicle delay	≤ 10	≤ 10
B	 Slight delay to vehicles	> 10 – 20	> 10 – 15
C	 Moderate vehicle delays, traffic flow remains stable	> 20 – 35	> 15 – 25
D	 More extensive delays at intersections	> 35 – 55	> 25 – 35
E	 Long queues create lengthy delays	> 55 – 80	> 35 – 50
F	 Severe delays and congestion	> 80	> 50

Source: HCM 2010
Delay = average seconds of delay per vehicle

delay that correspond to LOS “A” through “F” for signalized and unsignalized intersections. The ranges are those defined in the HCM 2010 and are used for estimating intersection LOS.

While ADT is a useful measure to show general levels of traffic on a facility and to provide data for other related aspects such as noise and greenhouse gas (GHG) emissions, congestion is largely a peak hour or peak period occurrence and ADT does not reflect peak period conditions very effectively. Because of this, ADT is not used here as the basis for capacity evaluation. Instead, this evaluation focuses on the parts of the day when such congestion can occur, specifically the AM and PM peak hours.

For the arterial system, the peak hour is the accepted time period used for impact evaluation and a number of techniques are available to define intersection LOS. Both the level of delay and the LOS are used in determining impact significance. Certain LOS values are deemed unacceptable by the City and increases in delay that cause or contribute to the LOS being unacceptable are defined as a significant impact. These definitions and procedures are established by individual local jurisdictions, such as the City.

LOS for arterial roadway intersections are determined based on operating conditions during the AM and PM peak hours and the geometric configuration of the intersection. For this study, HCM delay methodology is used to analyze both the signalized intersections and the stop-controlled intersection using Synchro software. For signalized intersections, signal timing/phasing consistent with current conditions was utilized for the existing and near-term conditions. Optimized signal timing/phasing was assumed for the long-range cumulative conditions. The result of these calculations is an estimate of average vehicle delay at the intersection.

The LOS calculation methodology and associated LOS performance standards and thresholds of significance as used in this analysis are summarized in Table 1-2.

Table 1-2 Arterial Intersection Performance Criteria

Delay Methodology

Calculation Methodology

Level of service (LOS) based on "average control delay" calculated as follows:

- Synchro/HCM 2010 delay-based intersection methodology for traffic signals
- Synchro/HCM 2010 delay-based intersection methodology for stop control (approach with highest average delay)

Performance Standard

Signalized Intersections

- High-level LOS D (55 seconds of delay or less) on routes of regional significance

Un-Signalized Intersections

- High-level LOS D (35 seconds of delay or less) on routes of regional significance

Significant Impact Thresholds

Based on the City of Antioch and the ECAP LOS standards, an intersection is considered to be significantly impacted if the Project would:

- Worsen a signalized intersection from acceptable LOS D or better under no-project conditions to unacceptable LOS E or F under project conditions
- Add traffic to a signalized intersection on a route of regional significance that operates at an unacceptable LOS E or F under no-project conditions
- Worsen an unsignalized intersection on a route of regional significance from acceptable LOS D or better under no-project conditions to unacceptable LOS E or F under project conditions, and the intersection warrants a traffic signal based on the California Manual of Uniform Traffic Control Devices (CA MUTCD) Peak-Hour Signal Warrant

Abbreviations:
LOS – Level of Service

1.4 DEFINITIONS

Certain terms used throughout this report are defined below to clarify their intended meaning:

ADT	Average Daily Traffic. Generally used to measure the total two-directional traffic volumes passing a given point on a roadway.
LOS	Level of Service. A scale used to evaluate circulation system performance based on intersection ICU values or volume/capacity ratios of arterial segments.
Peak Hour	This refers to the hour during the AM peak period (typically 7 AM - 9 AM) or the PM peak period (typically 4 PM - 6 PM) in which the greatest number of vehicle trips are generated by a given land use or are traveling on a given roadway.
V/C	Volume to Capacity Ratio. This is typically used to describe the percentage of capacity utilized by existing or projected traffic on a segment of an arterial or intersection.

1.5 REFERENCES

1. "Trip Generation 10th Edition," Institute of Transportation Engineers, 2017.
2. "Trip Generation Handbook 3rd Edition," Institute of Transportation Engineers, 2017.
3. "Highway Capacity Manual 2010," Transportation Research Board, National Research Council, 2010.
4. "3530-3560 E. 18th Street Residential Development Traffic Impact Analysis," Hexagon Transportation Consultants Inc., June 2018.
5. "East County Action Plan for Routes of Regional Significance," Fehr & Peers, Transplan, and Contra Costa Transportation Authority, May 2015.
6. "Technical Procedures," Contra Costa Transportation Authority, January 2013.
7. "Contra Costa Sub-regional Action Plans for the Routes of Regional Significance Multimodal Traffic Service Objectives (MTSO) Draft 2017 Monitoring Report," Iteris, Inc., March 2018.

2.0 TRANSPORTATION SETTING

The following section describes existing and future traffic conditions in the study area. It includes a description of the study area roadway system, existing traffic volumes and corresponding levels of service as defined by the performance criteria outlined in the previous chapter, public transportation services, and active transportation facilities. Forecasts of the baseline future traffic conditions are also presented.

2.1 EXISTING CONDITIONS

2.1.1 Existing Roadway System

As previously described in Chapter 1.0, the proposed Project is located at the northwest corner of Drive-in Way and East 18th Street in the City of Antioch. Local access to the Project site is proposed to be via three new driveways on East 18th Street, two new driveways on Drive-in Way and one new driveway on Sakurai Street as shown in the Project site plan provided in Chapter 1.0. Regional access to the project site is provided via SR 160.

East 18th street is classified by the City as a Primary arterial. It runs in an east-west direction from L Street to SR 160. It is a four-lane roadway with a landscaped median and left-turn pockets in the vicinity of the Project site. East 18th Street is designated as a route of regional significance between A Street and SR 160. East of SR 160 in the City of Oakley, East 18th Street changes names to Main Street.

Drive-in Way is a short two-lane street that terminates at the north side of the project site. It runs in a north-south direction from East 18th Street to Sakurai Street. It provides access to the Project and runs along the east side of the Project site.

Sakurai Street runs in an east-west direction along the north side of the Project site and will connect to future development to the west.

Phillips Lane is a local roadway and runs in a north-south direction from Oakley Road to East 18th Street. It has two lanes with a two-way left-turn lane and bicycle lanes.

Viera Avenue runs in a north-south direction from Oakley Road to Wilbur Avenue. It is a two-lane roadway with bicycle lanes to the north of East 18th Street.

Bridgehead Road/Neroly Road is a two-lane roadway that runs in a north-south direction. North of Main Street it is named Bridgehead Road and south of East 18th Street it is named Neroly Road.

SR 160 freeway is located just east of the Project site with a full interchange at East 18th Street. It generally runs in a north-south direction and provides regional access with a connection to SR 4 approximately one mile south of the project site.

Existing intersection lane configurations for the study locations are illustrated in Figure 2-1.

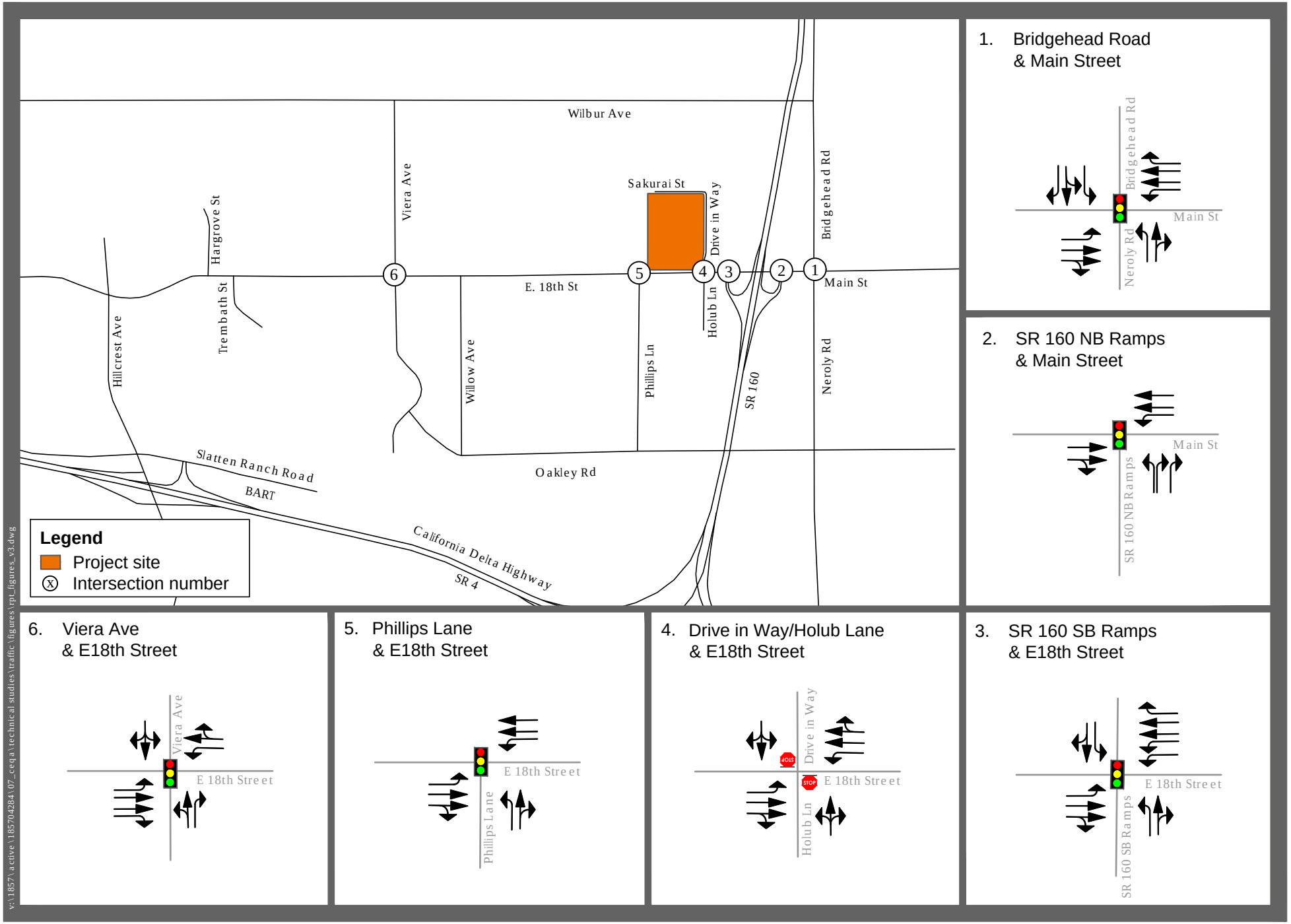


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Figure 2-1

Existing Intersection Lane Configurations

2.2

2.1.2 Existing Traffic Volumes and Levels of Service

As mentioned in Section 1.2, AM and PM peak hour turning movement counts for the study area intersections were obtained from the 2018 traffic study prepared for the 3530-3560 East 18th Street Project, except for the intersection of Bridgehead Road/Neroly Road and Main Street, which was not included in that study. A new peak hour turning movement count was collected for the Bridgehead Road/Neroly Road and Main Street intersection and 24-hour mid-block ADT counts were collected for key study area roadways in October 2018 for use in this study.

Existing ADT volumes for arterials in the study area are illustrated in Figure 2-2. Peak hour turning movement volumes are illustrated in Figure 2-3 for the AM peak hour and Figure 2-4 for the PM peak hour. The traffic count data sheets are provided in Appendix A.

The results of the intersection LOS analysis under existing conditions are shown in Table 2-1**.** Each of the signalized intersections and the stop-controlled intersection were analyzed using the HCM delay methodology. Detailed LOS calculation worksheets are provided in Appendix B. The table shows that all the study area intersections currently operate at LOS C or better in both the AM peak hour and the PM peak hour.

Table 2-1 Intersection LOS Summary – Existing Conditions

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1. Bridgehead Road/Neroly Road & Main Street	Signal	20.7	C	22.4	C
2. SR 160 NB Ramps & Main Street	Signal	11.1	B	17.3	B
3. SR 160 SB Ramps & East 18th Street	Signal	17.5	B	15.2	B
4. Drive-in Way/Holub Ln & East 18th Street	Two-Way Stop	13.1	B	13.8	B
5. Phillips Lane & East 18th Street	Signal	7.0	A	5.7	A
6. Viera Avenue & East 18th Street	Signal	7.4	A	8.1	A
Note: LOS – Level of Service Delay – Average Vehicle Delay (seconds)					

2.1.3 Public Transportation

Tri Delta Transit provides transit services near the Project site. There are three local bus routes that serve the study area directly, which primarily run in the east-west direction on East 18th Street. Figure 2-5 illustrates the existing transit routes. The bus stop closest to the project is located on the north side of East 18th Street just east of Drive-in Way, approximately 200 feet from the edge of the project site. The closest bus stop on the south side of East 18th Street is located near the freeway overpass and is approximately 800 feet from the edge of the project site.

Route 383 provides service between the Cities of Antioch and Brentwood and includes a stop at the Antioch BART Station. It operates on weekdays only. Weekday service is provided from approximately 7:00 AM to 5:00 PM with approximately 60-minute headways during commute hours.

Route 391 provides service between the Pittsburg Center BART Station and the Brentwood Park-and-Ride lot and includes a stop at the Antioch BART Station. It operates on weekdays only. Weekday service is provided from approximately 6:00 AM to 1:00 AM (next day), with approximately 35- to 40-minute headways during commute hours.

Route 393 provides service between the Antioch BART Station and the Brentwood Park-and-Ride lot. It operates on weekends only from approximately 5:00 AM to 1:00 AM (next day), with approximately 60-minute headways.

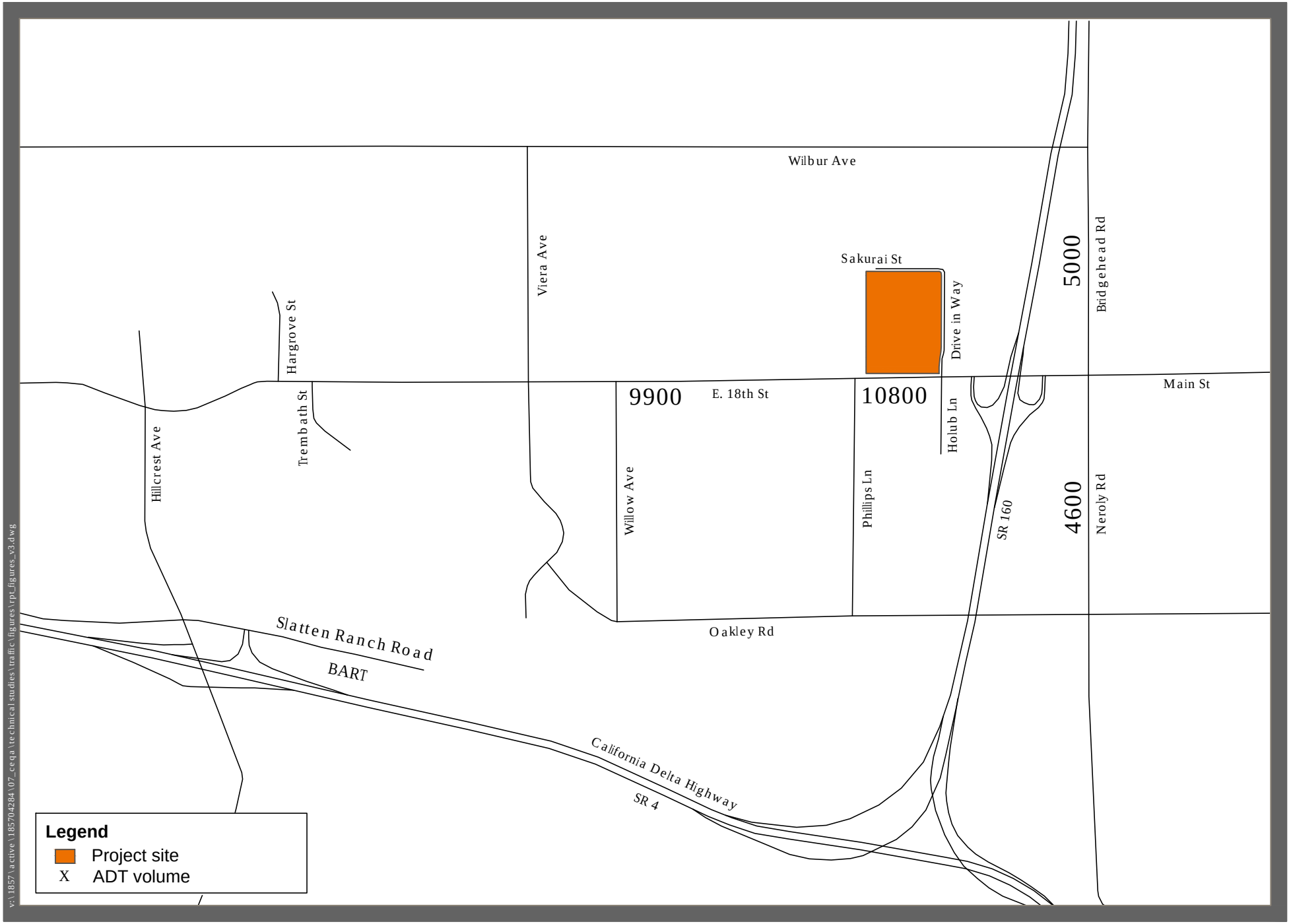

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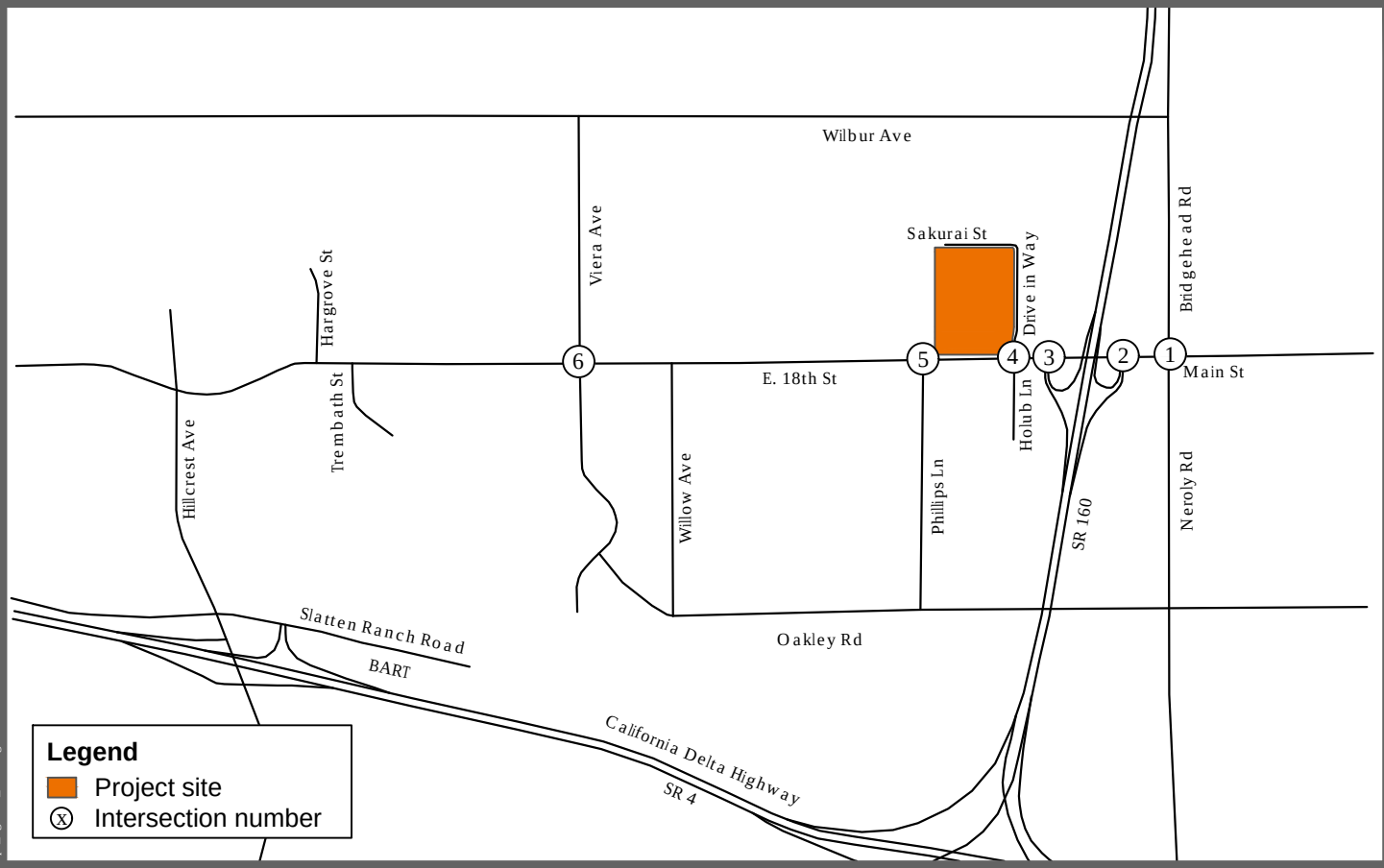
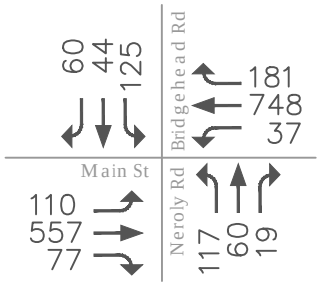
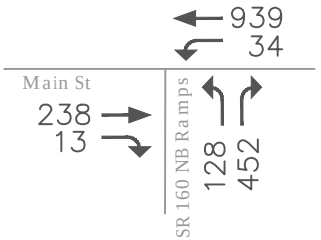
Figure 2-2
Existing ADT Volumes
2.4



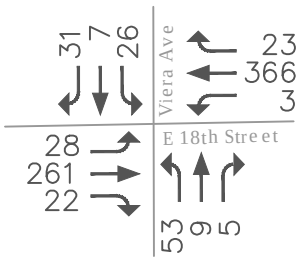
1. Bridgehead Road & Main Street



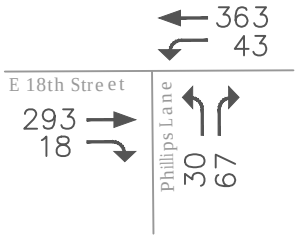
2. SR 160 NB Ramps & Main Street



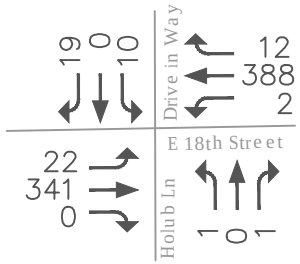
6. Viera Ave & E18th Street



5. Phillips Lane & E18th Street



4. Drive in Way/Holub Lane & E18th Street



3. SR 160 SB Ramps & E18th Street

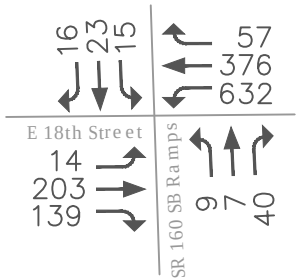


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Figure 2-3
Existing AM Peak Hour Volumes

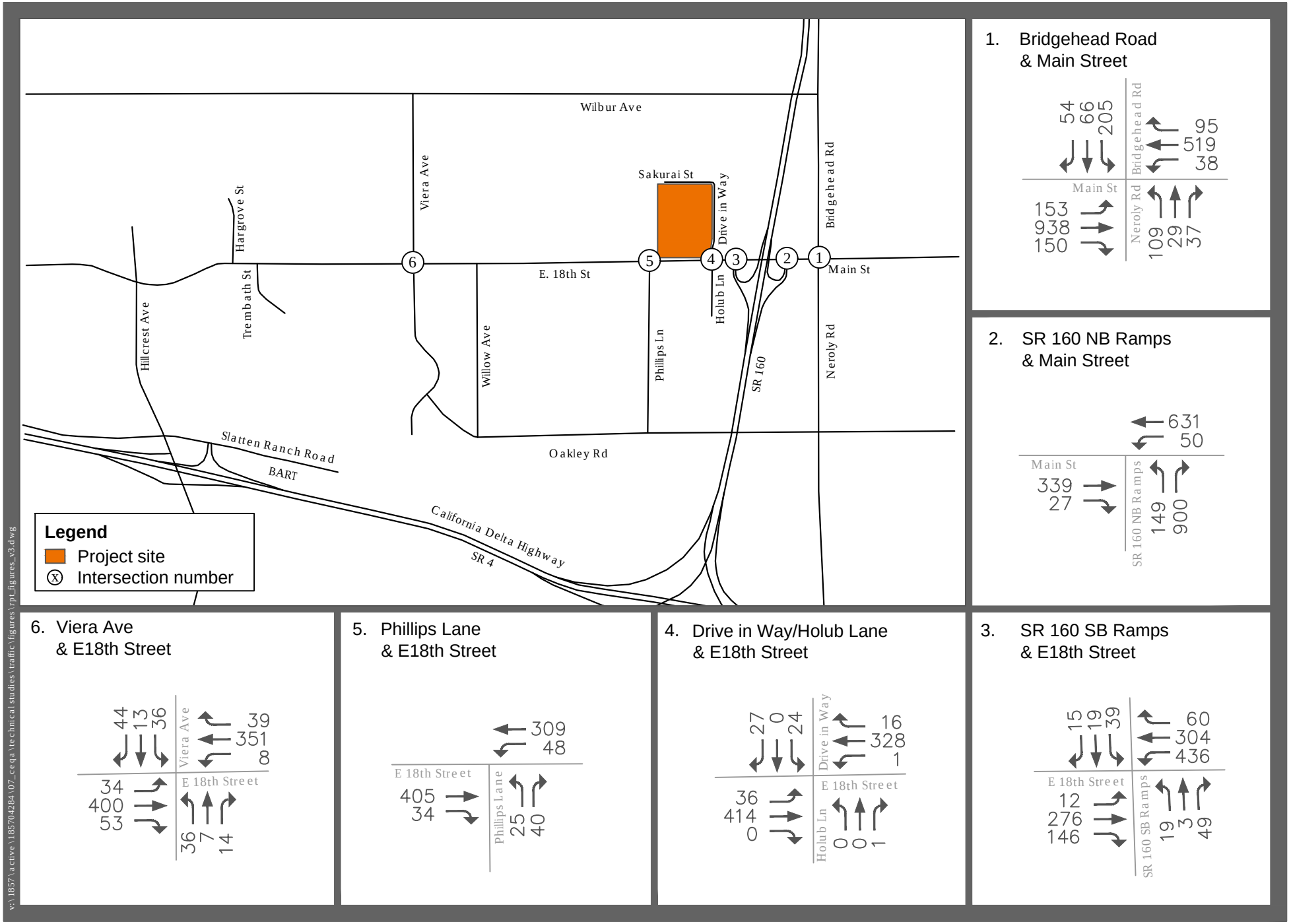

Figure 2-4
Existing PM Peak Hour Volumes

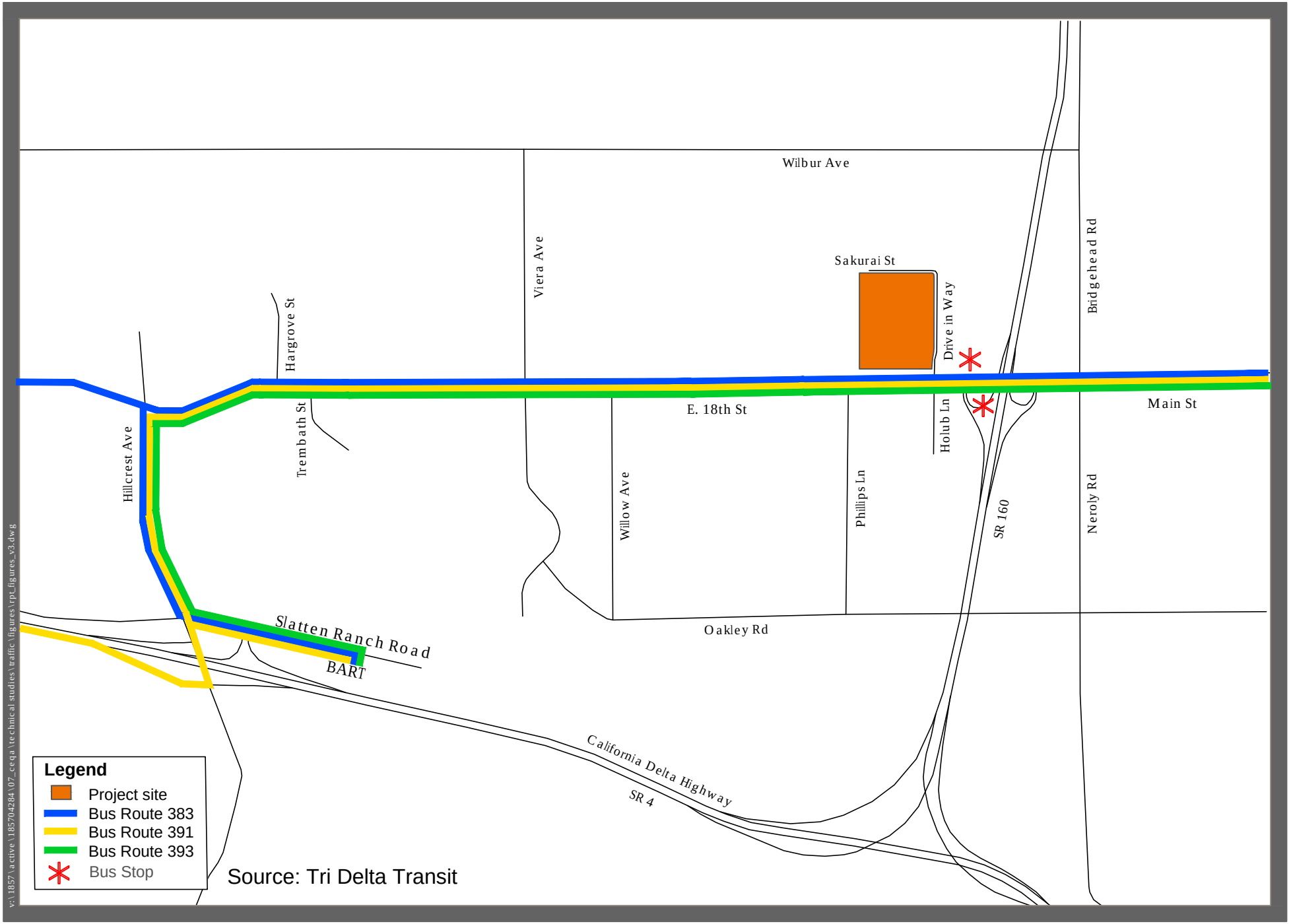

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Figure 2-5
Existing Transit Facilities

2.1.4 Active Transportation

Walking and biking is considered active transportation as it does not involve the use of motorized vehicles. Sidewalks, crosswalks, and pedestrian signals at signalized intersections are examples of facilities that are necessary for acceptable pedestrian accommodations.

In the project vicinity, a sidewalk is present on the north side of East 18th Street, however there are significant gaps on the south side of East 18th Street between Phillips Lane and Neroly Road including the area around the bus stop.

All the signalized study intersections except the SR 160 northbound ramps and Main Street intersection have marked crosswalks with pedestrian signal heads and push buttons. The unsignalized intersection of Drive-in Way and East 18th Street has a marked crosswalk along the north-leg only.

There are two bicycle facilities within the vicinity of the Project site, but none directly accessing the site. A Class II bike lane is present along both sides of Viera Avenue between East 18th Street and Wilbur Avenue, and a Class II bike lane is also present the entire length of Phillips Lane. Class II bike lanes are preferential use areas within a roadway designated for bicycles and separated from vehicles lanes using a white lane-line. The existing bicycle facilities within the study area are shown in Figure 2-6.

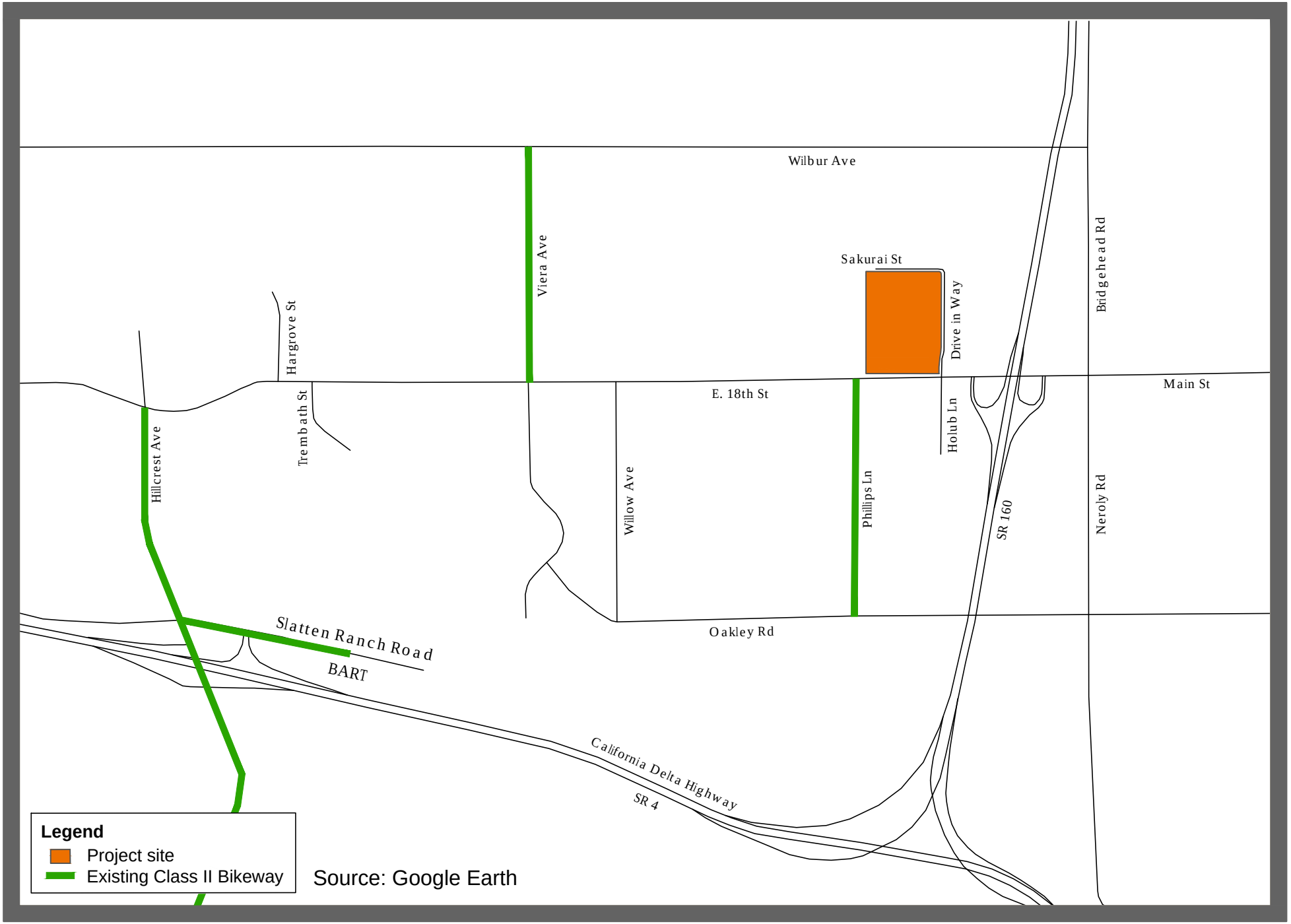

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Figure 2-6
Existing Bicycle Facilities

2.2 FUTURE CONDITIONS

The following two future condition scenarios are analyzed in this report:

Near-Term Conditions Analysis - The proposed Project is expected to build-out within an approximate three-year time period. Therefore, a near-term setting, which captures approved and pending development projects in the nearby area, is used to evaluate potential Project impacts. The City has identified one approved or pending project to apply to this analysis shown in Figure 2-7, which is the 3530-3560 East 18th Street Project located across East 18th Street from the proposed Project. Project trips associated with the proposed Project were added to near-term conditions inclusive of traffic from the approved and pending development projects to derive with-project conditions.

Cumulative Conditions Analysis - A 2040 horizon year is utilized to evaluate cumulative conditions, which represent future traffic conditions with expected growth in the area. For this analysis, the traffic volume forecasts for 2040 conditions were obtained from the traffic study prepared for the 3530-3560 East 18th Street Project. Project trips associated with the proposed Project were incrementally added to 2040 cumulative conditions to derive 2040 with-project conditions.

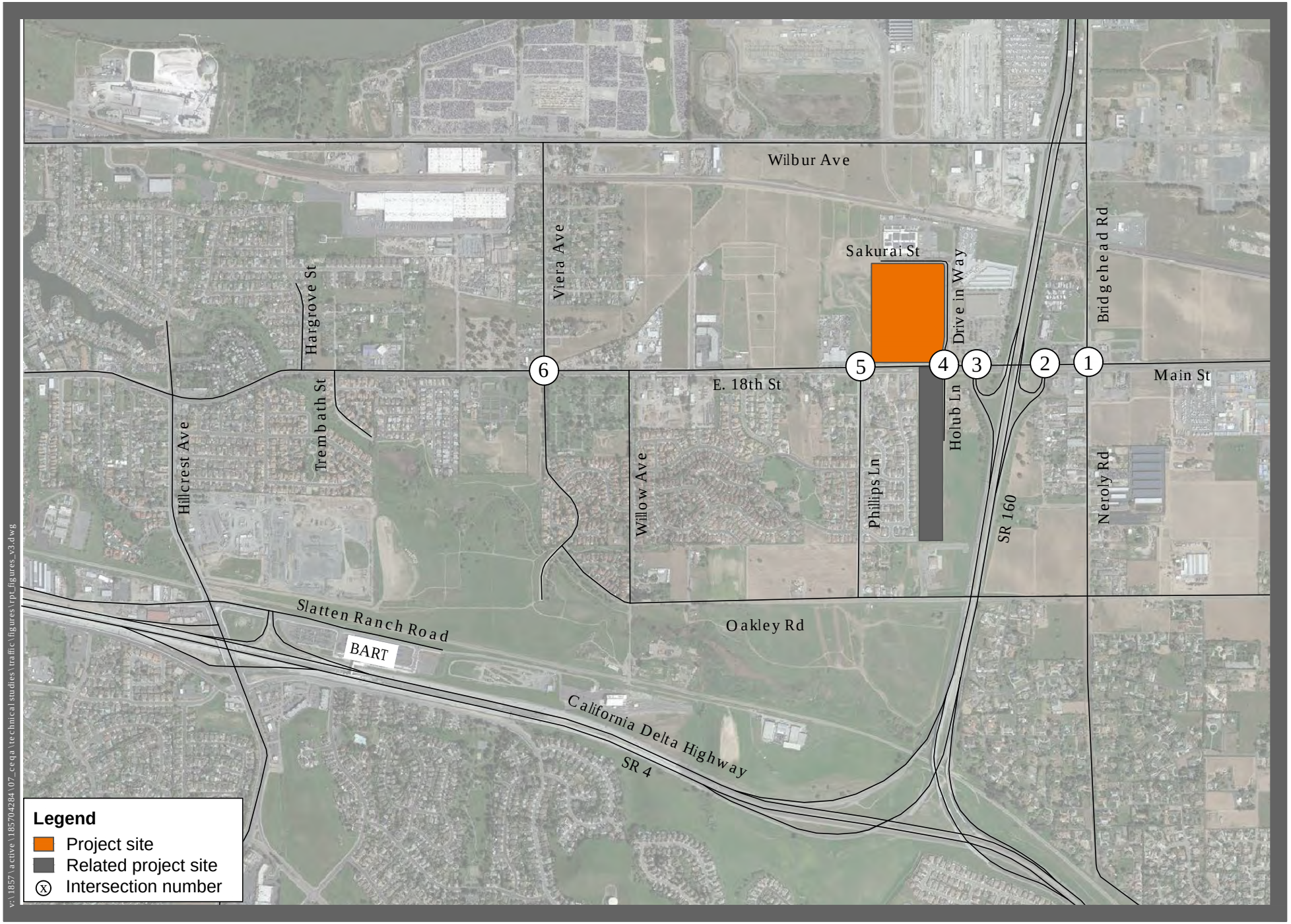

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Figure 2-7
Related Projects
2.11

3.0 PROJECT DESCRIPTION

This section describes the Project in terms of its transportation characteristics. Trip generation is summarized and the distribution of the Project's trips on the adjoining roadway network is presented.

3.1 PROJECT TRIP GENERATION

The specific uses to be developed by the proposed Project have not been determined but could generally include uses such as hotel, commercial retail and office space, and self-storage units. Currently, the following two alternatives are being proposed for consideration:

- Alternative 1 would include 33,600 square feet of commercial and retail space, 122,021 square feet of self-storage with rooftop solar, and 112,896 square feet of office space.
- Alternative 2 would include 11,088 square feet of commercial and retail space, a hotel with 95 rooms, 122,021 square feet of self-storage, and 71,880 square feet of office space.

Note that the project could also consist of a combination of Alternatives 1 and 2. For the purpose of the traffic study, the highest combination of traffic generating uses is evaluated as a worst-case condition. See the previously referenced Figure 1-2 for the proposed Project site plan, which depicts Alternative 2.

Table 3-1 summarizes the anticipated trip generation of the proposed Project. The trip generation estimates for each alternative were prepared using standardized Institute of Transportation Engineers (ITE) 10th Edition trip generation rates. As shown in Table 3-1, Alternative 1 is expected to generate approximately 3,862 ADT, with 295 trips occurring during the AM peak hour and 368 trips occurring during the PM peak hour. Alternative 2 is expected to generate approximately 2,478 ADT, with 274 trips occurring during the AM peak hour and 230 trips occurring during the PM peak hour. As noted above, the Project could also comprise a combination of the two alternatives. Alternative 1 was analyzed for this the traffic study as the worst-case scenario as it is the alternative that would generate the most project traffic.

The ITE Trip Generation Handbook, 3rd Edition provides pass-by trip percentages for a retail shopping center during the PM peak hour only, which is shown to generally range from approximately 30 to 60 percent for small shopping centers of 50,000 square feet or less. Since the specific type of retail uses are not known at this time, a conservative assumption of 10 percent pass-by is used for both the AM and PM peak hour for the retail commercial use only, as shown in Table 3-1.

3.2 PROJECT TRIP DISTRIBUTION

Trip distribution percentages were derived based on the Project site location in relation to the surrounding uses while taking into account the existing traffic flow patterns and engineering judgement. Approximately 30 percent of the project trips are anticipated to be oriented towards the west on East 18th Street, 10 percent towards the east on Main Street, 20 percent are anticipated to be oriented towards the north on SR 160, and 40 percent are anticipated to be

Table 3-1 Project Trip Generation Summary

Scenario	Amount	Unit	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
Trip Rates									
Business Hotel (312)		Rooms	0.16	0.23	0.39	0.18	0.14	0.32	4.02
Retail Shopping Center (820)	AM: T = 0.50(X) + 151.78 PM: Ln(T) = 0.74 Ln(X) + 2.89 ADT: Ln(T) = 0.68 Ln(X) + 5.57 Where T = trips and X = project size in TSF					62% IB; 38% OB 48% IB; 52% OB			
Mini Warehouse (151)		TSF	0.06	0.04	0.10	0.08	0.09	0.17	1.51
General Office Building (710)		TSF	1.00	0.16	1.16	0.18	0.97	1.15	9.74
Trip Generation									
Proposed - Alt 1									
Retail Shopping Center (820)	33.60	TSF	105	64	169	116	126	242	2,864
Pass-by trips[1]	10%		11	6	17	12	13	25	286
Total Retail Shopping Trips			**94**	**58**	**152**	**104**	**113**	**217**	**2,578**
Mini Warehouse (151)	122.02	TSF	7	5	12	10	11	21	184
General Office Building (710)	112.90	TSF	113	18	131	21	109	130	1,100
Total			**214**	**81**	**295**	**135**	**233**	**368**	**3,862**
Proposed - Alt 2									
Retail Shopping Center (820)	11.09	TSF	98	60	158	51	56	107	1,347
Pass-by trips[1]	10%		10	6	16	5	6	11	135
Total Retail Shopping Trips			**88**	**54**	**142**	**46**	**50**	**96**	**1,212**
Business Hotel (312)	95	Rooms	16	21	37	17	14	30	382
Mini Warehouse (151)	122.02	TSF	7	5	12	10	11	21	184
General Office Building (710)	71.88	TSF	72	12	83	13	69	83	700
Total			**183**	**92**	**274**	**86**	**144**	**230**	**2,478**

Trip Rate Source: Institute of Transportation Engineers (ITE), 10th Edition, 2017, with ITE code in parentheses

[1]Pass-by trips assumed to be 10% of the retail trip generation

ADT - Average Daily Trips

DU - Dwelling Units

oriented towards the south. The Project's trip distribution percentages are illustrated in Figure 3-1. Project trips during the AM and the PM peak hours are shown in Figure 3-2 and Figure 3-3, respectively.

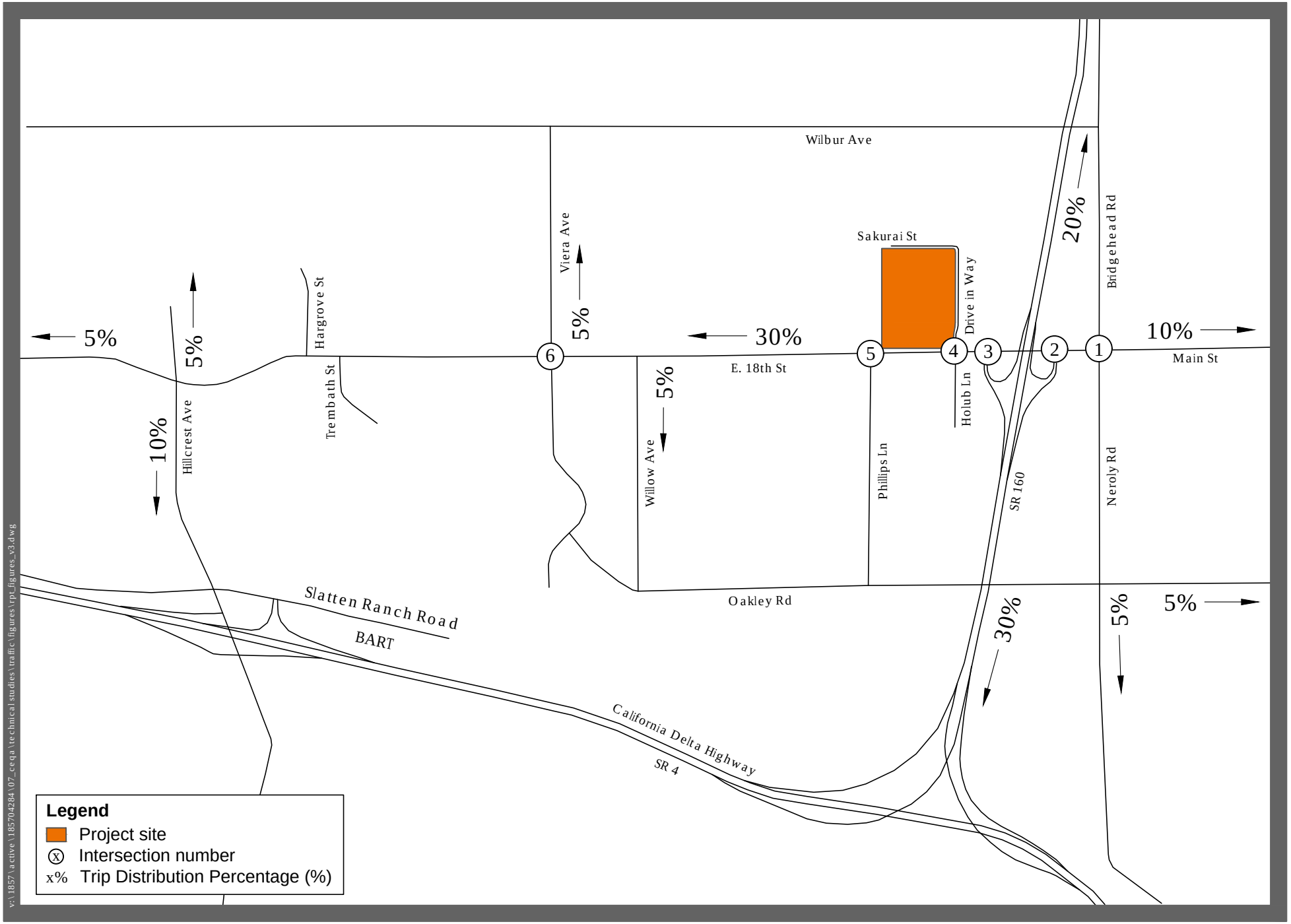

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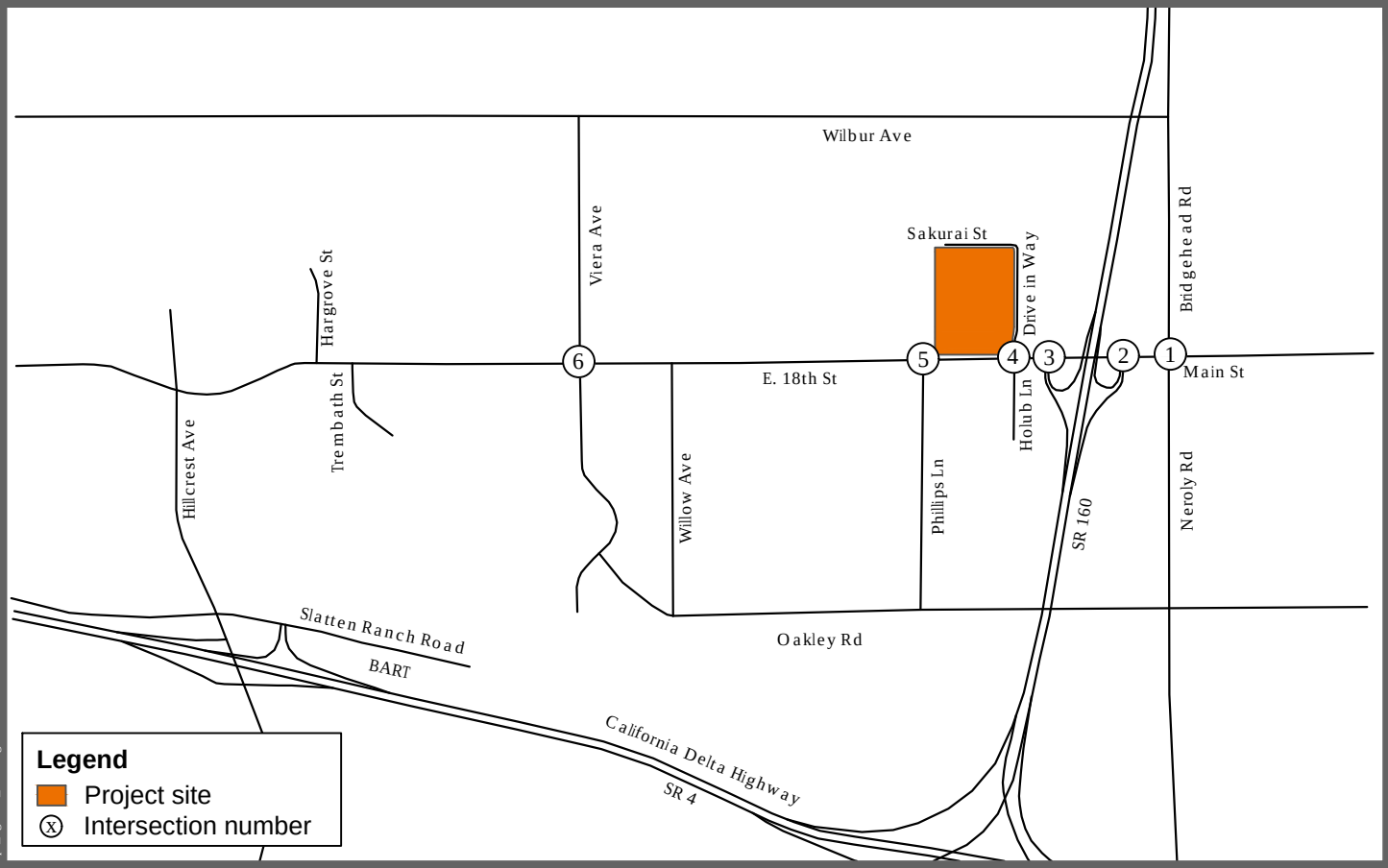
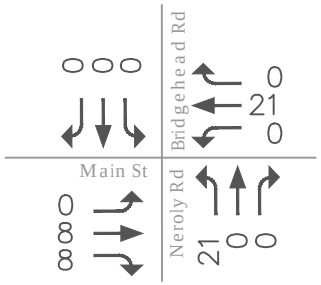
Figure 3-1

Near-term Project Trip Distribution

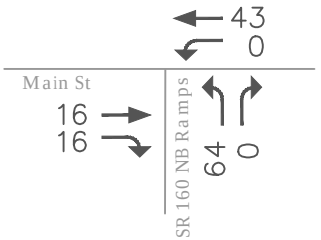
3.3



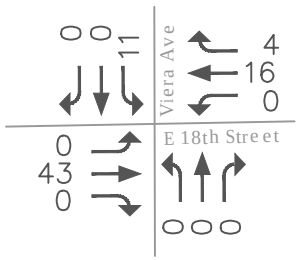
1. Bridgehead Road & Main Street



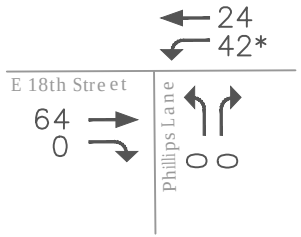
2. SR 160 NB Ramps & Main Street



6. Viera Ave & E18th Street

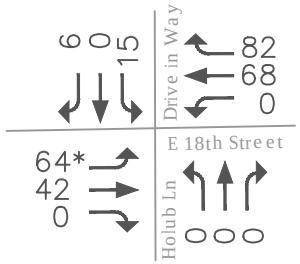


5. Phillips Lane & E18th Street



*U-turn

4. Drive in Way/Holub Lane & E18th Street



*includes U-turn

3. SR 160 SB Ramps & E18th Street

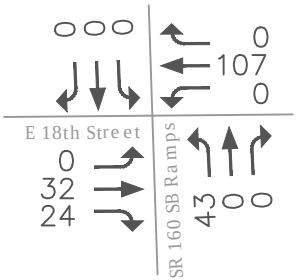


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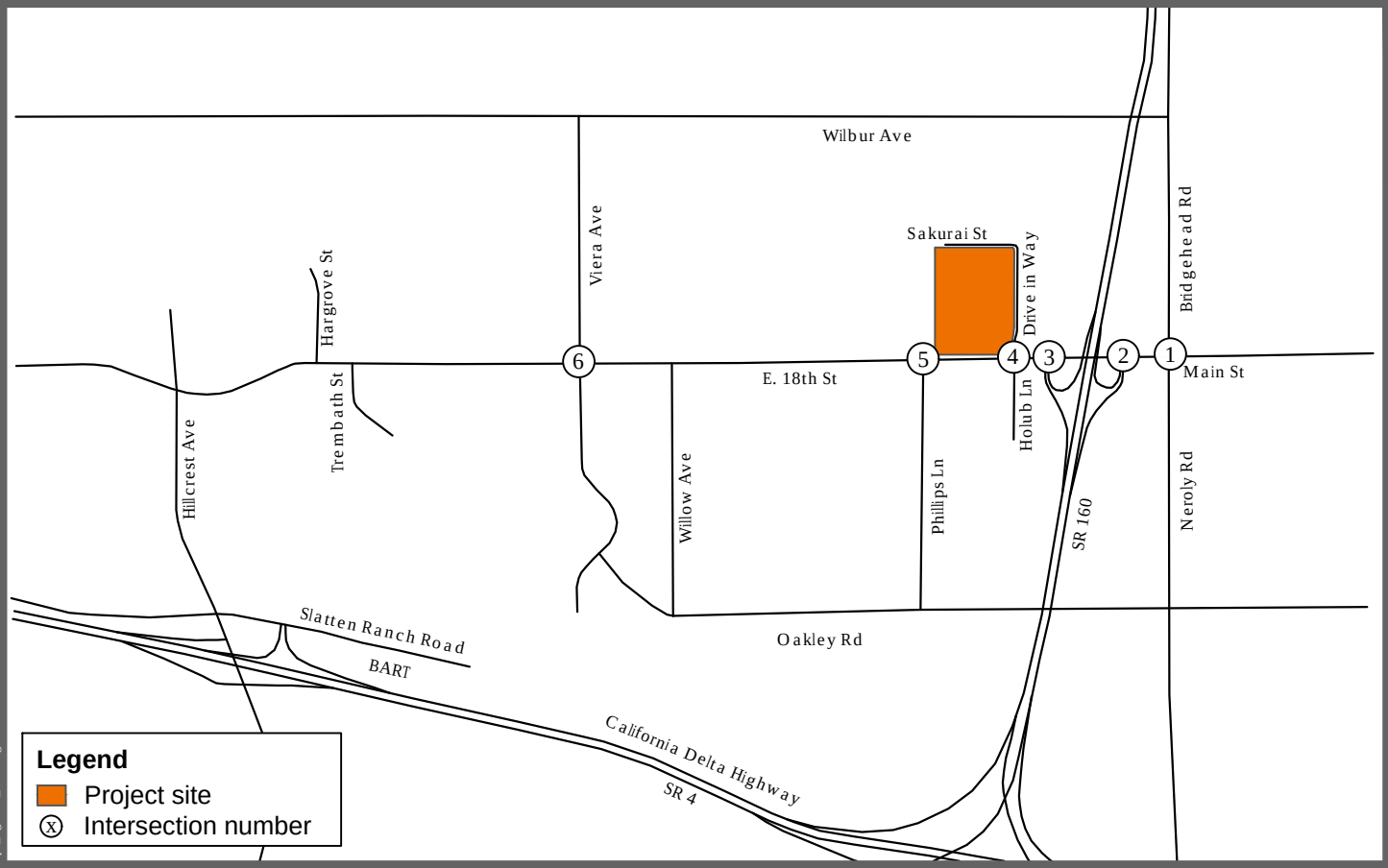
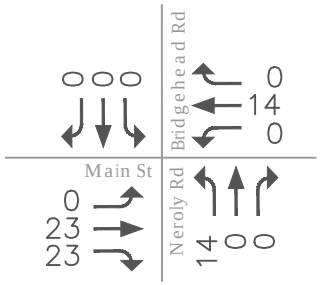
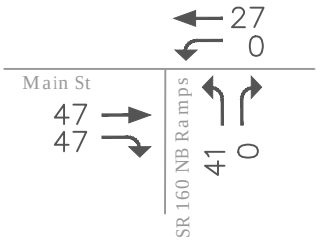
Figure 3-2
Near-term Project Trips - AM Peak Hour Volumes



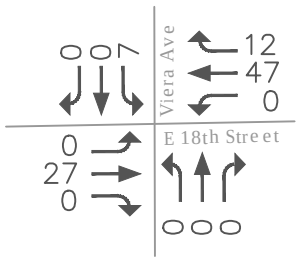
1. Bridgehead Road & Main Street



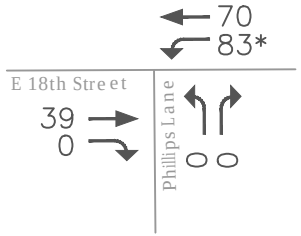
2. SR 160 NB Ramps & Main Street



6. Viera Ave & E18th Street

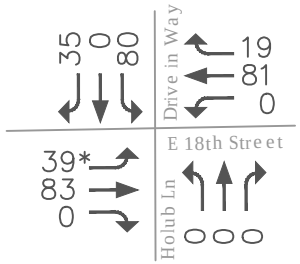


5. Phillips Lane & E18th Street



*U-turn

4. Drive in Way/Holub Lane & E18th Street



*includes U-turn

3. SR 160 SB Ramps & E18th Street

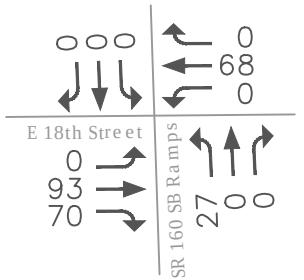


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Figure 3-3

Near-term Project Trips - PM Peak Hour Volumes

4.0 TRAFFIC IMPACT ANALYSIS

This chapter presents the traffic impacts of the proposed Project for conditions under without-Project and with-Project scenarios. The Project is expected to be constructed over an approximately three-year time period, therefore a near-term impact analysis is provided. A 2040 horizon year is utilized to evaluate long-range cumulative conditions. Traffic impacts of the proposed Project are addressed using the criteria outlined in Chapter 1.0.

4.1 NEAR-TERM ANALYSIS

This section provides an analysis of Project traffic impacts by comparing the Project's near-term without-Project traffic conditions to near-term with-Project traffic conditions. To estimate the near-term without-Project traffic conditions, the traffic from nearby approved and pending development projects were incrementally added to the existing (2018) traffic counts to account for the background traffic growth (see discussion in Section 2.2). For near-term with-Project traffic conditions, Project trips (shown in Figure 3-2 and Figure 3-3) are added to the without-Project conditions in order to identify potential traffic impacts.

Near-term without-Project conditions ADT volumes are illustrated in Figure 4-1. The corresponding without-Project peak hour turning movement volumes are illustrated in Figure 4-2 and Figure 4-3, for AM and PM peak hour respectively.

Near-term with-Project conditions ADT volumes are illustrated in Figure 4-4. The corresponding with-Project peak hour turning movement volumes are illustrated in Figure 4-5 and Figure 4-6, for AM and PM peak hour respectively.

Peak hour intersection LOS calculated using the near-term conditions traffic volumes referenced above are summarized in Table 4-1, which provides a comparison between without-Project and the with-Project conditions. The table indicates that under the Project's near-term conditions, the signalized study area intersections would operate at LOS C or better during both the AM and the PM peak hour and would not be significantly impacted by the proposed Project. At the unsignalized intersection of Drive-in Way/Holub Lane and East 18th Street, there is a significant Project impact in the PM peak hour since the LOS worsens from LOS C to LOS F. Mitigation that addresses this impact is provided in Section 4.3.

For this analysis, existing lane configurations were assumed for without-Project and with-Project conditions for all intersections except for the south-leg of the unsignalized intersection of Drive-in Way/Holub Lane and East 18th Street, which will be modified by an approved project. HCM delay methodology was used to analyze the signalized intersections and the stop-controlled intersection. Detailed LOS calculation worksheets are provided in Appendix B.

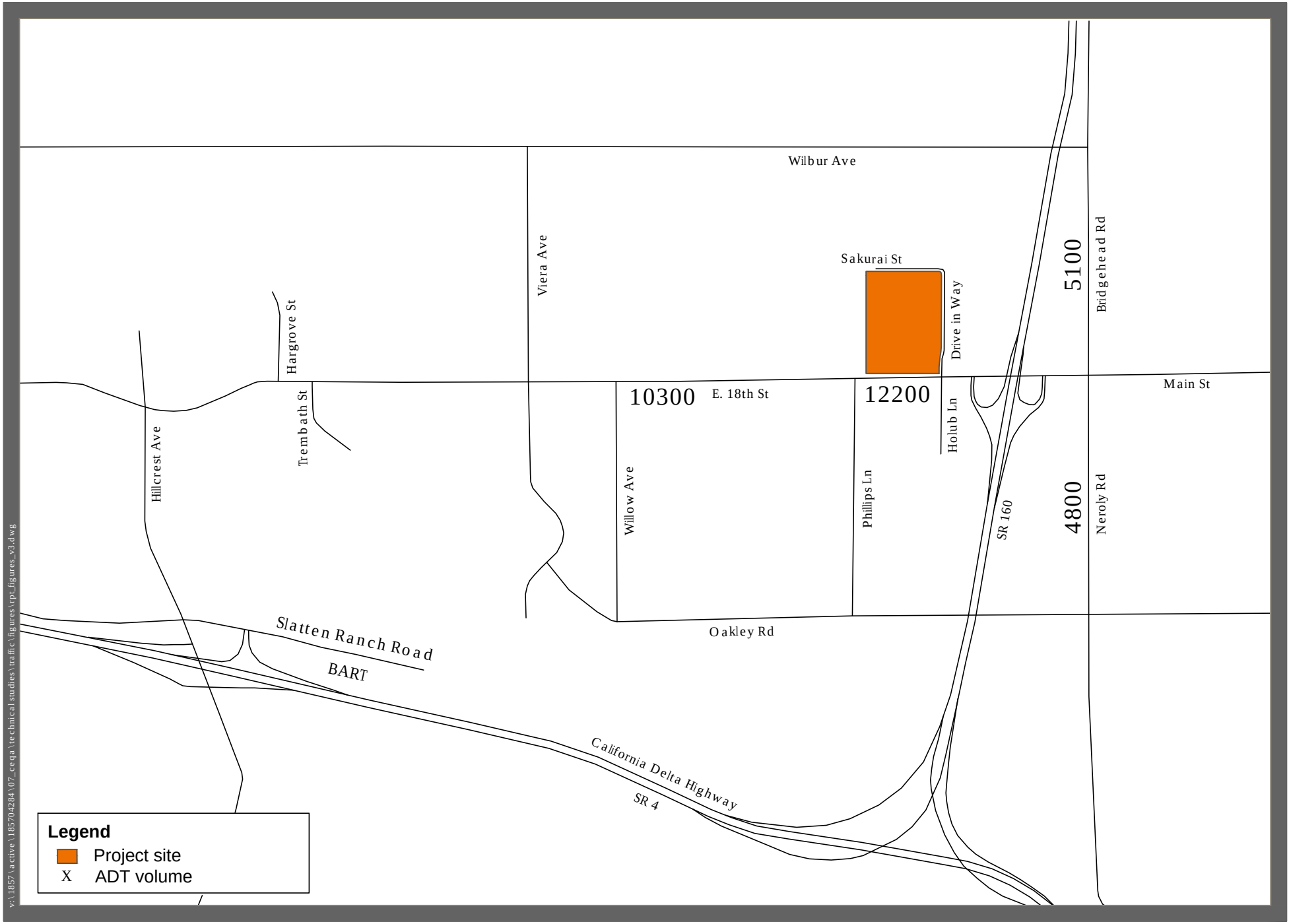

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Figure 4-1

Near-term Without Project ADT Volumes

4.2

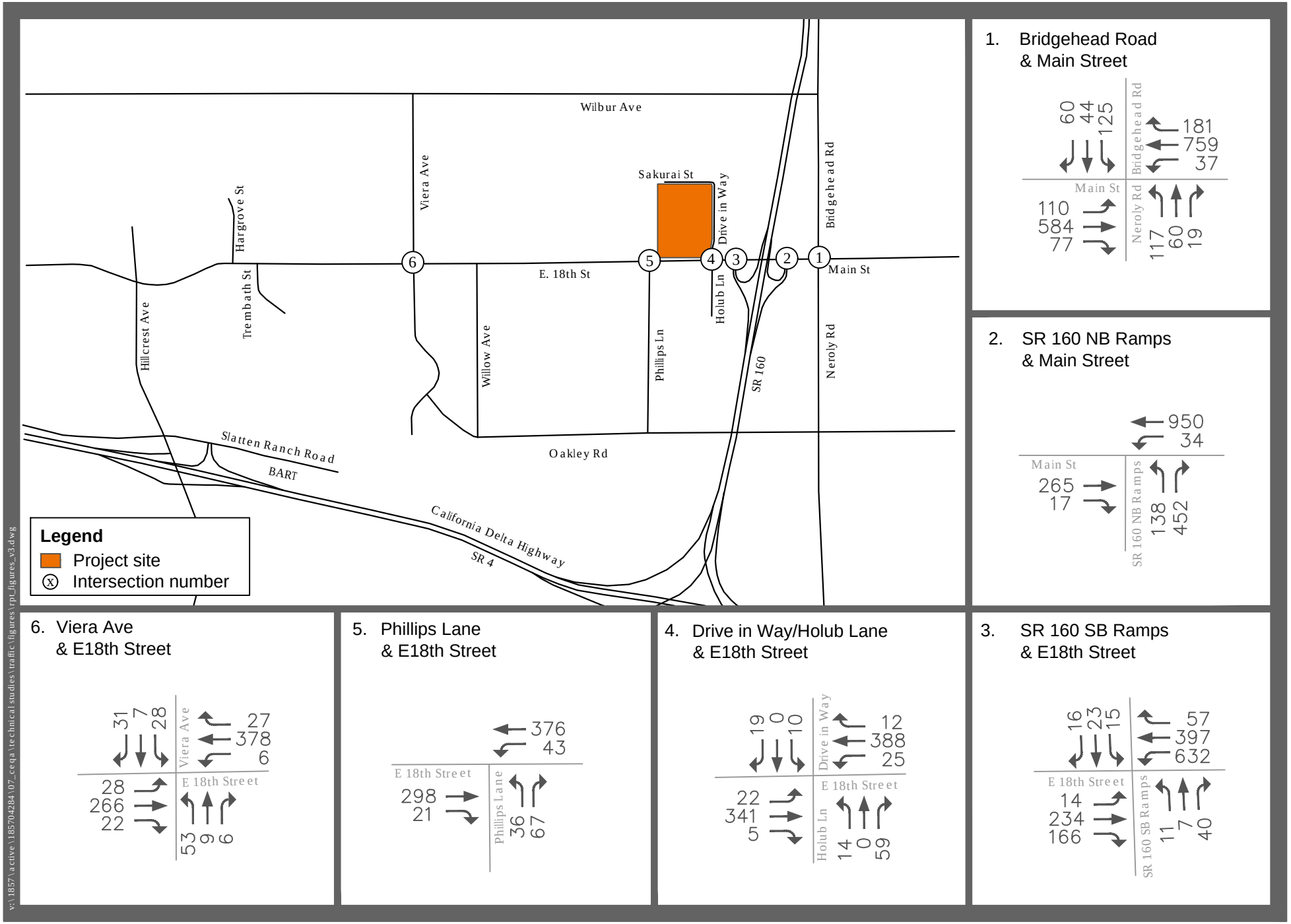

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Figure 4-2

Near-term Without Project - AM Peak Hour Volumes

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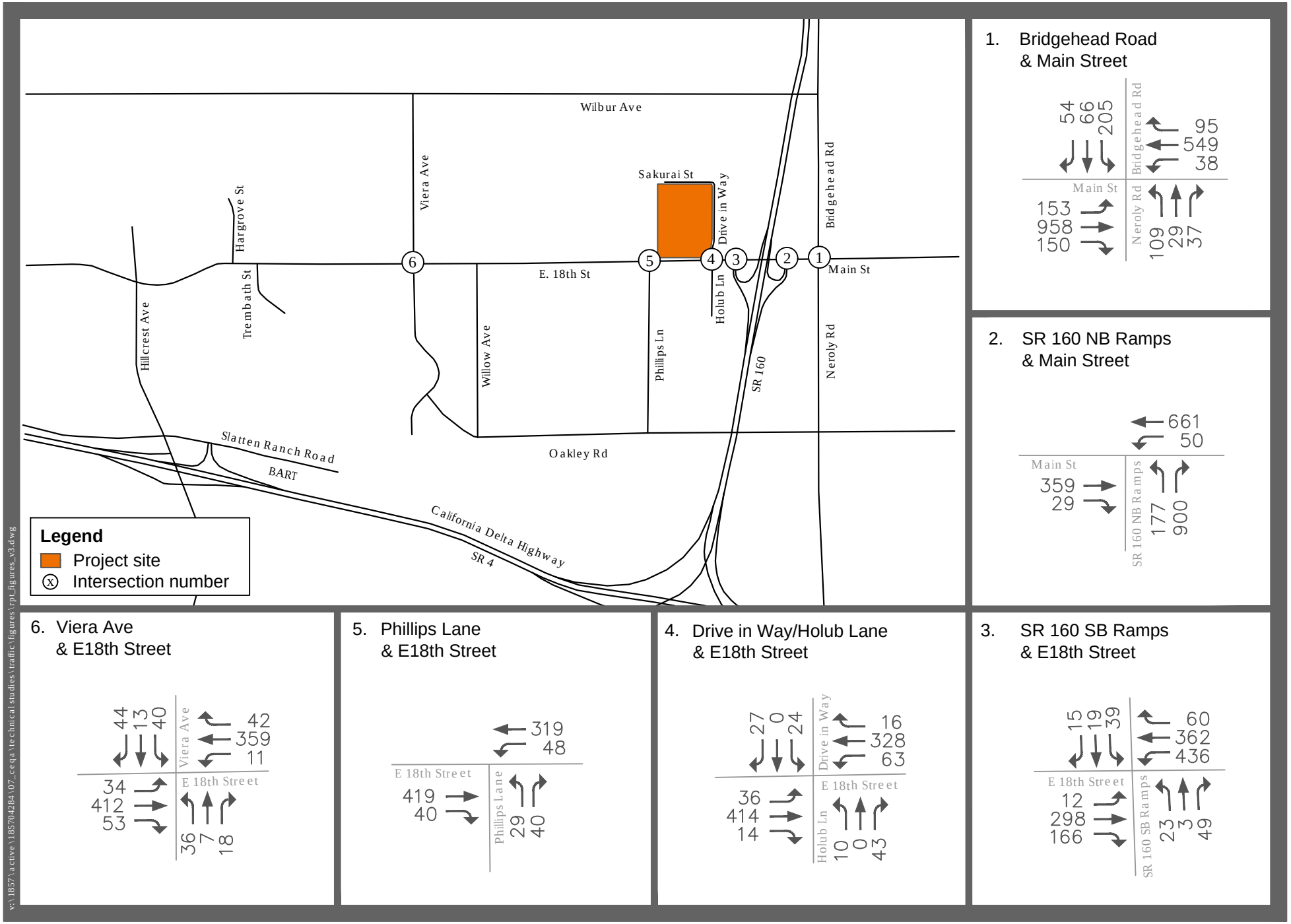

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Figure 4-3

Near-term Without Project - PM Peak Hour Volumes

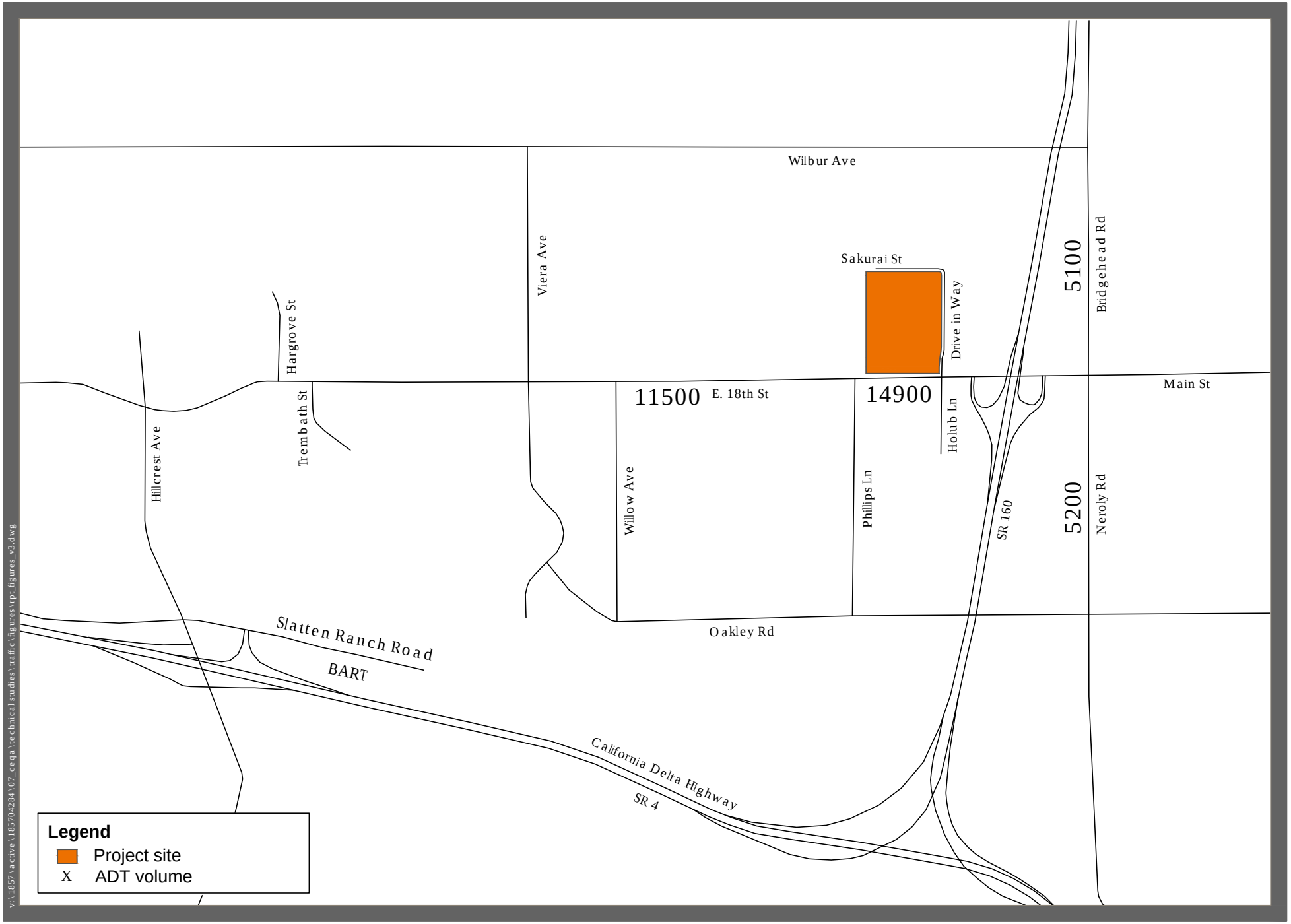

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Figure 4-4

Near-term With Project ADT Volumes

4.5

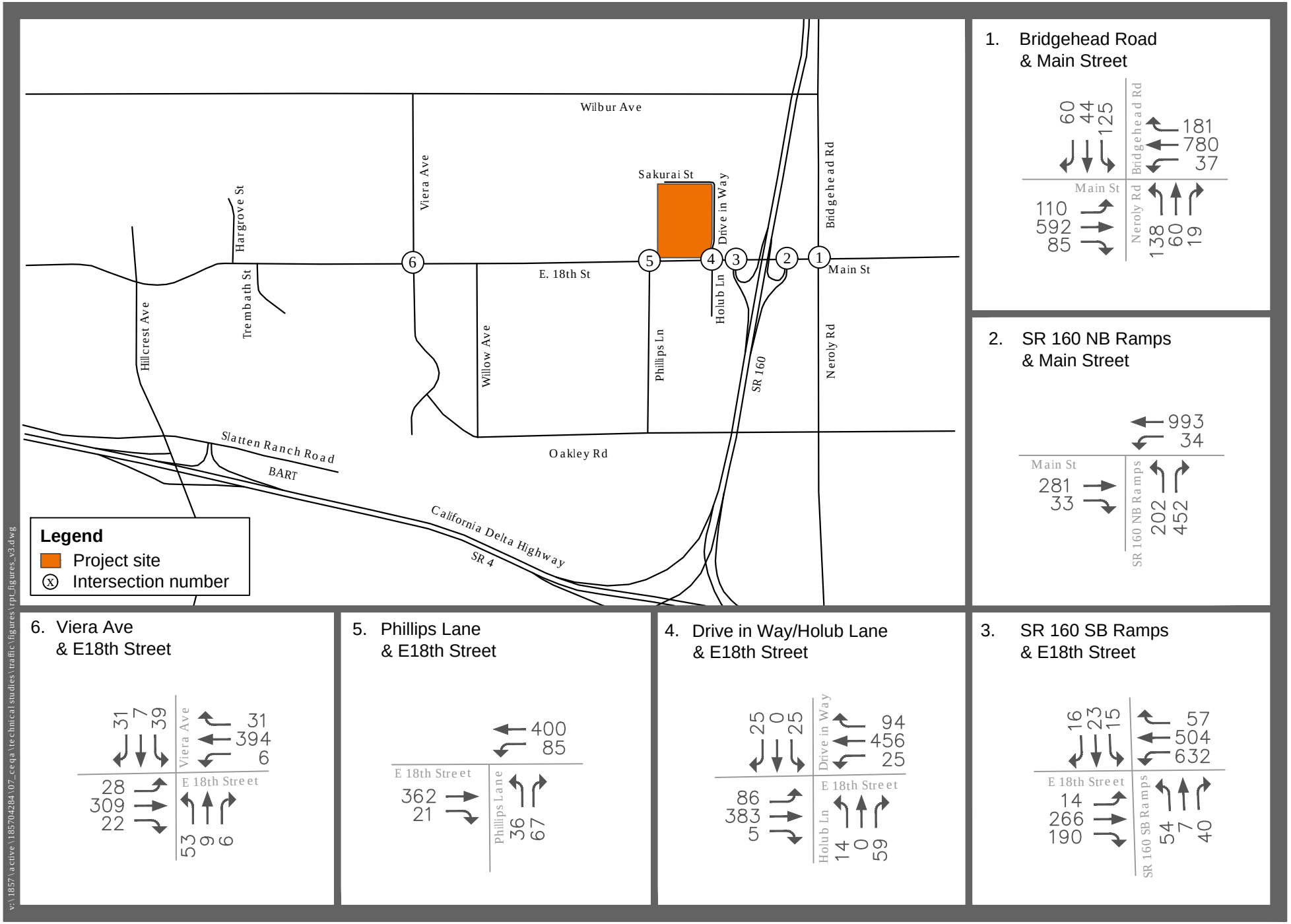

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Figure 4-5

Near-term With Project - AM Peak Hour Volumes

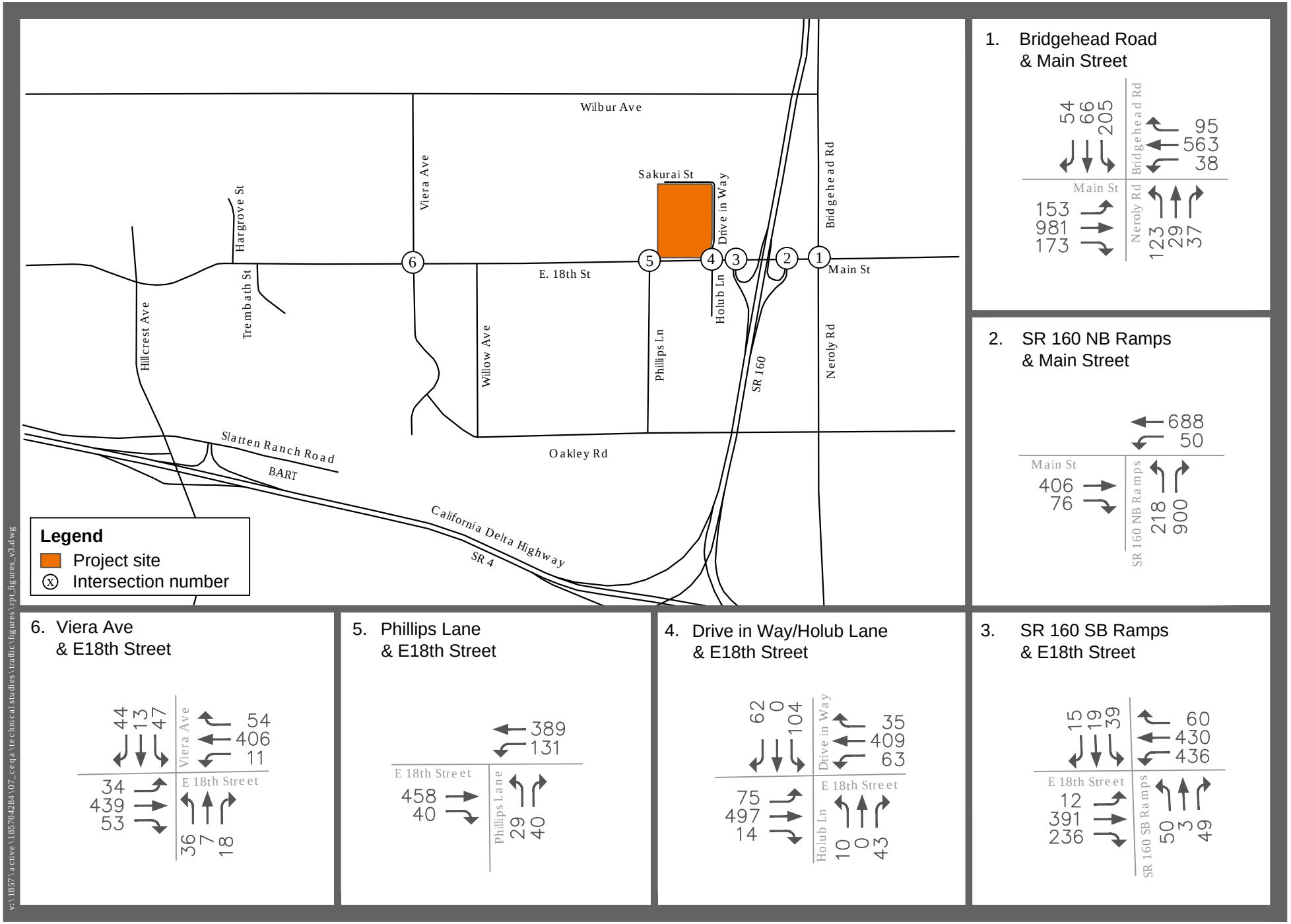

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Figure 4-6

Near-term With Project - PM Peak Hour Volumes

Table 4-1 Intersection LOS Summary – Near-Term Conditions

Intersection Name	Traffic Control	Without-Project				With-Project				Increase	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Bridgehead Road/Neroly Road & Main Street	Signal	20.7	C	22.6	C	22.1	C	23.5	C	1.4	0.9
2. Hwy 160 NB Ramps & East 18th Street	Signal	11.1	B	17.4	B	11.4	B	17.5	B	0.3	0.1
3. Hwy 160 SB Ramps & East 18th Street	Signal	17.6	B	15.0	B	18.1	B	15.8	B	0.5	0.8
4. Drive-in Way/Holub Ln & East 18th Street	Two-Way Stop	13.9	B	16.6	C	26.5	D	**79.6**	**F**	12.6	63.0
5. Phillips Lane & East 18th Street	Signal	7.1	A	5.8	A	7.9	A	7.7	A	0.8	1.9
6. Viera Avenue & East 18th Street	Signal	7.6	A	8.4	A	7.6	A	8.8	A	0.0	0.4
Note: LOS – Level of Service Delay – Average Vehicle Delay (seconds) Significant project impacts are shown in **bold**											

4.2 CUMULATIVE CONDITIONS ANALYSIS

As previously discussed in Section 2.2, forecast traffic volumes for cumulative conditions have been obtained from the 3530-3560 East 18th Street Project traffic study which was provided by the City for use in this analysis. A horizon year of 2040 is utilized to evaluate the cumulative conditions. Cumulative conditions without-Project and with-Project traffic are compared in this section to determine project impacts. For this analysis, planned city and regional roadway improvements provided in the Hillcrest Station Area Specific Plan were assumed to derive the trip distribution. The only difference in near-term and the cumulative conditions trip distribution is that, of the 30% oriented towards the west of the Project, 5% of the project trips would use the relocated and extended Viera Avenue to go south to the BART station. The cumulative conditions Project trip distribution is illustrated in Figure 4-7. Project trips during the AM and PM peak hour are shown in Figure 4-8 and Figure 4-9, respectively. The cumulative conditions without-Project peak hour turning movement volumes are illustrated in Figure 4-10 and Figure 4-11, for AM and PM peak hour respectively. The cumulative conditions with-Project peak hour turning movement volumes are illustrated in Figure 4-12 and Figure 4-13, for AM and PM peak hour respectively.

Peak hour intersection LOS calculated from the cumulative conditions traffic volumes referenced above are summarized in Table 4-2, which provides a comparison between without-Project and the with-Project conditions. HCM delay methodology was used to analyze the signalized intersections and the stop-controlled intersection. Detailed LOS calculation worksheets are provided in Appendix B.

The table indicates that under cumulative conditions, the signalized study area intersections would operate at LOS D or better during AM and PM peak hour conditions and would not be significantly impacted by the proposed Project. The unsignalized intersection of Drive-in Way and East 18th Street is forecast to operate at an unacceptable LOS F during the AM peak hour and the PM peak hour. Therefore, the additional traffic added by the proposed Project results in a significant impact at the intersection of Drive-in Way and East 18th street. Mitigation that addresses this impact is provided in Section 4.3.

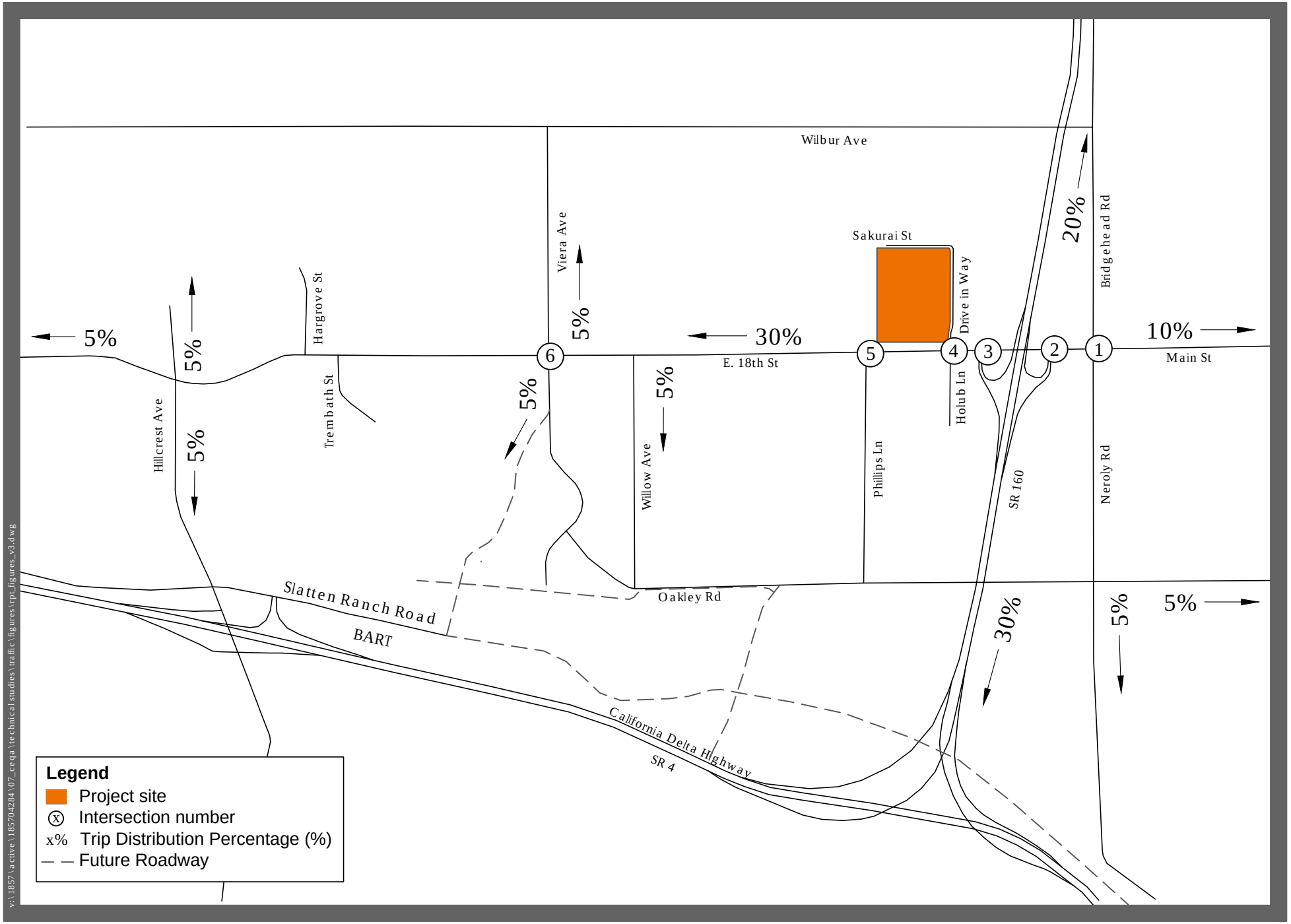

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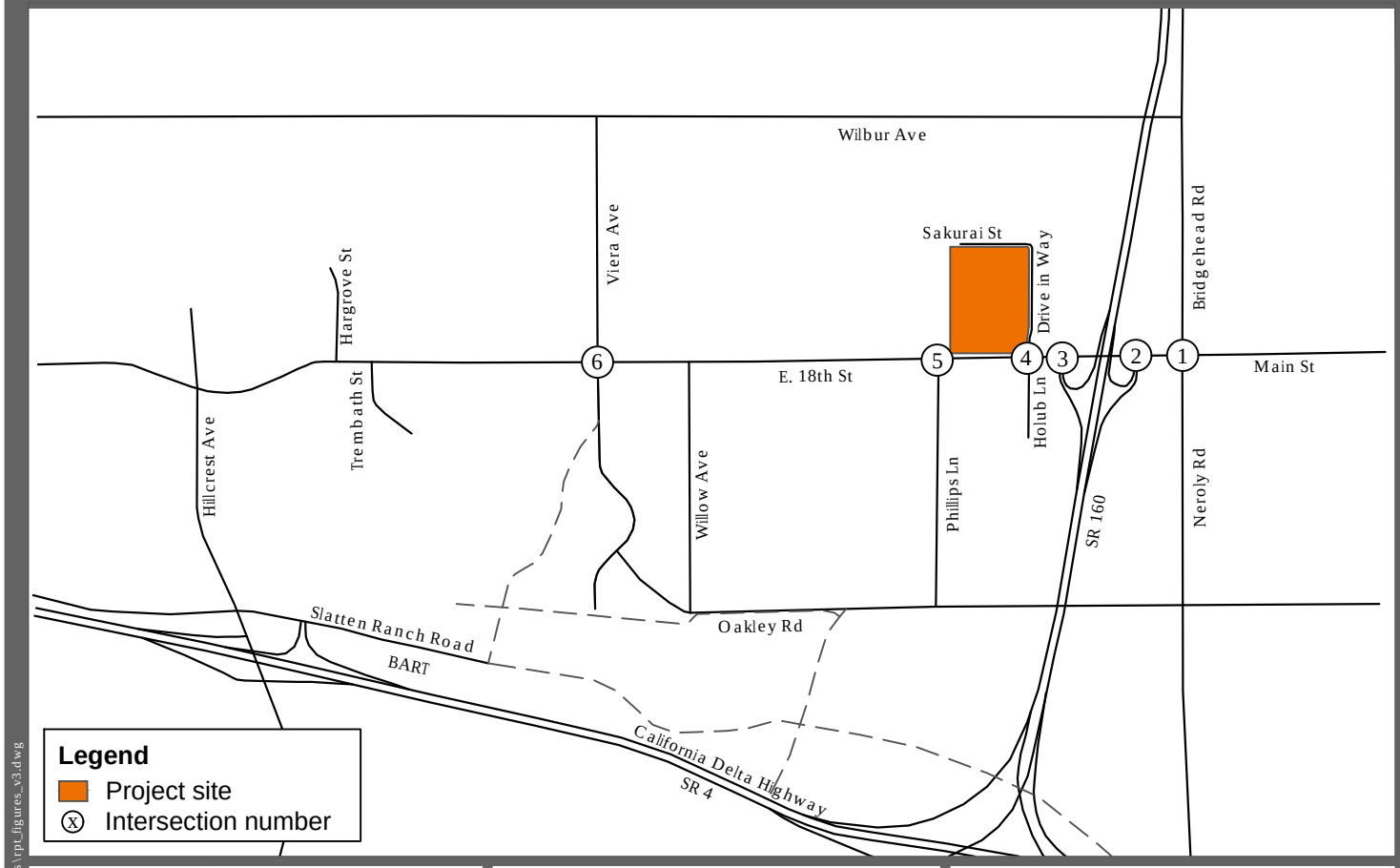
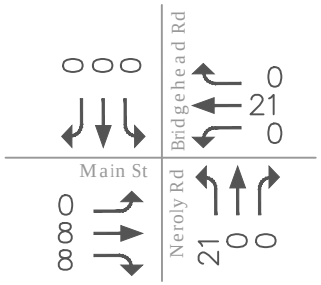
Figure 4-7

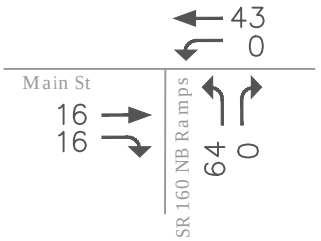
Cumulative Conditions - Project Trip Distribution



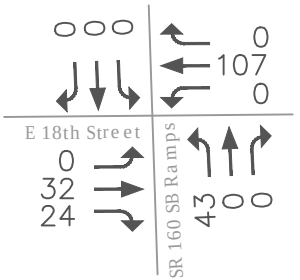
1. Bridgehead Road & Main Street



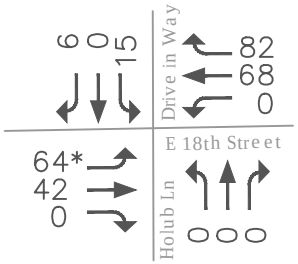
2. SR 160 NB Ramps & Main Street



3. SR 160 SB Ramps & E18th Street

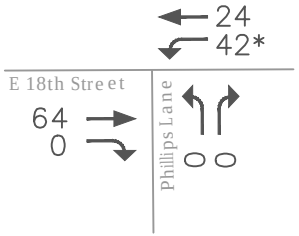


4. Drive in Way/Holub Lane & E18th Street



*includes U-turn

5. Phillips Lane & E18th Street



*U-turn

6. Viera Ave & E18th Street

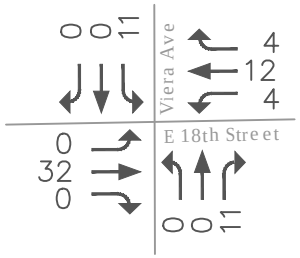


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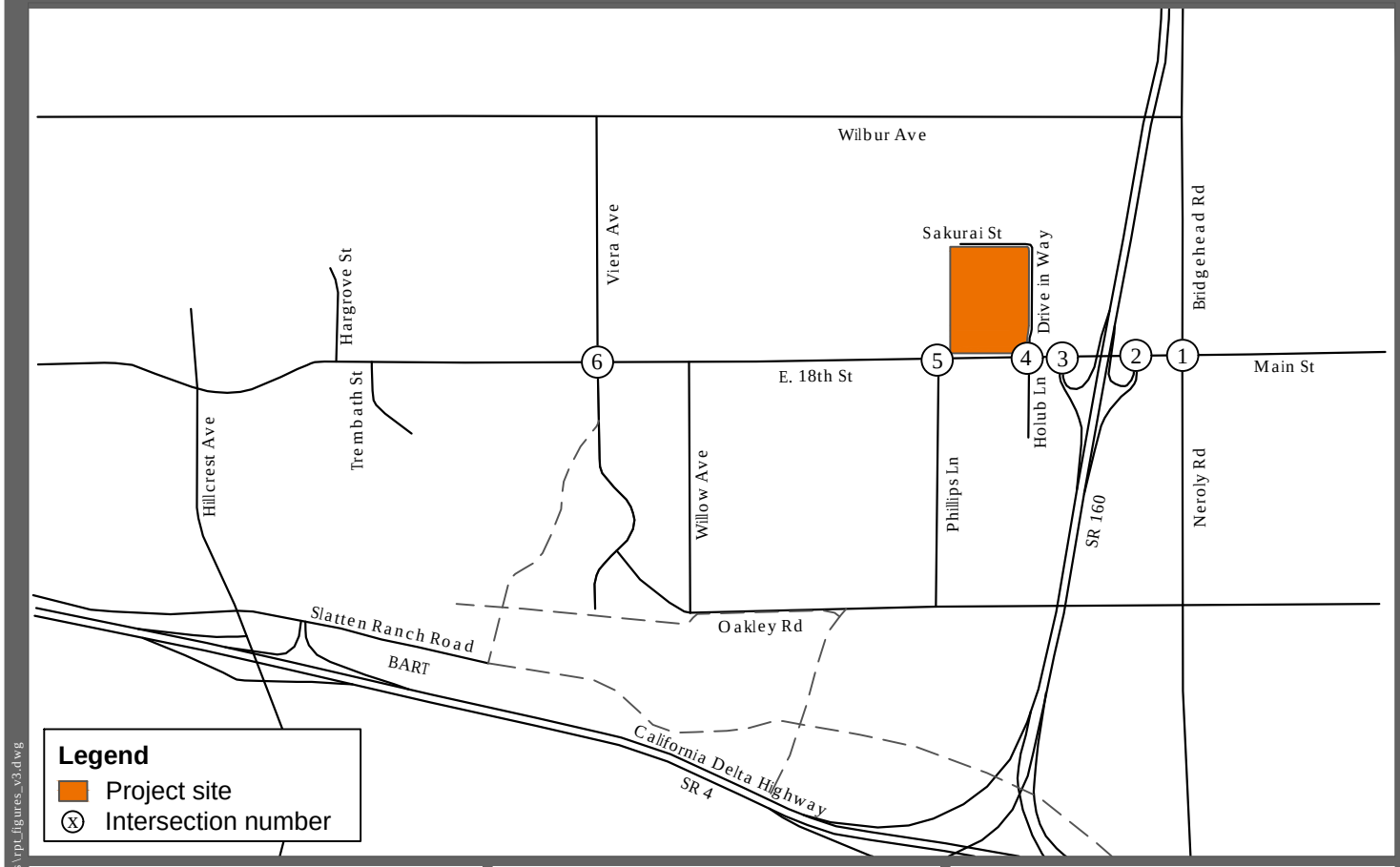
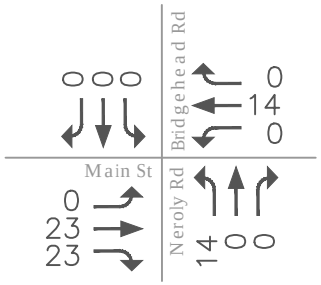
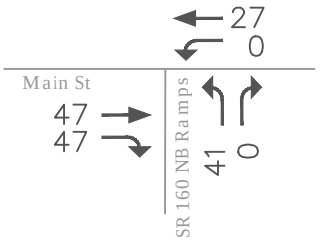
Figure 4-8
Cumulative Conditions Project Trips - AM Peak Hour



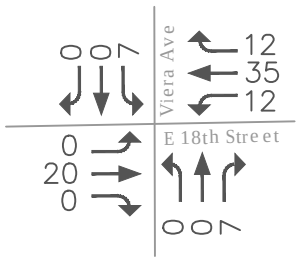
1. Bridgehead Road & Main Street



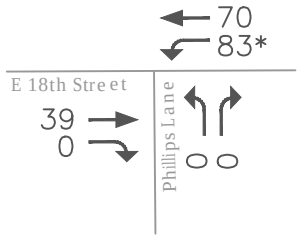
2. SR 160 NB Ramps & Main Street



6. Viera Ave & E18th Street

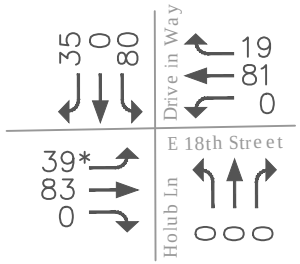


5. Phillips Lane & E18th Street



*U-turn

4. Drive in Way/Holub Lane & E18th Street



*includes U-turn

3. SR 160 SB Ramps & E18th Street

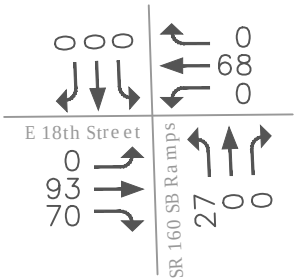


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Figure 4-9
Cumulative Conditions Project Trips - PM Peak Hour

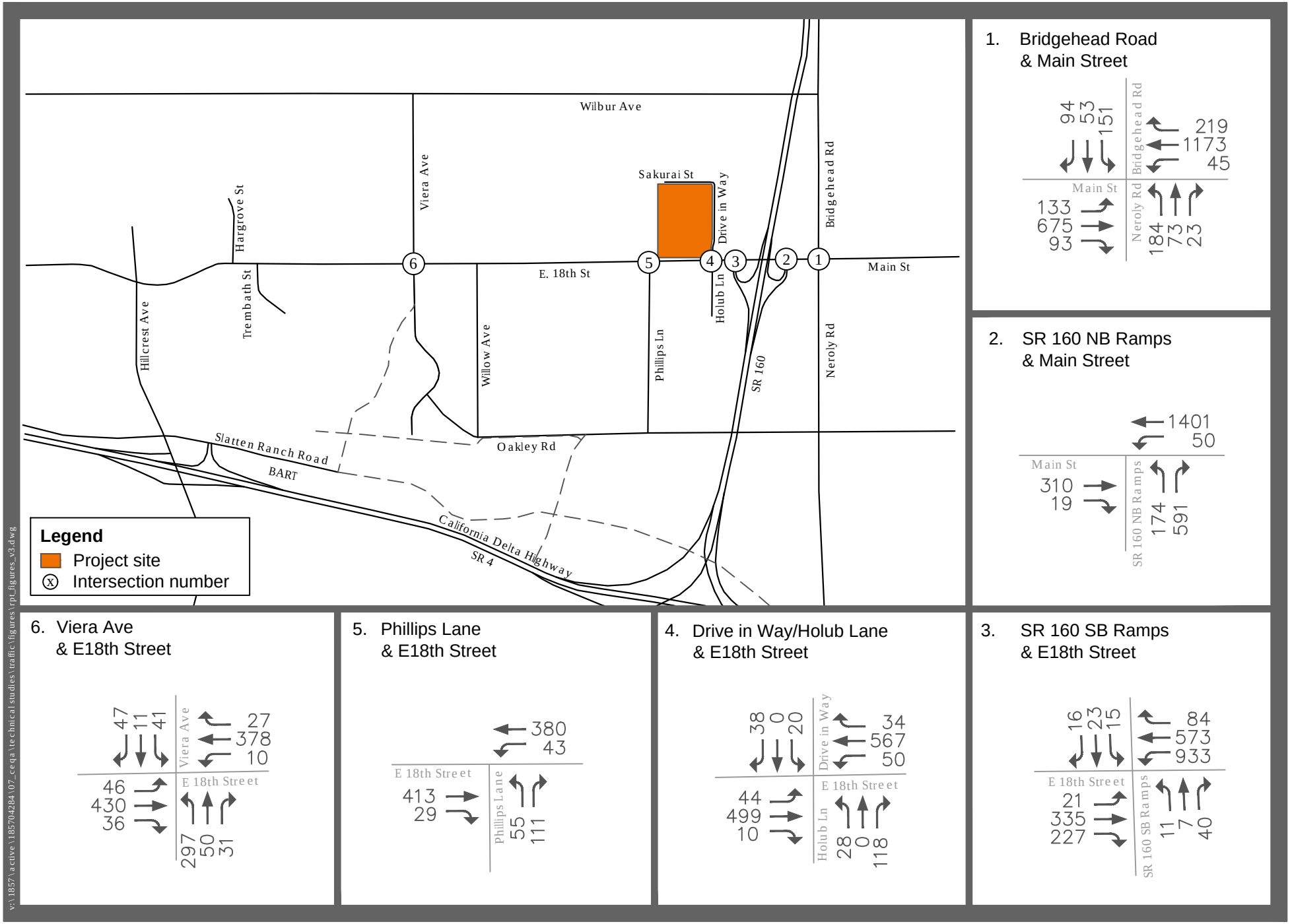

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Figure 4-10

Cumulative Conditions (2040) Without Project AM Peak Hour Volumes

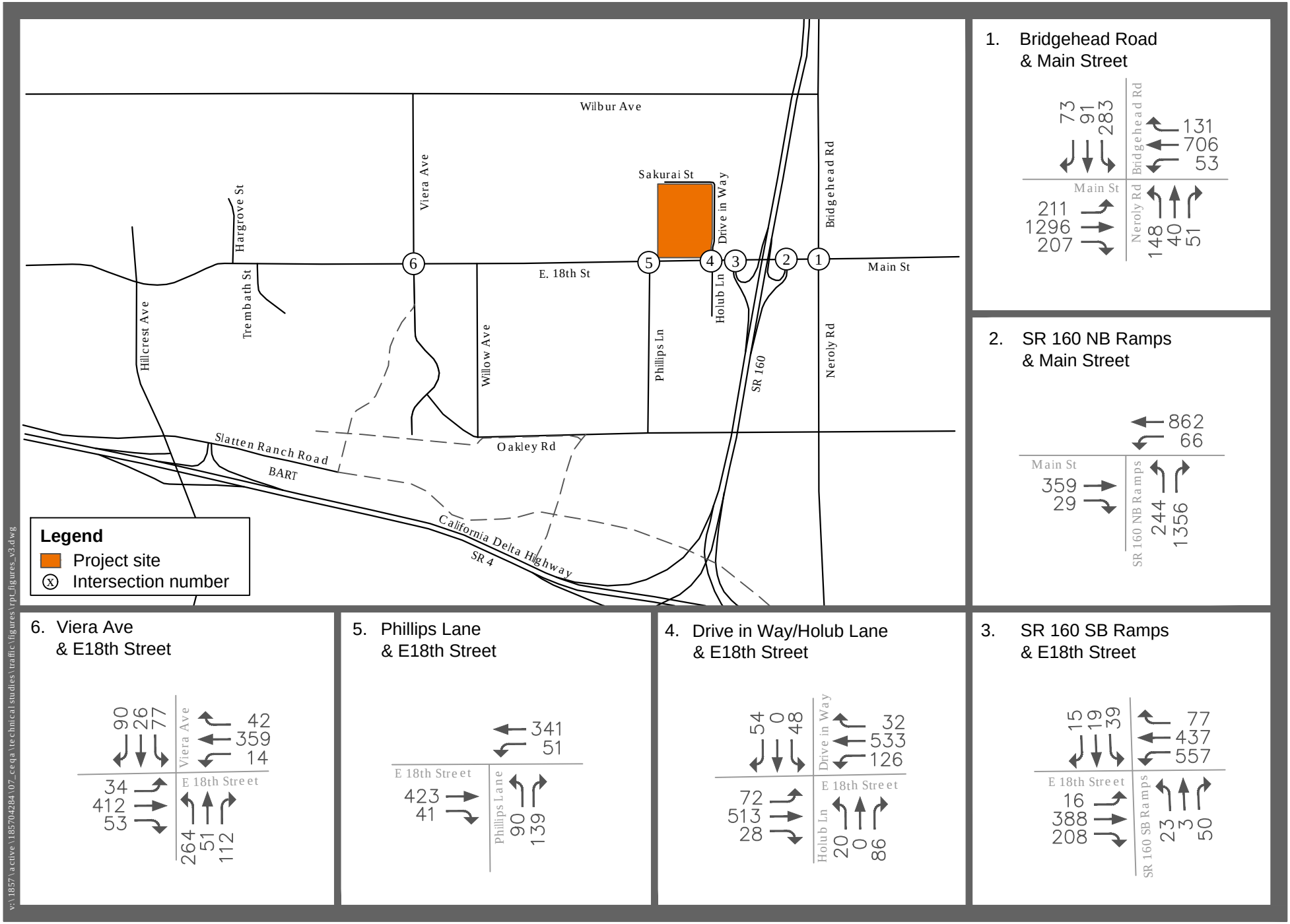

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Figure 4-11

Cumulative Conditions (2040) Without Project PM Peak Hour Volumes

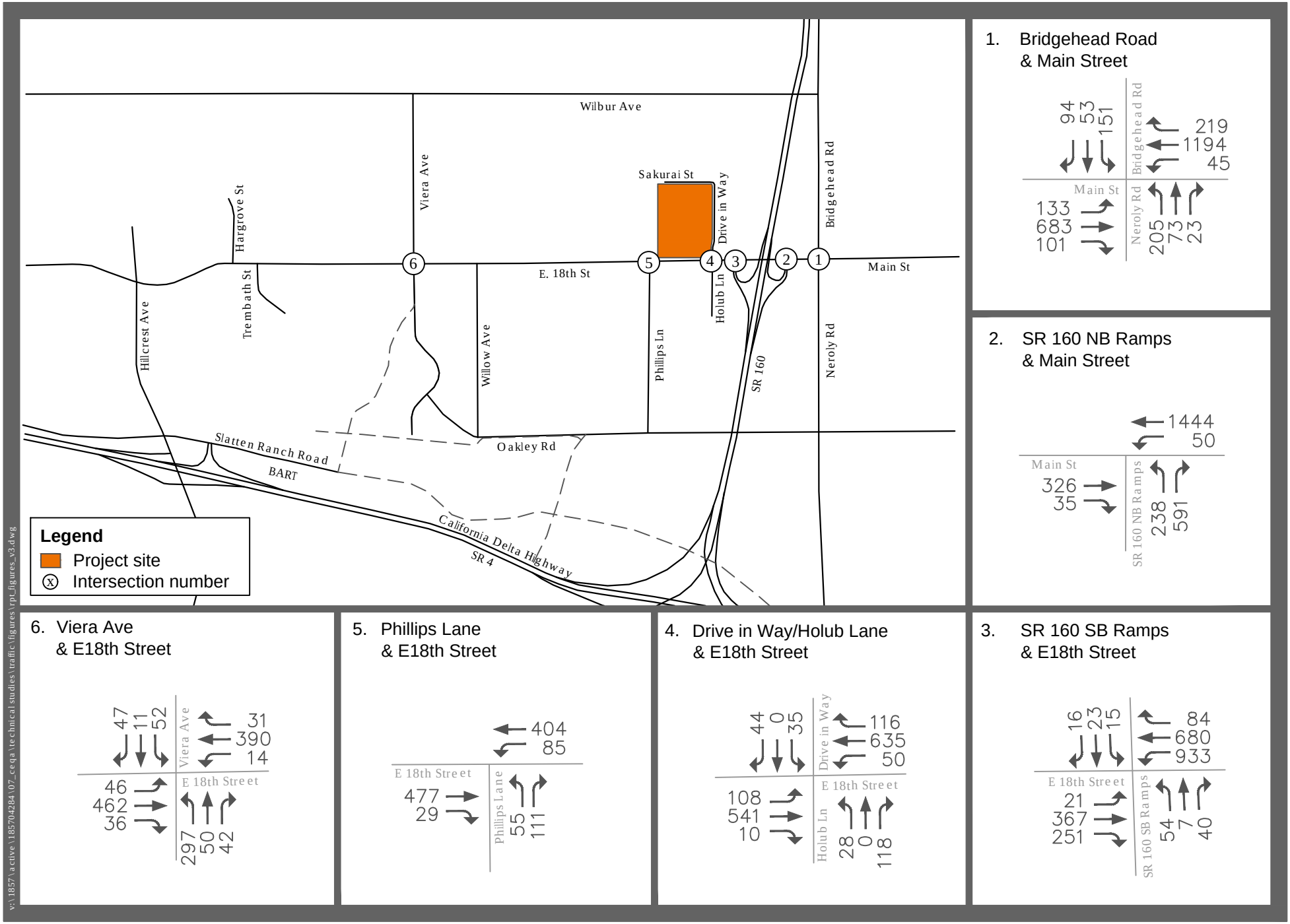

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Figure 4-12

Cumulative Conditions (2040) With Project AM Peak Hour Volumes

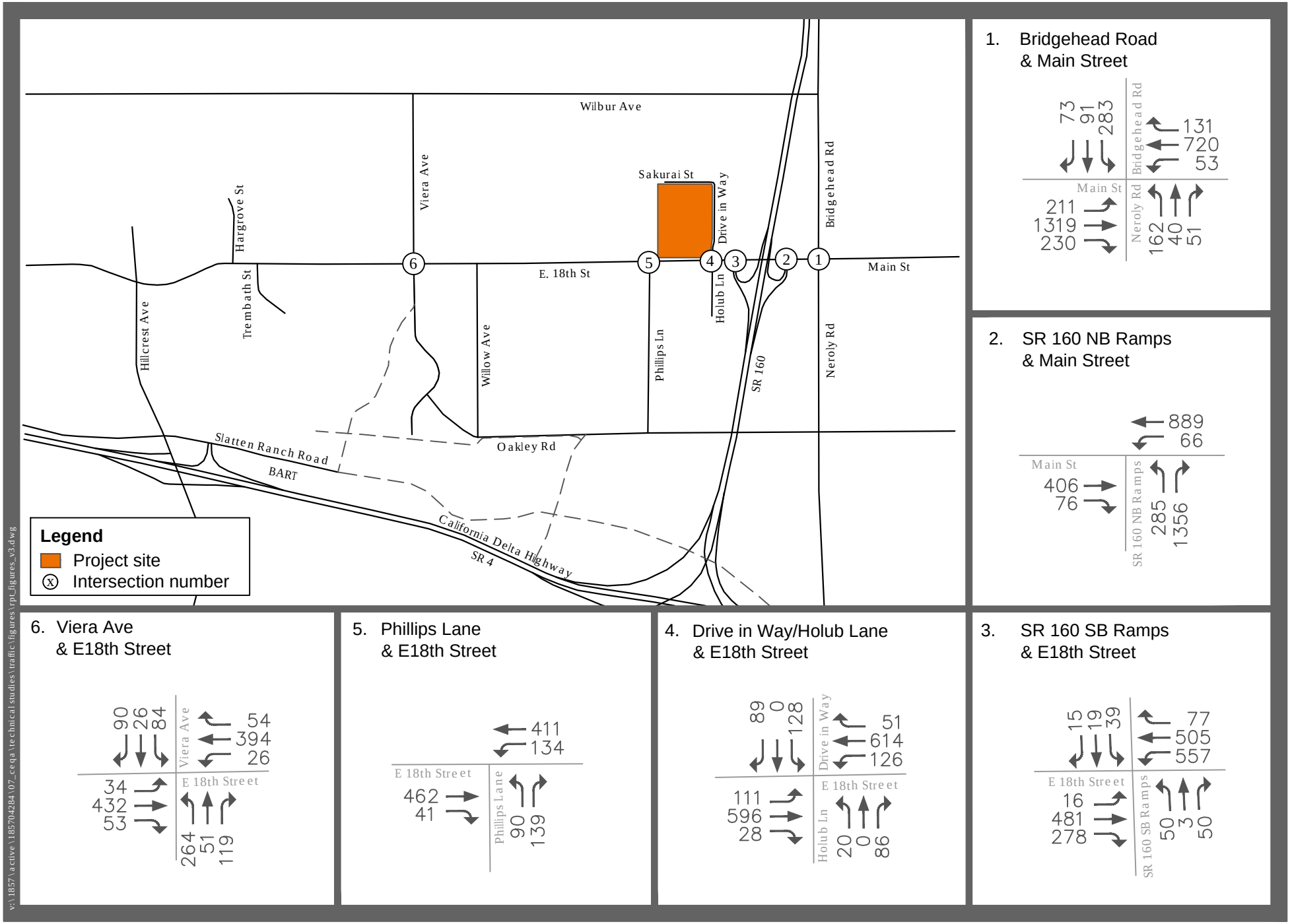

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Figure 4-13

Cumulative Conditions (2040) With Project PM Peak Hour Volumes

Table 4-2 Intersection LOS Summary – Cumulative Conditions (2040)

Intersection Name	Traffic Control	Without-Project				With-Project				Increase	
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
1. Bridgehead Road/Neroly Road & Main Street	Signal	31.1	C	36.3	D	33.0	C	39.1	D	1.9	2.8
2. Hwy 160 NB Ramps & East 18th Street	Signal	16.6	B	26.6	C	17.1	B	27.6	C	0.5	1.0
3. Hwy 160 SB Ramps & East 18th Street	Signal	21.6	C	16.6	B	23.3	C	18.2	B	1.7	1.6
4. Drive-in Way/Holub Ln & East 18th Street	Two-Way Stop	29.0	D	80.9	F	141.8	F	1004.6	**F**	112.8	923.7
5. Phillips Lane & East 18th Street	Signal	8.9	A	8.9	A	9.7	A	10.5	B	0.8	1.6
6. Viera Avenue & East 18th Street	Signal	8.9	A	45.3	D	9.2	A	50.1	D	0.3	4.8
Note: LOS – Level of Service Delay – Average Vehicle Delay (seconds) Significant project impacts are shown in **bold**											

4.3 MITIGATION

To mitigate the Project impact identified in the previous sections, a traffic signal should be installed at the intersection of Drive-in Way/Holub Lane and East 18th Street. A signal warrant analysis was conducted for the intersection, which has determined that the traffic volumes meet the peak hour warrant criteria for near-term conditions and cumulative conditions with the Project (Signal Warrant analysis is shown in Appendix C). The identified improvement would fully mitigate the Project's significant impact under the near-term conditions as shown in Table 4-3 and under the cumulative setting as shown in Table 4-4.

Table 4-3 Intersection LOS Summary – Near-Term Conditions with Mitigation

Intersection Name	Near-Term without Project				Near-Term with Project with Mitigation				Net Change with Mitigation	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Drive-in Way/Holub Ln & East 18th Street	13.9	B	16.6	C	14.0	B	15.9	B	0.1	-0.7

Table 4-4 Intersection LOS Summary – Cumulative Conditions (2040) with Mitigation

Intersection Name	Cumulative without Project				Cumulative with Project with Mitigation				Net Change with Mitigation	
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour			
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	AM	PM
Drive-in Way/Holub Ln & East 18th Street	22.6	C	33.1	D	17.6	B	18.7	B	-5.0	-14.4

Since the impact to the Drive-in Way/Holub Lane and East 18th Street intersection is due to the addition of project traffic to the north-leg (Drive-in Way), the traffic signal will be necessary when the portion of the site along Drive-in Way is developed. Currently, that portion of the site is proposed as office use. As such, the following mitigation measure is recommended:

Mitigation Measure (MM) 1 – Prior to issuing a certificate of occupancy for any commercial office use obtaining access from Drive-in Way, the project applicant shall construct or shall pay the City of Antioch to construct a traffic signal at the Drive-in Way/Holub Lane & East 18th Street intersection. The traffic signal shall be installed when minimum traffic signal warrant criteria is met as determined by the City Traffic Engineer.

5.0 OTHER TRANSPORTATION ISSUES

This section describes the site access and circulation, and potential impacts of the proposed project on transit, bicycle and pedestrian facilities. Site access and on-site circulation were evaluated in accordance with the City of Antioch Zoning Code and generally accepted traffic engineering standards. This review is based on the project site plan shown in Figure 1-2.

5.1 SITE ACCESS AND ON-SITE CIRCULATION

Vehicular access to the project site would be provided via three driveways on East 18th Street, two driveways on the Drive-in Way and a driveway on Sakurai Street as shown in the site plan. The west and center driveway on the East 18th street provides access to the hotel and/or commercial retail sites which are spaced approximately 350 feet from each other. The east driveway on East 18th street and the south driveway on Drive-in Way provide access to the self-storage facility and are approximately 40 feet and 500 feet away respectively, from the Drive-in Way and East 18th Street intersection. Based on the site plan, the east driveway on the East 18th street is the main entrance and provides parking to the self-storage. The Business Park is accessed through the north driveway on Drive-in way and the driveway on Sakurai Street. The distance between the two driveways on the Drive-in Way is approximately 250 feet. Due to the relatively short distance along East 18th Street between the self-storage facility driveway and Drive-in Way (approximately 40 feet), it is recommended that the driveway be relocated, or access provided to the commercial retail parcel for use of a shared driveway, thereby reducing the total number of driveways along East 18th Street to two.

All the project driveways would have a width of more than 24 feet which would meet the City's design standards for minimum driveway width of 20 feet. The Fire Department will review the site plan to ensure adequate access for fire trucks. Adequate sight distance should be provided at the project driveways. There are no roadway curves, on-street parking, or landscape features that appear to obstruct the vision of drivers adjacent to the project site. There are no landscape features shown on the site plan that appear to interfere with the sight distance at any of the driveways. To ensure the safety of the drivers, the sight distance triangle should be clear of any objects that would obstruct the vision of exiting drivers.

The site would have north-south and east-west drive aisles that extends the full length of the project site along the edges of each land use area. All drive aisles would have 90-degree perpendicular parking spaces. The drive aisle width (more than 24 feet) provides sufficient space for vehicles to back out of the parking stalls. Generally, the

proposed plan would provide vehicle traffic with adequate connectivity through the parking areas within each land use area. As mentioned above, the hotel and/or commercial, self-storage and business park areas are all fully separated with their own driveway access. There is no on-site connectivity between the areas, however as noted above, it is recommended that access be provided between the self-storage facility parking lot and the commercial retail parcel for use of a shared driveway, thereby eliminating the need for a drive way close to Drive-in Way and reducing the total number of driveways along East 18th Street to two.

With the installation of the new traffic signal at the intersection of East 18th Street and Drive-in Way, there are no apparent issues regarding conflicting movements, delay and vehicles queueing on Drive-in Way with the nearby and adjacent business/property that has access via Drive-in way. However, the Project would need to restripe the north leg of the intersection to match the proposed lane geometry of the south leg, which is 5 feet bike lane, 11 feet left-turn lane and 12 feet shared through and right-turn lane.

Public and Active Transportation Analysis

Tri Delta Transit provides transit services near the Project site. There are three local bus routes - Route 383, Route 391, and Route 393 that serve the study area directly, which primarily runs in the east-west direction on East 18th Street. The bus stop closest to the project on the north side of East 18th Street is approximately 200 feet from the edge of the project site, just east of Drive-in Way. On the south side of East 18th Street, it is located near the freeway overpass approximately 800 feet from the edge of the project site. These routes provide services between Cities of Antioch and Brentwood, the Pittsburg Center BART Station, the Brentwood Park-and-Ride lot, and Antioch BART Station. See Section 2.1.3 for detailed discussion.

The 2015 U.S. Census reports that bus trips comprise approximately 7.5% of the total commute mode share in the City of Antioch. Assuming the same mode split for the proposed project, there would be 22 transit trips during the AM and 28 transit trips during the PM peak commute hours. According to the Tri Delta Short Range Transit Plan, the capacity of their bus fleet ranges between 44 and 56 seats per vehicle. With one or two bus trips in each direction on every route during commute hours and given that the estimated transit volume of riders would be dispersed among the different routes, the project-generated riders are not expected to exceed the carrying capacity of the existing bus service near the project site.

Pedestrian facilities in the study area consist of sidewalks along portions of East 18th Street and other nearby neighborhood roadways in the vicinity of the project. There are significant gaps in the sidewalk on the south side of East 18th Street between Phillips Lane and Neroly Road. The conceptual site plan shows sidewalks will be constructed on East 18th Street, Drive-in Way and Sakurai Street along the edges of the project site. Pedestrian travel to and from the project site is aided by marked crosswalks with pedestrian signal heads and push buttons at all of the signalized study intersections except one, which is currently unsignalized but would install a signal at build-out of the project. The project would provide sidewalk connections within each of the three areas of the project site and also to connect sidewalks along the adjacent public streets.

Bicycle lanes are currently present along both sides of Viera Avenue between East 18th Street and Wilbur Avenue and along the entire length of Phillips Lane. There's a planned future Low Stress countywide bikeway on the East 18th Street. Although the other nearby streets have no striped bike lanes, the low traffic volumes make these roadways conducive to bicycle traffic.

6.0 CONCLUSION

This traffic study was conducted to evaluate Project impacts associated with the development of the proposed Acorn Business Park Project. Existing conditions, near-term conditions which include the nearby approved and pending development projects, and cumulative conditions with and without the Project were analyzed.

Based on the results of the LOS analyses and the criteria set forth by the City, the study intersections operate at an acceptable level of service under existing conditions. Under near-term and cumulative conditions scenario, the additional traffic added by the proposed Project results in an unacceptable LOS at the Drive-in Way and East 18th Street intersection. To mitigate this significant impact, the project would construct a traffic signal at the Drive-in Way and East 18th Street intersection. Since the impact to the Drive-in Way/Holub Lane and East 18th Street intersection is due to the addition of project traffic to the north-leg (Drive-in Way), the traffic signal will be necessary when the portion of the site along Drive-in Way is developed. Currently, that portion of the site is proposed as office use.

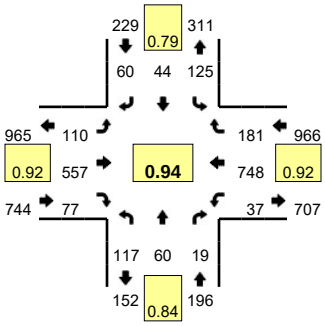
Appendix A TRAFFIC COUNTS

Type of peak hour being reported: Intersection Peak

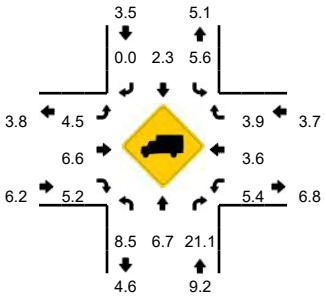
Method for determining peak hour: Total Entering Volume

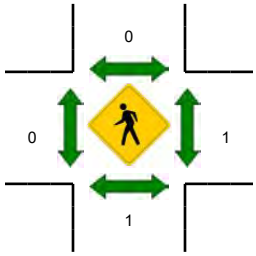
LOCATION: Neroly Rd -- Main St
CITY/STATE: Oakley, CA

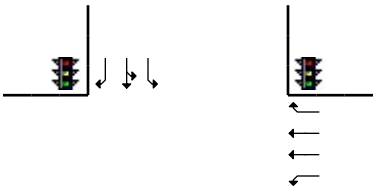
QC JOB #: 14825301
DATE: Thu, Oct 25 2018

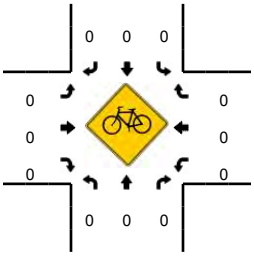


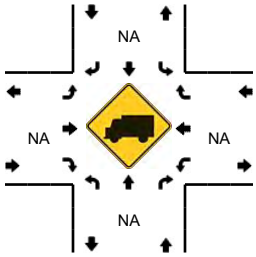
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

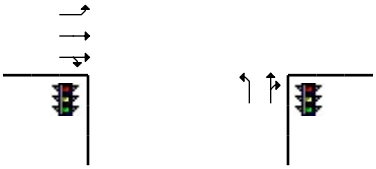


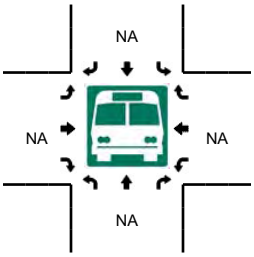












15-Min Count Period Beginning At	Neroly Rd (Northbound)				Neroly Rd (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	31	10	4	0	22	5	12	0	11	60	5	5	4	112	31	3	315	
7:15 AM	27	10	2	0	15	4	11	0	12	70	22	12	3	116	37	4	345	
7:30 AM	28	9	0	0	20	9	16	0	16	135	15	5	3	199	42	2	499	
7:45 AM	30	19	9	0	45	16	14	0	16	155	25	6	9	180	41	1	566	1725
8:00 AM	21	18	6	0	35	12	13	0	15	160	15	13	12	203	47	0	570	1980
8:15 AM	38	14	4	0	25	7	17	0	23	107	22	16	7	166	51	3	500	2135
8:30 AM	16	15	3	0	20	13	19	0	14	77	16	11	4	120	28	1	357	1993
8:45 AM	22	13	4	0	31	9	16	0	21	96	10	9	9	155	22	6	423	1850

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	84	72	24	0	140	48	52	0	60	640	60	52	48	812	188	0	2280
Heavy Trucks	0	0	8		8	0	0		4	40	4		4	16	12		96
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Railroad																	
Stopped Buses																	

Comments:

Report generated on 10/30/2018 12:56 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

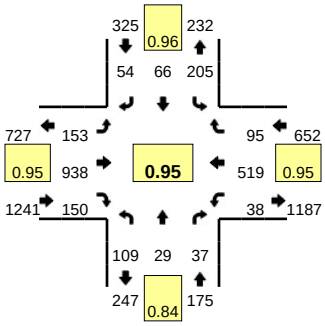
Method for determining peak hour: Total Entering Volume

LOCATION: Neroly Rd -- Main St

CITY/STATE: Oakley, CA

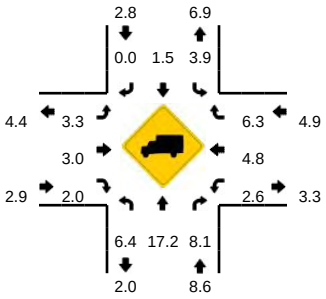
QC JOB #: 14825302

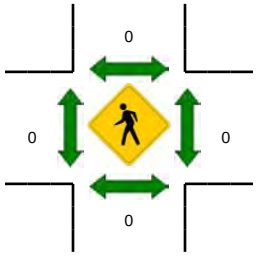
DATE: Thu, Oct 25 2018

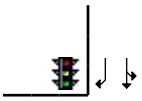


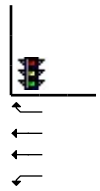
Peak-Hour: 4:45 PM -- 5:45 PM

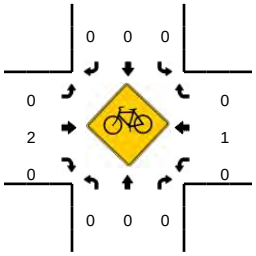
Peak 15-Min: 5:30 PM -- 5:45 PM

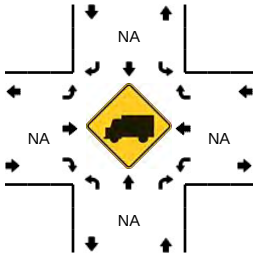


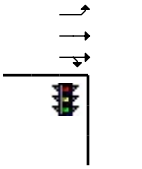


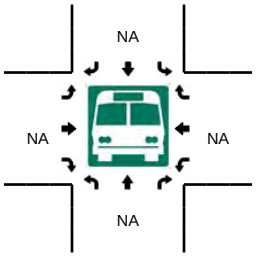












15-Min Count Period Beginning At	Neroly Rd (Northbound)				Neroly Rd (Southbound)				Main St (Eastbound)				Main St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	25	9	9	0	42	21	14	0	18	231	37	3	5	128	18	2	562	
4:15 PM	25	11	9	0	58	16	10	0	23	236	34	12	11	131	28	2	606	
4:30 PM	25	16	17	0	41	14	21	0	24	221	34	14	13	143	21	1	605	
4:45 PM	23	10	7	0	57	19	9	0	25	214	29	15	8	131	25	2	574	2347
5:00 PM	28	6	10	0	59	6	14	0	20	250	29	10	7	135	17	1	592	2377
5:15 PM	35	7	12	0	42	20	16	0	30	236	41	15	9	108	28	1	600	2371
5:30 PM	23	6	8	0	47	21	15	0	33	238	51	5	7	145	25	3	627	2393
5:45 PM	20	6	16	0	54	20	10	0	22	204	34	6	7	107	18	5	529	2348

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	24	32	0	188	84	60	0	132	952	204	20	28	580	100	12	2508
Heavy Trucks	12	4	4		12	0	0		4	32	4		0	32	12		116
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1
Railroad Stopped Buses																	

Comments:

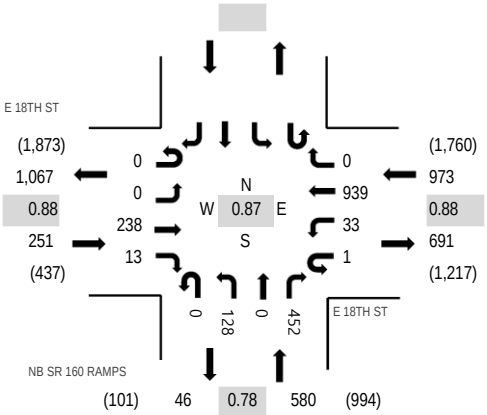
Report generated on 10/30/2018 12:56 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

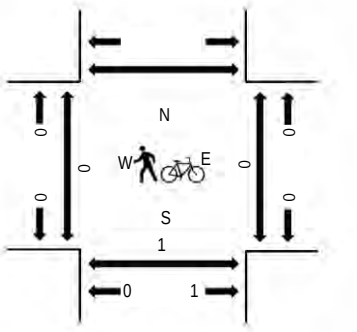
Location: 5 NB SR 160 RAMPS & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				NB SR 160 RAMPS Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	30	7	1	10	188	0	0	17	0	78					331	1,584	0	0	0	
7:15 AM	0	0	59	4	1	8	163	0	0	16	0	76					327	1,727	0	0	0	
7:30 AM	0	0	61	4	0	7	207	0	0	25	0	106					410	1,804	0	0	0	
7:45 AM	0	0	66	2	0	9	254	0	0	49	0	136					516	1,765	0	0	1	
8:00 AM	0	0	42	5	0	6	272	0	0	29	0	120					474	1,607	0	0	0	
8:15 AM	0	0	69	2	1	11	206	0	0	25	0	90					404		0	0	0	
8:30 AM	0	0	43	2	0	11	204	0	0	19	0	92					371		0	0	0	
8:45 AM	0	0	39	2	0	11	190	0	0	9	0	107					358		0	0	0	

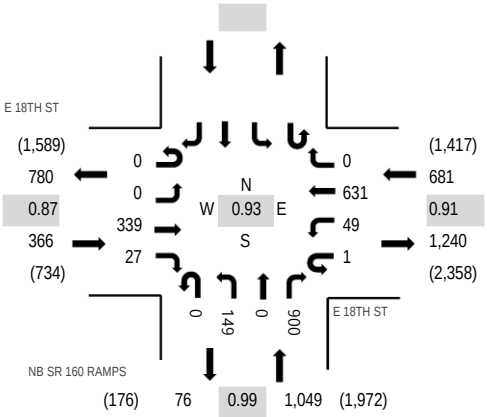
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	1	0	2	8	0	0	2	0	6					23
Lights	0	0	226	12	1	31	911	0	0	124	0	436					1,741
Mediums	0	0	8	0	0	0	20	0	0	2	0	10					40
Total	0	0	238	13	1	33	939	0	0	128	0	452					1,804

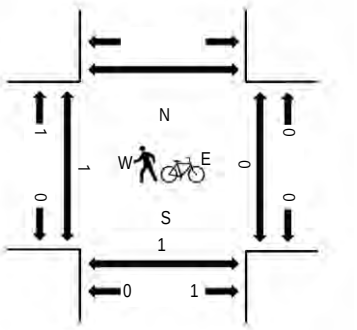
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

Location: 5 NB SR 160 RAMPS & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				NB SR 160 RAMPS Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	98	8	0	14	184	0	0	42	0	181					527	2,039	0	0	0	
4:15 PM	0	0	72	14	0	17	163	0	0	22	0	213					501	2,042	0	0	0	
4:30 PM	0	0	87	11	0	15	187	0	0	29	0	197					526	2,060	0	0	0	
4:45 PM	0	0	71	6	0	7	147	0	0	35	0	219					485	2,096	0	0	0	
5:00 PM	0	0	80	11	0	15	159	0	0	48	0	217					530	2,084	1	0	0	
5:15 PM	0	0	86	6	1	15	147	0	0	37	0	227					519		0	0	0	
5:30 PM	0	0	102	4	0	12	178	0	0	29	0	237					562		0	0	0	
5:45 PM	0	0	73	5	0	16	140	0	0	42	0	197					473		0	1	0	

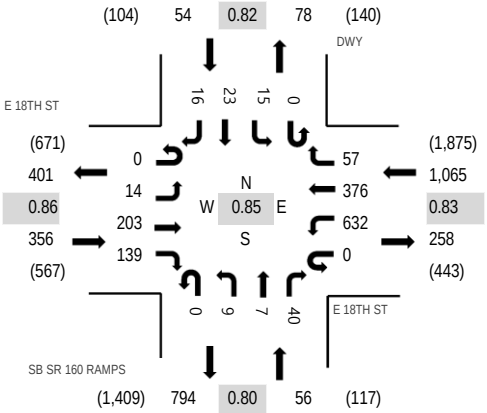
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	3	0	0	5	0	2					11
Lights	0	0	328	27	1	48	611	0	0	140	0	880					2,035
Mediums	0	0	10	0	0	1	17	0	0	4	0	18					50
Total	0	0	339	27	1	49	631	0	0	149	0	900					2,096

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

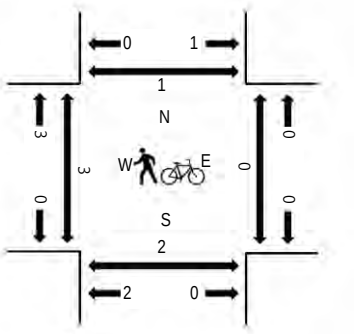
Location: 4 SB SR 160 RAMPS & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				SB SR 160 RAMPS Northbound				DWY Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	21	15	1	149	57	8	0	6	3	11	0	5	6	0	282	1,337	1	0	1	0
7:15 AM	0	2	43	23	0	107	61	8	0	6	1	13	0	5	5	4	278	1,441	0	0	0	0
7:30 AM	0	3	51	32	0	135	76	9	0	3	1	10	0	2	2	4	328	1,531	1	0	1	0
7:45 AM	0	7	59	37	0	181	122	16	0	2	1	7	0	6	5	6	449	1,499	0	0	0	1
8:00 AM	0	4	37	32	0	164	105	15	0	2	2	11	0	4	7	3	386	1,326	1	0	0	0
8:15 AM	0	0	56	38	0	152	73	17	0	2	3	12	0	3	9	3	368		0	0	0	0
8:30 AM	0	1	29	22	0	122	74	23	0	2	0	13	0	2	6	2	296		0	0	0	0
8:45 AM	0	2	34	19	0	133	54	13	0	3	1	2	0	6	8	1	276		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	6	0	7	2	0	0	1	0	3	0	0	0	0	21
Lights	0	14	193	128	0	609	368	57	0	8	7	37	0	15	23	16	1,475
Mediums	0	0	8	5	0	16	6	0	0	0	0	0	0	0	0	0	35
Total	0	14	203	139	0	632	376	57	0	9	7	40	0	15	23	16	1,531

All Traffic Data Services Inc.
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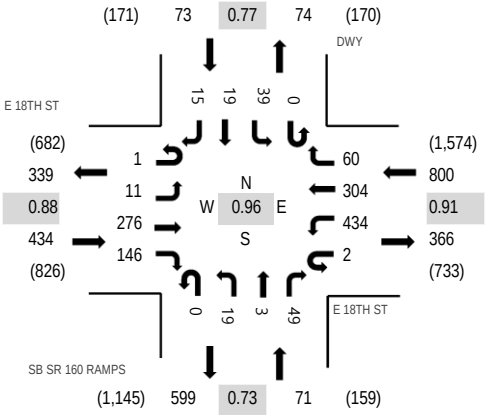
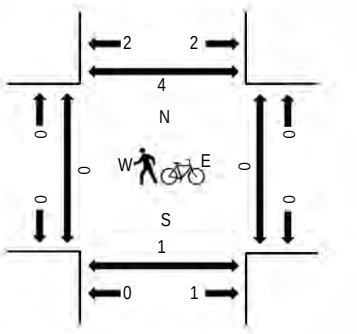
Location: 4 SB SR 160 RAMPS & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				SB SR 160 RAMPS Northbound				DWY Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	3	77	32	1	97	93	18	0	3	0	15	0	12	2	4	357	1,378	0	0	0	0
4:15 PM	0	3	80	41	0	124	60	10	0	8	1	11	0	6	8	2	354	1,376	0	0	0	0
4:30 PM	1	4	58	39	1	120	84	14	0	2	0	12	0	13	3	5	356	1,347	0	0	0	0
4:45 PM	0	1	61	34	0	93	67	18	0	6	2	11	0	8	6	4	311	1,355	0	0	1	2
5:00 PM	0	2	69	36	0	102	88	17	0	2	3	9	0	15	8	4	355	1,352	0	0	0	2
5:15 PM	0	2	61	30	0	79	81	20	0	4	3	13	0	17	13	2	325		0	0	0	0
5:30 PM	0	4	79	31	0	123	66	16	0	4	4	22	0	7	4	4	364		0	0	0	0
5:45 PM	0	3	48	27	0	84	79	19	0	3	3	18	0	9	9	6	308		0	0	0	2

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	1	0	1	2	0	0	3	0	2	0	0	0	1	11
Lights	1	11	267	144	2	430	289	60	0	13	3	47	0	38	18	14	1,337
Mediums	0	0	8	1	0	3	13	0	0	3	0	0	0	1	1	0	30
Total	1	11	276	146	2	434	304	60	0	19	3	49	0	39	19	15	1,378

All Traffic Data Services Inc.
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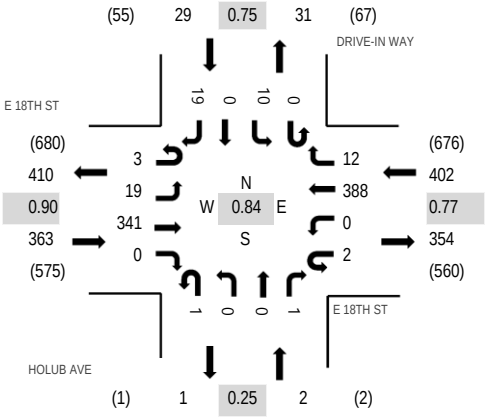
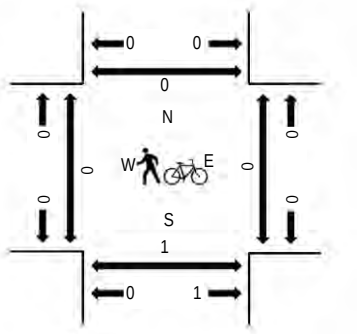
Location: 3 HOLUB AVE & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				HOLUB AVE Northbound				DRIVE-IN WAY Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	36	0	1	0	56	8	0	0	0	0	0	2	0	1	106	663	0	0	0	0
7:15 AM	0	6	63	0	0	0	67	4	0	0	0	0	0	0	0	3	143	756	0	0	0	0
7:30 AM	2	1	85	0	0	0	81	2	1	0	0	1	0	2	0	2	177	796	0	0	0	0
7:45 AM	1	5	95	0	0	0	125	5	0	0	0	0	0	2	0	4	237	756	0	0	1	0
8:00 AM	0	6	72	0	1	0	108	2	0	0	0	0	0	3	0	7	199	645	0	0	0	0
8:15 AM	0	7	89	0	1	0	74	3	0	0	0	0	0	3	0	6	183		0	0	0	0
8:30 AM	0	3	46	0	1	0	77	3	0	0	0	0	0	3	0	4	137		0	0	0	0
8:45 AM	0	8	48	0	0	0	55	2	0	0	0	0	0	6	0	7	126		0	0	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	2	2	0	0	0	0	0	5	0	0	14
Lights	3	18	327	0	2	0	380	10	1	0	0	1	0	5	0	18	765
Mediums	0	1	9	0	0	0	6	0	0	0	0	0	0	0	0	1	17
Total	3	19	341	0	2	0	388	12	1	0	0	1	0	10	0	19	796

All Traffic Data Services Inc.
(303) 216-2439
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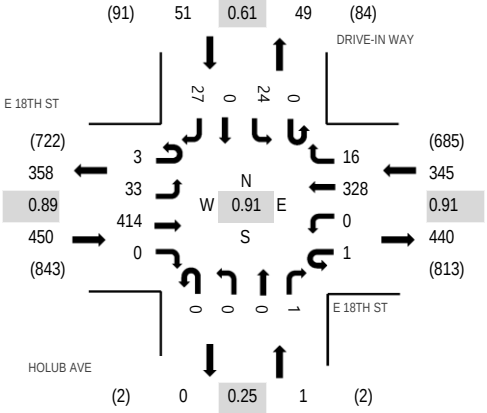
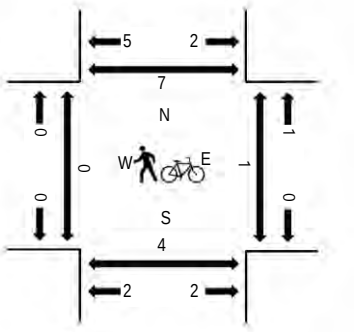
Location: 3 HOLUB AVE & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				HOLUB AVE Northbound				DRIVE-IN WAY Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	6	110	0	0	0	104	2	0	0	0	0	0	7	0	3	232	847	0	0	0	1
4:15 PM	0	10	116	0	0	0	67	5	0	0	0	1	0	8	0	13	220	823	0	1	3	0
4:30 PM	0	10	98	0	0	0	79	7	0	0	0	0	0	5	0	6	205	800	0	0	0	1
4:45 PM	3	7	90	0	1	0	78	2	0	0	0	0	0	4	0	5	190	782	0	0	1	4
5:00 PM	0	6	102	0	1	0	93	2	0	0	0	0	0	0	0	4	208	774	0	0	1	4
5:15 PM	1	9	88	0	1	0	82	3	0	1	0	0	0	2	0	10	197		0	0	0	1
5:30 PM	1	4	101	1	1	0	70	1	0	0	0	0	0	4	0	4	187		0	0	0	0
5:45 PM	1	9	69	1	1	0	84	1	0	0	0	0	0	3	0	13	182		0	0	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	1	2	0	0	0	3	2	0	0	0	0	0	0	0	0	8
Lights	3	32	402	0	1	0	311	13	0	0	0	1	0	24	0	27	814
Mediums	0	0	10	0	0	0	14	1	0	0	0	0	0	0	0	0	25
Total	3	33	414	0	1	0	328	16	0	0	0	1	0	24	0	27	847

All Traffic Data Services Inc.
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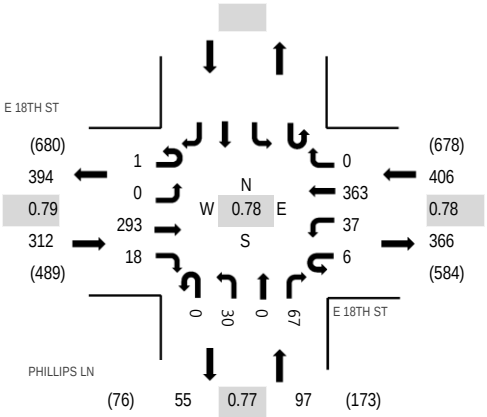
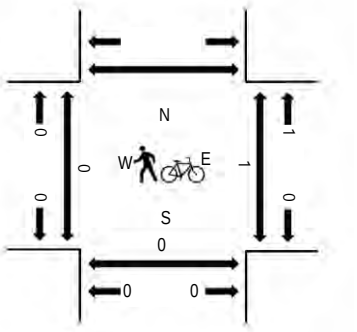
Location: 2 PHILLIPS LN & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				PHILLIPS LN Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	29	1	1	4	50	0	0	2	0	9					96	685	0	0	0	
7:15 AM	1	0	57	1	3	1	68	0	0	5	0	17					153	780	0	0	0	
7:30 AM	1	0	61	4	1	4	79	0	0	6	0	19					175	815	0	0	0	
7:45 AM	0	0	92	7	1	10	119	0	0	13	0	19					261	788	0	0	0	
8:00 AM	0	0	58	4	2	12	95	0	0	4	0	16					191	655	0	0	0	
8:15 AM	0	0	82	3	2	11	70	0	0	7	0	13					188		0	0	0	
8:30 AM	0	0	43	2	0	4	76	0	0	12	0	11					148		0	0	0	
8:45 AM	0	0	37	6	0	2	63	0	0	9	0	11					128		0	0	0	

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	1	0	0	0	0	0					6
Lights	1	0	276	18	6	36	357	0	0	30	0	67					791
Mediums	0	0	12	0	0	1	5	0	0	0	0	0					18
Total	1	0	293	18	6	37	363	0	0	30	0	67					815

All Traffic Data Services Inc.
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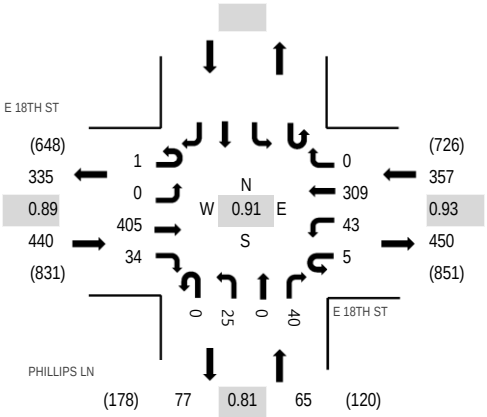
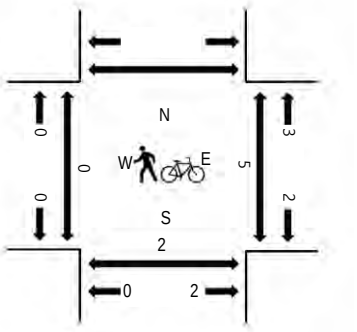
Location: 2 PHILLIPS LN & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				PHILLIPS LN Northbound				Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	113	10	1	12	87	0	0	6	0	9					238	862	0	0	0	
4:15 PM	0	0	111	5	1	8	77	0	0	10	0	5					217	847	0	1	1	
4:30 PM	1	0	96	13	1	9	75	0	0	4	0	16					215	826	0	2	0	
4:45 PM	0	0	85	6	2	14	70	0	0	5	0	10					192	811	0	2	1	
5:00 PM	0	0	102	13	2	12	82	0	0	4	0	8					223	815	0	0	1	
5:15 PM	0	0	85	4	0	20	76	0	0	1	0	10					196		0	0	0	
5:30 PM	0	0	94	9	1	12	65	0	0	0	0	19					200		0	0	0	
5:45 PM	0	0	71	13	0	18	81	0	0	4	0	9					196		0	1	0	

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	3	0	0	0	0	0					6
Lights	1	0	392	32	5	43	294	0	0	24	0	40					831
Mediums	0	0	10	2	0	0	12	0	0	1	0	0					25
Total	1	0	405	34	5	43	309	0	0	25	0	40					862

All Traffic Data Services Inc.
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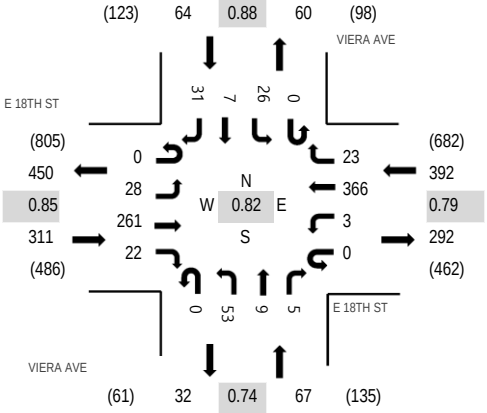
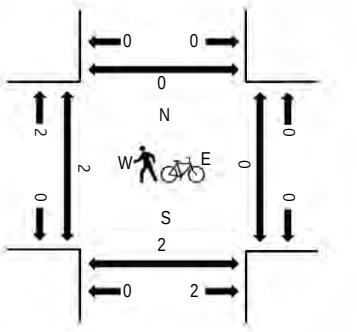
Location: 1 VIERA AVE & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				VIERA AVE Northbound				VIERA AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	3	25	6	0	0	58	2	0	13	1	0	0	4	0	8	120	700	1	0	0	0
7:15 AM	0	2	33	2	0	1	80	4	0	8	2	3	0	4	2	8	149	780	5	1	1	1
7:30 AM	1	3	50	6	0	1	67	7	0	18	4	2	0	6	2	10	177	821	0	0	1	0
7:45 AM	0	7	80	5	0	1	113	10	0	16	2	2	0	9	1	8	254	834	1	0	0	0
8:00 AM	0	9	55	10	0	1	89	2	0	11	3	0	0	5	3	12	200	726	0	0	1	0
8:15 AM	0	7	75	3	0	0	75	5	0	10	1	1	0	6	2	5	190		0	0	0	0
8:30 AM	0	5	51	4	0	1	89	6	0	16	3	2	0	6	1	6	190		0	0	0	0
8:45 AM	0	4	36	4	0	3	63	4	0	11	2	4	0	3	2	10	146		0	0	0	0

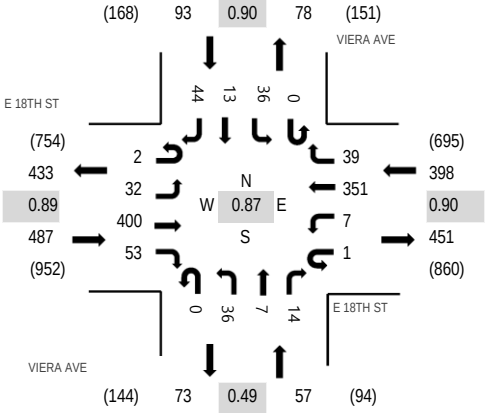
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	7
Lights	0	27	244	21	0	3	355	22	0	53	9	5	0	23	7	29	798
Mediums	0	1	11	1	0	0	10	1	0	0	0	0	0	3	0	2	29
Total	0	28	261	22	0	3	366	23	0	53	9	5	0	26	7	31	834

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

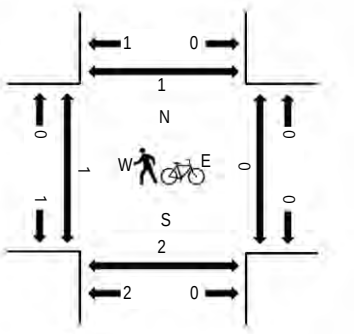
Location: 1 VIERA AVE & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	E 18TH ST Eastbound				E 18TH ST Westbound				VIERA AVE Northbound				VIERA AVE Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	11	112	14	0	3	100	7	0	18	2	9	0	8	3	12	299	1,035	0	0	0	0
4:15 PM	0	3	100	13	0	1	82	11	0	5	2	1	0	6	2	14	240	978	0	0	0	1
4:30 PM	0	10	94	15	1	2	79	11	0	9	1	3	0	12	5	9	251	959	0	0	1	0
4:45 PM	2	8	94	11	0	1	90	10	0	4	2	1	0	10	3	9	245	934	1	0	0	0
5:00 PM	0	8	103	16	0	1	71	8	0	11	1	0	0	10	6	7	242	874	0	0	0	0
5:15 PM	0	13	91	9	0	1	69	7	0	4	3	1	0	8	5	10	221		1	0	0	1
5:30 PM	0	8	101	19	0	0	68	9	0	4	3	2	0	6	0	6	226		0	0	0	0
5:45 PM	0	5	82	10	0	1	54	8	0	7	0	1	0	4	3	10	185		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5
Lights	2	32	391	53	1	7	339	38	0	36	6	13	0	34	12	43	1,007
Mediums	0	0	7	0	0	0	9	1	0	0	1	1	0	2	1	1	23
Total	2	32	400	53	1	7	351	39	0	36	7	14	0	36	13	44	1,035

LOCATION: 18th St West of Phillips St
QC JOB #: 14825303
SPECIFIC LOCATION: 18th St West of Phillips St
DIRECTION: EB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				9		9			9	
12:15 AM				8		8			8	
12:30 AM				7		7			7	
12:45 AM				4		4			4	
1:00 AM				5		5			5	
1:15 AM				4		4			4	
1:30 AM				2		2			2	
1:45 AM				2		2			2	
2:00 AM				7		7			7	
2:15 AM				4		4			4	
2:30 AM				5		5			5	
2:45 AM				7		7			7	
3:00 AM				3		3			3	
3:15 AM				9		9			9	
3:30 AM				5		5			5	
3:45 AM				9		9			9	
4:00 AM				13		13			13	
4:15 AM				15		15			15	
4:30 AM				13		13			13	
4:45 AM				27		27			27	
5:00 AM				34		34			34	
5:15 AM				47		47			47	
5:30 AM				48		48			48	
5:45 AM				53		53			53	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				55		55			55	
6:15 AM				47		47			47	
6:30 AM				57		57			57	
6:45 AM				56		56			56	
7:00 AM				47		47			47	
7:15 AM				59		59			59	
7:30 AM				102		102			102	
7:45 AM				**112**		**112**			**112**	
8:00 AM				97		97			97	
8:15 AM				87		87			87	
8:30 AM				60		60			60	
8:45 AM				65		65			65	
9:00 AM				68		68			68	
9:15 AM				68		68			68	
9:30 AM				69		69			69	
9:45 AM				46		46			46	
10:00 AM				42		42			42	
10:15 AM				52		52			52	
10:30 AM				53		53			53	
10:45 AM				47		47			47	
11:00 AM				63		63			63	
11:15 AM				83		83			83	
11:30 AM				68		68			68	
11:45 AM				71		71			71	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				75		75			75	
12:15 PM				80		80			80	
12:30 PM				98		98			98	
12:45 PM				95		95			95	
1:00 PM				79		79			79	
1:15 PM				75		75			75	
1:30 PM				82		82			82	
1:45 PM				62		62			62	
2:00 PM				73		73			73	
2:15 PM				74		74			74	
2:30 PM				110		110			110	
2:45 PM				**114**		**114**			**114**	
3:00 PM				88		88			88	
3:15 PM				102		102			102	
3:30 PM				88		88			88	
3:45 PM				95		95			95	
4:00 PM				89		89			89	
4:15 PM				70		70			70	
4:30 PM				72		72			72	
4:45 PM				103		103			103	
5:00 PM				101		101			101	
5:15 PM				104		104			104	
5:30 PM				86		86			86	
5:45 PM				80		80			80	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				76		76			76	
6:15 PM				89		89			89	
6:30 PM				98		98			98	
6:45 PM				96		96			96	
7:00 PM				80		80			80	
7:15 PM				52		52			52	
7:30 PM				37		37			37	
7:45 PM				45		45			45	
8:00 PM				55		55			55	
8:15 PM				44		44			44	
8:30 PM				43		43			43	
8:45 PM				35		35			35	
9:00 PM				32		32			32	
9:15 PM				37		37			37	
9:30 PM				26		26			26	
9:45 PM				25		25			25	
10:00 PM				24		24			24	
10:15 PM				13		13			13	
10:30 PM				18		18			18	
10:45 PM				13		13			13	
11:00 PM				13		13			13	
11:15 PM				14		14			14	
11:30 PM				13		13			13	
11:45 PM				4		4			4	
Day Total				4991		4991			4991	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				112		112			112	
PM Peak				2:45 PM		2:45 PM			2:45 PM	
Volume				114		114			114	

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				12		12			12	
12:15 AM				7		7			7	
12:30 AM				2		2			2	
12:45 AM				6		6			6	
1:00 AM				6		6			6	
1:15 AM				2		2			2	
1:30 AM				0		0			0	
1:45 AM				4		4			4	
2:00 AM				2		2			2	
2:15 AM				5		5			5	
2:30 AM				8		8			8	
2:45 AM				4		4			4	
3:00 AM				6		6			6	
3:15 AM				2		2			2	
3:30 AM				4		4			4	
3:45 AM				6		6			6	
4:00 AM				11		11			11	
4:15 AM				12		12			12	
4:30 AM				13		13			13	
4:45 AM				20		20			20	
5:00 AM				12		12			12	
5:15 AM				18		18			18	
5:30 AM				20		20			20	
5:45 AM				20		20			20	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				33		33			33	
6:15 AM				25		25			25	
6:30 AM				27		27			27	
6:45 AM				31		31			31	
7:00 AM				44		44			44	
7:15 AM				70		70			70	
7:30 AM				77		77			77	
7:45 AM				**113**		**113**			**113**	
8:00 AM				91		91			91	
8:15 AM				53		53			53	
8:30 AM				45		45			45	
8:45 AM				55		55			55	
9:00 AM				51		51			51	
9:15 AM				46		46			46	
9:30 AM				85		85			85	
9:45 AM				52		52			52	
10:00 AM				50		50			50	
10:15 AM				44		44			44	
10:30 AM				51		51			51	
10:45 AM				65		65			65	
11:00 AM				72		72			72	
11:15 AM				75		75			75	
11:30 AM				76		76			76	
11:45 AM				78		78			78	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				72		72			72	
12:15 PM				70		70			70	
12:30 PM				77		77			77	
12:45 PM				110		110			110	
1:00 PM				91		91			91	
1:15 PM				82		82			82	
1:30 PM				82		82			82	
1:45 PM				79		79			79	
2:00 PM				75		75			75	
2:15 PM				84		84			84	
2:30 PM				90		90			90	
2:45 PM				93		93			93	
3:00 PM				97		97			97	
3:15 PM				100		100			100	
3:30 PM				107		107			107	
3:45 PM				101		101			101	
4:00 PM				104		104			104	
4:15 PM				96		96			96	
4:30 PM				120		120			120	
4:45 PM				**145**		**145**			**145**	
5:00 PM				129		129			129	
5:15 PM				118		118			118	
5:30 PM				102		102			102	
5:45 PM				103		103			103	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				108		108			108	
6:15 PM				102		102			102	
6:30 PM				89		89			89	
6:45 PM				74		74			74	
7:00 PM				71		71			71	
7:15 PM				60		60			60	
7:30 PM				38		38			38	
7:45 PM				48		48			48	
8:00 PM				43		43			43	
8:15 PM				35		35			35	
8:30 PM				49		49			49	
8:45 PM				34		34			34	
9:00 PM				33		33			33	
9:15 PM				21		21			21	
9:30 PM				18		18			18	
9:45 PM				19		19			19	
10:00 PM				22		22			22	
10:15 PM				13		13			13	
10:30 PM				13		13			13	
10:45 PM				17		17			17	
11:00 PM				12		12			12	
11:15 PM				10		10			10	
11:30 PM				11		11			11	
11:45 PM				6		6			6	
Day Total				4884		4884			4884	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				113		113			113	
PM Peak				4:45 PM		4:45 PM			4:45 PM	
Volume				145		145			145	

Comments:

LOCATION: 18th St West of Phillips St
QC JOB #: 14825303
SPECIFIC LOCATION: 18th St West of Phillips St
DIRECTION: EB/WB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				21		21			21	
12:15 AM				15		15			15	
12:30 AM				9		9			9	
12:45 AM				10		10			10	
1:00 AM				11		11			11	
1:15 AM				6		6			6	
1:30 AM				2		2			2	
1:45 AM				6		6			6	
2:00 AM				9		9			9	
2:15 AM				9		9			9	
2:30 AM				13		13			13	
2:45 AM				11		11			11	
3:00 AM				9		9			9	
3:15 AM				11		11			11	
3:30 AM				9		9			9	
3:45 AM				15		15			15	
4:00 AM				24		24			24	
4:15 AM				27		27			27	
4:30 AM				26		26			26	
4:45 AM				47		47			47	
5:00 AM				46		46			46	
5:15 AM				65		65			65	
5:30 AM				68		68			68	
5:45 AM				73		73			73	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
QC JOB #: 14825303
SPECIFIC LOCATION: 18th St West of Phillips St
DIRECTION: EB/WB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				88		88			88	
6:15 AM				72		72			72	
6:30 AM				84		84			84	
6:45 AM				87		87			87	
7:00 AM				91		91			91	
7:15 AM				129		129			129	
7:30 AM				179		179			179	
7:45 AM				**225**		**225**			**225**	
8:00 AM				188		188			188	
8:15 AM				140		140			140	
8:30 AM				105		105			105	
8:45 AM				120		120			120	
9:00 AM				119		119			119	
9:15 AM				114		114			114	
9:30 AM				154		154			154	
9:45 AM				98		98			98	
10:00 AM				92		92			92	
10:15 AM				96		96			96	
10:30 AM				104		104			104	
10:45 AM				112		112			112	
11:00 AM				135		135			135	
11:15 AM				158		158			158	
11:30 AM				144		144			144	
11:45 AM				149		149			149	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: EB/WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				147		147			147	
12:15 PM				150		150			150	
12:30 PM				175		175			175	
12:45 PM				205		205			205	
1:00 PM				170		170			170	
1:15 PM				157		157			157	
1:30 PM				164		164			164	
1:45 PM				141		141			141	
2:00 PM				148		148			148	
2:15 PM				158		158			158	
2:30 PM				200		200			200	
2:45 PM				207		207			207	
3:00 PM				185		185			185	
3:15 PM				202		202			202	
3:30 PM				195		195			195	
3:45 PM				196		196			196	
4:00 PM				193		193			193	
4:15 PM				166		166			166	
4:30 PM				192		192			192	
4:45 PM				**248**		**248**			**248**	
5:00 PM				230		230			230	
5:15 PM				222		222			222	
5:30 PM				188		188			188	
5:45 PM				183		183			183	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St West of Phillips St
SPECIFIC LOCATION: 18th St West of Phillips St
CITY/STATE: Antioch, CA

QC JOB #: 14825303
DIRECTION: EB/WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				184		184			184	
6:15 PM				191		191			191	
6:30 PM				187		187			187	
6:45 PM				170		170			170	
7:00 PM				151		151			151	
7:15 PM				112		112			112	
7:30 PM				75		75			75	
7:45 PM				93		93			93	
8:00 PM				98		98			98	
8:15 PM				79		79			79	
8:30 PM				92		92			92	
8:45 PM				69		69			69	
9:00 PM				65		65			65	
9:15 PM				58		58			58	
9:30 PM				44		44			44	
9:45 PM				44		44			44	
10:00 PM				46		46			46	
10:15 PM				26		26			26	
10:30 PM				31		31			31	
10:45 PM				30		30			30	
11:00 PM				25		25			25	
11:15 PM				24		24			24	
11:30 PM				24		24			24	
11:45 PM				10		10			10	
Day Total				9875		9875			9875	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak Volume				7:45 AM 225		7:45 AM 225			7:45 AM 225	
PM Peak Volume				4:45 PM 248		4:45 PM 248			4:45 PM 248	

Comments:

LOCATION: 18th St East of Phillips Ln
QC JOB #: 14825304
SPECIFIC LOCATION: 18th St East of Phillips Ln
DIRECTION: EB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				12		12			12	
12:15 AM				8		8			8	
12:30 AM				5		5			5	
12:45 AM				4		4			4	
1:00 AM				6		6			6	
1:15 AM				4		4			4	
1:30 AM				3		3			3	
1:45 AM				2		2			2	
2:00 AM				7		7			7	
2:15 AM				5		5			5	
2:30 AM				4		4			4	
2:45 AM				7		7			7	
3:00 AM				4		4			4	
3:15 AM				8		8			8	
3:30 AM				7		7			7	
3:45 AM				9		9			9	
4:00 AM				13		13			13	
4:15 AM				13		13			13	
4:30 AM				14		14			14	
4:45 AM				28		28			28	
5:00 AM				34		34			34	
5:15 AM				44		44			44	
5:30 AM				48		48			48	
5:45 AM				49		49			49	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				55		55			55	
6:15 AM				49		49			49	
6:30 AM				47		47			47	
6:45 AM				59		59			59	
7:00 AM				53		53			53	
7:15 AM				59		59			59	
7:30 AM				96		96			96	
7:45 AM				**114**		**114**			**114**	
8:00 AM				111		111			111	
8:15 AM				87		87			87	
8:30 AM				79		79			79	
8:45 AM				72		72			72	
9:00 AM				71		71			71	
9:15 AM				73		73			73	
9:30 AM				73		73			73	
9:45 AM				52		52			52	
10:00 AM				51		51			51	
10:15 AM				48		48			48	
10:30 AM				56		56			56	
10:45 AM				48		48			48	
11:00 AM				63		63			63	
11:15 AM				84		84			84	
11:30 AM				81		81			81	
11:45 AM				79		79			79	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				74		74			74	
12:15 PM				78		78			78	
12:30 PM				94		94			94	
12:45 PM				104		104			104	
1:00 PM				86		86			86	
1:15 PM				70		70			70	
1:30 PM				88		88			88	
1:45 PM				66		66			66	
2:00 PM				68		68			68	
2:15 PM				81		81			81	
2:30 PM				**122**		**122**			**122**	
2:45 PM				122		122			122	
3:00 PM				91		91			91	
3:15 PM				103		103			103	
3:30 PM				90		90			90	
3:45 PM				103		103			103	
4:00 PM				84		84			84	
4:15 PM				88		88			88	
4:30 PM				88		88			88	
4:45 PM				103		103			103	
5:00 PM				104		104			104	
5:15 PM				112		112			112	
5:30 PM				107		107			107	
5:45 PM				95		95			95	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: EB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				78		78			78	
6:15 PM				98		98			98	
6:30 PM				100		100			100	
6:45 PM				102		102			102	
7:00 PM				91		91			91	
7:15 PM				68		68			68	
7:30 PM				49		49			49	
7:45 PM				56		56			56	
8:00 PM				63		63			63	
8:15 PM				60		60			60	
8:30 PM				51		51			51	
8:45 PM				37		37			37	
9:00 PM				36		36			36	
9:15 PM				37		37			37	
9:30 PM				31		31			31	
9:45 PM				28		28			28	
10:00 PM				29		29			29	
10:15 PM				13		13			13	
10:30 PM				27		27			27	
10:45 PM				17		17			17	
11:00 PM				14		14			14	
11:15 PM				16		16			16	
11:30 PM				17		17			17	
11:45 PM				5		5			5	
Day Total				5342		5342			5342	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				114		114			114	
PM Peak				2:30 PM		2:30 PM			2:30 PM	
Volume				122		122			122	

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				11		11			11	
12:15 AM				8		8			8	
12:30 AM				2		2			2	
12:45 AM				6		6			6	
1:00 AM				9		9			9	
1:15 AM				3		3			3	
1:30 AM				2		2			2	
1:45 AM				5		5			5	
2:00 AM				8		8			8	
2:15 AM				5		5			5	
2:30 AM				6		6			6	
2:45 AM				7		7			7	
3:00 AM				7		7			7	
3:15 AM				5		5			5	
3:30 AM				7		7			7	
3:45 AM				10		10			10	
4:00 AM				13		13			13	
4:15 AM				19		19			19	
4:30 AM				15		15			15	
4:45 AM				29		29			29	
5:00 AM				27		27			27	
5:15 AM				22		22			22	
5:30 AM				26		26			26	
5:45 AM				33		33			33	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				41		41			41	
6:15 AM				31		31			31	
6:30 AM				37		37			37	
6:45 AM				48		48			48	
7:00 AM				52		52			52	
7:15 AM				83		83			83	
7:30 AM				90		90			90	
7:45 AM				**118**		**118**			**118**	
8:00 AM				98		98			98	
8:15 AM				75		75			75	
8:30 AM				60		60			60	
8:45 AM				64		64			64	
9:00 AM				68		68			68	
9:15 AM				56		56			56	
9:30 AM				88		88			88	
9:45 AM				69		69			69	
10:00 AM				61		61			61	
10:15 AM				59		59			59	
10:30 AM				62		62			62	
10:45 AM				70		70			70	
11:00 AM				71		71			71	
11:15 AM				58		58			58	
11:30 AM				83		83			83	
11:45 AM				87		87			87	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				74		74			74	
12:15 PM				79		79			79	
12:30 PM				79		79			79	
12:45 PM				119		119			119	
1:00 PM				93		93			93	
1:15 PM				77		77			77	
1:30 PM				101		101			101	
1:45 PM				82		82			82	
2:00 PM				85		85			85	
2:15 PM				90		90			90	
2:30 PM				107		107			107	
2:45 PM				115		115			115	
3:00 PM				101		101			101	
3:15 PM				111		111			111	
3:30 PM				112		112			112	
3:45 PM				103		103			103	
4:00 PM				95		95			95	
4:15 PM				104		104			104	
4:30 PM				108		108			108	
4:45 PM				126		126			126	
5:00 PM				**130**		**130**			**130**	
5:15 PM				125		125			125	
5:30 PM				114		114			114	
5:45 PM				105		105			105	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
QC JOB #: 14825304
SPECIFIC LOCATION: 18th St East of Phillips Ln
DIRECTION: WB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				112		112			112	
6:15 PM				97		97			97	
6:30 PM				92		92			92	
6:45 PM				90		90			90	
7:00 PM				80		80			80	
7:15 PM				67		67			67	
7:30 PM				55		55			55	
7:45 PM				42		42			42	
8:00 PM				53		53			53	
8:15 PM				53		53			53	
8:30 PM				55		55			55	
8:45 PM				44		44			44	
9:00 PM				42		42			42	
9:15 PM				29		29			29	
9:30 PM				17		17			17	
9:45 PM				29		29			29	
10:00 PM				20		20			20	
10:15 PM				25		25			25	
10:30 PM				20		20			20	
10:45 PM				21		21			21	
11:00 PM				11		11			11	
11:15 PM				12		12			12	
11:30 PM				10		10			10	
11:45 PM				6		6			6	
Day Total				5431		5431			5431	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				118		118			118	
PM Peak				5:00 PM		5:00 PM			5:00 PM	
Volume				130		130			130	

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: EB/WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				23		23			23	
12:15 AM				16		16			16	
12:30 AM				7		7			7	
12:45 AM				10		10			10	
1:00 AM				15		15			15	
1:15 AM				7		7			7	
1:30 AM				5		5			5	
1:45 AM				7		7			7	
2:00 AM				15		15			15	
2:15 AM				10		10			10	
2:30 AM				10		10			10	
2:45 AM				14		14			14	
3:00 AM				11		11			11	
3:15 AM				13		13			13	
3:30 AM				14		14			14	
3:45 AM				19		19			19	
4:00 AM				26		26			26	
4:15 AM				32		32			32	
4:30 AM				29		29			29	
4:45 AM				57		57			57	
5:00 AM				61		61			61	
5:15 AM				66		66			66	
5:30 AM				74		74			74	
5:45 AM				82		82			82	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
SPECIFIC LOCATION: 18th St East of Phillips Ln
CITY/STATE: Antioch, CA

QC JOB #: 14825304
DIRECTION: EB/WB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				96		96			96	
6:15 AM				80		80			80	
6:30 AM				84		84			84	
6:45 AM				107		107			107	
7:00 AM				105		105			105	
7:15 AM				142		142			142	
7:30 AM				186		186			186	
7:45 AM				**232**		**232**			**232**	
8:00 AM				209		209			209	
8:15 AM				162		162			162	
8:30 AM				139		139			139	
8:45 AM				136		136			136	
9:00 AM				139		139			139	
9:15 AM				129		129			129	
9:30 AM				161		161			161	
9:45 AM				121		121			121	
10:00 AM				112		112			112	
10:15 AM				107		107			107	
10:30 AM				118		118			118	
10:45 AM				118		118			118	
11:00 AM				134		134			134	
11:15 AM				142		142			142	
11:30 AM				164		164			164	
11:45 AM				166		166			166	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
QC JOB #: 14825304
SPECIFIC LOCATION: 18th St East of Phillips Ln
DIRECTION: EB/WB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				148		148			148	
12:15 PM				157		157			157	
12:30 PM				173		173			173	
12:45 PM				223		223			223	
1:00 PM				179		179			179	
1:15 PM				147		147			147	
1:30 PM				189		189			189	
1:45 PM				148		148			148	
2:00 PM				153		153			153	
2:15 PM				171		171			171	
2:30 PM				229		229			229	
2:45 PM				**237**		**237**			**237**	
3:00 PM				192		192			192	
3:15 PM				214		214			214	
3:30 PM				202		202			202	
3:45 PM				206		206			206	
4:00 PM				179		179			179	
4:15 PM				192		192			192	
4:30 PM				196		196			196	
4:45 PM				229		229			229	
5:00 PM				234		234			234	
5:15 PM				237		237			237	
5:30 PM				221		221			221	
5:45 PM				200		200			200	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: 18th St East of Phillips Ln
QC JOB #: 14825304
SPECIFIC LOCATION: 18th St East of Phillips Ln
DIRECTION: EB/WB
CITY/STATE: Antioch, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				190		190			190	
6:15 PM				195		195			195	
6:30 PM				192		192			192	
6:45 PM				192		192			192	
7:00 PM				171		171			171	
7:15 PM				135		135			135	
7:30 PM				104		104			104	
7:45 PM				98		98			98	
8:00 PM				116		116			116	
8:15 PM				113		113			113	
8:30 PM				106		106			106	
8:45 PM				81		81			81	
9:00 PM				78		78			78	
9:15 PM				66		66			66	
9:30 PM				48		48			48	
9:45 PM				57		57			57	
10:00 PM				49		49			49	
10:15 PM				38		38			38	
10:30 PM				47		47			47	
10:45 PM				38		38			38	
11:00 PM				25		25			25	
11:15 PM				28		28			28	
11:30 PM				27		27			27	
11:45 PM				11		11			11	
Day Total				10773		10773			10773	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				232		232			232	
PM Peak				2:45 PM		2:45 PM			2:45 PM	
Volume				237		237			237	

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				0		0			0	
12:15 AM				2		2			2	
12:30 AM				1		1			1	
12:45 AM				1		1			1	
1:00 AM				0		0			0	
1:15 AM				2		2			2	
1:30 AM				0		0			0	
1:45 AM				0		0			0	
2:00 AM				1		1			1	
2:15 AM				1		1			1	
2:30 AM				2		2			2	
2:45 AM				2		2			2	
3:00 AM				3		3			3	
3:15 AM				3		3			3	
3:30 AM				3		3			3	
3:45 AM				13		13			13	
4:00 AM				10		10			10	
4:15 AM				17		17			17	
4:30 AM				23		23			23	
4:45 AM				11		11			11	
5:00 AM				24		24			24	
5:15 AM				22		22			22	
5:30 AM				18		18			18	
5:45 AM				17		17			17	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				25		25			25	
6:15 AM				28		28			28	
6:30 AM				28		28			28	
6:45 AM				23		23			23	
7:00 AM				39		39			39	
7:15 AM				36		36			36	
7:30 AM				40		40			40	
7:45 AM				41		41			41	
8:00 AM				43		43			43	
8:15 AM				**49**		**49**			**49**	
8:30 AM				31		31			31	
8:45 AM				32		32			32	
9:00 AM				41		41			41	
9:15 AM				34		34			34	
9:30 AM				33		33			33	
9:45 AM				24		24			24	
10:00 AM				25		25			25	
10:15 AM				18		18			18	
10:30 AM				29		29			29	
10:45 AM				36		36			36	
11:00 AM				21		21			21	
11:15 AM				26		26			26	
11:30 AM				28		28			28	
11:45 AM				30		30			30	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				26		26			26	
12:15 PM				30		30			30	
12:30 PM				31		31			31	
12:45 PM				29		29			29	
1:00 PM				38		38			38	
1:15 PM				36		36			36	
1:30 PM				33		33			33	
1:45 PM				33		33			33	
2:00 PM				37		37			37	
2:15 PM				33		33			33	
2:30 PM				**50**		**50**			**50**	
2:45 PM				30		30			30	
3:00 PM				35		35			35	
3:15 PM				46		46			46	
3:30 PM				38		38			38	
3:45 PM				22		22			22	
4:00 PM				34		34			34	
4:15 PM				46		46			46	
4:30 PM				41		41			41	
4:45 PM				31		31			31	
5:00 PM				36		36			36	
5:15 PM				36		36			36	
5:30 PM				31		31			31	
5:45 PM				21		21			21	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				26		26			26	
6:15 PM				23		23			23	
6:30 PM				26		26			26	
6:45 PM				22		22			22	
7:00 PM				31		31			31	
7:15 PM				24		24			24	
7:30 PM				25		25			25	
7:45 PM				23		23			23	
8:00 PM				22		22			22	
8:15 PM				16		16			16	
8:30 PM				11		11			11	
8:45 PM				15		15			15	
9:00 PM				6		6			6	
9:15 PM				11		11			11	
9:30 PM				3		3			3	
9:45 PM				11		11			11	
10:00 PM				10		10			10	
10:15 PM				2		2			2	
10:30 PM				7		7			7	
10:45 PM				3		3			3	
11:00 PM				6		6			6	
11:15 PM				6		6			6	
11:30 PM				2		2			2	
11:45 PM				2		2			2	
Day Total				2092		2092			2092	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				8:15 AM		8:15 AM			8:15 AM	
Volume				49		49			49	
PM Peak				2:30 PM		2:30 PM			2:30 PM	
Volume				50		50			50	

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				3		3			3	
12:15 AM				3		3			3	
12:30 AM				3		3			3	
12:45 AM				6		6			6	
1:00 AM				1		1			1	
1:15 AM				1		1			1	
1:30 AM				0		0			0	
1:45 AM				1		1			1	
2:00 AM				0		0			0	
2:15 AM				1		1			1	
2:30 AM				2		2			2	
2:45 AM				5		5			5	
3:00 AM				0		0			0	
3:15 AM				1		1			1	
3:30 AM				2		2			2	
3:45 AM				4		4			4	
4:00 AM				7		7			7	
4:15 AM				3		3			3	
4:30 AM				4		4			4	
4:45 AM				1		1			1	
5:00 AM				5		5			5	
5:15 AM				7		7			7	
5:30 AM				4		4			4	
5:45 AM				10		10			10	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				9		9			9	
6:15 AM				18		18			18	
6:30 AM				11		11			11	
6:45 AM				12		12			12	
7:00 AM				10		10			10	
7:15 AM				27		27			27	
7:30 AM				32		32			32	
7:45 AM				**47**		**47**			**47**	
8:00 AM				40		40			40	
8:15 AM				34		34			34	
8:30 AM				26		26			26	
8:45 AM				27		27			27	
9:00 AM				29		29			29	
9:15 AM				27		27			27	
9:30 AM				27		27			27	
9:45 AM				23		23			23	
10:00 AM				25		25			25	
10:15 AM				22		22			22	
10:30 AM				38		38			38	
10:45 AM				30		30			30	
11:00 AM				31		31			31	
11:15 AM				27		27			27	
11:30 AM				32		32			32	
11:45 AM				32		32			32	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				36		36			36	
12:15 PM				49		49			49	
12:30 PM				41		41			41	
12:45 PM				46		46			46	
1:00 PM				52		52			52	
1:15 PM				44		44			44	
1:30 PM				48		48			48	
1:45 PM				35		35			35	
2:00 PM				41		41			41	
2:15 PM				50		50			50	
2:30 PM				55		55			55	
2:45 PM				47		47			47	
3:00 PM				43		43			43	
3:15 PM				50		50			50	
3:30 PM				36		36			36	
3:45 PM				53		53			53	
4:00 PM				64		64			64	
4:15 PM				61		61			61	
4:30 PM				65		65			65	
4:45 PM				65		65			65	
5:00 PM				51		51			51	
5:15 PM				76		76			76	
5:30 PM				**84**		**84**			**84**	
5:45 PM				60		60			60	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				56		56			56	
6:15 PM				48		48			48	
6:30 PM				37		37			37	
6:45 PM				29		29			29	
7:00 PM				47		47			47	
7:15 PM				27		27			27	
7:30 PM				48		48			48	
7:45 PM				46		46			46	
8:00 PM				21		21			21	
8:15 PM				25		25			25	
8:30 PM				25		25			25	
8:45 PM				20		20			20	
9:00 PM				20		20			20	
9:15 PM				25		25			25	
9:30 PM				11		11			11	
9:45 PM				11		11			11	
10:00 PM				4		4			4	
10:15 PM				19		19			19	
10:30 PM				14		14			14	
10:45 PM				9		9			9	
11:00 PM				5		5			5	
11:15 PM				7		7			7	
11:30 PM				5		5			5	
11:45 PM				5		5			5	
Day Total				2526		2526			2526	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				47		47			47	
PM Peak				5:30 PM		5:30 PM			5:30 PM	
Volume				84		84			84	

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				3		3			3	
12:15 AM				5		5			5	
12:30 AM				4		4			4	
12:45 AM				7		7			7	
1:00 AM				1		1			1	
1:15 AM				3		3			3	
1:30 AM				0		0			0	
1:45 AM				1		1			1	
2:00 AM				1		1			1	
2:15 AM				2		2			2	
2:30 AM				4		4			4	
2:45 AM				7		7			7	
3:00 AM				3		3			3	
3:15 AM				4		4			4	
3:30 AM				5		5			5	
3:45 AM				17		17			17	
4:00 AM				17		17			17	
4:15 AM				20		20			20	
4:30 AM				27		27			27	
4:45 AM				12		12			12	
5:00 AM				29		29			29	
5:15 AM				29		29			29	
5:30 AM				22		22			22	
5:45 AM				27		27			27	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				34		34			34	
6:15 AM				46		46			46	
6:30 AM				39		39			39	
6:45 AM				35		35			35	
7:00 AM				49		49			49	
7:15 AM				63		63			63	
7:30 AM				72		72			72	
7:45 AM				**88**		**88**			**88**	
8:00 AM				83		83			83	
8:15 AM				83		83			83	
8:30 AM				57		57			57	
8:45 AM				59		59			59	
9:00 AM				70		70			70	
9:15 AM				61		61			61	
9:30 AM				60		60			60	
9:45 AM				47		47			47	
10:00 AM				50		50			50	
10:15 AM				40		40			40	
10:30 AM				67		67			67	
10:45 AM				66		66			66	
11:00 AM				52		52			52	
11:15 AM				53		53			53	
11:30 AM				60		60			60	
11:45 AM				62		62			62	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				62		62			62	
12:15 PM				79		79			79	
12:30 PM				72		72			72	
12:45 PM				75		75			75	
1:00 PM				90		90			90	
1:15 PM				80		80			80	
1:30 PM				81		81			81	
1:45 PM				68		68			68	
2:00 PM				78		78			78	
2:15 PM				83		83			83	
2:30 PM				105		105			105	
2:45 PM				77		77			77	
3:00 PM				78		78			78	
3:15 PM				96		96			96	
3:30 PM				74		74			74	
3:45 PM				75		75			75	
4:00 PM				98		98			98	
4:15 PM				107		107			107	
4:30 PM				106		106			106	
4:45 PM				96		96			96	
5:00 PM				87		87			87	
5:15 PM				112		112			112	
5:30 PM				**115**		**115**			**115**	
5:45 PM				81		81			81	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Neroly Rd South of Main St
QC JOB #: 14825305
SPECIFIC LOCATION: Neroly Rd South of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				82		82			82	
6:15 PM				71		71			71	
6:30 PM				63		63			63	
6:45 PM				51		51			51	
7:00 PM				78		78			78	
7:15 PM				51		51			51	
7:30 PM				73		73			73	
7:45 PM				69		69			69	
8:00 PM				43		43			43	
8:15 PM				41		41			41	
8:30 PM				36		36			36	
8:45 PM				35		35			35	
9:00 PM				26		26			26	
9:15 PM				36		36			36	
9:30 PM				14		14			14	
9:45 PM				22		22			22	
10:00 PM				14		14			14	
10:15 PM				21		21			21	
10:30 PM				21		21			21	
10:45 PM				12		12			12	
11:00 PM				11		11			11	
11:15 PM				13		13			13	
11:30 PM				7		7			7	
11:45 PM				7		7			7	
Day Total				4618		4618			4618	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				88		88			88	
PM Peak				5:30 PM		5:30 PM			5:30 PM	
Volume				115		115			115	

Comments:

Report generated on 10/26/2018 3:31 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				5		5			5	
12:15 AM				2		2			2	
12:30 AM				5		5			5	
12:45 AM				4		4			4	
1:00 AM				1		1			1	
1:15 AM				0		0			0	
1:30 AM				0		0			0	
1:45 AM				2		2			2	
2:00 AM				0		0			0	
2:15 AM				2		2			2	
2:30 AM				2		2			2	
2:45 AM				0		0			0	
3:00 AM				2		2			2	
3:15 AM				1		1			1	
3:30 AM				4		4			4	
3:45 AM				6		6			6	
4:00 AM				5		5			5	
4:15 AM				10		10			10	
4:30 AM				6		6			6	
4:45 AM				15		15			15	
5:00 AM				13		13			13	
5:15 AM				23		23			23	
5:30 AM				47		47			47	
5:45 AM				45		45			45	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
SPECIFIC LOCATION: Bridgehead Rd North of Main St
CITY/STATE: Oakley, CA

QC JOB #: 14825306
DIRECTION: NB
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				38		38			38	
6:15 AM				48		48			48	
6:30 AM				29		29			29	
6:45 AM				48		48			48	
7:00 AM				38		38			38	
7:15 AM				46		46			46	
7:30 AM				49		49			49	
7:45 AM				67		67			67	
8:00 AM				53		53			53	
8:15 AM				**70**		**70**			**70**	
8:30 AM				39		39			39	
8:45 AM				35		35			35	
9:00 AM				45		45			45	
9:15 AM				34		34			34	
9:30 AM				35		35			35	
9:45 AM				35		35			35	
10:00 AM				34		34			34	
10:15 AM				28		28			28	
10:30 AM				31		31			31	
10:45 AM				25		25			25	
11:00 AM				45		45			45	
11:15 AM				38		38			38	
11:30 AM				32		32			32	
11:45 AM				54		54			54	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				26		26			26	
12:15 PM				42		42			42	
12:30 PM				34		34			34	
12:45 PM				39		39			39	
1:00 PM				25		25			25	
1:15 PM				29		29			29	
1:30 PM				44		44			44	
1:45 PM				39		39			39	
2:00 PM				39		39			39	
2:15 PM				41		41			41	
2:30 PM				34		34			34	
2:45 PM				49		49			49	
3:00 PM				43		43			43	
3:15 PM				46		46			46	
3:30 PM				40		40			40	
3:45 PM				51		51			51	
4:00 PM				39		39			39	
4:15 PM				**55**		**55**			**55**	
4:30 PM				45		45			45	
4:45 PM				39		39			39	
5:00 PM				29		29			29	
5:15 PM				49		49			49	
5:30 PM				36		36			36	
5:45 PM				31		31			31	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				26		26			26	
6:15 PM				34		34			34	
6:30 PM				27		27			27	
6:45 PM				31		31			31	
7:00 PM				22		22			22	
7:15 PM				31		31			31	
7:30 PM				12		12			12	
7:45 PM				8		8			8	
8:00 PM				19		19			19	
8:15 PM				19		19			19	
8:30 PM				15		15			15	
8:45 PM				18		18			18	
9:00 PM				11		11			11	
9:15 PM				18		18			18	
9:30 PM				13		13			13	
9:45 PM				16		16			16	
10:00 PM				15		15			15	
10:15 PM				7		7			7	
10:30 PM				5		5			5	
10:45 PM				12		12			12	
11:00 PM				6		6			6	
11:15 PM				4		4			4	
11:30 PM				2		2			2	
11:45 PM				2		2			2	
Day Total				2513		2513			2513	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				8:15 AM		8:15 AM			8:15 AM	
Volume				70		70			70	
PM Peak				4:15 PM		4:15 PM			4:15 PM	
Volume				55		55			55	

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				4		4			4	
12:15 AM				7		7			7	
12:30 AM				4		4			4	
12:45 AM				1		1			1	
1:00 AM				2		2			2	
1:15 AM				0		0			0	
1:30 AM				0		0			0	
1:45 AM				1		1			1	
2:00 AM				0		0			0	
2:15 AM				1		1			1	
2:30 AM				1		1			1	
2:45 AM				3		3			3	
3:00 AM				3		3			3	
3:15 AM				5		5			5	
3:30 AM				3		3			3	
3:45 AM				8		8			8	
4:00 AM				7		7			7	
4:15 AM				2		2			2	
4:30 AM				5		5			5	
4:45 AM				8		8			8	
5:00 AM				11		11			11	
5:15 AM				13		13			13	
5:30 AM				11		11			11	
5:45 AM				11		11			11	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				19		19			19	
6:15 AM				15		15			15	
6:30 AM				15		15			15	
6:45 AM				24		24			24	
7:00 AM				18		18			18	
7:15 AM				16		16			16	
7:30 AM				40		40			40	
7:45 AM				43		43			43	
8:00 AM				**57**		**57**			**57**	
8:15 AM				36		36			36	
8:30 AM				19		19			19	
8:45 AM				28		28			28	
9:00 AM				33		33			33	
9:15 AM				35		35			35	
9:30 AM				27		27			27	
9:45 AM				22		22			22	
10:00 AM				20		20			20	
10:15 AM				25		25			25	
10:30 AM				25		25			25	
10:45 AM				33		33			33	
11:00 AM				41		41			41	
11:15 AM				32		32			32	
11:30 AM				50		50			50	
11:45 AM				49		49			49	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				32		32			32	
12:15 PM				49		49			49	
12:30 PM				35		35			35	
12:45 PM				38		38			38	
1:00 PM				44		44			44	
1:15 PM				50		50			50	
1:30 PM				39		39			39	
1:45 PM				37		37			37	
2:00 PM				52		52			52	
2:15 PM				35		35			35	
2:30 PM				64		64			64	
2:45 PM				49		49			49	
3:00 PM				57		57			57	
3:15 PM				59		59			59	
3:30 PM				65		65			65	
3:45 PM				58		58			58	
4:00 PM				53		53			53	
4:15 PM				**75**		**75**			**75**	
4:30 PM				63		63			63	
4:45 PM				53		53			53	
5:00 PM				59		59			59	
5:15 PM				65		65			65	
5:30 PM				53		53			53	
5:45 PM				56		56			56	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				51		51			51	
6:15 PM				43		43			43	
6:30 PM				45		45			45	
6:45 PM				40		40			40	
7:00 PM				36		36			36	
7:15 PM				30		30			30	
7:30 PM				18		18			18	
7:45 PM				21		21			21	
8:00 PM				15		15			15	
8:15 PM				14		14			14	
8:30 PM				25		25			25	
8:45 PM				10		10			10	
9:00 PM				10		10			10	
9:15 PM				16		16			16	
9:30 PM				14		14			14	
9:45 PM				10		10			10	
10:00 PM				9		9			9	
10:15 PM				9		9			9	
10:30 PM				15		15			15	
10:45 PM				9		9			9	
11:00 PM				3		3			3	
11:15 PM				8		8			8	
11:30 PM				3		3			3	
11:45 PM				4		4			4	
Day Total				2531		2531			2531	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				8:00 AM		8:00 AM			8:00 AM	
Volume				57		57			57	
PM Peak				4:15 PM		4:15 PM			4:15 PM	
Volume				75		75			75	

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM				9		9			9	
12:15 AM				9		9			9	
12:30 AM				9		9			9	
12:45 AM				5		5			5	
1:00 AM				3		3			3	
1:15 AM				0		0			0	
1:30 AM				0		0			0	
1:45 AM				3		3			3	
2:00 AM				0		0			0	
2:15 AM				3		3			3	
2:30 AM				3		3			3	
2:45 AM				3		3			3	
3:00 AM				5		5			5	
3:15 AM				6		6			6	
3:30 AM				7		7			7	
3:45 AM				14		14			14	
4:00 AM				12		12			12	
4:15 AM				12		12			12	
4:30 AM				11		11			11	
4:45 AM				23		23			23	
5:00 AM				24		24			24	
5:15 AM				36		36			36	
5:30 AM				58		58			58	
5:45 AM				56		56			56	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 AM				57		57			57	
6:15 AM				63		63			63	
6:30 AM				44		44			44	
6:45 AM				72		72			72	
7:00 AM				56		56			56	
7:15 AM				62		62			62	
7:30 AM				89		89			89	
7:45 AM				**110**		**110**			**110**	
8:00 AM				110		110			110	
8:15 AM				106		106			106	
8:30 AM				58		58			58	
8:45 AM				63		63			63	
9:00 AM				78		78			78	
9:15 AM				69		69			69	
9:30 AM				62		62			62	
9:45 AM				57		57			57	
10:00 AM				54		54			54	
10:15 AM				53		53			53	
10:30 AM				56		56			56	
10:45 AM				58		58			58	
11:00 AM				86		86			86	
11:15 AM				70		70			70	
11:30 AM				82		82			82	
11:45 AM				103		103			103	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 PM				58		58			58	
12:15 PM				91		91			91	
12:30 PM				69		69			69	
12:45 PM				77		77			77	
1:00 PM				69		69			69	
1:15 PM				79		79			79	
1:30 PM				83		83			83	
1:45 PM				76		76			76	
2:00 PM				91		91			91	
2:15 PM				76		76			76	
2:30 PM				98		98			98	
2:45 PM				98		98			98	
3:00 PM				100		100			100	
3:15 PM				105		105			105	
3:30 PM				105		105			105	
3:45 PM				109		109			109	
4:00 PM				92		92			92	
4:15 PM				**130**		**130**			**130**	
4:30 PM				108		108			108	
4:45 PM				92		92			92	
5:00 PM				88		88			88	
5:15 PM				114		114			114	
5:30 PM				89		89			89	
5:45 PM				87		87			87	
Day Total										
% Weekday Average										
% Week Average										
AM Peak Volume										
PM Peak Volume										

Comments:

LOCATION: Bridgehead Rd North of Main St
QC JOB #: 14825306
SPECIFIC LOCATION: Bridgehead Rd North of Main St
DIRECTION: NB/SB
CITY/STATE: Oakley, CA
DATE: Oct 25 2018 - Oct 25 2018

Start Time	Mon	Tue	Wed	Thu 25-Oct-18	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
6:00 PM				77		77			77	
6:15 PM				77		77			77	
6:30 PM				72		72			72	
6:45 PM				71		71			71	
7:00 PM				58		58			58	
7:15 PM				61		61			61	
7:30 PM				30		30			30	
7:45 PM				29		29			29	
8:00 PM				34		34			34	
8:15 PM				33		33			33	
8:30 PM				40		40			40	
8:45 PM				28		28			28	
9:00 PM				21		21			21	
9:15 PM				34		34			34	
9:30 PM				27		27			27	
9:45 PM				26		26			26	
10:00 PM				24		24			24	
10:15 PM				16		16			16	
10:30 PM				20		20			20	
10:45 PM				21		21			21	
11:00 PM				9		9			9	
11:15 PM				12		12			12	
11:30 PM				5		5			5	
11:45 PM				6		6			6	
Day Total				5044		5044			5044	
% Weekday Average				100.0%						
% Week Average				100.0%		100.0%				
AM Peak				7:45 AM		7:45 AM			7:45 AM	
Volume				110		110			110	
PM Peak				4:15 PM		4:15 PM			4:15 PM	
Volume				130		130			130	

Comments:

Appendix B INTERSECTION LOS WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	557	77	37	748	181	117	60	19	125	44	60
Future Volume (vph)	110	557	77	37	748	181	117	60	19	125	44	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1736	3408		1736	3471	1553	1736	1760		1649	1695	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1736	3408		1736	3471	1553	1736	1760		1649	1695	1553
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	125	633	88	42	850	206	133	68	22	142	50	68
RTOR Reduction (vph)	0	9	0	0	0	123	0	14	0	0	0	60
Lane Group Flow (vph)	125	712	0	42	850	83	133	76	0	95	97	8
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	8.7	35.1		3.1	29.5	29.5	10.9	10.9		8.1	8.1	8.1
Effective Green, g (s)	8.7	35.1		3.1	29.5	29.5	10.9	10.9		8.1	8.1	8.1
Actuated g/C Ratio	0.12	0.48		0.04	0.40	0.40	0.15	0.15		0.11	0.11	0.11
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	206	1634		73	1398	625	258	262		182	187	171
v/s Ratio Prot	c0.07	0.21		0.02	c0.24		c0.08	0.04		c0.06	0.06	
v/s Ratio Perm						0.05						0.00
v/c Ratio	0.61	0.44		0.58	0.61	0.13	0.52	0.29		0.52	0.52	0.04
Uniform Delay, d1	30.6	12.5		34.4	17.3	13.8	28.7	27.7		30.7	30.7	29.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.0	0.8		10.5	2.0	0.4	1.7	0.6		2.7	2.4	0.1
Delay (s)	35.6	13.4		44.9	19.3	14.2	30.5	28.3		33.4	33.1	29.2
Level of Service	D	B		D	B	B	C	C		C	C	C
Approach Delay (s)		16.7			19.3			29.6			32.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	73.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	238	13	34	939	128	452
Future Volume (veh/h)	238	13	34	939	128	452
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	274	15	39	1079	147	520
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1557	85	74	2049	441	693
Arrive On Green	0.46	0.46	0.04	0.58	0.25	0.25
Sat Flow, veh/h	3473	184	1757	3597	1757	2760
Grp Volume(v), veh/h	141	148	39	1079	147	520
Grp Sat Flow(s),veh/h/ln	1752	1812	1757	1752	1757	1380
Q Serve(g_s), s	2.3	2.3	1.1	9.0	3.3	8.5
Cycle Q Clear(g_c), s	2.3	2.3	1.1	9.0	3.3	8.5
Prop In Lane		0.10	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	807	835	74	2049	441	693
V/C Ratio(X)	0.18	0.18	0.53	0.53	0.33	0.75
Avail Cap(c_a), veh/h	807	835	216	2049	667	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.7	7.7	22.9	6.1	14.9	16.8
Incr Delay (d2), s/veh	0.5	0.5	5.7	1.0	0.4	1.7
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	1.3	0.6	4.5	1.6	3.3
LnGrp Delay(d),s/veh	8.2	8.2	28.6	7.0	15.4	18.5
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	289			1118	667	
Approach Delay, s/veh	8.2			7.8	17.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		16.2	6.1	26.4				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		10.5	3.1	4.3				11.0
Green Ext Time (p_c), s		1.8	0.0	1.2				7.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	203	139	632	376	57	9	7	40	15	23	16
Future Volume (veh/h)	14	203	139	632	376	57	9	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	16	239	164	744	442	67	11	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	34	666	440	899	2010	899	100	13	78	98	56	40
Arrive On Green	0.02	0.33	0.33	0.27	0.58	0.58	0.06	0.06	0.06	0.06	0.06	0.06
Sat Flow, veh/h	1740	2005	1324	3375	3471	1553	1740	231	1357	1740	999	703
Grp Volume(v), veh/h	16	206	197	744	442	67	11	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1593	1688	1736	1553	1740	0	1588	1740	0	1703
Q Serve(g_s), s	0.5	5.0	5.3	11.5	3.4	1.1	0.3	0.0	1.9	0.5	0.0	1.5
Cycle Q Clear(g_c), s	0.5	5.0	5.3	11.5	3.4	1.1	0.3	0.0	1.9	0.5	0.0	1.5
Prop In Lane	1.00		0.83	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	34	577	530	899	2010	899	100	0	91	98	0	96
V/C Ratio(X)	0.47	0.36	0.37	0.83	0.22	0.07	0.11	0.00	0.60	0.18	0.00	0.48
Avail Cap(c_a), veh/h	172	577	530	1092	2010	899	594	0	542	578	0	566
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	14.1	14.2	19.2	5.7	5.2	24.9	0.0	25.6	25.0	0.0	25.5
Incr Delay (d2), s/veh	9.6	1.7	2.0	4.5	0.3	0.2	0.5	0.0	6.3	0.9	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.7	2.6	5.9	1.7	0.5	0.2	0.0	1.0	0.3	0.0	0.8
LnGrp Delay(d),s/veh	36.6	15.8	16.2	23.8	5.9	5.3	25.4	0.0	31.9	25.9	0.0	29.1
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		419			1253			66			64	
Approach Delay, s/veh		16.8			16.5			30.8			28.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.2	18.8	22.5		7.1	5.1	36.2
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	18.0	18.5		18.5	5.5	31.0
Max Q Clear Time (g_c+I1), s		3.9	13.5	7.3		3.5	2.5	5.4
Green Ext Time (p_c), s		0.2	1.3	1.6		0.1	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	341	0	2	388	12	1	0	1	10	0	19
Future Vol, veh/h	22	341	0	2	388	12	1	0	1	10	0	19
Conflicting Peds, #/hr	0	0	1	1	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	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	-	-	-	-
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	26	406	0	2	462	14	1	0	1	12	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	-	407	0	0	694	939	204	728	932	238
Stage 1	-	-	-	-	-	-	459	459	-	473	473	-
Stage 2	-	-	-	-	-	-	235	480	-	255	459	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1068	-	0	1134	-	-	325	259	797	307	262	757
Stage 1	-	-	0	-	-	-	546	560	-	536	552	-
Stage 2	-	-	0	-	-	-	741	548	-	721	560	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1068	-	-	1133	-	-	309	252	796	301	255	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	252	-	301	255	-
Stage 1	-	-	-	-	-	-	532	546	-	523	551	-
Stage 2	-	-	-	-	-	-	718	547	-	702	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	13.1	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	1068	-	1133	-	-	497
HCM Lane V/C Ratio	0.005	0.025	-	0.002	-	-	0.069
HCM Control Delay (s)	13.1	8.5	-	8.2	-	-	12.8
HCM Lane LOS	B	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.1	-	0	-	-	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	18	43	363	30	67
Future Volume (veh/h)	293	18	43	363	30	67
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	376	23	55	465	38	86
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1543	94	262	2482	164	146
Arrive On Green	0.46	0.46	0.15	0.71	0.09	0.09
Sat Flow, veh/h	3449	205	1757	3597	1757	1568
Grp Volume(v), veh/h	196	203	55	465	38	86
Grp Sat Flow(s),veh/h/ln	1752	1809	1757	1752	1757	1568
Q Serve(g_s), s	2.7	2.8	1.1	1.8	0.8	2.1
Cycle Q Clear(g_c), s	2.7	2.8	1.1	1.8	0.8	2.1
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	805	831	262	2482	164	146
V/C Ratio(X)	0.24	0.24	0.21	0.19	0.23	0.59
Avail Cap(c_a), veh/h	805	831	262	2482	807	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.6	6.6	15.0	2.0	16.9	17.5
Incr Delay (d2), s/veh	0.7	0.7	1.8	0.2	0.7	3.7
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	1.5	0.7	0.9	0.4	1.1
LnGrp Delay(d),s/veh	7.3	7.3	16.9	2.1	17.6	21.2
LnGrp LOS	A	A	B	A	B	C
Approach Vol, veh/h	399			520	124	
Approach Delay, s/veh	7.3			3.7	20.1	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.8	10.0	22.5				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		4.1	3.1	4.8				3.8
Green Ext Time (p_c), s		0.3	0.0	1.7				2.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	261	22	3	366	23	53	9	5	26	7	31
Future Volume (veh/h)	28	261	22	3	366	23	53	9	5	26	7	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	34	318	27	4	446	28	65	11	6	32	9	38
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	70	1948	872	9	896	56	0	184	156	0	31	130
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.53	0.00	0.10	0.10	0.00	0.10	0.10
Sat Flow, veh/h	1740	3471	1553	1740	1701	107	0	1827	1553	0	306	1293
Grp Volume(v), veh/h	34	318	27	4	0	474	0	11	6	0	0	47
Grp Sat Flow(s),veh/h/ln	1740	1736	1553	1740	0	1808	0	1827	1553	0	0	1599
Q Serve(g_s), s	0.7	1.6	0.3	0.1	0.0	6.1	0.0	0.2	0.1	0.0	0.0	1.0
Cycle Q Clear(g_c), s	0.7	1.6	0.3	0.1	0.0	6.1	0.0	0.2	0.1	0.0	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.06	0.00		1.00	0.00		0.81
Lane Grp Cap(c), veh/h	70	1948	872	9	0	952	0	184	156	0	0	161
V/C Ratio(X)	0.49	0.16	0.03	0.42	0.00	0.50	0.00	0.06	0.04	0.00	0.00	0.29
Avail Cap(c_a), veh/h	270	1948	872	265	0	952	0	957	814	0	0	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	3.8	3.5	17.9	0.0	5.5	0.0	14.7	14.6	0.0	0.0	15.0
Incr Delay (d2), s/veh	5.2	0.2	0.1	27.2	0.0	1.9	0.0	0.1	0.1	0.0	0.0	1.0
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	0.4	0.8	0.1	0.1	0.0	3.4	0.0	0.1	0.1	0.0	0.0	0.5
LnGrp Delay(d),s/veh	22.2	4.0	3.6	45.0	0.0	7.3	0.0	14.8	14.7	0.0	0.0	16.0
LnGrp LOS	C	A	A	D		A		B	B			B
Approach Vol, veh/h		379			478			17			47	
Approach Delay, s/veh		5.6			7.6			14.8			16.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	7.6	4.2	24.2	0.0	7.6	5.4	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	18.9	5.5	19.1	5.5	18.9	5.6	19.0
Max Q Clear Time (g_c+I1), s	0.0	2.2	2.1	3.6	0.0	3.0	2.7	8.1
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	0.1	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	938	150	38	519	95	109	29	37	205	66	54
Future Volume (vph)	153	938	150	38	519	95	109	29	37	205	66	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	3399		1736	3471	1553	1736	1674		1649	1691	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1736	3399		1736	3471	1553	1736	1674		1649	1691	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	987	158	40	546	100	115	31	39	216	69	57
RTOR Reduction (vph)	0	11	0	0	0	65	0	34	0	0	0	48
Lane Group Flow (vph)	161	1134	0	40	546	35	115	36	0	140	145	9
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.1	33.3		2.9	25.1	25.1	8.4	8.4		11.6	11.6	11.6
Effective Green, g (s)	11.1	33.3		2.9	25.1	25.1	8.4	8.4		11.6	11.6	11.6
Actuated g/C Ratio	0.15	0.46		0.04	0.35	0.35	0.12	0.12		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	266	1567		69	1206	539	201	194		264	271	249
v/s Ratio Prot	c0.09	c0.33		0.02	0.16		c0.07	0.02		0.08	c0.09	
v/s Ratio Perm						0.02						0.01
v/c Ratio	0.61	0.72		0.58	0.45	0.06	0.57	0.18		0.53	0.54	0.04
Uniform Delay, d1	28.5	15.7		34.1	18.2	15.7	30.2	28.8		27.8	27.8	25.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	2.9		11.3	1.2	0.2	3.9	0.5		2.0	2.0	0.1
Delay (s)	32.4	18.7		45.3	19.5	15.9	34.1	29.3		29.8	29.9	25.6
Level of Service	C	B		D	B	B	C	C		C	C	C
Approach Delay (s)		20.4			20.5			32.3			29.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	339	27	50	631	149	900
Future Volume (veh/h)	339	27	50	631	149	900
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	365	29	54	678	160	968
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	867	69	99	1472	668	1049
Arrive On Green	0.26	0.26	0.06	0.42	0.38	0.38
Sat Flow, veh/h	3383	260	1757	3597	1757	2760
Grp Volume(v), veh/h	194	200	54	678	160	968
Grp Sat Flow(s),veh/h/ln	1752	1799	1757	1752	1757	1380
Q Serve(g_s), s	3.7	3.7	1.2	5.6	2.5	13.4
Cycle Q Clear(g_c), s	3.7	3.7	1.2	5.6	2.5	13.4
Prop In Lane		0.14	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	462	474	99	1472	668	1049
V/C Ratio(X)	0.42	0.42	0.55	0.46	0.24	0.92
Avail Cap(c_a), veh/h	462	474	246	1472	668	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	12.2	18.4	8.3	8.5	11.8
Incr Delay (d2), s/veh	2.8	2.8	4.6	1.0	0.2	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.2	0.7	2.8	1.2	6.9
LnGrp Delay(d),s/veh	15.0	15.0	23.0	9.4	8.6	25.0
LnGrp LOS	B	B	C	A	A	C
Approach Vol, veh/h	394			732	1128	
Approach Delay, s/veh	15.0			10.4	22.7	
Approach LOS	B			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.2	6.3	14.5				20.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		15.2	5.6	7.2				16.8
Max Q Clear Time (g_c+I1), s		15.4	3.2	5.7				7.6
Green Ext Time (p_c), s		0.0	0.0	0.3				3.1

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	276	146	436	304	60	19	3	49	39	19	15
Future Volume (veh/h)	12	276	146	436	304	60	19	3	49	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	12	288	152	454	317	62	20	3	51	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	830	427	620	1882	842	113	6	96	115	62	50
Arrive On Green	0.02	0.37	0.37	0.18	0.54	0.54	0.06	0.06	0.06	0.07	0.07	0.07
Sat Flow, veh/h	1757	2241	1152	3408	3505	1568	1757	88	1493	1757	950	760
Grp Volume(v), veh/h	12	224	216	454	317	62	20	0	54	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1641	1704	1752	1568	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.3	4.6	4.8	6.3	2.3	1.0	0.5	0.0	1.7	1.1	0.0	1.0
Cycle Q Clear(g_c), s	0.3	4.6	4.8	6.3	2.3	1.0	0.5	0.0	1.7	1.1	0.0	1.0
Prop In Lane	1.00		0.70	1.00		1.00	1.00		0.94	1.00		0.44
Lane Grp Cap(c), veh/h	27	649	608	620	1882	842	113	0	101	115	0	112
V/C Ratio(X)	0.45	0.34	0.36	0.73	0.17	0.07	0.18	0.00	0.53	0.36	0.00	0.32
Avail Cap(c_a), veh/h	192	649	608	949	1882	842	227	0	204	175	0	170
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	11.4	11.5	19.4	5.9	5.6	22.3	0.0	22.8	22.5	0.0	22.4
Incr Delay (d2), s/veh	11.1	1.4	1.6	1.7	0.2	0.2	0.7	0.0	4.3	1.9	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	2.4	3.1	1.2	0.5	0.3	0.0	0.8	0.6	0.0	0.5
LnGrp Delay(d),s/veh	35.6	12.9	13.1	21.1	6.1	5.8	23.0	0.0	27.1	24.3	0.0	24.1
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		452			833			74			77	
Approach Delay, s/veh		13.6			14.3			26.0			24.2	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.2	13.1	22.6		7.3	4.8	31.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		6.5	14.0	18.5		5.0	5.5	27.0
Max Q Clear Time (g_c+I1), s		3.7	8.3	6.8		3.1	2.3	4.3
Green Ext Time (p_c), s		0.0	0.8	1.8		0.0	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	414	0	1	328	16	0	0	1	24	0	27
Future Vol, veh/h	36	414	0	1	328	16	0	0	1	24	0	27
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	40	455	0	1	360	18	0	0	1	26	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	-	459	0	0	721	926	233	687	917	196
Stage 1	-	-	-	-	-	-	539	539	-	378	378	-
Stage 2	-	-	-	-	-	-	182	387	-	309	539	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1156	-	0	1084	-	-	311	264	763	329	267	806
Stage 1	-	-	0	-	-	-	489	515	-	610	609	-
Stage 2	-	-	0	-	-	-	796	603	-	670	515	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1148	-	-	1080	-	-	290	252	759	317	254	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	252	-	317	254	-
Stage 1	-	-	-	-	-	-	470	495	-	585	604	-
Stage 2	-	-	-	-	-	-	766	598	-	645	495	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	9.8	13.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	759	1148	-	1080	-	-	466
HCM Lane V/C Ratio	0.001	0.034	-	0.001	-	-	0.12
HCM Control Delay (s)	9.8	8.2	-	8.3	-	-	13.8
HCM Lane LOS	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.1	-	0	-	-	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	405	34	48	309	25	40
Future Volume (veh/h)	405	34	48	309	25	40
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	445	37	53	340	27	44
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1850	153	99	2538	121	108
Arrive On Green	0.56	0.56	0.06	0.72	0.07	0.07
Sat Flow, veh/h	3370	272	1757	3597	1757	1568
Grp Volume(v), veh/h	237	245	53	340	27	44
Grp Sat Flow(s),veh/h/ln	1752	1797	1757	1752	1757	1568
Q Serve(g_s), s	2.6	2.7	1.1	1.1	0.6	1.0
Cycle Q Clear(g_c), s	2.6	2.7	1.1	1.1	0.6	1.0
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	989	1014	99	2538	121	108
V/C Ratio(X)	0.24	0.24	0.54	0.13	0.22	0.41
Avail Cap(c_a), veh/h	989	1014	273	2538	863	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.2	4.2	17.8	1.6	17.0	17.2
Incr Delay (d2), s/veh	0.6	0.6	4.5	0.1	0.9	2.4
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	1.5	0.7	0.6	0.3	0.5
LnGrp Delay(d),s/veh	4.8	4.8	22.2	1.7	17.9	19.7
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	482			393	71	
Approach Delay, s/veh	4.8			4.5	19.0	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.7	6.2	25.8				32.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		19.0	6.0	18.0				28.0
Max Q Clear Time (g_c+I1), s		3.0	3.1	4.7				3.1
Green Ext Time (p_c), s		0.1	0.0	2.1				2.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	400	53	8	351	39	36	7	14	36	13	44
Future Volume (veh/h)	34	400	53	8	351	39	36	7	14	36	13	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	460	61	9	403	45	41	8	16	41	15	51
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	76	2072	927	21	913	102	297	44	176	169	34	78
Arrive On Green	0.04	0.59	0.59	0.01	0.56	0.56	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1757	3505	1568	1757	1630	182	1246	393	1568	452	307	691
Grp Volume(v), veh/h	39	460	61	9	0	448	49	0	16	107	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	0	1813	1639	0	1568	1450	0	0
Q Serve(g_s), s	0.9	2.6	0.7	0.2	0.0	6.1	0.0	0.0	0.4	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.9	2.6	0.7	0.2	0.0	6.1	1.0	0.0	0.4	3.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.84		1.00	0.38		0.48
Lane Grp Cap(c), veh/h	76	2072	927	21	0	1014	341	0	176	281	0	0
V/C Ratio(X)	0.51	0.22	0.07	0.43	0.00	0.44	0.14	0.00	0.09	0.38	0.00	0.00
Avail Cap(c_a), veh/h	237	2072	927	233	0	1014	798	0	695	783	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.7	4.1	3.7	20.7	0.0	5.4	17.1	0.0	16.8	18.0	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.2	0.1	13.5	0.0	1.4	0.2	0.0	0.2	0.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.3	0.3	0.2	0.0	3.4	0.5	0.0	0.2	1.3	0.0	0.0
LnGrp Delay(d),s/veh	24.9	4.3	3.8	34.2	0.0	6.8	17.3	0.0	17.0	18.9	0.0	0.0
LnGrp LOS	C	A	A	C		A	B		B	B		
Approach Vol, veh/h		560			457			65			107	
Approach Delay, s/veh		5.7			7.4			17.2			18.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.7	4.5	28.9		8.7	5.8	27.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.7	5.6	23.7		18.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		3.0	2.2	4.6		5.1	2.9	8.1
Green Ext Time (p_c), s		0.2	0.0	2.8		0.4	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	584	77	37	759	181	117	60	19	125	44	60
Future Volume (vph)	110	584	77	37	759	181	117	60	19	125	44	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1736	3410		1736	3471	1553	1736	1760		1649	1695	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1736	3410		1736	3471	1553	1736	1760		1649	1695	1553
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	125	664	88	42	862	206	133	68	22	142	50	68
RTOR Reduction (vph)	0	9	0	0	0	123	0	14	0	0	0	60
Lane Group Flow (vph)	125	743	0	42	863	83	133	76	0	95	97	8
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	8.7	35.1		3.1	29.5	29.5	10.9	10.9		8.1	8.1	8.1
Effective Green, g (s)	8.7	35.1		3.1	29.5	29.5	10.9	10.9		8.1	8.1	8.1
Actuated g/C Ratio	0.12	0.48		0.04	0.40	0.40	0.15	0.15		0.11	0.11	0.11
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	206	1635		73	1398	625	258	262		182	187	171
v/s Ratio Prot	c0.07	0.22		0.02	c0.25		c0.08	0.04		c0.06	0.06	
v/s Ratio Perm						0.05						0.00
v/c Ratio	0.61	0.45		0.58	0.62	0.13	0.52	0.29		0.52	0.52	0.04
Uniform Delay, d1	30.6	12.7		34.4	17.4	13.8	28.7	27.7		30.7	30.7	29.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.0	0.9		10.5	2.1	0.4	1.7	0.6		2.7	2.4	0.1
Delay (s)	35.6	13.6		44.9	19.4	14.2	30.5	28.3		33.4	33.1	29.2
Level of Service	D	B		D	B	B	C	C		C	C	C
Approach Delay (s)		16.7			19.4			29.6			32.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	73.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	265	17	34	950	138	452
Future Volume (veh/h)	265	17	34	950	138	452
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	305	20	39	1092	159	520
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1537	100	74	2048	442	695
Arrive On Green	0.46	0.46	0.04	0.58	0.25	0.25
Sat Flow, veh/h	3433	218	1757	3597	1757	2760
Grp Volume(v), veh/h	159	166	39	1092	159	520
Grp Sat Flow(s),veh/h/ln	1752	1806	1757	1752	1757	1380
Q Serve(g_s), s	2.6	2.7	1.1	9.2	3.6	8.5
Cycle Q Clear(g_c), s	2.6	2.7	1.1	9.2	3.6	8.5
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	807	831	74	2048	442	695
V/C Ratio(X)	0.20	0.20	0.53	0.53	0.36	0.75
Avail Cap(c_a), veh/h	807	831	216	2048	666	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.8	7.8	22.9	6.1	15.0	16.8
Incr Delay (d2), s/veh	0.5	0.5	5.7	1.0	0.5	1.6
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	1.4	0.6	4.7	1.8	3.3
LnGrp Delay(d),s/veh	8.4	8.4	28.6	7.1	15.5	18.5
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	325			1131	679	
Approach Delay, s/veh	8.4			7.9	17.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		16.3	6.1	26.4				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		10.5	3.1	4.7				11.2
Green Ext Time (p_c), s		1.8	0.0	1.3				7.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	234	166	632	397	57	11	7	40	15	23	16
Future Volume (veh/h)	14	234	166	632	397	57	11	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	16	275	195	744	467	67	13	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	34	654	449	899	2008	898	102	13	79	98	56	40
Arrive On Green	0.02	0.33	0.33	0.27	0.58	0.58	0.06	0.06	0.06	0.06	0.06	0.06
Sat Flow, veh/h	1740	1970	1354	3375	3471	1553	1740	231	1357	1740	999	703
Grp Volume(v), veh/h	16	241	229	744	467	67	13	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1588	1688	1736	1553	1740	0	1588	1740	0	1703
Q Serve(g_s), s	0.5	6.0	6.3	11.6	3.7	1.1	0.4	0.0	1.9	0.5	0.0	1.5
Cycle Q Clear(g_c), s	0.5	6.0	6.3	11.6	3.7	1.1	0.4	0.0	1.9	0.5	0.0	1.5
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	34	576	527	899	2008	898	102	0	93	98	0	96
V/C Ratio(X)	0.47	0.42	0.43	0.83	0.23	0.07	0.13	0.00	0.59	0.18	0.00	0.48
Avail Cap(c_a), veh/h	172	576	527	1090	2008	898	593	0	541	578	0	565
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	14.4	14.5	19.2	5.7	5.2	24.9	0.0	25.6	25.1	0.0	25.5
Incr Delay (d2), s/veh	9.6	2.2	2.6	4.6	0.3	0.2	0.6	0.0	5.9	0.9	0.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.2	3.1	5.9	1.8	0.5	0.2	0.0	1.0	0.3	0.0	0.8
LnGrp Delay(d),s/veh	36.6	16.7	17.1	23.8	6.0	5.3	25.5	0.0	31.5	26.0	0.0	29.2
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		486			1278			68			64	
Approach Delay, s/veh		17.5			16.3			30.4			28.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.3	18.8	22.5		7.1	5.1	36.2
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	18.0	18.5		18.5	5.5	31.0
Max Q Clear Time (g_c+I1), s		3.9	13.6	8.3		3.5	2.5	5.7
Green Ext Time (p_c), s		0.2	1.3	1.9		0.1	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	341	5	25	388	12	14	0	59	10	0	19
Future Vol, veh/h	22	341	5	25	388	12	14	0	59	10	0	19
Conflicting Peds, #/hr	0	0	1	1	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	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	26	406	6	30	462	14	17	0	70	12	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	0	413	0	0	753	998	207	784	994	238
Stage 1	-	-	-	-	-	-	462	462	-	529	529	-
Stage 2	-	-	-	-	-	-	291	536	-	255	465	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1068	-	-	1128	-	-	295	239	793	280	240	757
Stage 1	-	-	-	-	-	-	544	558	-	496	520	-
Stage 2	-	-	-	-	-	-	687	517	-	721	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1068	-	-	1127	-	-	275	227	792	245	228	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	275	227	-	245	228	-
Stage 1	-	-	-	-	-	-	530	544	-	484	506	-
Stage 2	-	-	-	-	-	-	649	503	-	641	542	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.5	11.7	13.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	792	1068	-	-	1127	-	-	440
HCM Lane V/C Ratio	0.061	0.089	0.025	-	-	0.026	-	-	0.078
HCM Control Delay (s)	18.9	10	8.5	-	-	8.3	-	-	13.9
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	298	21	43	376	36	67
Future Volume (veh/h)	298	21	43	376	36	67
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	382	27	55	482	46	86
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1523	107	261	2475	168	150
Arrive On Green	0.46	0.46	0.15	0.71	0.10	0.10
Sat Flow, veh/h	3414	234	1757	3597	1757	1568
Grp Volume(v), veh/h	201	208	55	482	46	86
Grp Sat Flow(s),veh/h/ln	1752	1803	1757	1752	1757	1568
Q Serve(g_s), s	2.8	2.9	1.1	1.9	1.0	2.1
Cycle Q Clear(g_c), s	2.8	2.9	1.1	1.9	1.0	2.1
Prop In Lane		0.13	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	803	827	261	2475	168	150
V/C Ratio(X)	0.25	0.25	0.21	0.19	0.27	0.57
Avail Cap(c_a), veh/h	803	827	261	2475	805	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	6.7	15.1	2.0	16.9	17.5
Incr Delay (d2), s/veh	0.7	0.7	1.8	0.2	0.9	3.4
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	1.6	0.7	0.9	0.5	1.1
LnGrp Delay(d),s/veh	7.4	7.4	16.9	2.2	17.8	20.9
LnGrp LOS	A	A	B	A	B	C
Approach Vol, veh/h	409			537	132	
Approach Delay, s/veh	7.4			3.7	19.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.9	10.0	22.5				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		4.1	3.1	4.9				3.9
Green Ext Time (p_c), s		0.3	0.0	1.8				2.9

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	266	22	6	378	27	53	9	6	28	7	31
Future Volume (veh/h)	28	266	22	6	378	27	53	9	6	28	7	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	34	324	27	7	461	33	65	11	7	34	9	38
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	70	1934	865	16	887	64	0	184	157	0	31	130
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.53	0.00	0.10	0.10	0.00	0.10	0.10
Sat Flow, veh/h	1740	3471	1553	1740	1685	121	0	1827	1553	0	306	1293
Grp Volume(v), veh/h	34	324	27	7	0	494	0	11	7	0	0	47
Grp Sat Flow(s),veh/h/ln	1740	1736	1553	1740	0	1806	0	1827	1553	0	0	1599
Q Serve(g_s), s	0.7	1.6	0.3	0.1	0.0	6.4	0.0	0.2	0.1	0.0	0.0	1.0
Cycle Q Clear(g_c), s	0.7	1.6	0.3	0.1	0.0	6.4	0.0	0.2	0.1	0.0	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.07	0.00		1.00	0.00		0.81
Lane Grp Cap(c), veh/h	70	1934	865	16	0	951	0	184	157	0	0	161
V/C Ratio(X)	0.49	0.17	0.03	0.43	0.00	0.52	0.00	0.06	0.04	0.00	0.00	0.29
Avail Cap(c_a), veh/h	270	1934	865	265	0	951	0	957	813	0	0	837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	3.9	3.6	17.8	0.0	5.6	0.0	14.7	14.7	0.0	0.0	15.0
Incr Delay (d2), s/veh	5.2	0.2	0.1	16.8	0.0	2.0	0.0	0.1	0.1	0.0	0.0	1.0
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	0.4	0.8	0.1	0.1	0.0	3.7	0.0	0.1	0.1	0.0	0.0	0.5
LnGrp Delay(d),s/veh	22.2	4.1	3.7	34.5	0.0	7.6	0.0	14.8	14.8	0.0	0.0	16.0
LnGrp LOS	C	A	A	C		A		B	B			B
Approach Vol, veh/h		385			501			18			47	
Approach Delay, s/veh		5.7			8.0			14.8			16.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	7.6	4.3	24.1	0.0	7.6	5.4	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	18.9	5.5	19.1	5.5	18.9	5.6	19.0
Max Q Clear Time (g_c+I1), s	0.0	2.2	2.1	3.6	0.0	3.0	2.7	8.4
Green Ext Time (p_c), s	0.0	0.0	0.0	1.7	0.0	0.1	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	958	150	38	549	95	109	29	37	205	66	54
Future Volume (vph)	153	958	150	38	549	95	109	29	37	205	66	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	3401		1736	3471	1553	1736	1674		1649	1691	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1736	3401		1736	3471	1553	1736	1674		1649	1691	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	1008	158	40	578	100	115	31	39	216	69	57
RTOR Reduction (vph)	0	11	0	0	0	65	0	34	0	0	0	48
Lane Group Flow (vph)	161	1155	0	40	578	35	115	36	0	140	145	9
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.1	33.3		2.9	25.1	25.1	8.4	8.4		11.6	11.6	11.6
Effective Green, g (s)	11.1	33.3		2.9	25.1	25.1	8.4	8.4		11.6	11.6	11.6
Actuated g/C Ratio	0.15	0.46		0.04	0.35	0.35	0.12	0.12		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	266	1568		69	1206	539	201	194		264	271	249
v/s Ratio Prot	c0.09	c0.34		0.02	0.17		c0.07	0.02		0.08	c0.09	
v/s Ratio Perm						0.02						0.01
v/c Ratio	0.61	0.74		0.58	0.48	0.06	0.57	0.18		0.53	0.54	0.04
Uniform Delay, d1	28.5	15.9		34.1	18.4	15.7	30.2	28.8		27.8	27.8	25.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	3.1		11.3	1.4	0.2	3.9	0.5		2.0	2.0	0.1
Delay (s)	32.4	19.0		45.3	19.8	15.9	34.1	29.3		29.8	29.9	25.6
Level of Service	C	B		D	B	B	C	C		C	C	C
Approach Delay (s)		20.6			20.7			32.3			29.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	72.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	359	29	50	661	117	900
Future Volume (veh/h)	359	29	50	661	117	900
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	386	31	54	711	126	968
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	867	69	99	1472	668	1049
Arrive On Green	0.26	0.26	0.06	0.42	0.38	0.38
Sat Flow, veh/h	3380	263	1757	3597	1757	2760
Grp Volume(v), veh/h	205	212	54	711	126	968
Grp Sat Flow(s),veh/h/ln	1752	1798	1757	1752	1757	1380
Q Serve(g_s), s	3.9	3.9	1.2	5.9	1.9	13.4
Cycle Q Clear(g_c), s	3.9	3.9	1.2	5.9	1.9	13.4
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	462	474	99	1472	668	1049
V/C Ratio(X)	0.44	0.45	0.55	0.48	0.19	0.92
Avail Cap(c_a), veh/h	462	474	246	1472	668	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.3	12.3	18.4	8.4	8.3	11.8
Incr Delay (d2), s/veh	3.1	3.0	4.6	1.1	0.1	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.3	0.7	3.0	0.9	6.9
LnGrp Delay(d),s/veh	15.4	15.3	23.0	9.6	8.4	25.0
LnGrp LOS	B	B	C	A	A	C
Approach Vol, veh/h	417			765	1094	
Approach Delay, s/veh	15.3			10.5	23.1	
Approach LOS	B			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.2	6.3	14.5				20.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		15.2	5.6	7.2				16.8
Max Q Clear Time (g_c+I1), s		15.4	3.2	5.9				7.9
Green Ext Time (p_c), s		0.0	0.0	0.3				3.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	298	166	436	362	60	23	3	49	39	19	15
Future Volume (veh/h)	12	298	166	436	362	60	23	3	49	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	12	310	173	454	377	62	24	3	51	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	809	441	620	1878	840	116	6	98	115	62	50
Arrive On Green	0.02	0.37	0.37	0.18	0.54	0.54	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	1757	2192	1195	3408	3505	1568	1757	88	1493	1757	950	760
Grp Volume(v), veh/h	12	246	237	454	377	62	24	0	54	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1634	1704	1752	1568	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.3	5.2	5.4	6.3	2.8	1.0	0.7	0.0	1.7	1.1	0.0	1.0
Cycle Q Clear(g_c), s	0.3	5.2	5.4	6.3	2.8	1.0	0.7	0.0	1.7	1.1	0.0	1.0
Prop In Lane	1.00		0.73	1.00		1.00	1.00		0.94	1.00		0.44
Lane Grp Cap(c), veh/h	27	647	603	620	1878	840	116	0	104	115	0	112
V/C Ratio(X)	0.45	0.38	0.39	0.73	0.20	0.07	0.21	0.00	0.52	0.36	0.00	0.32
Avail Cap(c_a), veh/h	192	647	603	947	1878	840	227	0	204	174	0	170
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	11.7	11.7	19.5	6.1	5.7	22.3	0.0	22.8	22.5	0.0	22.5
Incr Delay (d2), s/veh	11.1	1.7	1.9	1.7	0.2	0.2	0.9	0.0	3.9	1.9	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.8	2.8	3.1	1.4	0.5	0.3	0.0	0.8	0.6	0.0	0.5
LnGrp Delay(d),s/veh	35.7	13.4	13.6	21.2	6.3	5.8	23.2	0.0	26.7	24.4	0.0	24.1
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		495			893			78			77	
Approach Delay, s/veh		14.0			13.8			25.6			24.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.3	13.2	22.6		7.3	4.8	31.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		6.5	14.0	18.5		5.0	5.5	27.0
Max Q Clear Time (g_c+I1), s		3.7	8.3	7.4		3.1	2.3	4.8
Green Ext Time (p_c), s		0.1	0.8	2.0		0.0	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	414	14	63	328	16	10	0	43	24	0	27
Future Vol, veh/h	36	414	14	63	328	16	10	0	43	24	0	27
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	40	455	15	69	360	18	11	0	47	26	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	474	0	0	865	1070	240	823	1068	196
Stage 1	-	-	-	-	-	-	547	547	-	514	514	-
Stage 2	-	-	-	-	-	-	318	523	-	309	554	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1156	-	-	1070	-	-	244	217	755	262	217	806
Stage 1	-	-	-	-	-	-	484	511	-	506	529	-
Stage 2	-	-	-	-	-	-	662	524	-	670	507	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1148	-	-	1066	-	-	217	194	751	226	194	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	217	194	-	226	194	-
Stage 1	-	-	-	-	-	-	465	491	-	485	491	-
Stage 2	-	-	-	-	-	-	596	486	-	605	487	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	1.3	12.4	16.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	217	751	1148	-	-	1066	-	-	365
HCM Lane V/C Ratio	0.051	0.063	0.034	-	-	0.065	-	-	0.154
HCM Control Delay (s)	22.5	10.1	8.2	-	-	8.6	-	-	16.6
HCM Lane LOS	C	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	0.1	-	-	0.2	-	-	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	419	40	48	319	29	40
Future Volume (veh/h)	419	40	48	319	29	40
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	460	44	53	351	32	44
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1820	173	99	2530	127	113
Arrive On Green	0.56	0.56	0.06	0.72	0.07	0.07
Sat Flow, veh/h	3327	308	1757	3597	1757	1568
Grp Volume(v), veh/h	248	256	53	351	32	44
Grp Sat Flow(s),veh/h/ln	1752	1790	1757	1752	1757	1568
Q Serve(g_s), s	2.8	2.8	1.1	1.2	0.7	1.0
Cycle Q Clear(g_c), s	2.8	2.8	1.1	1.2	0.7	1.0
Prop In Lane		0.17	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	986	1007	99	2530	127	113
V/C Ratio(X)	0.25	0.25	0.54	0.14	0.25	0.39
Avail Cap(c_a), veh/h	986	1007	272	2530	860	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.3	4.3	17.8	1.7	17.0	17.2
Incr Delay (d2), s/veh	0.6	0.6	4.5	0.1	1.0	2.2
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	1.5	0.7	0.6	0.4	0.5
LnGrp Delay(d),s/veh	4.9	4.9	22.3	1.8	18.0	19.4
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	504			404	76	
Approach Delay, s/veh	4.9			4.5	18.8	
Approach LOS	A			A	B	

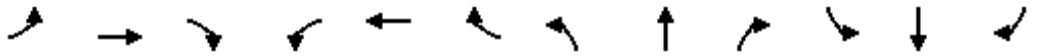
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.8	6.2	25.8				32.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		19.0	6.0	18.0				28.0
Max Q Clear Time (g_c+I1), s		3.0	3.1	4.8				3.2
Green Ext Time (p_c), s		0.1	0.0	2.2				2.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	412	53	11	359	42	36	7	18	40	13	44
Future Volume (veh/h)	34	412	53	11	359	42	36	7	18	40	13	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	474	61	13	413	48	41	8	21	46	15	51
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	76	2044	914	29	903	105	302	45	184	177	35	77
Arrive On Green	0.04	0.58	0.58	0.02	0.56	0.56	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1757	3505	1568	1757	1623	189	1251	387	1568	487	302	660
Grp Volume(v), veh/h	39	474	61	13	0	461	49	0	21	112	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	0	1811	1638	0	1568	1450	0	0
Q Serve(g_s), s	0.9	2.8	0.7	0.3	0.0	6.4	0.0	0.0	0.5	2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.9	2.8	0.7	0.3	0.0	6.4	1.0	0.0	0.5	3.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.84		1.00	0.41		0.46
Lane Grp Cap(c), veh/h	76	2044	914	29	0	1008	348	0	184	290	0	0
V/C Ratio(X)	0.51	0.23	0.07	0.44	0.00	0.46	0.14	0.00	0.11	0.39	0.00	0.00
Avail Cap(c_a), veh/h	236	2044	914	232	0	1008	795	0	691	777	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.8	4.3	3.8	20.7	0.0	5.6	17.0	0.0	16.8	18.0	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.3	0.1	10.1	0.0	1.5	0.2	0.0	0.3	0.8	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.4	0.3	0.2	0.0	3.6	0.5	0.0	0.2	1.3	0.0	0.0
LnGrp Delay(d),s/veh	25.0	4.5	4.0	30.7	0.0	7.1	17.2	0.0	17.0	18.8	0.0	0.0
LnGrp LOS	C	A	A	C		A	B		B	B		
Approach Vol, veh/h		574			474			70			112	
Approach Delay, s/veh		5.9			7.7			17.1			18.8	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.0	4.7	28.7		9.0	5.8	27.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.7	5.6	23.7		18.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		3.0	2.3	4.8		5.2	2.9	8.4
Green Ext Time (p_c), s		0.2	0.0	2.9		0.4	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A



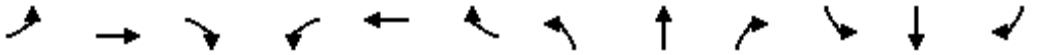
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	675	93	37	780	181	138	60	19	125	44	60
Future Volume (vph)	133	675	93	37	780	181	138	60	19	125	44	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1736	3408		1736	3471	1553	1736	1760		1649	1695	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1736	3408		1736	3471	1553	1736	1760		1649	1695	1553
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	151	767	106	42	886	206	157	68	22	142	50	68
RTOR Reduction (vph)	0	9	0	0	0	125	0	14	0	0	0	61
Lane Group Flow (vph)	151	864	0	42	886	81	157	76	0	95	97	7
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.2	35.5		3.1	29.4	29.4	11.9	11.9		8.2	8.2	8.2
Effective Green, g (s)	9.2	35.5		3.1	29.4	29.4	11.9	11.9		8.2	8.2	8.2
Actuated g/C Ratio	0.12	0.48		0.04	0.39	0.39	0.16	0.16		0.11	0.11	0.11
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	213	1619		72	1366	611	276	280		181	186	170
v/s Ratio Prot	c0.09	0.25		0.02	c0.26		c0.09	0.04		c0.06	0.06	
v/s Ratio Perm						0.05						0.00
v/c Ratio	0.71	0.53		0.58	0.65	0.13	0.57	0.27		0.52	0.52	0.04
Uniform Delay, d1	31.5	13.8		35.2	18.4	14.5	29.0	27.6		31.4	31.4	29.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.3	1.3		11.5	2.4	0.5	2.7	0.5		2.7	2.6	0.1
Delay (s)	41.8	15.0		46.6	20.8	14.9	31.7	28.1		34.1	34.0	29.9
Level of Service	D	B		D	C	B	C	C		C	C	C
Approach Delay (s)		19.0			20.7			30.4			33.0	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	281	33	34	993	202	452
Future Volume (veh/h)	281	33	34	993	202	452
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	323	38	39	1141	232	520
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1450	169	74	2040	447	702
Arrive On Green	0.46	0.46	0.04	0.58	0.25	0.25
Sat Flow, veh/h	3255	369	1757	3597	1757	2760
Grp Volume(v), veh/h	178	183	39	1141	232	520
Grp Sat Flow(s),veh/h/ln	1752	1780	1757	1752	1757	1380
Q Serve(g_s), s	3.0	3.0	1.1	9.9	5.6	8.5
Cycle Q Clear(g_c), s	3.0	3.0	1.1	9.9	5.6	8.5
Prop In Lane		0.21	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	803	816	74	2040	447	702
V/C Ratio(X)	0.22	0.22	0.53	0.56	0.52	0.74
Avail Cap(c_a), veh/h	803	816	215	2040	664	1043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.0	8.0	23.0	6.3	15.7	16.8
Incr Delay (d2), s/veh	0.6	0.6	5.7	1.1	0.9	1.6
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	1.6	0.6	4.9	2.8	3.4
LnGrp Delay(d),s/veh	8.6	8.6	28.7	7.4	16.6	18.3
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	361			1180	752	
Approach Delay, s/veh	8.6			8.2	17.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		16.5	6.1	26.4				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		10.5	3.1	5.0				11.9
Green Ext Time (p_c), s		2.0	0.0	1.5				7.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	266	190	632	504	57	54	7	40	15	23	16
Future Volume (veh/h)	14	266	190	632	504	57	54	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	16	313	224	744	593	67	64	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	34	635	444	892	1976	884	129	17	101	97	56	39
Arrive On Green	0.02	0.32	0.32	0.26	0.57	0.57	0.07	0.07	0.07	0.06	0.06	0.06
Sat Flow, veh/h	1740	1955	1366	3375	3471	1553	1740	231	1357	1740	999	703
Grp Volume(v), veh/h	16	277	260	744	593	67	64	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1586	1688	1736	1553	1740	0	1588	1740	0	1703
Q Serve(g_s), s	0.5	7.3	7.5	11.9	5.1	1.1	2.0	0.0	1.9	0.6	0.0	1.5
Cycle Q Clear(g_c), s	0.5	7.3	7.5	11.9	5.1	1.1	2.0	0.0	1.9	0.6	0.0	1.5
Prop In Lane	1.00		0.86	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	34	563	515	892	1976	884	129	0	118	97	0	95
V/C Ratio(X)	0.47	0.49	0.51	0.83	0.30	0.08	0.49	0.00	0.47	0.19	0.00	0.48
Avail Cap(c_a), veh/h	168	563	515	1066	1976	884	580	0	529	565	0	553
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.6	15.5	15.5	19.8	6.4	5.5	25.3	0.0	25.3	25.7	0.0	26.1
Incr Delay (d2), s/veh	9.6	3.0	3.5	5.0	0.4	0.2	2.9	0.0	2.8	0.9	0.0	3.8
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	0.3	3.9	3.8	6.1	2.5	0.5	1.1	0.0	0.9	0.3	0.0	0.8
LnGrp Delay(d),s/veh	37.3	18.5	19.1	24.8	6.8	5.7	28.2	0.0	28.1	26.6	0.0	29.9
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		553			1404			119			64	
Approach Delay, s/veh		19.3			16.3			28.2			28.9	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.2	19.1	22.5		7.2	5.1	36.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	18.0	18.5		18.5	5.5	31.0
Max Q Clear Time (g_c+I1), s		4.0	13.9	9.5		3.5	2.5	7.1
Green Ext Time (p_c), s		0.3	1.2	2.0		0.1	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	383	5	25	456	94	14	0	59	25	0	25
Future Vol, veh/h	86	383	5	25	456	94	14	0	59	25	0	25
Conflicting Peds, #/hr	0	0	1	1	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	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	102	456	6	30	543	112	17	0	70	30	0	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	655	0	0	463	0	0	996	1379	232	1091	1326	328
Stage 1	-	-	-	-	-	-	664	664	-	659	659	-
Stage 2	-	-	-	-	-	-	332	715	-	432	667	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	915	-	-	1081	-	-	196	141	764	167	152	662
Stage 1	-	-	-	-	-	-	411	452	-	414	454	-
Stage 2	-	-	-	-	-	-	650	428	-	567	450	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	915	-	-	1080	-	-	168	122	763	136	131	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	122	-	136	131	-
Stage 1	-	-	-	-	-	-	365	401	-	368	441	-
Stage 2	-	-	-	-	-	-	604	416	-	457	400	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.4	13.8	26.5
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	763	915	-	-	1080	-	-	226
HCM Lane V/C Ratio	0.099	0.092	0.112	-	-	0.028	-	-	0.263
HCM Control Delay (s)	28.8	10.2	9.4	-	-	8.4	-	-	26.5
HCM Lane LOS	D	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.3	0.3	0.4	-	-	0.1	-	-	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	362	21	85	400	36	67
Future Volume (veh/h)	362	21	85	400	36	67
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	464	27	109	513	46	86
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1543	90	261	2475	168	150
Arrive On Green	0.46	0.46	0.15	0.71	0.10	0.10
Sat Flow, veh/h	3459	195	1757	3597	1757	1568
Grp Volume(v), veh/h	241	250	109	513	46	86
Grp Sat Flow(s),veh/h/ln	1752	1810	1757	1752	1757	1568
Q Serve(g_s), s	3.5	3.5	2.3	2.0	1.0	2.1
Cycle Q Clear(g_c), s	3.5	3.5	2.3	2.0	1.0	2.1
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	803	830	261	2475	168	150
V/C Ratio(X)	0.30	0.30	0.42	0.21	0.27	0.57
Avail Cap(c_a), veh/h	803	830	261	2475	805	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.9	6.9	15.6	2.0	16.9	17.5
Incr Delay (d2), s/veh	1.0	0.9	4.8	0.2	0.9	3.4
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	2.0	1.4	1.0	0.5	1.1
LnGrp Delay(d),s/veh	7.8	7.8	20.4	2.2	17.8	20.9
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	491			622	132	
Approach Delay, s/veh	7.8			5.4	19.8	
Approach LOS	A			A	B	

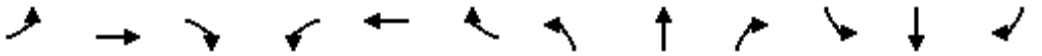
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.9	10.0	22.5				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		4.1	4.3	5.5				4.0
Green Ext Time (p_c), s		0.3	0.0	2.1				3.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	309	22	6	394	31	53	9	6	39	7	31
Future Volume (veh/h)	28	309	22	6	394	31	53	9	6	39	7	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	34	377	27	7	480	38	65	11	7	48	9	38
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	70	1934	865	16	880	70	0	184	157	0	31	130
Arrive On Green	0.04	0.56	0.56	0.01	0.53	0.53	0.00	0.10	0.10	0.00	0.10	0.10
Sat Flow, veh/h	1740	3471	1553	1740	1671	132	0	1827	1553	0	306	1293
Grp Volume(v), veh/h	34	377	27	7	0	518	0	11	7	0	0	47
Grp Sat Flow(s),veh/h/ln	1740	1736	1553	1740	0	1804	0	1827	1553	0	0	1599
Q Serve(g_s), s	0.7	1.9	0.3	0.1	0.0	6.9	0.0	0.2	0.1	0.0	0.0	1.0
Cycle Q Clear(g_c), s	0.7	1.9	0.3	0.1	0.0	6.9	0.0	0.2	0.1	0.0	0.0	1.0
Prop In Lane	1.00		1.00	1.00		0.07	0.00		1.00	0.00		0.81
Lane Grp Cap(c), veh/h	70	1934	865	16	0	950	0	184	157	0	0	161
V/C Ratio(X)	0.49	0.19	0.03	0.43	0.00	0.55	0.00	0.06	0.04	0.00	0.00	0.29
Avail Cap(c_a), veh/h	270	1934	865	265	0	950	0	957	813	0	0	837
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	4.0	3.6	17.8	0.0	5.7	0.0	14.7	14.7	0.0	0.0	15.0
Incr Delay (d2), s/veh	5.2	0.2	0.1	16.8	0.0	2.3	0.0	0.1	0.1	0.0	0.0	1.0
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	0.4	1.0	0.1	0.1	0.0	3.9	0.0	0.1	0.1	0.0	0.0	0.5
LnGrp Delay(d),s/veh	22.2	4.2	3.7	34.5	0.0	7.9	0.0	14.8	14.8	0.0	0.0	16.0
LnGrp LOS	C	A	A	C		A		B	B			B
Approach Vol, veh/h		438			525			18			47	
Approach Delay, s/veh		5.6			8.3			14.8			16.0	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	7.6	4.3	24.1	0.0	7.6	5.4	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	18.9	5.5	19.1	5.5	18.9	5.6	19.0
Max Q Clear Time (g_c+I1), s	0.0	2.2	2.1	3.9	0.0	3.0	2.7	8.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	0.0	0.1	0.0	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	981	173	38	563	95	123	29	37	205	66	54
Future Volume (vph)	153	981	173	38	563	95	123	29	37	205	66	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	3393		1736	3471	1553	1736	1674		1649	1691	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1736	3393		1736	3471	1553	1736	1674		1649	1691	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	161	1033	182	40	593	100	129	31	39	216	69	57
RTOR Reduction (vph)	0	13	0	0	0	66	0	34	0	0	0	48
Lane Group Flow (vph)	161	1202	0	40	593	34	129	36	0	140	145	9
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	11.2	33.4		2.9	25.1	25.1	8.9	8.9		11.7	11.7	11.7
Effective Green, g (s)	11.2	33.4		2.9	25.1	25.1	8.9	8.9		11.7	11.7	11.7
Actuated g/C Ratio	0.15	0.46		0.04	0.34	0.34	0.12	0.12		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	266	1554		69	1195	534	211	204		264	271	249
v/s Ratio Prot	c0.09	c0.35		0.02	0.17		c0.07	0.02		0.08	c0.09	
v/s Ratio Perm						0.02						0.01
v/c Ratio	0.61	0.77		0.58	0.50	0.06	0.61	0.18		0.53	0.54	0.04
Uniform Delay, d1	28.8	16.6		34.4	18.9	16.0	30.4	28.7		28.1	28.1	25.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	3.8		11.3	1.5	0.2	5.2	0.4		2.0	2.0	0.1
Delay (s)	32.6	20.4		45.7	20.4	16.3	35.5	29.1		30.1	30.1	25.9
Level of Service	C	C		D	C	B	D	C		C	C	C
Approach Delay (s)		21.8			21.2			33.3			29.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	406	76	50	688	218	900
Future Volume (veh/h)	406	76	50	688	218	900
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	437	82	54	740	234	968
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	778	145	99	1472	668	1049
Arrive On Green	0.26	0.26	0.06	0.42	0.38	0.38
Sat Flow, veh/h	3042	550	1757	3597	1757	2760
Grp Volume(v), veh/h	258	261	54	740	234	968
Grp Sat Flow(s),veh/h/ln	1752	1748	1757	1752	1757	1380
Q Serve(g_s), s	5.1	5.2	1.2	6.2	3.8	13.4
Cycle Q Clear(g_c), s	5.1	5.2	1.2	6.2	3.8	13.4
Prop In Lane		0.31	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	462	461	99	1472	668	1049
V/C Ratio(X)	0.56	0.57	0.55	0.50	0.35	0.92
Avail Cap(c_a), veh/h	462	461	246	1472	668	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	12.7	18.4	8.5	8.9	11.8
Incr Delay (d2), s/veh	4.8	5.0	4.6	1.2	0.3	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	3.1	0.7	3.2	1.9	6.9
LnGrp Delay(d),s/veh	17.5	17.7	23.0	9.8	9.2	25.0
LnGrp LOS	B	B	C	A	A	C
Approach Vol, veh/h	519			794	1202	
Approach Delay, s/veh	17.6			10.7	21.9	
Approach LOS	B			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.2	6.3	14.5				20.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		15.2	5.6	7.2				16.8
Max Q Clear Time (g_c+I1), s		15.4	3.2	7.2				8.2
Green Ext Time (p_c), s		0.0	0.0	0.0				3.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	391	236	436	430	60	50	3	49	39	19	15
Future Volume (veh/h)	12	391	236	436	430	60	50	3	49	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	12	407	246	454	448	62	52	3	51	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	768	459	617	1856	830	134	7	114	114	62	49
Arrive On Green	0.02	0.36	0.36	0.18	0.53	0.53	0.08	0.08	0.08	0.07	0.07	0.07
Sat Flow, veh/h	1757	2112	1263	3408	3505	1568	1757	88	1493	1757	950	760
Grp Volume(v), veh/h	12	337	316	454	448	62	52	0	54	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1622	1704	1752	1568	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.3	7.7	7.9	6.4	3.5	1.0	1.4	0.0	1.7	1.1	0.0	1.0
Cycle Q Clear(g_c), s	0.3	7.7	7.9	6.4	3.5	1.0	1.4	0.0	1.7	1.1	0.0	1.0
Prop In Lane	1.00		0.78	1.00		1.00	1.00		0.94	1.00		0.44
Lane Grp Cap(c), veh/h	27	637	590	617	1856	830	134	0	121	114	0	111
V/C Ratio(X)	0.45	0.53	0.54	0.74	0.24	0.07	0.39	0.00	0.45	0.36	0.00	0.32
Avail Cap(c_a), veh/h	190	637	590	936	1856	830	224	0	202	172	0	168
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.9	12.8	12.8	19.7	6.5	5.9	22.4	0.0	22.5	22.8	0.0	22.8
Incr Delay (d2), s/veh	11.1	3.1	3.5	1.7	0.3	0.2	1.8	0.0	2.6	1.9	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.2	4.1	3.2	1.8	0.5	0.8	0.0	0.8	0.6	0.0	0.5
LnGrp Delay(d),s/veh	36.0	15.9	16.3	21.5	6.8	6.0	24.3	0.0	25.1	24.7	0.0	24.4
LnGrp LOS	D	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		665			964			106			77	
Approach Delay, s/veh		16.4			13.6			24.7			24.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.9	13.2	22.5		7.3	4.8	31.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		6.5	14.0	18.5		5.0	5.5	27.0
Max Q Clear Time (g_c+I1), s		3.7	8.4	9.9		3.1	2.3	5.5
Green Ext Time (p_c), s		0.1	0.8	2.5		0.0	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

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	75	497	14	63	409	35	10	0	43	104	0	62
Future Vol, veh/h	75	497	14	63	409	35	10	0	43	104	0	62
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	82	546	15	69	449	38	11	0	47	114	0	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	494	0	0	565	0	0	1085	1354	286	1051	1342	251
Stage 1	-	-	-	-	-	-	722	722	-	613	613	-
Stage 2	-	-	-	-	-	-	363	632	-	438	729	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1052	-	-	989	-	-	168	146	705	178	148	743
Stage 1	-	-	-	-	-	-	380	425	-	442	477	-
Stage 2	-	-	-	-	-	-	623	467	-	562	421	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1045	-	-	985	-	-	135	124	702	147	126	738
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	124	-	147	126	-
Stage 1	-	-	-	-	-	-	349	390	-	404	440	-
Stage 2	-	-	-	-	-	-	526	431	-	483	386	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.1	14.9	79.6
HCM LOS			B	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	135	702	1045	-	-	985	-	-	210
HCM Lane V/C Ratio	0.081	0.067	0.079	-	-	0.07	-	-	0.869
HCM Control Delay (s)	34	10.5	8.7	-	-	8.9	-	-	79.6
HCM Lane LOS	D	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.2	0.3	-	-	0.2	-	-	6.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	458	40	131	389	29	40
Future Volume (veh/h)	458	40	131	389	29	40
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	503	44	144	427	32	44
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1705	149	184	2551	125	112
Arrive On Green	0.52	0.52	0.10	0.73	0.07	0.07
Sat Flow, veh/h	3355	285	1757	3597	1757	1568
Grp Volume(v), veh/h	270	277	144	427	32	44
Grp Sat Flow(s),veh/h/ln	1752	1794	1757	1752	1757	1568
Q Serve(g_s), s	3.5	3.5	3.2	1.5	0.7	1.1
Cycle Q Clear(g_c), s	3.5	3.5	3.2	1.5	0.7	1.1
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	916	938	184	2551	125	112
V/C Ratio(X)	0.29	0.30	0.78	0.17	0.26	0.39
Avail Cap(c_a), veh/h	916	938	309	2551	794	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.4	5.4	17.4	1.7	17.5	17.7
Incr Delay (d2), s/veh	0.8	0.8	7.1	0.1	1.1	2.2
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	1.9	1.9	0.8	0.4	0.5
LnGrp Delay(d),s/veh	6.2	6.2	24.5	1.8	18.6	19.9
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	547			571	76	
Approach Delay, s/veh	6.2			7.5	19.3	
Approach LOS	A			A	B	

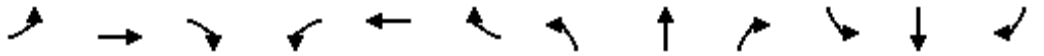
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.8	8.2	24.8				33.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.0	7.0	18.0				29.0
Max Q Clear Time (g_c+I1), s		3.1	5.2	5.5				3.5
Green Ext Time (p_c), s		0.1	0.1	2.4				2.6

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	439	53	11	406	54	36	7	18	47	13	44
Future Volume (veh/h)	34	439	53	11	406	54	36	7	18	47	13	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	505	61	13	467	62	41	8	21	54	15	51
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	76	2028	907	29	881	117	311	47	194	189	36	76
Arrive On Green	0.04	0.58	0.58	0.02	0.55	0.55	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1757	3505	1568	1757	1595	212	1260	381	1568	539	292	614
Grp Volume(v), veh/h	39	505	61	13	0	529	49	0	21	120	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	0	1807	1641	0	1568	1445	0	0
Q Serve(g_s), s	0.9	3.0	0.7	0.3	0.0	7.9	0.0	0.0	0.5	2.4	0.0	0.0
Cycle Q Clear(g_c), s	0.9	3.0	0.7	0.3	0.0	7.9	1.0	0.0	0.5	3.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.84		1.00	0.45		0.42
Lane Grp Cap(c), veh/h	76	2028	907	29	0	998	358	0	194	301	0	0
V/C Ratio(X)	0.51	0.25	0.07	0.44	0.00	0.53	0.14	0.00	0.11	0.40	0.00	0.00
Avail Cap(c_a), veh/h	234	2028	907	230	0	998	791	0	686	770	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.0	4.4	3.9	20.8	0.0	6.1	16.9	0.0	16.6	17.9	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.3	0.1	10.1	0.0	2.0	0.2	0.0	0.2	0.9	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.5	0.3	0.2	0.0	4.4	0.5	0.0	0.2	1.4	0.0	0.0
LnGrp Delay(d),s/veh	25.2	4.7	4.1	30.9	0.0	8.1	17.0	0.0	16.9	18.8	0.0	0.0
LnGrp LOS	C	A	A	C		A	B		B	B		
Approach Vol, veh/h		605			542			70			120	
Approach Delay, s/veh		6.0			8.6			17.0			18.8	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.3	4.7	28.7		9.3	5.9	27.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.7	5.6	23.7		18.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		3.0	2.3	5.0		5.5	2.9	9.9
Green Ext Time (p_c), s		0.2	0.0	3.1		0.5	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	675	93	45	1173	219	184	73	23	151	53	94
Future Volume (vph)	133	675	93	45	1173	219	184	73	23	151	53	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1736	3408		1736	3471	1553	1736	1762		1649	1694	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1736	3408		1736	3471	1553	1736	1762		1649	1694	1553
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	151	767	106	51	1333	249	209	83	26	172	60	107
RTOR Reduction (vph)	0	9	0	0	0	128	0	12	0	0	0	93
Lane Group Flow (vph)	151	864	0	51	1333	121	209	97	0	115	117	14
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.4	44.7		4.2	39.5	39.5	15.1	15.1		11.7	11.7	11.7
Effective Green, g (s)	9.4	44.7		4.2	39.5	39.5	15.1	15.1		11.7	11.7	11.7
Actuated g/C Ratio	0.10	0.49		0.05	0.43	0.43	0.16	0.16		0.13	0.13	0.13
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	177	1661		79	1495	668	285	290		210	216	198
v/s Ratio Prot	c0.09	0.25		0.03	c0.38		c0.12	0.06		c0.07	0.07	
v/s Ratio Perm						0.08						0.01
v/c Ratio	0.85	0.52		0.65	0.89	0.18	0.73	0.34		0.55	0.54	0.07
Uniform Delay, d1	40.5	16.1		43.0	24.1	16.1	36.4	33.9		37.5	37.5	35.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	30.7	1.2		16.7	8.4	0.6	9.4	0.7		2.9	2.8	0.1
Delay (s)	71.1	17.3		59.7	32.6	16.7	45.8	34.6		40.4	40.2	35.4
Level of Service	E	B		E	C	B	D	C		D	D	D
Approach Delay (s)		25.2			31.0			41.9			38.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	310	19	50	1401	174	591
Future Volume (veh/h)	310	19	50	1401	174	591
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	356	22	57	1610	200	679
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1510	93	91	2003	510	801
Arrive On Green	0.45	0.45	0.05	0.57	0.29	0.29
Sat Flow, veh/h	3446	206	1757	3597	1757	2760
Grp Volume(v), veh/h	185	193	57	1610	200	679
Grp Sat Flow(s),veh/h/ln	1752	1808	1757	1752	1757	1380
Q Serve(g_s), s	3.8	3.8	1.8	21.0	5.3	13.4
Cycle Q Clear(g_c), s	3.8	3.8	1.8	21.0	5.3	13.4
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	789	814	91	2003	510	801
V/C Ratio(X)	0.23	0.24	0.63	0.80	0.39	0.85
Avail Cap(c_a), veh/h	789	814	189	2003	578	908
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	9.8	26.8	9.8	16.4	19.3
Incr Delay (d2), s/veh	0.7	0.7	6.8	3.5	0.5	6.9
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	2.0	1.1	11.0	2.6	5.9
LnGrp Delay(d),s/veh	10.5	10.5	33.7	13.4	16.9	26.2
LnGrp LOS	B	B	C	B	B	C
Approach Vol, veh/h	378			1667	879	
Approach Delay, s/veh	10.5			14.1	24.1	
Approach LOS	B			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		20.8	7.0	30.0				37.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		19.0	6.2	22.8				33.0
Max Q Clear Time (g_c+I1), s		15.4	3.8	5.8				23.0
Green Ext Time (p_c), s		1.4	0.0	1.8				7.4

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	335	227	933	573	84	11	7	40	15	23	16
Future Volume (veh/h)	21	335	227	933	573	84	11	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	25	394	267	1098	674	99	13	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	48	559	374	1250	2163	968	94	12	73	91	52	37
Arrive On Green	0.03	0.28	0.28	0.37	0.62	0.62	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	1740	1992	1335	3375	3471	1553	1740	231	1357	1740	999	703
Grp Volume(v), veh/h	25	343	318	1098	674	99	13	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1591	1688	1736	1553	1740	0	1588	1740	0	1703
Q Serve(g_s), s	0.9	11.7	11.9	20.0	6.0	1.7	0.5	0.0	2.2	0.7	0.0	1.7
Cycle Q Clear(g_c), s	0.9	11.7	11.9	20.0	6.0	1.7	0.5	0.0	2.2	0.7	0.0	1.7
Prop In Lane	1.00		0.84	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	48	487	446	1250	2163	968	94	0	86	91	0	89
V/C Ratio(X)	0.52	0.70	0.71	0.88	0.31	0.10	0.14	0.00	0.64	0.20	0.00	0.52
Avail Cap(c_a), veh/h	153	487	446	1433	2163	968	501	0	457	488	0	478
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.6	21.3	21.3	19.4	5.8	5.0	29.7	0.0	30.6	29.9	0.0	30.4
Incr Delay (d2), s/veh	8.2	8.3	9.3	5.9	0.4	0.2	0.7	0.0	7.7	1.0	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	6.6	6.4	10.3	2.9	0.8	0.2	0.0	1.2	0.3	0.0	0.9
LnGrp Delay(d),s/veh	39.8	29.5	30.7	25.3	6.2	5.2	30.4	0.0	38.3	31.0	0.0	35.0
LnGrp LOS	D	C	C	C	A	A	C		D	C		C
Approach Vol, veh/h		686			1871			68			64	
Approach Delay, s/veh		30.4			17.3			36.8			33.9	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.6	28.4	22.5		7.5	5.8	45.1
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	28.0	18.5		18.5	5.8	40.7
Max Q Clear Time (g_c+I1), s		4.2	22.0	13.9		3.7	2.9	8.0
Green Ext Time (p_c), s		0.2	2.4	1.6		0.1	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	499	10	50	567	34	28	0	118	20	0	38
Future Vol, veh/h	44	499	10	50	567	34	28	0	118	20	0	38
Conflicting Peds, #/hr	0	0	1	1	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	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	52	594	12	60	675	40	33	0	140	24	0	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	715	0	0	607	0	0	1163	1540	304	1216	1526	358
Stage 1	-	-	-	-	-	-	705	705	-	815	815	-
Stage 2	-	-	-	-	-	-	458	835	-	401	711	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	868	-	-	954	-	-	147	112	686	135	114	633
Stage 1	-	-	-	-	-	-	389	432	-	333	384	-
Stage 2	-	-	-	-	-	-	547	376	-	591	430	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	868	-	-	953	-	-	124	99	685	97	100	633
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	99	-	97	100	-
Stage 1	-	-	-	-	-	-	365	406	-	313	360	-
Stage 2	-	-	-	-	-	-	476	352	-	442	404	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.7	17.9	29
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	124	685	868	-	-	953	-	-	218
HCM Lane V/C Ratio	0.269	0.205	0.06	-	-	0.062	-	-	0.317
HCM Control Delay (s)	44.4	11.6	9.4	-	-	9	-	-	29
HCM Lane LOS	E	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1	0.8	0.2	-	-	0.2	-	-	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	413	29	43	380	55	111
Future Volume (veh/h)	413	29	43	380	55	111
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	529	37	55	487	71	142
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1459	102	250	2370	235	210
Arrive On Green	0.44	0.44	0.14	0.68	0.13	0.13
Sat Flow, veh/h	3416	232	1757	3597	1757	1568
Grp Volume(v), veh/h	278	288	55	487	71	142
Grp Sat Flow(s),veh/h/ln	1752	1804	1757	1752	1757	1568
Q Serve(g_s), s	4.5	4.5	1.2	2.2	1.5	3.6
Cycle Q Clear(g_c), s	4.5	4.5	1.2	2.2	1.5	3.6
Prop In Lane		0.13	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	769	792	250	2370	235	210
V/C Ratio(X)	0.36	0.36	0.22	0.21	0.30	0.68
Avail Cap(c_a), veh/h	769	792	250	2370	771	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.9	7.9	16.0	2.6	16.5	17.4
Incr Delay (d2), s/veh	1.3	1.3	2.0	0.2	0.7	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.5	0.7	1.1	0.8	1.8
LnGrp Delay(d),s/veh	9.2	9.2	18.0	2.8	17.2	21.2
LnGrp LOS	A	A	B	A	B	C
Approach Vol, veh/h	566			542	213	
Approach Delay, s/veh	9.2			4.3	19.8	
Approach LOS	A			A	B	

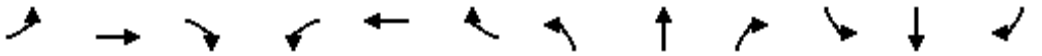
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.6	10.0	22.5				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		5.6	3.2	6.5				4.2
Green Ext Time (p_c), s		0.5	0.0	2.4				3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	430	36	10	378	27	297	50	31	41	11	47
Future Volume (veh/h)	46	430	36	10	378	27	297	50	31	41	11	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	56	524	44	12	461	33	362	61	38	50	13	57
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	102	1875	839	27	838	60	0	238	202	0	39	170
Arrive On Green	0.06	0.54	0.54	0.02	0.50	0.50	0.00	0.13	0.13	0.00	0.13	0.13
Sat Flow, veh/h	1740	3471	1553	1740	1685	121	0	1827	1553	0	297	1301
Grp Volume(v), veh/h	56	524	44	12	0	494	0	61	38	0	0	70
Grp Sat Flow(s),veh/h/ln	1740	1736	1553	1740	0	1806	0	1827	1553	0	0	1597
Q Serve(g_s), s	1.2	3.1	0.5	0.3	0.0	7.2	0.0	1.1	0.8	0.0	0.0	1.5
Cycle Q Clear(g_c), s	1.2	3.1	0.5	0.3	0.0	7.2	0.0	1.1	0.8	0.0	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.07	0.00		1.00	0.00		0.81
Lane Grp Cap(c), veh/h	102	1875	839	27	0	898	0	238	202	0	0	208
V/C Ratio(X)	0.55	0.28	0.05	0.44	0.00	0.55	0.00	0.26	0.19	0.00	0.00	0.34
Avail Cap(c_a), veh/h	255	1875	839	250	0	898	0	903	768	0	0	790
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.5	4.8	4.2	18.6	0.0	6.7	0.0	15.0	14.8	0.0	0.0	15.1
Incr Delay (d2), s/veh	4.5	0.4	0.1	10.8	0.0	2.4	0.0	0.6	0.4	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.6	0.2	0.2	0.0	4.2	0.0	0.6	0.4	0.0	0.0	0.7
LnGrp Delay(d),s/veh	22.0	5.1	4.3	29.4	0.0	9.1	0.0	15.5	15.3	0.0	0.0	16.1
LnGrp LOS	C	A	A	C		A		B	B			B
Approach Vol, veh/h		624			506			99			70	
Approach Delay, s/veh		6.6			9.6			15.4			16.1	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	9.0	4.6	24.6	0.0	9.0	6.2	23.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	18.9	5.5	19.1	5.5	18.9	5.6	19.0
Max Q Clear Time (g_c+I1), s	0.0	3.1	2.3	5.1	0.0	3.5	3.2	9.2
Green Ext Time (p_c), s	0.0	0.3	0.0	2.8	0.0	0.2	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	1296	207	53	706	131	148	40	51	283	91	73
Future Volume (vph)	211	1296	207	53	706	131	148	40	51	283	91	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	3399		1736	3471	1553	1736	1673		1649	1692	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1736	3399		1736	3471	1553	1736	1673		1649	1692	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	222	1364	218	56	743	138	156	42	54	298	96	77
RTOR Reduction (vph)	0	10	0	0	0	86	0	44	0	0	0	65
Lane Group Flow (vph)	222	1572	0	56	743	52	156	52	0	194	200	12
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	16.9	50.6		4.4	38.1	38.1	14.1	14.1		16.0	16.0	16.0
Effective Green, g (s)	16.9	50.6		4.4	38.1	38.1	14.1	14.1		16.0	16.0	16.0
Actuated g/C Ratio	0.17	0.50		0.04	0.38	0.38	0.14	0.14		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	290	1701		75	1308	585	242	233		260	267	245
v/s Ratio Prot	c0.13	c0.46		0.03	0.21		c0.09	0.03		0.12	c0.12	
v/s Ratio Perm						0.03						0.01
v/c Ratio	0.77	0.92		0.75	0.57	0.09	0.64	0.22		0.75	0.75	0.05
Uniform Delay, d1	40.2	23.5		47.8	25.0	20.3	41.1	38.6		40.6	40.6	36.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.4	10.0		32.8	1.8	0.3	5.8	0.5		11.1	10.9	0.1
Delay (s)	51.6	33.4		80.5	26.8	20.6	46.9	39.1		51.7	51.6	36.2
Level of Service	D	C		F	C	C	D	D		D	D	D
Approach Delay (s)		35.7			29.1			43.9			49.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	359	29	66	862	244	1356
Future Volume (veh/h)	359	29	66	862	244	1356
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	386	31	71	927	262	1458
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	724	58	94	1162	972	1527
Arrive On Green	0.22	0.22	0.05	0.33	0.55	0.55
Sat Flow, veh/h	3380	263	1757	3597	1757	2760
Grp Volume(v), veh/h	205	212	71	927	262	1458
Grp Sat Flow(s),veh/h/ln	1752	1798	1757	1752	1757	1380
Q Serve(g_s), s	7.2	7.2	2.8	16.7	5.4	34.7
Cycle Q Clear(g_c), s	7.2	7.2	2.8	16.7	5.4	34.7
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	386	396	94	1162	972	1527
V/C Ratio(X)	0.53	0.54	0.75	0.80	0.27	0.95
Avail Cap(c_a), veh/h	386	396	152	1162	987	1551
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	23.9	32.4	21.1	8.1	14.7
Incr Delay (d2), s/veh	5.2	5.1	11.4	5.8	0.1	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	4.2	1.6	8.9	2.7	15.8
LnGrp Delay(d),s/veh	29.1	29.1	43.7	26.8	8.3	28.2
LnGrp LOS	C	C	D	C	A	C
Approach Vol, veh/h	417			998	1720	
Approach Delay, s/veh	29.1			28.1	25.2	
Approach LOS	C			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		42.4	7.7	19.3				27.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		39.0	6.0	13.0				23.0
Max Q Clear Time (g_c+I1), s		36.7	4.8	9.2				18.7
Green Ext Time (p_c), s		1.7	0.0	0.8				2.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	388	208	557	437	77	23	3	50	39	19	15
Future Volume (veh/h)	16	388	208	557	437	77	23	3	50	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	404	217	580	455	80	24	3	52	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	37	777	412	739	1916	857	114	6	97	113	61	49
Arrive On Green	0.02	0.35	0.35	0.22	0.55	0.55	0.07	0.07	0.07	0.06	0.06	0.06
Sat Flow, veh/h	1757	2214	1175	3408	3505	1568	1757	86	1495	1757	950	760
Grp Volume(v), veh/h	17	319	302	580	455	80	24	0	55	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1637	1704	1752	1568	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.5	7.6	7.8	8.5	3.6	1.3	0.7	0.0	1.8	1.2	0.0	1.1
Cycle Q Clear(g_c), s	0.5	7.6	7.8	8.5	3.6	1.3	0.7	0.0	1.8	1.2	0.0	1.1
Prop In Lane	1.00		0.72	1.00		1.00	1.00		0.95	1.00		0.44
Lane Grp Cap(c), veh/h	37	615	574	739	1916	857	114	0	103	113	0	110
V/C Ratio(X)	0.46	0.52	0.53	0.78	0.24	0.09	0.21	0.00	0.54	0.36	0.00	0.33
Avail Cap(c_a), veh/h	183	615	574	969	1916	857	183	0	165	167	0	162
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	13.6	13.6	19.5	6.2	5.7	23.4	0.0	23.9	23.7	0.0	23.6
Incr Delay (d2), s/veh	8.8	3.1	3.4	3.2	0.3	0.2	0.9	0.0	4.3	2.0	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.2	4.0	4.3	1.8	0.6	0.4	0.0	0.9	0.6	0.0	0.6
LnGrp Delay(d),s/veh	34.3	16.7	17.1	22.7	6.5	5.9	24.3	0.0	28.2	25.6	0.0	25.3
LnGrp LOS	C	B	B	C	A	A	C		C	C		C
Approach Vol, veh/h		638			1115			79			77	
Approach Delay, s/veh		17.3			14.9			27.0			25.5	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.4	15.4	22.5		7.4	5.1	32.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		5.5	15.0	18.5		5.0	5.5	28.0
Max Q Clear Time (g_c+I1), s		3.8	10.5	9.8		3.2	2.5	5.6
Green Ext Time (p_c), s		0.0	1.0	2.3		0.0	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	513	28	126	533	32	20	0	86	48	0	54
Future Vol, veh/h	72	513	28	126	533	32	20	0	86	48	0	54
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	79	564	31	138	586	35	22	0	95	53	0	59

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	628	0	0	599	0	0	1311	1646	303	1328	1644	318
Stage 1	-	-	-	-	-	-	742	742	-	887	887	-
Stage 2	-	-	-	-	-	-	569	904	-	441	757	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	936	-	-	960	-	-	114	96	687	111	97	672
Stage 1	-	-	-	-	-	-	369	416	-	301	356	-
Stage 2	-	-	-	-	-	-	469	349	-	560	409	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	930	-	-	956	-	-	86	74	684	79	75	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	74	-	79	75	-
Stage 1	-	-	-	-	-	-	337	379	-	274	303	-
Stage 2	-	-	-	-	-	-	366	297	-	441	373	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.7	20.5	80.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	684	930	-	-	956	-	-	148
HCM Lane V/C Ratio	0.256	0.138	0.085	-	-	0.145	-	-	0.757
HCM Control Delay (s)	60.7	11.1	9.2	-	-	9.4	-	-	80.9
HCM Lane LOS	F	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.9	0.5	0.3	-	-	0.5	-	-	4.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	423	41	51	341	90	139
Future Volume (veh/h)	423	41	51	341	90	139
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	465	45	56	375	99	153
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1657	160	100	2328	258	230
Arrive On Green	0.51	0.51	0.06	0.66	0.15	0.15
Sat Flow, veh/h	3323	311	1757	3597	1757	1568
Grp Volume(v), veh/h	251	259	56	375	99	153
Grp Sat Flow(s),veh/h/ln	1752	1790	1757	1752	1757	1568
Q Serve(g_s), s	3.5	3.5	1.3	1.7	2.2	3.9
Cycle Q Clear(g_c), s	3.5	3.5	1.3	1.7	2.2	3.9
Prop In Lane		0.17	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	899	918	100	2328	258	230
V/C Ratio(X)	0.28	0.28	0.56	0.16	0.38	0.67
Avail Cap(c_a), veh/h	899	918	253	2328	785	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.9	5.9	19.4	2.7	16.3	17.1
Incr Delay (d2), s/veh	0.8	0.8	4.8	0.1	0.9	3.3
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	1.9	0.8	0.8	1.1	1.9
LnGrp Delay(d),s/veh	6.6	6.6	24.2	2.8	17.3	20.4
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	510			431	252	
Approach Delay, s/veh	6.6			5.6	19.1	
Approach LOS	A			A	B	

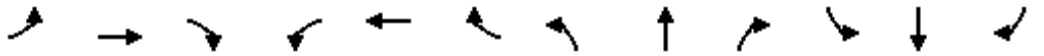
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		10.2	6.4	25.7				32.1
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.9	6.1	18.0				28.1
Max Q Clear Time (g_c+I1), s		5.9	3.3	5.5				3.7
Green Ext Time (p_c), s		0.6	0.0	2.2				2.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	412	53	14	359	42	264	51	112	77	26	90
Future Volume (veh/h)	34	412	53	14	359	42	264	51	112	77	26	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	474	61	16	413	48	303	59	129	89	30	103
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	69	1410	631	34	620	72	379	53	602	82	44	38
Arrive On Green	0.04	0.40	0.40	0.02	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1757	3505	1568	1757	1623	189	709	138	1568	0	115	100
Grp Volume(v), veh/h	39	474	61	16	0	461	362	0	129	222	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	0	1811	846	0	1568	215	0	0
Q Serve(g_s), s	1.3	5.8	1.5	0.6	0.0	13.0	0.0	0.0	3.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	5.8	1.5	0.6	0.0	13.0	23.7	0.0	3.4	23.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.84		1.00	0.40		0.46
Lane Grp Cap(c), veh/h	69	1410	631	34	0	692	432	0	602	164	0	0
V/C Ratio(X)	0.56	0.34	0.10	0.47	0.00	0.67	0.84	0.00	0.21	1.35	0.00	0.00
Avail Cap(c_a), veh/h	162	1410	631	159	0	692	432	0	602	164	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.1	12.8	11.5	30.0	0.0	15.8	20.2	0.0	12.8	19.7	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.6	0.3	9.7	0.0	5.0	13.5	0.0	0.2	193.5	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.9	0.7	0.4	0.0	7.4	7.7	0.0	1.5	11.6	0.0	0.0
LnGrp Delay(d),s/veh	36.1	13.4	11.8	39.6	0.0	20.8	33.8	0.0	12.9	213.3	0.0	0.0
LnGrp LOS	D	B	B	D		C	C		B	F		
Approach Vol, veh/h		574			477			491			222	
Approach Delay, s/veh		14.8			21.4			28.3			213.3	
Approach LOS		B			C			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.7	5.2	28.8		27.7	6.4	27.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.7	5.6	23.7		23.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		25.7	2.6	7.8		25.7	3.3	15.0
Green Ext Time (p_c), s		0.0	0.0	2.7		0.0	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	45.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	683	93	45	1194	219	205	73	23	151	53	94
Future Volume (vph)	133	683	93	45	1194	219	205	73	23	151	53	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1736	3409		1736	3471	1553	1736	1762		1649	1694	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1736	3409		1736	3471	1553	1736	1762		1649	1694	1553
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	151	776	106	51	1357	249	233	83	26	172	60	107
RTOR Reduction (vph)	0	9	0	0	0	127	0	12	0	0	0	93
Lane Group Flow (vph)	151	873	0	51	1357	122	233	97	0	115	117	14
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.3	44.6		4.2	39.5	39.5	16.1	16.1		11.8	11.8	11.8
Effective Green, g (s)	9.3	44.6		4.2	39.5	39.5	16.1	16.1		11.8	11.8	11.8
Actuated g/C Ratio	0.10	0.48		0.05	0.43	0.43	0.17	0.17		0.13	0.13	0.13
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	174	1640		78	1479	661	301	306		209	215	197
v/s Ratio Prot	c0.09	0.26		0.03	c0.39		c0.13	0.06		c0.07	0.07	
v/s Ratio Perm						0.08						0.01
v/c Ratio	0.87	0.53		0.65	0.92	0.18	0.77	0.32		0.55	0.54	0.07
Uniform Delay, d1	41.1	16.8		43.5	25.1	16.6	36.6	33.5		38.0	37.9	35.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.7	1.2		18.0	10.5	0.6	11.7	0.6		3.1	2.8	0.1
Delay (s)	74.8	18.0		61.5	35.6	17.2	48.3	34.1		41.1	40.7	35.8
Level of Service	E	B		E	D	B	D	C		D	D	D
Approach Delay (s)		26.3			33.6			43.8			39.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	326	35	50	1444	238	591
Future Volume (veh/h)	326	35	50	1444	238	591
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	375	40	57	1660	274	679
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1437	152	91	1999	512	804
Arrive On Green	0.45	0.45	0.05	0.57	0.29	0.29
Sat Flow, veh/h	3290	339	1757	3597	1757	2760
Grp Volume(v), veh/h	204	211	57	1660	274	679
Grp Sat Flow(s),veh/h/ln	1752	1785	1757	1752	1757	1380
Q Serve(g_s), s	4.2	4.3	1.8	22.4	7.6	13.4
Cycle Q Clear(g_c), s	4.2	4.3	1.8	22.4	7.6	13.4
Prop In Lane		0.19	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	788	802	91	1999	512	804
V/C Ratio(X)	0.26	0.26	0.63	0.83	0.54	0.84
Avail Cap(c_a), veh/h	788	802	188	1999	577	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	9.9	26.9	10.1	17.2	19.3
Incr Delay (d2), s/veh	0.8	0.8	6.9	4.2	0.9	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.3	1.1	11.8	3.8	5.8
LnGrp Delay(d),s/veh	10.7	10.7	33.7	14.3	18.1	26.0
LnGrp LOS	B	B	C	B	B	C
Approach Vol, veh/h	415			1717	953	
Approach Delay, s/veh	10.7			15.0	23.7	
Approach LOS	B			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		20.9	7.0	30.0				37.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		19.0	6.2	22.8				33.0
Max Q Clear Time (g_c+I1), s		15.4	3.8	6.3				24.4
Green Ext Time (p_c), s		1.5	0.0	1.9				6.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	367	251	933	680	84	54	7	40	15	23	16
Future Volume (veh/h)	21	367	251	933	680	84	54	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	25	432	295	1098	800	99	64	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	48	546	370	1243	2138	956	115	15	90	90	52	36
Arrive On Green	0.03	0.28	0.28	0.37	0.62	0.62	0.07	0.07	0.07	0.05	0.05	0.05
Sat Flow, veh/h	1740	1982	1344	3375	3471	1553	1740	231	1357	1740	999	703
Grp Volume(v), veh/h	25	378	349	1098	800	99	64	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1590	1688	1736	1553	1740	0	1588	1740	0	1703
Q Serve(g_s), s	1.0	13.6	13.7	20.5	7.7	1.8	2.4	0.0	2.3	0.7	0.0	1.8
Cycle Q Clear(g_c), s	1.0	13.6	13.7	20.5	7.7	1.8	2.4	0.0	2.3	0.7	0.0	1.8
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	48	478	438	1243	2138	956	115	0	105	90	0	88
V/C Ratio(X)	0.52	0.79	0.80	0.88	0.37	0.10	0.55	0.00	0.52	0.20	0.00	0.52
Avail Cap(c_a), veh/h	150	478	438	1407	2138	956	492	0	449	479	0	469
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	22.6	22.6	19.9	6.4	5.3	30.4	0.0	30.3	30.5	0.0	31.0
Incr Delay (d2), s/veh	8.3	12.6	14.0	6.4	0.5	0.2	4.1	0.0	4.0	1.1	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.1	7.7	10.6	3.8	0.8	1.3	0.0	1.1	0.3	0.0	0.9
LnGrp Delay(d),s/veh	40.6	35.1	36.6	26.3	6.9	5.5	34.5	0.0	34.3	31.6	0.0	35.7
LnGrp LOS	D	D	D	C	A	A	C		C	C		D
Approach Vol, veh/h		752			1997			119			64	
Approach Delay, s/veh		36.0			17.5			34.4			34.6	
Approach LOS		D			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.5	28.7	22.5		7.5	5.9	45.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	28.0	18.5		18.5	5.8	40.7
Max Q Clear Time (g_c+I1), s		4.4	22.5	15.7		3.8	3.0	9.7
Green Ext Time (p_c), s		0.3	2.3	1.2		0.1	0.0	6.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	541	10	50	635	116	28	0	118	35	0	44
Future Vol, veh/h	108	541	10	50	635	116	28	0	118	35	0	44
Conflicting Peds, #/hr	0	0	1	1	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	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
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, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	129	644	12	60	756	138	33	0	140	42	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	894	0	0	657	0	0	1407	1923	329	1525	1860	447
Stage 1	-	-	-	-	-	-	909	909	-	945	945	-
Stage 2	-	-	-	-	-	-	498	1014	-	580	915	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	742	-	-	913	-	-	97	65	661	79	71	553
Stage 1	-	-	-	-	-	-	292	347	-	278	334	-
Stage 2	-	-	-	-	-	-	518	310	-	462	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	742	-	-	912	-	-	72	50	660	51	55	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	50	-	51	55	-
Stage 1	-	-	-	-	-	-	241	286	-	230	312	-
Stage 2	-	-	-	-	-	-	438	290	-	300	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.6	27.3	141.8
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	660	742	-	-	912	-	-	103
HCM Lane V/C Ratio	0.463	0.213	0.173	-	-	0.065	-	-	0.913
HCM Control Delay (s)	92.3	11.9	10.9	-	-	9.2	-	-	141.8
HCM Lane LOS	F	B	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.9	0.8	0.6	-	-	0.2	-	-	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	477	29	85	404	55	111
Future Volume (veh/h)	477	29	85	404	55	111
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	612	37	109	518	71	142
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1474	89	250	2370	235	210
Arrive On Green	0.44	0.44	0.14	0.68	0.13	0.13
Sat Flow, veh/h	3451	203	1757	3597	1757	1568
Grp Volume(v), veh/h	319	330	109	518	71	142
Grp Sat Flow(s),veh/h/ln	1752	1809	1757	1752	1757	1568
Q Serve(g_s), s	5.3	5.3	2.4	2.4	1.5	3.6
Cycle Q Clear(g_c), s	5.3	5.3	2.4	2.4	1.5	3.6
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	769	794	250	2370	235	210
V/C Ratio(X)	0.41	0.42	0.44	0.22	0.30	0.68
Avail Cap(c_a), veh/h	769	794	250	2370	771	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.1	8.1	16.5	2.6	16.5	17.4
Incr Delay (d2), s/veh	1.6	1.6	5.4	0.2	0.7	3.8
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	2.9	1.5	1.1	0.8	1.8
LnGrp Delay(d),s/veh	9.8	9.7	22.0	2.8	17.2	21.2
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	649			627	213	
Approach Delay, s/veh	9.7			6.1	19.8	
Approach LOS	A			A	B	

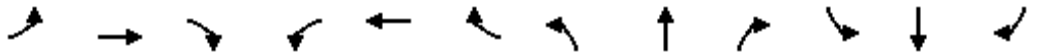
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.6	10.0	22.5				32.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.5	6.0	18.5				28.5
Max Q Clear Time (g_c+I1), s		5.6	4.4	7.3				4.4
Green Ext Time (p_c), s		0.5	0.0	2.7				3.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	462	36	14	390	31	297	50	42	52	11	47
Future Volume (veh/h)	46	462	36	14	390	31	297	50	42	52	11	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	56	563	44	17	476	38	362	61	51	63	13	57
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	102	1862	833	38	834	67	0	237	201	0	38	169
Arrive On Green	0.06	0.54	0.54	0.02	0.50	0.50	0.00	0.13	0.13	0.00	0.13	0.13
Sat Flow, veh/h	1740	3471	1553	1740	1670	133	0	1827	1553	0	297	1301
Grp Volume(v), veh/h	56	563	44	17	0	514	0	61	51	0	0	70
Grp Sat Flow(s),veh/h/ln	1740	1736	1553	1740	0	1803	0	1827	1553	0	0	1597
Q Serve(g_s), s	1.2	3.4	0.5	0.4	0.0	7.7	0.0	1.2	1.1	0.0	0.0	1.5
Cycle Q Clear(g_c), s	1.2	3.4	0.5	0.4	0.0	7.7	0.0	1.2	1.1	0.0	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.07	0.00		1.00	0.00		0.81
Lane Grp Cap(c), veh/h	102	1862	833	38	0	901	0	237	201	0	0	207
V/C Ratio(X)	0.55	0.30	0.05	0.45	0.00	0.57	0.00	0.26	0.25	0.00	0.00	0.34
Avail Cap(c_a), veh/h	254	1862	833	249	0	901	0	889	756	0	0	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	4.9	4.2	18.6	0.0	6.7	0.0	15.1	15.1	0.0	0.0	15.2
Incr Delay (d2), s/veh	4.6	0.4	0.1	8.3	0.0	2.6	0.0	0.6	0.7	0.0	0.0	1.0
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	0.7	1.8	0.2	0.3	0.0	4.4	0.0	0.6	0.5	0.0	0.0	0.7
LnGrp Delay(d),s/veh	22.2	5.3	4.4	26.9	0.0	9.4	0.0	15.6	15.7	0.0	0.0	16.2
LnGrp LOS	C	A	A	C		A		B	B			B
Approach Vol, veh/h		663			531			112			70	
Approach Delay, s/veh		6.7			9.9			15.7			16.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	9.0	4.8	24.6	0.0	9.0	6.3	23.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.5	18.7	5.5	19.3	5.5	18.7	5.6	19.2
Max Q Clear Time (g_c+I1), s	0.0	3.2	2.4	5.4	0.0	3.5	3.2	9.7
Green Ext Time (p_c), s	0.0	0.3	0.0	3.0	0.0	0.2	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	211	1319	230	53	720	131	162	40	51	283	91	73
Future Volume (vph)	211	1319	230	53	720	131	162	40	51	283	91	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1736	3394		1736	3471	1553	1736	1673		1649	1692	1553
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	1736	3394		1736	3471	1553	1736	1673		1649	1692	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	222	1388	242	56	758	138	171	42	54	298	96	77
RTOR Reduction (vph)	0	12	0	0	0	86	0	44	0	0	0	65
Lane Group Flow (vph)	222	1618	0	56	758	52	171	52	0	194	200	12
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						6
Actuated Green, G (s)	17.0	50.6		4.4	38.0	38.0	14.8	14.8		16.0	16.0	16.0
Effective Green, g (s)	17.0	50.6		4.4	38.0	38.0	14.8	14.8		16.0	16.0	16.0
Actuated g/C Ratio	0.17	0.50		0.04	0.37	0.37	0.15	0.15		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	289	1686		75	1295	579	252	243		259	265	244
v/s Ratio Prot	c0.13	c0.48		0.03	0.22		c0.10	0.03		0.12	c0.12	
v/s Ratio Perm						0.03						0.01
v/c Ratio	0.77	0.96		0.75	0.59	0.09	0.68	0.22		0.75	0.75	0.05
Uniform Delay, d1	40.5	24.6		48.1	25.6	20.7	41.2	38.4		41.0	41.0	36.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.6	14.2		32.8	1.9	0.3	7.1	0.4		11.2	11.5	0.1
Delay (s)	52.1	38.8		80.9	27.5	21.0	48.3	38.8		52.2	52.6	36.5
Level of Service	D	D		F	C	C	D	D		D	D	D
Approach Delay (s)		40.4			29.7			44.9			49.8	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	101.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	406	76	66	889	285	1356
Future Volume (veh/h)	406	76	66	889	285	1356
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	437	82	71	956	306	1458
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	649	121	94	1161	972	1527
Arrive On Green	0.22	0.22	0.05	0.33	0.55	0.55
Sat Flow, veh/h	3042	550	1757	3597	1757	2760
Grp Volume(v), veh/h	258	261	71	956	306	1458
Grp Sat Flow(s),veh/h/ln	1752	1748	1757	1752	1757	1380
Q Serve(g_s), s	9.4	9.5	2.8	17.4	6.5	34.7
Cycle Q Clear(g_c), s	9.4	9.5	2.8	17.4	6.5	34.7
Prop In Lane		0.31	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	386	384	94	1161	972	1527
V/C Ratio(X)	0.67	0.68	0.75	0.82	0.31	0.95
Avail Cap(c_a), veh/h	386	384	152	1161	987	1550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	24.8	32.4	21.3	8.4	14.7
Incr Delay (d2), s/veh	8.9	9.3	11.4	6.7	0.2	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	5.6	1.6	9.4	3.2	15.8
LnGrp Delay(d),s/veh	33.7	34.1	43.8	28.0	8.6	28.2
LnGrp LOS	C	C	D	C	A	C
Approach Vol, veh/h	519			1027	1764	
Approach Delay, s/veh	33.9			29.1	24.8	
Approach LOS	C			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		42.4	7.7	19.3				27.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		39.0	6.0	13.0				23.0
Max Q Clear Time (g_c+I1), s		36.7	4.8	11.5				19.4
Green Ext Time (p_c), s		1.7	0.0	0.5				2.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	481	278	557	505	77	50	3	50	39	19	15
Future Volume (veh/h)	16	481	278	557	505	77	50	3	50	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	501	290	580	526	80	52	3	52	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	37	742	428	736	1898	849	131	6	111	112	61	48
Arrive On Green	0.02	0.35	0.35	0.22	0.54	0.54	0.07	0.07	0.07	0.06	0.06	0.06
Sat Flow, veh/h	1757	2143	1236	3408	3505	1568	1757	86	1495	1757	950	760
Grp Volume(v), veh/h	17	409	382	580	526	80	52	0	55	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1627	1704	1752	1568	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.5	10.6	10.7	8.6	4.3	1.3	1.5	0.0	1.8	1.2	0.0	1.1
Cycle Q Clear(g_c), s	0.5	10.6	10.7	8.6	4.3	1.3	1.5	0.0	1.8	1.2	0.0	1.1
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.95	1.00		0.44
Lane Grp Cap(c), veh/h	37	607	563	736	1898	849	131	0	118	112	0	109
V/C Ratio(X)	0.46	0.67	0.68	0.79	0.28	0.09	0.40	0.00	0.47	0.37	0.00	0.33
Avail Cap(c_a), veh/h	181	607	563	957	1898	849	181	0	163	164	0	160
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.9	14.9	14.9	19.8	6.6	5.9	23.6	0.0	23.7	24.0	0.0	23.9
Incr Delay (d2), s/veh	8.8	5.9	6.4	3.4	0.4	0.2	1.9	0.0	2.9	2.0	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.1	5.8	4.4	2.1	0.6	0.8	0.0	0.9	0.6	0.0	0.6
LnGrp Delay(d),s/veh	34.7	20.8	21.3	23.1	7.0	6.1	25.5	0.0	26.6	26.0	0.0	25.7
LnGrp LOS	C	C	C	C	A	A	C		C	C		C
Approach Vol, veh/h		808			1186			107			77	
Approach Delay, s/veh		21.3			14.8			26.1			25.8	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		8.0	15.5	22.5		7.4	5.1	32.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		5.5	15.0	18.5		5.0	5.5	28.0
Max Q Clear Time (g_c+I1), s		3.8	10.6	12.7		3.2	2.5	6.3
Green Ext Time (p_c), s		0.0	0.9	2.3		0.0	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	121

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	596	28	126	614	51	20	0	86	128	0	89
Future Vol, veh/h	111	596	28	126	614	51	20	0	86	128	0	89
Conflicting Peds, #/hr	7	0	4	4	0	7	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	122	655	31	138	675	56	22	0	95	141	0	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	738	0	0	690	0	0	1533	1933	348	1559	1920	373
Stage 1	-	-	-	-	-	-	919	919	-	986	986	-
Stage 2	-	-	-	-	-	-	614	1014	-	573	934	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	851	-	-	887	-	-	78	64	642	~ 75	65	619
Stage 1	-	-	-	-	-	-	288	344	-	262	320	-
Stage 2	-	-	-	-	-	-	441	310	-	467	338	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	845	-	-	884	-	-	51	46	639	~ 50	46	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	46	-	~ 50	46	-
Stage 1	-	-	-	-	-	-	245	293	-	223	268	-
Stage 2	-	-	-	-	-	-	313	260	-	340	288	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	1.6	32.2	$ 1004.6
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	51	639	845	-	-	884	-	-	80
HCM Lane V/C Ratio	0.431	0.148	0.144	-	-	0.157	-	-	2.981
HCM Control Delay (s)	121	11.6	10	-	-	9.8	-	-	$ 1004.6
HCM Lane LOS	F	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.6	0.5	0.5	-	-	0.6	-	-	23.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	462	41	134	411	90	139
Future Volume (veh/h)	462	41	134	411	90	139
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	508	45	147	452	99	153
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1533	135	188	2348	255	228
Arrive On Green	0.47	0.47	0.11	0.67	0.15	0.15
Sat Flow, veh/h	3351	288	1757	3597	1757	1568
Grp Volume(v), veh/h	273	280	147	452	99	153
Grp Sat Flow(s),veh/h/ln	1752	1794	1757	1752	1757	1568
Q Serve(g_s), s	4.2	4.2	3.5	2.1	2.2	4.0
Cycle Q Clear(g_c), s	4.2	4.2	3.5	2.1	2.2	4.0
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	825	844	188	2348	255	228
V/C Ratio(X)	0.33	0.33	0.78	0.19	0.39	0.67
Avail Cap(c_a), veh/h	825	844	284	2348	730	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.2	7.2	18.8	2.7	16.8	17.5
Incr Delay (d2), s/veh	1.1	1.1	7.8	0.2	1.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.4	2.1	1.1	1.1	1.9
LnGrp Delay(d),s/veh	8.3	8.2	26.6	2.9	17.7	20.9
LnGrp LOS	A	A	C	A	B	C
Approach Vol, veh/h	553			599	252	
Approach Delay, s/veh	8.3			8.7	19.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		10.3	8.6	24.4				33.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.0	7.0	18.0				29.0
Max Q Clear Time (g_c+I1), s		6.0	5.5	6.2				4.1
Green Ext Time (p_c), s		0.6	0.0	2.3				2.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	432	53	26	394	54	264	51	119	84	26	90
Future Volume (veh/h)	34	432	53	26	394	54	264	51	119	84	26	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	497	61	30	453	62	303	59	137	97	30	103
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	69	1364	610	57	607	83	390	55	602	83	42	34
Arrive On Green	0.04	0.39	0.39	0.03	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1757	3505	1568	1757	1589	217	737	144	1568	0	109	88
Grp Volume(v), veh/h	39	497	61	30	0	515	362	0	137	230	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	0	1806	881	0	1568	198	0	0
Q Serve(g_s), s	1.3	6.2	1.5	1.0	0.0	15.2	0.0	0.0	3.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	6.2	1.5	1.0	0.0	15.2	23.7	0.0	3.6	23.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.84		1.00	0.42		0.45
Lane Grp Cap(c), veh/h	69	1364	610	57	0	690	445	0	602	159	0	0
V/C Ratio(X)	0.56	0.36	0.10	0.52	0.00	0.75	0.81	0.00	0.23	1.45	0.00	0.00
Avail Cap(c_a), veh/h	162	1364	610	159	0	690	445	0	602	159	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.1	13.4	12.0	29.4	0.0	16.5	19.8	0.0	12.8	20.2	0.0	0.0
Incr Delay (d2), s/veh	6.9	0.8	0.3	7.2	0.0	7.2	11.0	0.0	0.2	233.7	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.1	0.7	0.6	0.0	9.0	7.4	0.0	1.6	13.0	0.0	0.0
LnGrp Delay(d),s/veh	36.1	14.2	12.3	36.6	0.0	23.7	30.8	0.0	13.0	253.9	0.0	0.0
LnGrp LOS	D	B	B	D		C	C		B	F		
Approach Vol, veh/h		597			545			499			230	
Approach Delay, s/veh		15.4			24.4			25.9			253.9	
Approach LOS		B			C			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		27.7	6.0	28.0		27.7	6.4	27.6
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		23.7	5.6	23.7		23.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		25.7	3.0	8.2		25.7	3.3	17.2
Green Ext Time (p_c), s		0.0	0.0	2.8		0.0	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	50.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	383	5	25	456	94	14	0	59	25	0	25
Future Volume (veh/h)	86	383	5	25	456	94	14	0	59	25	0	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	102	456	6	30	543	112	17	0	70	30	0	30
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	149	1181	16	62	822	169	38	0	200	62	0	222
Arrive On Green	0.09	0.34	0.34	0.04	0.29	0.29	0.02	0.00	0.13	0.04	0.00	0.14
Sat Flow, veh/h	1740	3508	46	1740	2868	589	1740	0	1553	1740	0	1553
Grp Volume(v), veh/h	102	225	237	30	328	327	17	0	70	30	0	30
Grp Sat Flow(s),veh/h/ln	1740	1736	1819	1740	1736	1722	1740	0	1553	1740	0	1553
Q Serve(g_s), s	2.2	3.8	3.9	0.7	6.5	6.5	0.4	0.0	1.6	0.7	0.0	0.7
Cycle Q Clear(g_c), s	2.2	3.8	3.9	0.7	6.5	6.5	0.4	0.0	1.6	0.7	0.0	0.7
Prop In Lane	1.00		0.03	1.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	584	612	62	497	493	38	0	200	62	0	222
V/C Ratio(X)	0.68	0.39	0.39	0.48	0.66	0.66	0.45	0.00	0.35	0.48	0.00	0.14
Avail Cap(c_a), veh/h	246	804	843	246	804	798	224	0	740	224	0	740
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	9.8	9.8	18.4	12.2	12.2	18.8	0.0	15.4	18.4	0.0	14.6
Incr Delay (d2), s/veh	5.4	0.4	0.4	5.8	1.5	1.5	8.3	0.0	1.0	5.8	0.0	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	1.3	1.9	2.0	0.4	3.3	3.3	0.3	0.0	0.7	0.4	0.0	0.3
LnGrp Delay(d),s/veh	22.6	10.2	10.2	24.1	13.7	13.7	27.1	0.0	16.5	24.1	0.0	14.8
LnGrp LOS	C	B	B	C	B	B	C		B	C		B
Approach Vol, veh/h		564			685			87			60	
Approach Delay, s/veh		12.5			14.2			18.6			19.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	9.5	5.9	17.6	5.3	10.0	7.8	15.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5	5.5	18.0	5.0	18.5	5.5	18.0
Max Q Clear Time (g_c+I1), s	2.7	3.6	2.7	5.9	2.4	2.7	4.2	8.5
Green Ext Time (p_c), s	0.0	0.2	0.0	1.9	0.0	0.1	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	497	14	63	409	35	10	0	43	104	0	62
Future Volume (veh/h)	75	497	14	63	409	35	10	0	43	104	0	62
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	82	546	15	69	449	38	11	0	47	114	0	68
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	130	900	25	117	819	69	25	0	200	157	0	318
Arrive On Green	0.07	0.26	0.26	0.07	0.25	0.25	0.01	0.00	0.13	0.09	0.00	0.21
Sat Flow, veh/h	1740	3450	95	1740	3237	273	1740	0	1549	1740	0	1551
Grp Volume(v), veh/h	82	274	287	69	240	247	11	0	47	114	0	68
Grp Sat Flow(s),veh/h/ln	1740	1736	1809	1740	1736	1774	1740	0	1549	1740	0	1551
Q Serve(g_s), s	1.8	5.5	5.5	1.5	4.8	4.8	0.2	0.0	1.1	2.5	0.0	1.5
Cycle Q Clear(g_c), s	1.8	5.5	5.5	1.5	4.8	4.8	0.2	0.0	1.1	2.5	0.0	1.5
Prop In Lane	1.00		0.05	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	453	472	117	439	449	25	0	200	157	0	318
V/C Ratio(X)	0.63	0.61	0.61	0.59	0.55	0.55	0.44	0.00	0.23	0.73	0.00	0.21
Avail Cap(c_a), veh/h	219	786	819	219	786	803	219	0	721	241	0	741
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	12.9	12.9	18.0	12.9	12.9	19.4	0.0	15.5	17.6	0.0	13.1
Incr Delay (d2), s/veh	4.9	1.3	1.3	4.7	1.1	1.1	11.6	0.0	0.6	6.3	0.0	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	1.0	2.8	2.9	0.9	2.4	2.5	0.2	0.0	0.5	1.5	0.0	0.7
LnGrp Delay(d),s/veh	22.8	14.2	14.2	22.7	13.9	13.9	31.1	0.0	16.1	23.9	0.0	13.5
LnGrp LOS	C	B	B	C	B	B	C		B	C		B
Approach Vol, veh/h		643			556			58			182	
Approach Delay, s/veh		15.3			15.0			19.0			20.0	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	9.6	7.2	14.9	5.1	12.7	7.5	14.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	18.5	5.0	18.0	5.0	19.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	4.5	3.1	3.5	7.5	2.2	3.5	3.8	6.8
Green Ext Time (p_c), s	0.0	0.1	0.0	2.2	0.0	0.2	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	541	10	50	635	116	28	0	118	35	0	44
Future Volume (veh/h)	108	541	10	50	635	116	28	0	118	35	0	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	129	644	12	60	756	138	33	0	140	42	0	52
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	165	1296	24	101	982	179	65	0	219	78	0	231
Arrive On Green	0.09	0.37	0.37	0.06	0.34	0.34	0.04	0.00	0.14	0.04	0.00	0.15
Sat Flow, veh/h	1740	3486	65	1740	2932	535	1740	0	1553	1740	0	1553
Grp Volume(v), veh/h	129	321	335	60	447	447	33	0	140	42	0	52
Grp Sat Flow(s),veh/h/ln	1740	1736	1815	1740	1736	1732	1740	0	1553	1740	0	1553
Q Serve(g_s), s	3.4	6.7	6.7	1.6	10.8	10.8	0.9	0.0	4.0	1.1	0.0	1.4
Cycle Q Clear(g_c), s	3.4	6.7	6.7	1.6	10.8	10.8	0.9	0.0	4.0	1.1	0.0	1.4
Prop In Lane	1.00		0.04	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	645	675	101	581	580	65	0	219	78	0	231
V/C Ratio(X)	0.78	0.50	0.50	0.60	0.77	0.77	0.51	0.00	0.64	0.54	0.00	0.23
Avail Cap(c_a), veh/h	279	760	795	242	723	721	186	0	660	190	0	663
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	11.3	11.3	21.5	13.9	13.9	22.1	0.0	19.0	21.9	0.0	17.6
Incr Delay (d2), s/veh	7.9	0.6	0.6	5.5	4.0	4.0	6.1	0.0	3.1	5.6	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	2.0	3.2	3.4	0.9	5.7	5.7	0.5	0.0	1.9	0.6	0.0	0.6
LnGrp Delay(d),s/veh	28.6	11.9	11.9	27.1	18.0	18.0	28.2	0.0	22.1	27.5	0.0	18.0
LnGrp LOS	C	B	B	C	B	B	C		C	C		B
Approach Vol, veh/h		785			954			173			94	
Approach Delay, s/veh		14.7			18.5			23.2			22.3	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	11.1	7.2	21.9	6.2	11.5	8.9	20.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	19.9	6.5	20.5	5.0	20.0	7.5	19.5
Max Q Clear Time (g_c+I1), s	3.1	6.0	3.6	8.7	2.9	3.4	5.4	12.8
Green Ext Time (p_c), s	0.0	0.6	0.0	2.8	0.0	0.2	0.1	2.8

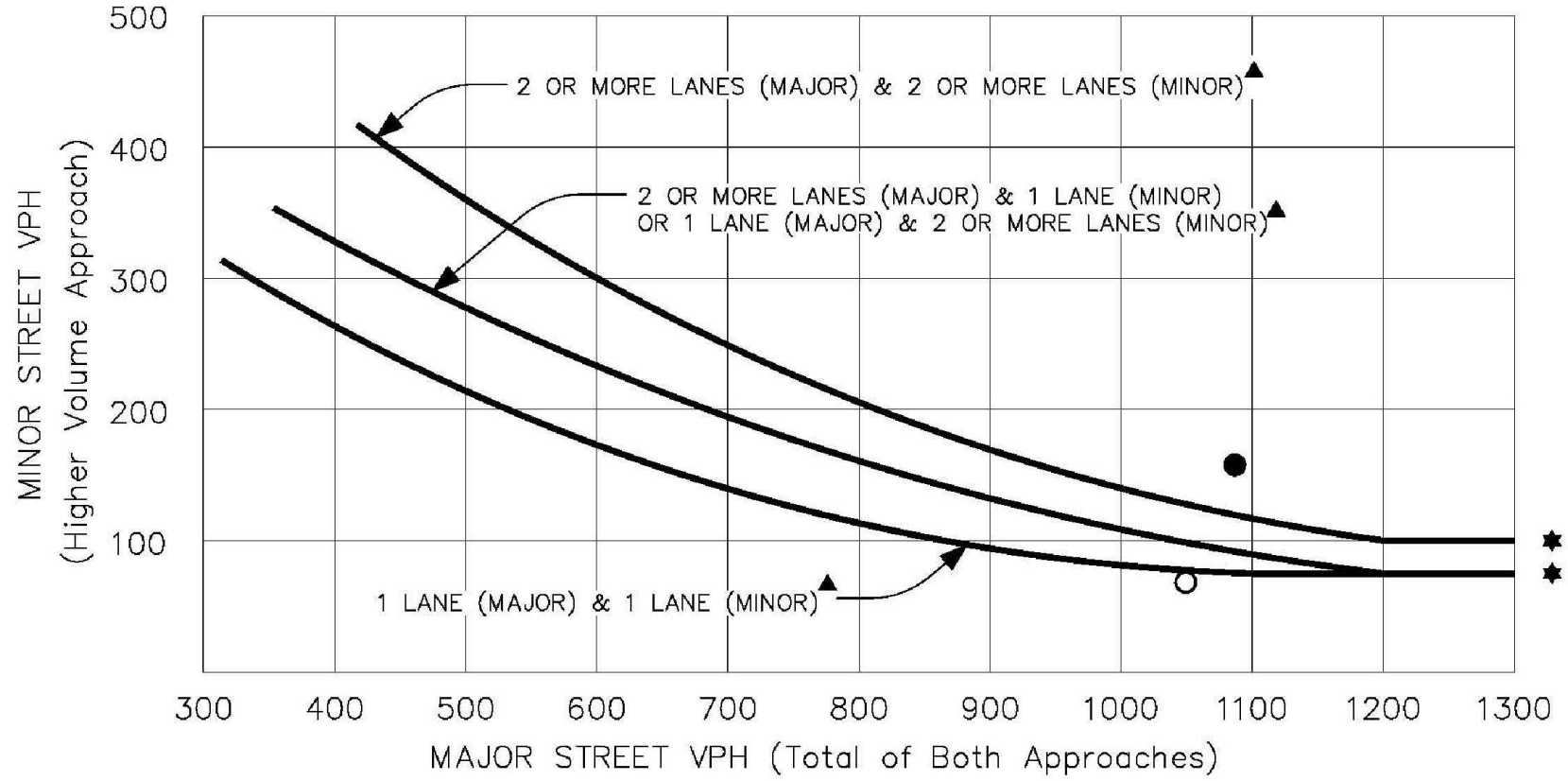
Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	596	28	126	614	51	20	0	86	128	0	89
Future Volume (veh/h)	111	596	28	126	614	51	20	0	86	128	0	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	122	655	31	138	675	56	22	0	95	141	0	98
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	155	962	46	176	964	80	46	0	176	180	0	295
Arrive On Green	0.09	0.29	0.29	0.10	0.30	0.30	0.03	0.00	0.11	0.10	0.00	0.19
Sat Flow, veh/h	1740	3373	159	1740	3243	269	1740	0	1549	1740	0	1550
Grp Volume(v), veh/h	122	337	349	138	361	370	22	0	95	141	0	98
Grp Sat Flow(s),veh/h/ln	1740	1736	1796	1740	1736	1776	1740	0	1549	1740	0	1550
Q Serve(g_s), s	3.1	7.8	7.8	3.5	8.4	8.4	0.6	0.0	2.6	3.6	0.0	2.5
Cycle Q Clear(g_c), s	3.1	7.8	7.8	3.5	8.4	8.4	0.6	0.0	2.6	3.6	0.0	2.5
Prop In Lane	1.00		0.09	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	495	513	176	516	528	46	0	176	180	0	295
V/C Ratio(X)	0.79	0.68	0.68	0.78	0.70	0.70	0.47	0.00	0.54	0.78	0.00	0.33
Avail Cap(c_a), veh/h	249	688	712	287	726	743	192	0	648	287	0	734
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	14.4	14.4	19.9	14.2	14.2	21.8	0.0	19.0	19.9	0.0	15.9
Incr Delay (d2), s/veh	8.5	1.7	1.6	7.4	1.7	1.7	7.3	0.0	2.6	7.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	4.0	4.1	2.1	4.3	4.4	0.4	0.0	1.2	2.1	0.0	1.1
LnGrp Delay(d),s/veh	28.8	16.0	16.0	27.4	15.9	15.9	29.1	0.0	21.6	27.1	0.0	16.5
LnGrp LOS	C	B	B	C	B	B	C		C	C		B
Approach Vol, veh/h		808			869			117			239	
Approach Delay, s/veh		17.9			17.7			23.0			22.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	9.7	9.1	17.5	5.7	13.2	8.5	18.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	19.0	7.5	18.0	5.0	21.5	6.5	19.0
Max Q Clear Time (g_c+I1), s	5.6	4.6	5.5	9.8	2.6	4.5	5.1	10.4
Green Ext Time (p_c), s	0.1	0.4	0.1	2.4	0.0	0.4	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Appendix C SIGNAL WARRANT



○ AM peak hour Major Street Volume, Minor Street Volume AM Peak (Minor St - 73; Major St - 1049)

● PM peak hour Major Street Volume, Minor Street Volume PM Peak (Minor St - 166; Major St - 1093)

▲ Note: These curves are recommended for use in community less than 10,000 population or above 40 MPH on Major Street.

★ Note: 100 VPH applies as the lower threshold volume for a minor–street approach with two or more lanes, and 75 VPH applies as the lower threshold volume for a minor–street approach with one lane.

Source: MUTCD – Figure 4C–4

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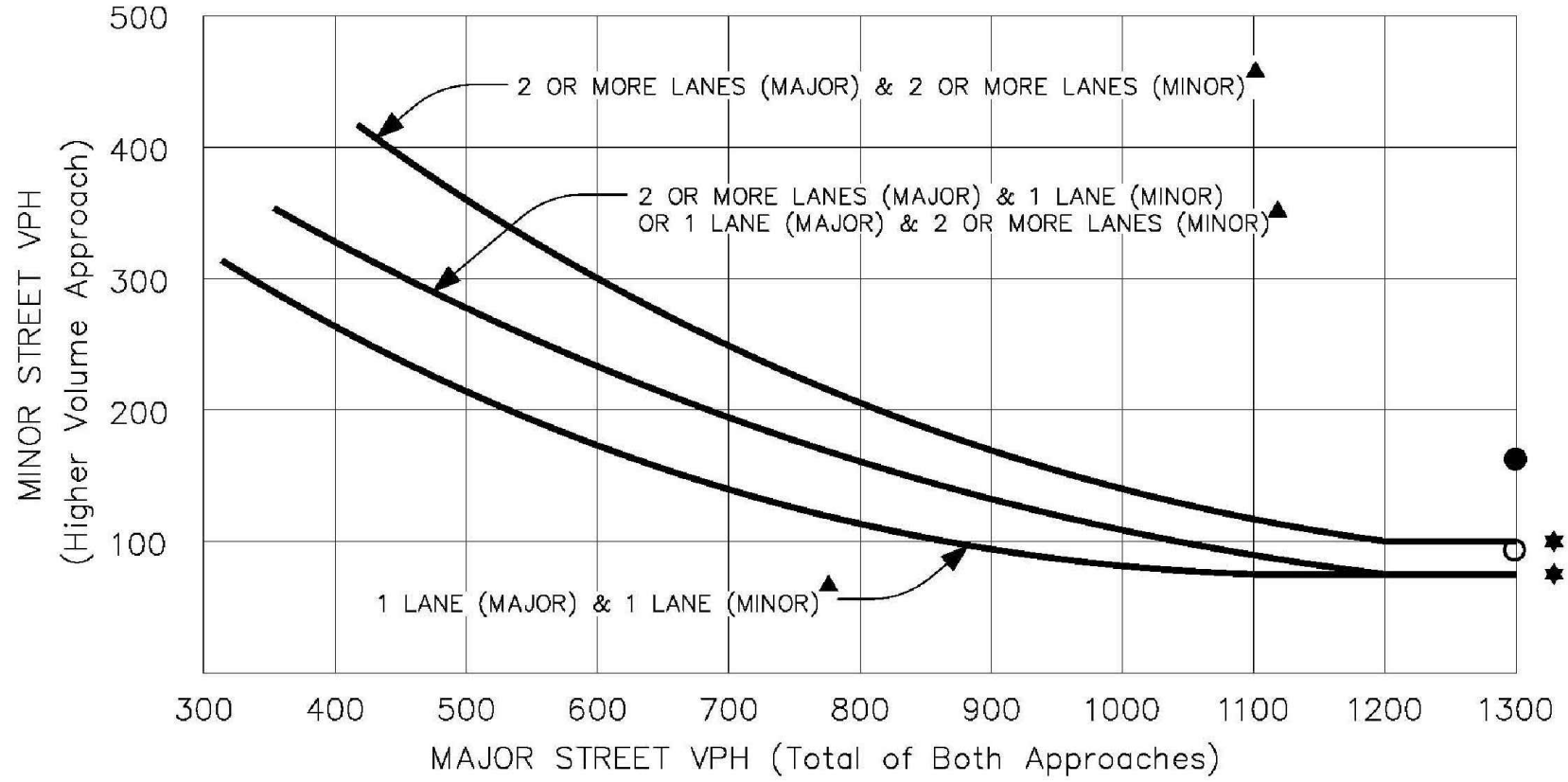
Figure C-1

Signal Warrant - Near-term Conditions



○ AM peak hour Major Street Volume, Minor Street Volume AM Peak (Minor St - 98; Major St - 1399)

● PM peak hour Major Street Volume, Minor Street Volume PM Peak (Minor St - 166; Major St - 1392)

▲ Note: These curves are recommended for use in community less than 10,000 population or above 40 MPH on Major Street.

✸ Note: 100 VPH applies as the lower threshold volume for a minor–street approach with two or more lanes, and 75 VPH applies as the lower threshold volume for a minor–street approach with one lane.

Source: MUTCD – Figure 4C–4

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Figure C-2

Signal Warrant - Cumulative Conditions