



Transportation Impact Analysis

Outside CEQA Evaluation

Project Address: 590 South Fair Oaks Avenue

Project Summary: The Department of Transportation received an application for the construction of a building with 79,800 sf medical office and 20,000 sf general office land uses with subterranean parking. Existing buildings on-site will be demolished.

**Applicant: 590 Fair Oaks Development, LLC
303 South Union Avenue
First Floor
Los Angeles, CA 90017**

**Attention: Luis Rocha, Zoning Administrator
City Planning Department**

October 30, 2020

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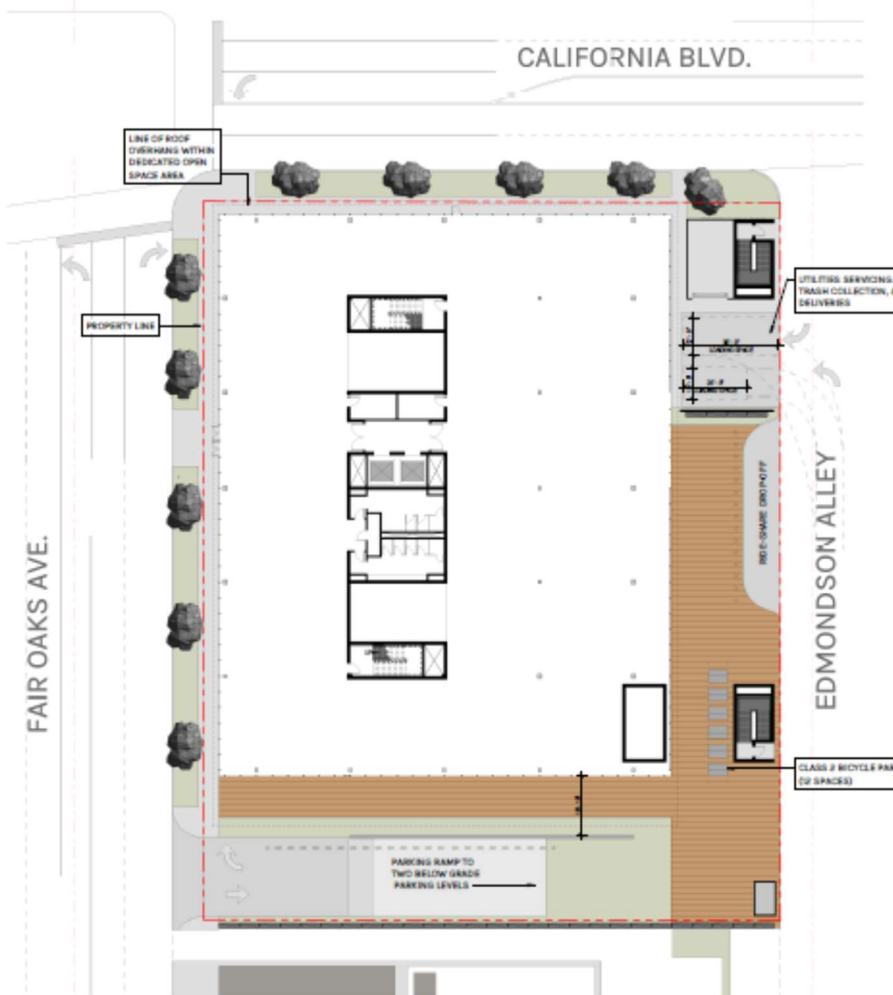
I. Study Objective

The Department of Transportation at its discretion may analyze performance metrics outside of CEQA for projects below community-wide significance caps of 50 units and/or 50,000 square feet of development. The analysis will assess the changes to intersection Levels of Service (LOS) and “Access and Connector-Neighborhood” Street Type segments adjacent to the project. The findings may result in imposing project approval conditions to better manage project trips and protect neighborhoods from the proposed development’s vehicular trips, if applicable.

II. Project Description

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of a new 99,800 sf building with approximately 79,800 sf medical office and 20,000 sf general office land uses with subterranean parking. Parking garage access is off of Fair Oaks Avenue.

Figure 1. Project Level 1 Floor Plan



III. Existing Transportation Network

Street System Classifications

Pasadena Avenue is a multi-lane northbound **City Connector** with on-street parking on both sides of the roadway. It is also classified as Commercial – Suburban in the City’s Street Design Guide.

Fair Oaks Avenue is a north/south **City Connector** with two through travel lanes in each direction and turn lanes at key intersections. It is also classified as Commercial – Urban between California Boulevard and Congress Street, Commercial – Suburban between Congress Street and Arlington Drive, and Commercial – Urban between Arlington Drive and Glenarm Street in the City’s Street Design Guide. Fair Oaks Avenue has a speed limit of 35 mph. Parking is restricted along the project frontage. Parking access is along Fair Oaks Avenue.

Edmondson Alley is a north/south alley that provides local access to various land uses. It is 20’ wide between California Boulevard and Pico Street.

Raymond Avenue is a **City Connector** between Del Mar Boulevard to Glenarm Street. Per the City’s Street Design Guide, Raymond Avenue is classified as a Commercial – Suburban between Bellevue Drive and Glenarm Street.

Arroyo Parkway is a north/south **City Connector** between Colorado Boulevard to the SR-110 freeway. South of Colorado Boulevard, this street is also designated as a multimodal corridor with two through travel lanes provided in each direction. Arroyo Parkway is not designated as a bike lane or route.

Del Mar Boulevard is an east/west **City Connector** that generally offers two lanes in each direction. Del Mar Boulevard is designated as a Class III Bike Route between Saint John Avenue and Wilson Avenue, and a Class III Enhanced Bike Route east of Wilson Avenue.

California Boulevard is an east/west roadway designated as a **City Connector**. One through travel lane is provided west of Orange Grove Boulevard, two travel lanes are provided east of Orange Grove Boulevard to Lake Avenue, and one through travel lane per direction is provided east of Lake Avenue. California Boulevard is posted for a 30 mph speed limit within the project study area. California Boulevard is designated as a Class III Bike Route between Marengo Avenue and Lake Avenue, and a Class III Enhanced Bike Route between Lake Avenue and Allen Avenue.

Glenarm Street is an east/west oriented roadway that is classified as an **Access Road** between Pasadena Avenue to Fair Oaks Avenue, a **City Connector** between Fair Oaks Avenue to Arroyo Parkway, and a **Neighborhood Connector** between Arroyo Parkway to El Molino Avenue. Glenarm Street is designated as a Class III Bike Route between

Pasadena Avenue and Marengo Avenue, and a Class II Bike Lane east of Marengo Avenue.

Figure 2 depicts the project in the City of Pasadena’s Adopted Streets Plan map. Street segment analyses are limited to “access” and “neighborhood connector” street types within a residential context.

Since the street segments surrounding the project are classified as City Connectors, and segment analyses are meant to analyze neighborhood connectors and access roads, street segments will not be analyzed in this report.

The analysis considered potential traffic changes along the following intersections:

Intersections:

- St. John Avenue at California Boulevard
- Pasadena Avenue at California Boulevard
- Fair Oaks Avenue at Del Mar Boulevard
- Fair Oaks Avenue at California Boulevard
- Fair Oaks Avenue at Glenarm Street
- Raymond Avenue at California Boulevard
- Arroyo Parkway at California Boulevard
- Raymond Avenue at Glenarm Street

Existing Transit Service

Public transit service within the project study area is currently provided by LA Metro and Pasadena Transit (PT). The locations of public transit stops near the project are summarized as follows:

Location	Route
Fair Oaks Ave at California Blvd – Northeast side	PT 20; Metro 260, 762
Fair Oaks Ave at California Blvd – Southwest corner	PT 20, 51; Metro 260, 686, 687, 762
Fair Oaks Ave at California Blvd – Southeast corner – Northwest corner	Metro 256
Fair Oaks Ave at Congress St – Northeast side	PT 20; Metro 260
Fair Oaks Ave at Bellefontaine St – Northeast corner	PT 20; Metro 260
Fair Oaks Ave at Bellefontaine St – Southwest corner	PT 20, 51; Metro 260, 686, 687
Raymond Ave at Fillmore St – Northeast corner	PT 51,52; Metro 686, 687

I. Transportation Analysis Methodology

With the City of Pasadena General Plan, the City's guiding principles cumulatively represent the community's vision for the future:

- Growth will be targeted to serve community needs and enhance quality of life.
- New construction that could affect the integrity of historic resources will be compatible with, and differentiated from, the existing historic resource.
- Economic vitality will be promoted to provide jobs, services, revenues, and opportunities.
- Pasadena will be a socially, economically, and environmentally sustainable community.
- Pasadena will be a city where people can circulate without cars.
- Pasadena will be promoted as a cultural, scientific, corporate, entertainment, and educational center for the region.
- Community participation will be a permanent part of achieving a greater city.
- Pasadena is committed to public education and a diverse educational system responsive to the broad needs of the community.

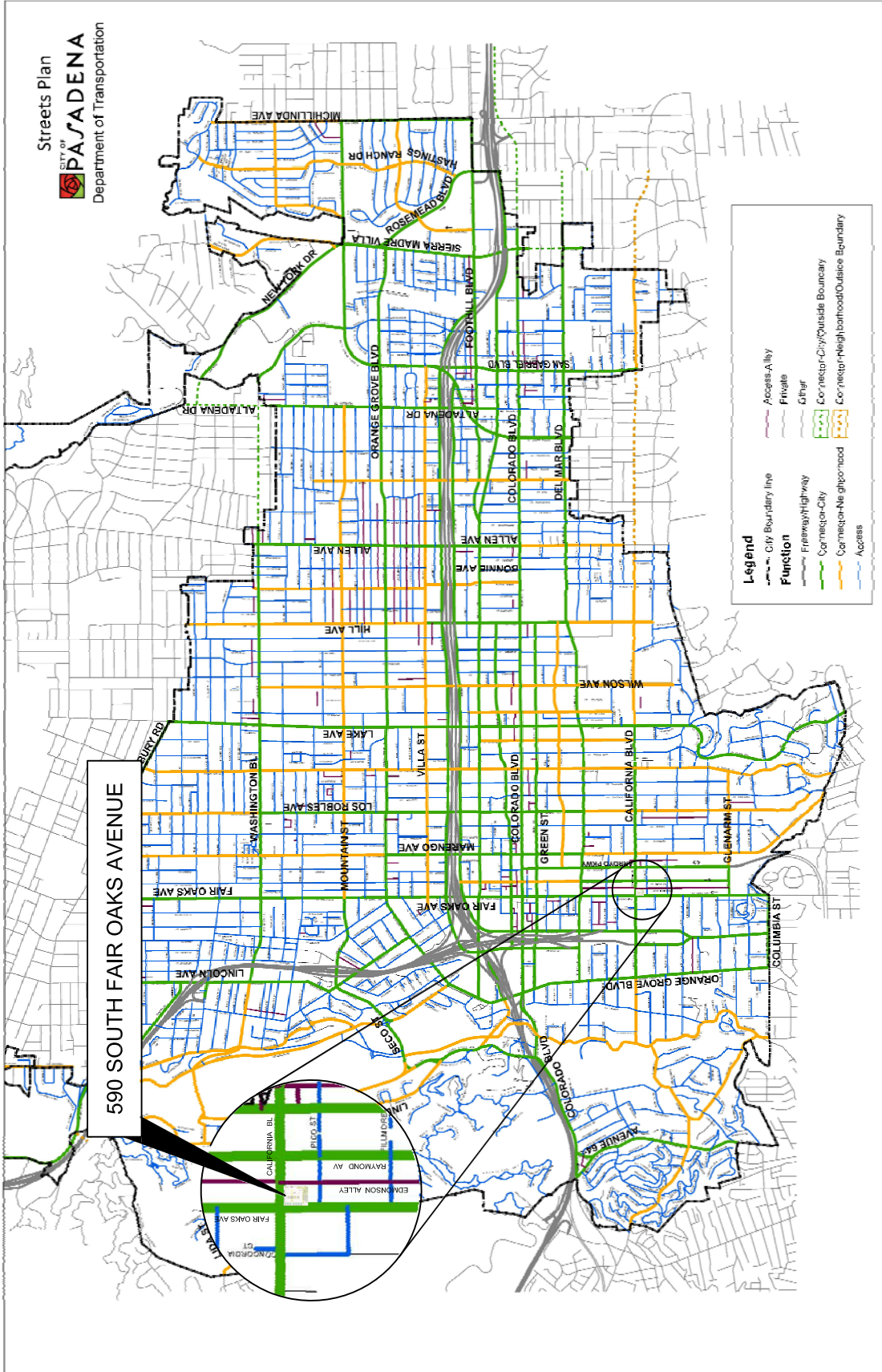
Understanding the goals and objectives of the General Plan, the Pasadena Department of Transportation sets forth goals and policies to improve overall transportation in Pasadena and create "a community where people can circulate without cars." Inherent in this vision statement is to accommodate different modes of transportation including vehicle, pedestrian, bicycle, and transit. The analysis is based on City Transportation Impact Analysis Guidelines. This report will assess accessibility of these different modes of travel and the project's transportation impacts using the City's adopted transportation performance measures.

Analysis Criteria - Transportation Performance Measures

The Department's defined criteria and categories when determining the level of transportation impact of projects fall under three categories based on project size and community-wide significance.

- Exempt projects have 10 residential units or less, are 10,000 sf or less, or generate less than 300 daily trips if less than 10,000 sf.
- Category 1 Projects considered below community-wide significance are between 11-49 residential units, or 10,001 to 49,999 sf.
- Category 2 Projects classified as having community-wide significance have 50 or more residential units, or are 50,000 sf or more.

Pasadena Department of Transportation's mobility performance measures assess the quality of walking, biking, transit, and vehicular travel in the City. A combination of



NO SCALE

FIGURE 2
 CITY OF PASADENA ADOPTED STREET TYPES
 590 SOUTH FAIR OAKS AVENUE

vehicular and multimodal performance measures are employed to evaluate system performance in reviewing new development impacts.

The following table summarizes the City’s Metrics Cap Outside of CEQA for projects below “communitywide significance:”

Table 1. City of Pasadena Metrics Cap

METRIC	DESCRIPTION	CAP*
1. Street Segment Analysis	The street segment analysis assesses traffic intrusion on local streets in residential neighborhoods	Increases of 10-15% above existing on streets with more than 1,500 ADT would trigger conditions of approval to reduce project vehicular trips
2. Auto Level of Service	Level of Service (LOS) as defined by the Transportation Research Board's <i>Highway Capacity Manual (HCM) 2010</i> .	A decrease beyond LOS D Citywide or LOS E within Transit Oriented Districts (TODs) would trigger conditions of approval to reduce project vehicular trips
3. PEQI	Pedestrian Environmental Quality Index	Below average conditions
4. BEQI	Bicycle Environmental Quality Index	Below average conditions

*The adopted caps are not intended to be the absolute limits, but rather limits/ranges when exceeded may require additional project approval conditions.

Caps for Determining Project Street Segment Changes

Specific caps have been established to determine whether there would be any potential project changes along neighborhood street segments by project traffic. A conservative approach is taken when calculating the traffic growth by basing the calculation on the increase relative to existing traffic volumes as follows:

$$\text{Percentage of Increase} = \frac{\text{net new project trips}}{\text{existing daily traffic}}$$

The daily traffic growth caps for determining the level of street segment transportation changes are summarized as follows:

Table 2. Street Segment Caps

Existing ADT	Project-Related Vehicular Increase in ADT
0 to 1,500 average daily trips	150 trips or more
1,501 to 3,499 average daily trips	10 percent or more of final project ADT
3,500 or more	8 percent or more of final project ADT

If project-related net trips exceed the caps in the table above, conditions of approval would require the project applicant to implement measures to discourage neighborhood intrusion by project related traffic. If the project traffic increases fall below the street segment caps, additional analyses are not required.

Caps for Determining Intersection Changes

Proposed development projects that meet or exceed the caps will be evaluated using the Highway Capacity Manual (HCM) Level of Service (LOS) analysis criteria at study intersections. This methodology determines an intersection’s level of service by calculating delay. LOS descriptions are summarized in Table 3.

Table 3. LOS Capacity Criteria

HIGHWAY CAPACITY LEVEL OF SERVICE CRITERIA		
LOS	DESCRIPTION	DELAY (s)
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0

E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor (vehicle) progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0
Source: 2010 Highway Capacity Manual.		

Intersection LOS analysis using HCM criteria will be conducted for peak hour conditions. LOS caps are summarized in the following table:

Table 4: Intersection Level of Service Caps

Study Intersections	Existing + Project LOS Cap
Citywide	D
Transit Oriented District (TOD)	E

Where the evaluated intersections exceed the LOS caps, conditions of approval will be recommended consistent with the City’s guiding principles to encourage walking, biking, and transit to and from the project site to reduce project-related vehicular trips.

Pedestrian and Bicycle Environmental Quality Index Discussion

The Pedestrian Environmental Quality Index (PEQI) and Bicycle Environmental Quality Index (BEQI) is a quantitative, observational instrument used to describe and summarize the street and intersection environmental factors known to affect people’s travel behaviors. The PEQI and BEQI consists of factors associated with pedestrian and bicycle environmental quality and safety, classified into five categories; Intersection Safety, Traffic, Street Design, Land Use and Perceived Safety.

Data is primarily collected through an observational survey. Indicator scores for each indicator category are based on a survey of national experts, including City, transportation planners and consultants regarding the importance of each indicator to pedestrian and bicycle environmental quality. The scores reflect the degree to which environmental factors supportive of walking, biking, and safety have been incorporated into street segment and intersection design. The PEQI and BEQI analysis result in a score for street segments and intersections on a scale ranging between 0-100 as outlined below.

Score	Description
81-100	Highest quality, many important pedestrian/bicycle conditions present
61-80	High quality, some important pedestrian/bicycle conditions present
41-60	Average quality, pedestrian/bicycle conditions present but room for improvement
21-40	Low quality, minimal pedestrian/bicycle conditions
20 and below	Poor quality, pedestrian/bicycle conditions absent

II. Transportation Analysis

Project Trip Generation

The industry standard procedure to determine the number of daily and peak hour trips a project would generate is based on published trip generation estimates from the ITE Trip Generation manual and is summarized in the following table:

Table 5. Trip Generation

Trip Generation Rates (proposed)											
Proposed Use	Land Use Code	Amount	Units	Measure	Daily	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
General Office Building	710	20,000	SF	1000	9.74	1.00	0.16	1.16	0.18	0.97	1.15
Medical-Dental Office Building	720	79,800	SF	1000	34.8	2.17	0.61	2.78	0.97	2.49	3.46
Volumes											
Proposed Use	Daily	AM Peak Hour			PM Peak Hour						
		In	Out	Total	In	Out	Total				
General Office Building	195	20	3	23	4	19	23				
Medical-Dental Office Building	2777	173	49	222	77	199	276				
Total Project Trips	2972	193	52	245	81	218	299				
Walk-In	10%	297	19	5	25	8	22	30			
Transit Trips	10%	297	19	5	25	8	22	30			
Net Project Vehicle Trips		2378	155	42	195	65	174	239			
Net total (proposed minus existing trips)					2,378	155	42	195	65	174	239

In summary, it is estimated that the project would generate 2,378 net daily trip, 195 AM and 239 PM peak hour project trips.

Street Segment Analysis

Since the street segments surrounding the project are classified as City Connectors, and the project traffic is expected to primarily utilize those segments to access the project, street segments will not be analyzed in this report.

Intersection Level of Service (LOS) Analysis

Figure 3 describes the project trip distribution and project traffic intersection volumes on the street network. Figure 4 indicates that the project is in the City's Transit Oriented District. Therefore, the Existing + Project LOS cap for intersections is "LOS E". The calculated LOS results are summarized in the following table:

Table 6. Signalized Intersection LOS Summary

Intersection	Peak Hour	Existing		Existing w/ Project		Exceeds LOS Cap?
		Delay	LOS	Delay	LOS	Yes/No
St. John Avenue at California Boulevard	AM	17.1	B	17.5	B	No
	PM	44.8	D	51.6	D	No
Pasadena Avenue at California Boulevard	AM	21.3	C	22.9	C	No
	PM	22.8	C	25.0	C	No
Fair Oaks Avenue at Del Mar Boulevard	AM	32.9	C	33.4	C	No
	PM	40.5	D	41.7	D	No
Fair Oaks Avenue at California Boulevard	AM	30.8	C	30.9	C	No
	PM	24.3	C	26.2	C	No
Fair Oaks Avenue at Glenarm Street	AM	30.5	C	34.7	C	No
	PM	51.2	D	54.4	D	No
Raymond Avenue at California Boulevard	AM	16.8	B	16.9	B	No
	PM	23.5	C	24.1	C	No
Arroyo Parkway at California Boulevard	AM	54.1	D	54.5	D	No
	PM	66.5	E	66.9	E	No
Raymond Avenue at Glenarm Street	AM	5.1	A	5.2	A	No
	PM	7.3	A	7.7	A	No

PEQI/BEQI Analysis

An observational survey was conducted along Fair Oaks Avenue between California Boulevard and Pico Street and along California Boulevard between Fair Oaks Avenue and Edmondson Alley to document existing pedestrian and bicycle quality conditions. Vehicle traffic features (i.e., number of lanes, vehicle speed, etc.) as well as street quality features (i.e., sidewalk widths and impediments, driveway cuts, land use characteristics, etc.) were collected on both sides of the street.

Environmental quality of non-vehicular modes must be improved when the assessment of project study segments reveal less than average conditions. According to the PEQI and BEQI indicator and indicator category scores, Table 7 summarizes the scores:

EXISTING TRAFFIC VOLUMES

1 ST JOHN AV/CALIFORNIA BL	2 PASADENA AV/CALIFORNIA BL	3 FAIR OAKS AV/DEL MAR BL	4 FAIR OAKS AV/CALIFORNIA BL
<p>143/277 1139/1317 630/647</p> <p>164/333 24/64</p> <p>472/372 70/39</p>	<p>448/485 233/302</p> <p>349/263 861/782</p> <p>13/15 60/72</p> <p>1645/1948</p>	<p>47/48 733/812 106/124</p> <p>26/70 689/573 74/111</p> <p>21/51 481/515 352/215</p> <p>50/81 444/519 281/250</p>	<p>114/86 561/503 236/173</p> <p>140/152 748/692 64/128</p> <p>50/81 444/519 281/250</p>
5 FAIR OAKS AV/GLENARM ST	6 RAYMOND AV/CALIFORNIA BL	7 ARROYO PKWY/CALIFORNIA BL	8 RAYMOND AV/GLENARM ST
<p>11/17 122/228 718/945</p> <p>141/76 167/183 97/198</p> <p>69/64 216/199</p> <p>18/16 167/237 28/35</p>	<p>54/62 219/213 34/15</p> <p>176/159 641/597 87/56</p> <p>30/39 390/645 68/49</p> <p>45/134 170/290 30/72</p>	<p>34/73 890/735 477/474</p> <p>35/85 510/751 35/40</p> <p>41/77 445/851 98/191</p> <p>135/78 285/468</p>	<p>208/112 296/287</p> <p>109/416 65/153</p> <p>135/78 285/468</p>

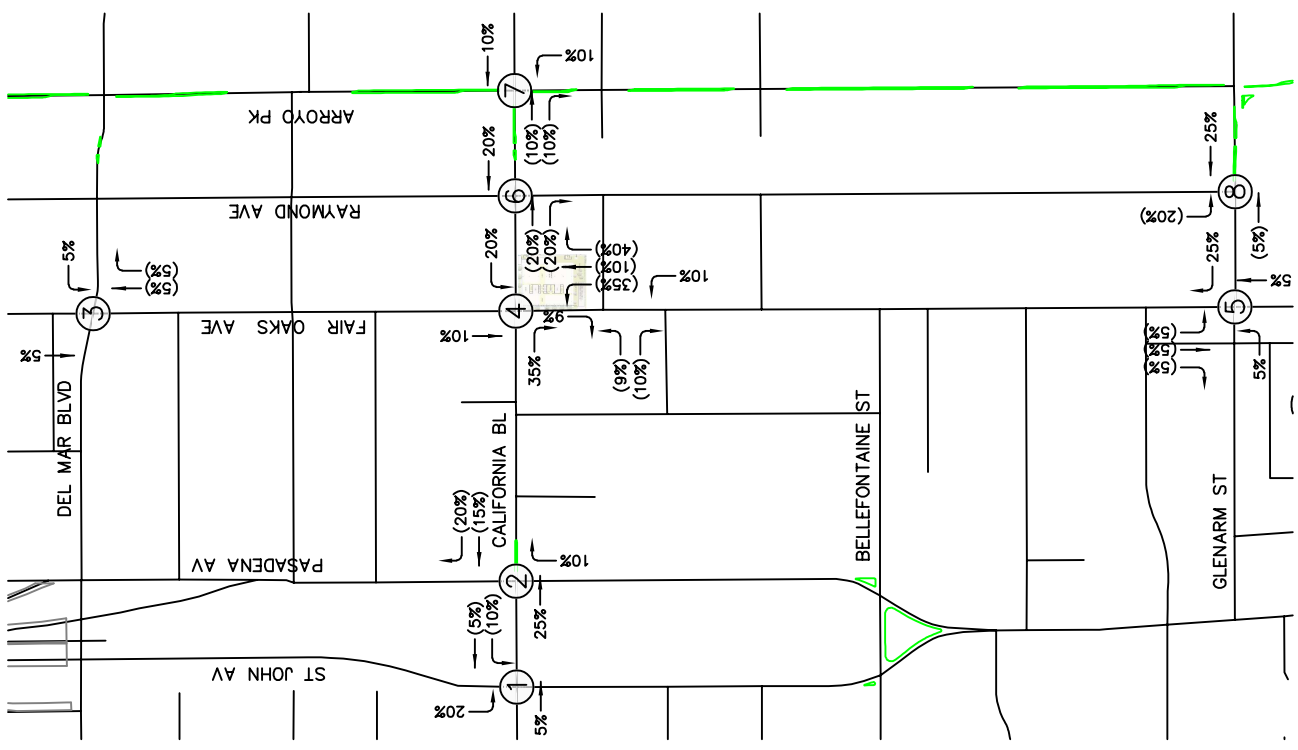
EXISTING PLUS PROJECT TRAFFIC VOLUMES

1 ST JOHN AV/CALIFORNIA BL	2 PASADENA AV/CALIFORNIA BL	3 FAIR OAKS AV/DEL MAR BL	4 FAIR OAKS AV/CALIFORNIA BL
<p>143/277 1139/1317 661/660</p> <p>166/342 28/82</p> <p>480/375 70/39</p>	<p>456/520 239/328</p> <p>349/263 900/798</p> <p>13/15 1645/1948 76/79</p>	<p>47/48 733/812 114/127</p> <p>26/70 697/576 74/111</p> <p>21/51 481/515 352/215</p> <p>50/81 444/519 335/273</p>	<p>114/86 561/503 267/186</p> <p>155/212 752/709 81/198</p> <p>50/81 444/519 335/273</p>
5 FAIR OAKS AV/GLENARM ST	6 RAYMOND AV/CALIFORNIA BL	7 ARROYO PKWY/CALIFORNIA BL	8 RAYMOND AV/GLENARM ST
<p>14/26 125/954 720/954</p> <p>179/92 167/183 97/198</p> <p>69/64 216/199</p> <p>26/20 167/237 28/35</p>	<p>54/62 219/213 34/15</p> <p>176/159 672/610 87/56</p> <p>30/39 398/680 77/84</p> <p>45/134 170/290 30/72</p>	<p>34/73 905/742 477/474</p> <p>35/85 510/751 35/40</p> <p>41/77 449/868 102/209</p> <p>135/78 288/477</p>	<p>208/112 307/330</p> <p>117/450 65/153</p> <p>135/78 288/477</p>

LEGEND

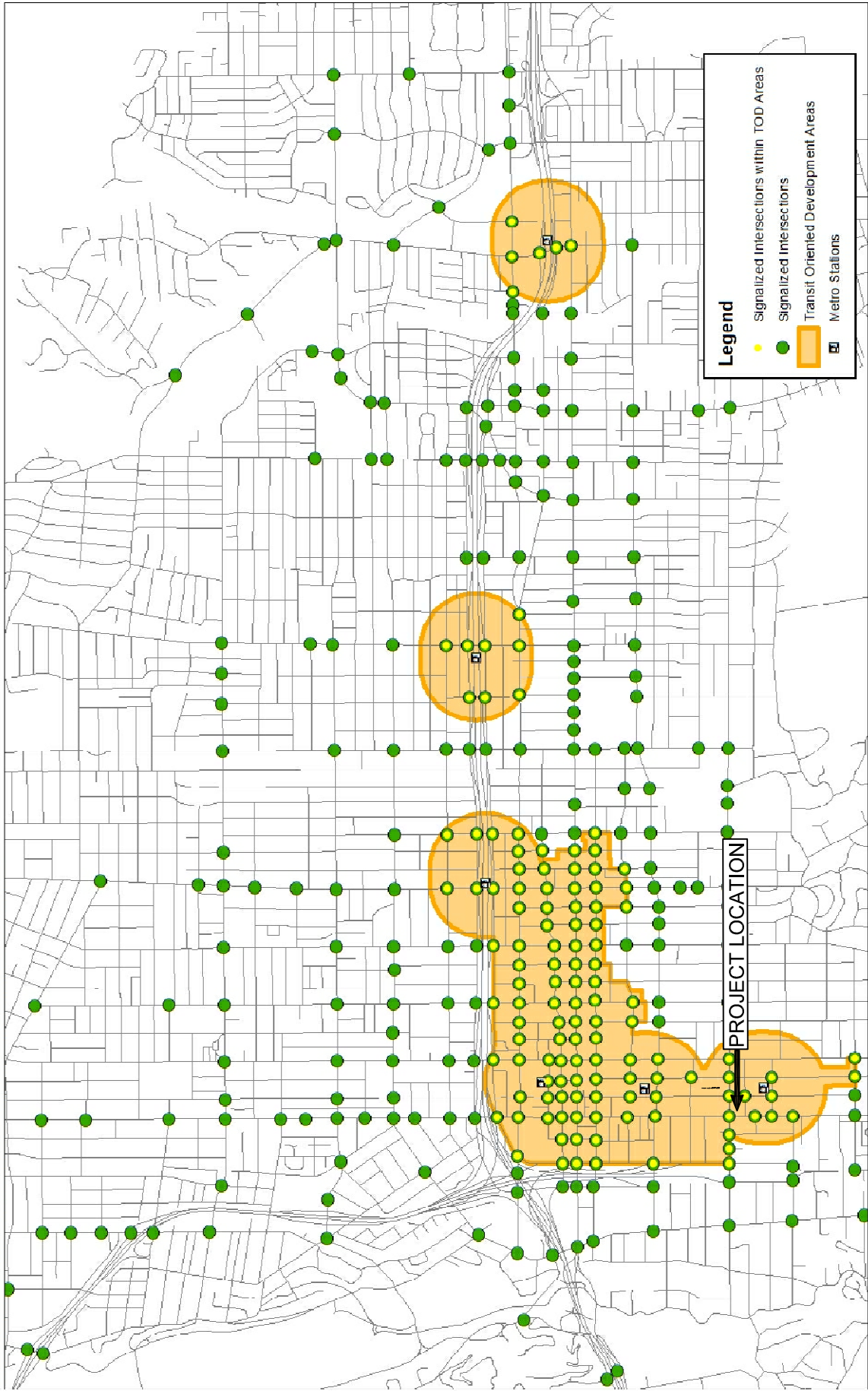
XX(YY) AM/PM PEAK HOUR TRAFFIC VOLUMES

FIGURE 3 PROJECT TRIP DISTRIBUTION AND TRAFFIC VOLUMES 590 SOUTH FAIR OAKS AVENUE



NO SCALE

Pasadena Proposed Transportation Performance Measures



NO SCALE

FIGURE 4
CITY OF PASADENA ADOPTED TRANSIT ORIENTED DEVELOPMENT AREA
590 SOUTH FAIR OAKS AVE

Table 7. PEQI/BEQI Summary

Segment	PEQI Score	BEQI Score
Fair Oaks Avenue between California Boulevard and Pico Street		
- West side	50 – Average	29 – Low
- East side	47 – Average	29 – Low
California Boulevard between Fair Oaks Avenue and Edmondson Alley		
- North side	48 – Average	28 – Low
- South side	46 – Average	28 – Low

PEQI and BEQI calculations are found in the appendix of this report.

III. Conclusion

The City of Pasadena Department of Transportation conducted an analysis to review potential transportation impacts related to the construction of a new building with 79,800 sf medical office and 20,000 sf general office land uses with subterranean parking. Driveway access is off of Fair Oaks Avenue.

Since the street segments surrounding the project are classified as City Connectors, and segment analyses are expected to primarily utilize those segments to access the project, street segments was not analyzed in this report.

No intersections exceed the adopted caps. The calculated PEQI and BEQI scores determined that existing pedestrian conditions are average and low, respectively.

IV. Appendices

Appendix:
Memorandum of Understanding



PLAN 2020 - 00136
CUP# 6831

PLANNING DIVISION MASTER APPLICATION FORM

Project Address: 590 FAIR OAKS AVENUE, PASADENA, CA 91105

Project Name: 590 FAIR OAKS AVENUE MEDICAL OFFICE BUILDING

Project Description: (Please describe demolitions, alterations and any new construction)
NEW 99,800 SQUARE FOOT OFFICE BUILDING OF WHICH NOT MORE THAN 79,800 SQUARE FEET DEDICATED TO IN-PERSON PATIENT SERVING MEDICAL USES, IN ADDITION THE PROJECT WILL HAVE TWO LEVELS OF UNDERGROUND PARKING AND SITE IMPROVEMENTS INCLUDING SIDEWALKS AND IMPROVEMENTS TO THE ADJACENT EDMONSON ALLEY. THE PROGRAM WILL INCLUDE A TRANSPORTATION DEMAND MANAGEMENT PROGRAM APPROVED BY THE CITY.

Zoning Designation: IG (INDUSTRY, GENERAL) General Plan Designation: SP-2 (SOUTH FAIR OAKS SPECIFIC PLAN)

Valuation (Cost of Project):

APPLICANT / OWNER INFORMATION

APPLICANT NAME: 590 Fair Oaks Development, LLC

Address: 303 South Union Ave., First Floor

City Los Angeles, State: CA Zip: 90017

CONTACT PERSON: Richard Bruckner

Address: 1110 S 9th Ave.

City Arcadia State: CA Zip: 91004

PROPERTY OWNER NAME: Genesis FO Partners LLC

Address: 303 South Union Ave., First Floor

City Los Angeles, State: CA Zip: 90017

Telephone: 213] 550.7200

Fax: 213] 481.0014

Email: mohammed@mjislam.com

Telephone: [626] 701.7911

Fax: []

Email: rbruckner5354@gmail.com

Telephone: 213] 550.7200

Fax: 213] 481.0114

Email: mohammed@mjislam.com

TYPE OF PLANNING REVIEW AND APPROVALS REQUIRED (Mark clearly the type of approval(s) required):

Table with 3 columns of planning review types and checkboxes. Checked items include: PREDEVELOPMENT PLAN REVIEW, CONDITIONAL USE PERMIT, DESIGN REVIEW, MASTER SIGN PLAN, and ZONE CHANGE (MAP AMENDMENT).

Note: Space for signature is on reverse side

Appendix:
Traffic Volumes

STREET	SEGMENT	2017	2018	2019
Fair Oaks	Green to Del Mar	30,921	30,270	26,848
	Del Mar to California	39,701	44,884	31,602
	California to Glenarm	41,325	48,056	43,130
	Glenarm to Columbia	44,852	50,031	51,147
Raymond	Green to Del Mar	12,784	9,864	13,869
	Del Mar to California	11,185	8,932	13,859
	California to Filmore	10,714	8,533	13,700
	Filmore to Glenarm	10,453	7,429	12,981
Arroyo Parkway	Green to Cordova	19,904	18,649	16,423
	Cordova to Del Mar	23,859	21,348	20,545
	Del Mar to California	25,199	21,365	23,621
	California to Filmore	37,120	27,933	37,564
	Filmore to Glenarm	36,569	26,718	33,564
	South of Glenarm	51,112	40,214	45,202
Marengo	Green to Cordova	13,756	12,520	13,787
	Cordova to Del Mar	10,751	9,760	13,071
	Del Mar to California	12,062	9,656	13,475
	California to Filmore	12,395	9,756	13,369
Del Mar	Pasadena to Fair Oaks	18,506	17,303	20,441
	Fair Oaks to Raymond	19,727	20,172	20,436
	Raymond to Arroyo Pkwy	18,116	18,724	20,908
	Arroyo Pkwy to Marengo	17,096	17,664	20,061
	Marengo to Euclid	17,361	18,201	20,442
California	Orange Grove to St John	14,663	10,351	14,968
	St John to Pasadena	16,095	12,565	18,777
	Pasadena to Fair Oaks	18,058	16,863	21,661
	Fair Oaks to Raymond	19,263	18,572	20,265
	Raymond to Arroyo Pkwy	18,478	18,240	22,246
	Arroyo Pkwy to Marengo	20,235	21,204	26,564
	Marengo to Euclid	20,170	20,332	26,503
Pasadena	Bellefontaine to California	19,750	19,024	24,573
	California to Del Mar	24,628	24,402	29,927
St John	North of California	22,921	26,967	31,329
	California to Bellefontaine	13,005	14,456	19,668
Cordova	Arroyo Pkwy to Marengo	9,533	8,364	7,939
Glenarm	Pasadena to Fair Oaks	8,094	5,630	7,216
	Fair Oaks to Raymond	19,404	18,440	19,076
	Raymond to Arroyo	15,767	15,621	17,816
	Arroyo to Marengo	17,972	18,536	21,306

Peak Hour Data for Intersection

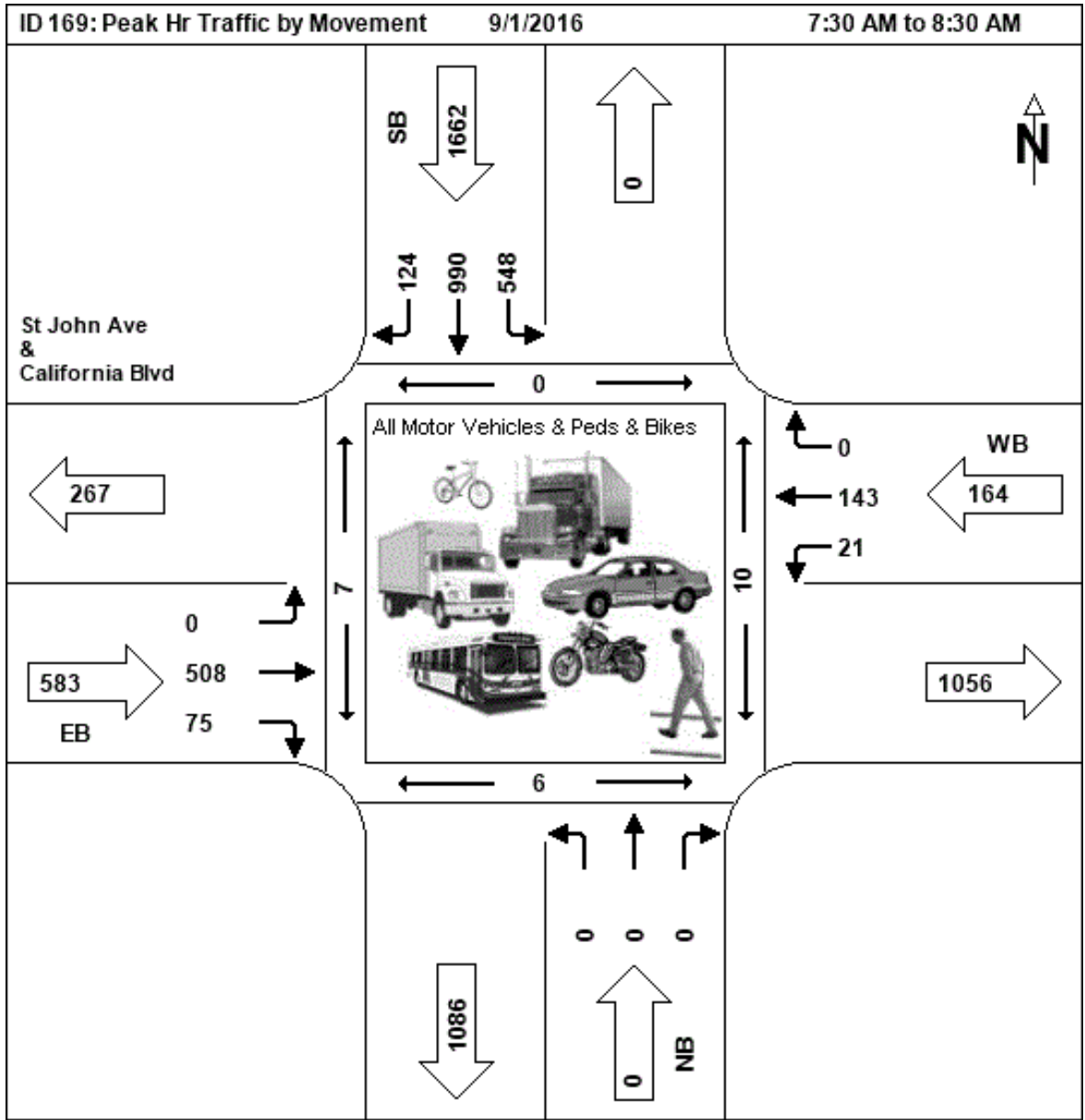
Int ID: 169
 Community: Pasadena
 Road 1: St John Ave
 Road 2: California Blvd
 Corridor: NA
 Road 3:
 Road 4:

|<< < > >>| 1-5 of 5

AM Peak Hour
 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
7:30 AM	0	0	0	2	0	0	114	20	2	134	106	250	27	2	383	4	37	0	0	41	558
7:45 AM	0	0	0	1	0	0	134	23	0	157	144	262	22	0	428	6	36	0	0	42	627
8:00 AM	0	0	0	4	0	0	161	19	3	180	143	244	37	1	424	7	24	0	0	31	635
8:15 AM	0	0	0	3	0	0	99	13	1	112	155	234	38	4	427	4	46	0	0	50	589
Total	0	0	0	10	0	0	508	75	6	583	548	990	124	7	1662	21	143	0	0	164	2409
PHF						0.79 0.82					0.81 0.88 0.94 0.82					0.97 0.75 0.78					0.82
HV %						0 0					0 0 0					0 0					

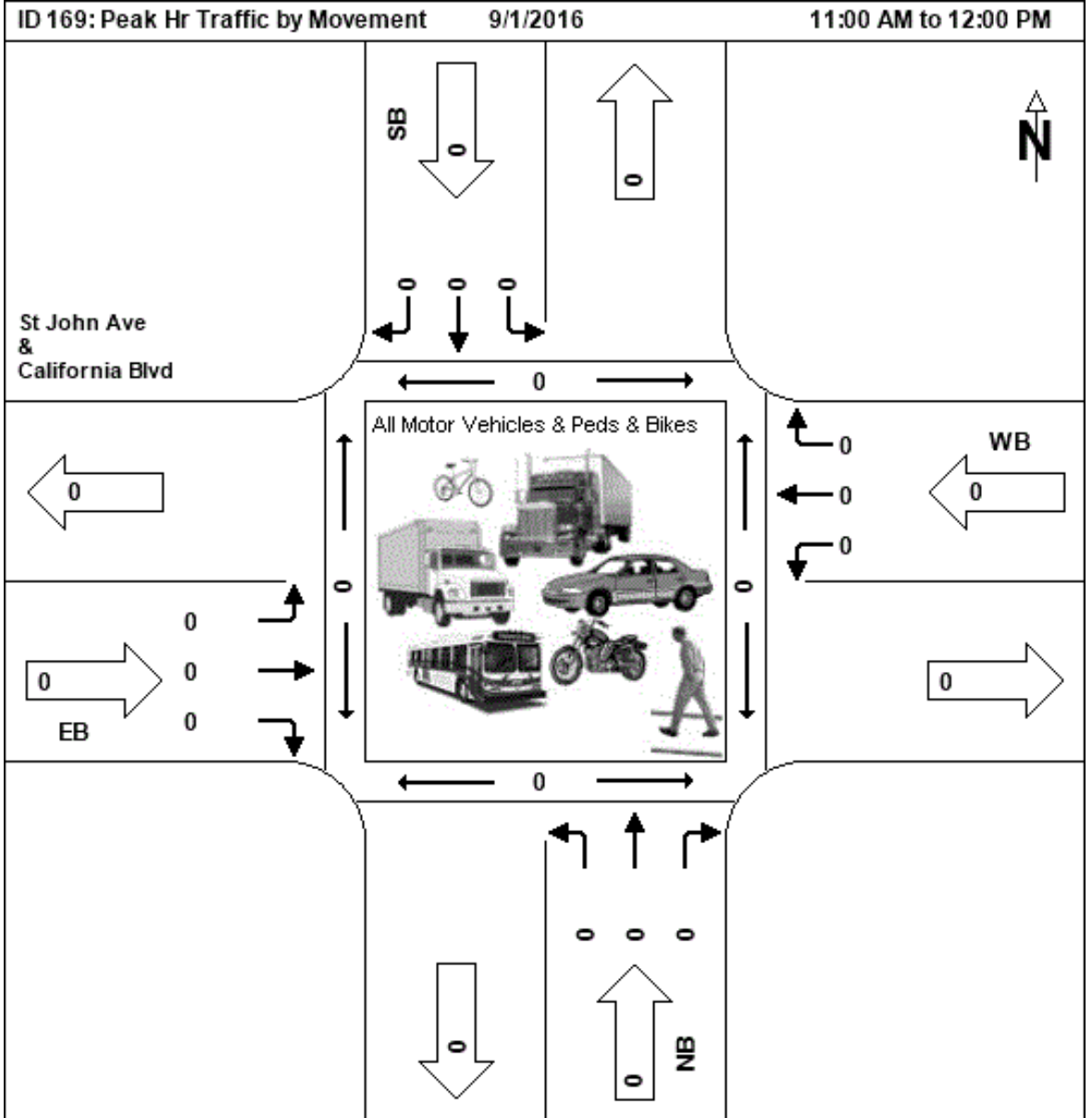
Cars Trucks Pedestrians Bikes



Midday Peak Hour 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF																					
HV %																					

- Cars
 Trucks
 Pedestrians
 Bikes



PM Peak Hour 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
5:15 PM	0	0	0	6	0	0	98	10	2	108	138	299	62	2	499	10	77	0	0	87	694
5:30 PM	0	0	0	0	0	0	101	8	0	109	137	307	52	0	496	13	72	0	0	85	690
5:45 PM	0	0	0	6	0	0	104	17	0	121	145	274	64	2	483	17	74	0	0	91	695
6:00 PM	0	0	0	2	0	0	97	7	0	104	143	265	63	0	471	16	67	0	0	83	658
Total	0	0	0	14	0	0	400	42	2	442	563	1145	241	4	1949	56	290	0	0	346	2737

PHF
HV %

0.96 0.62
0 0

0.91 0.97 0.93 0.94
0 0 0

0.98 0.82 0.94
0 0

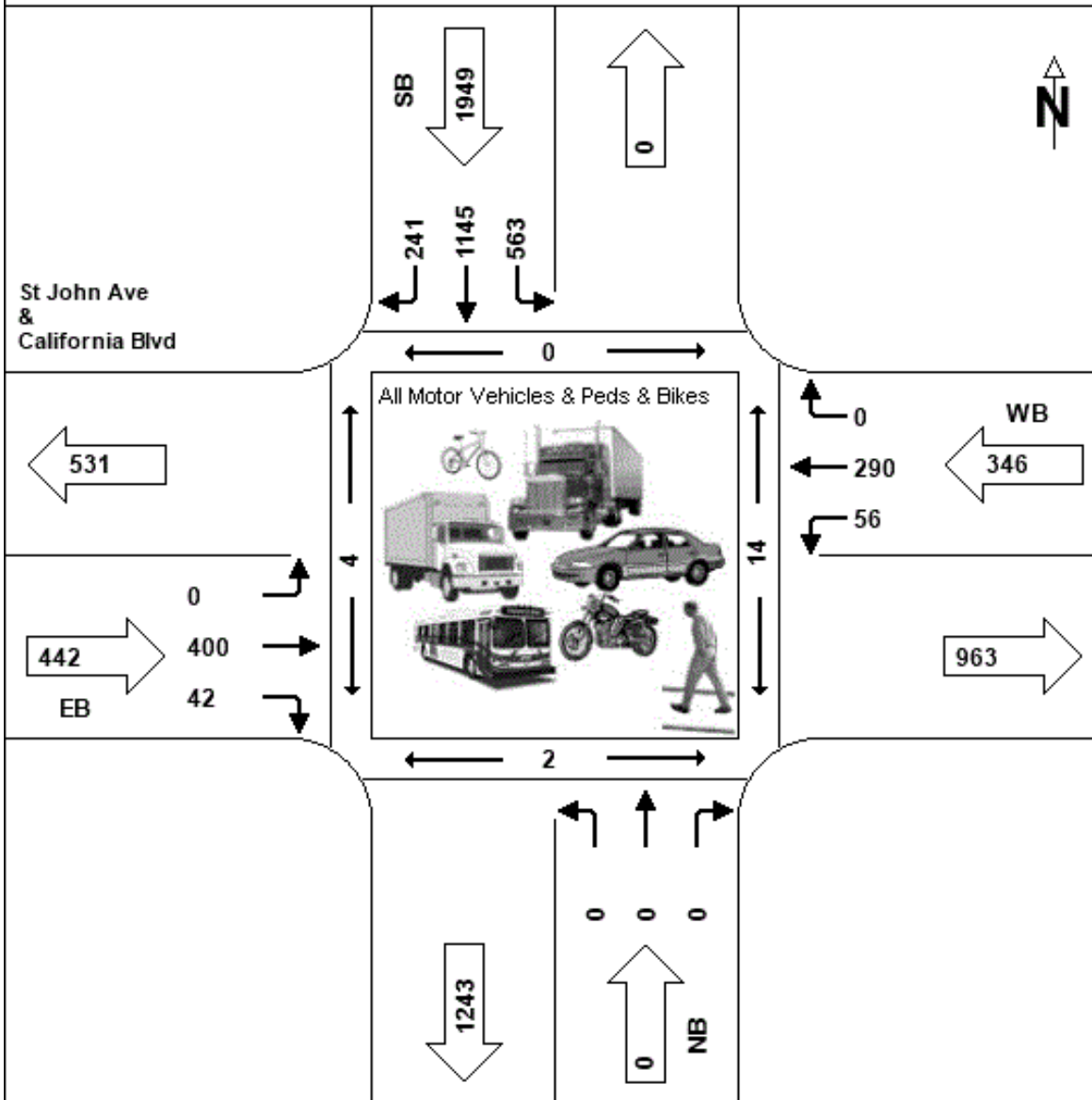
0.95

Cars Trucks Pedestrians Bikes

ID 169: Peak Hr Traffic by Movement

9/1/2016

5:15 PM to 6:15 PM



Peak Hour Data for Intersection

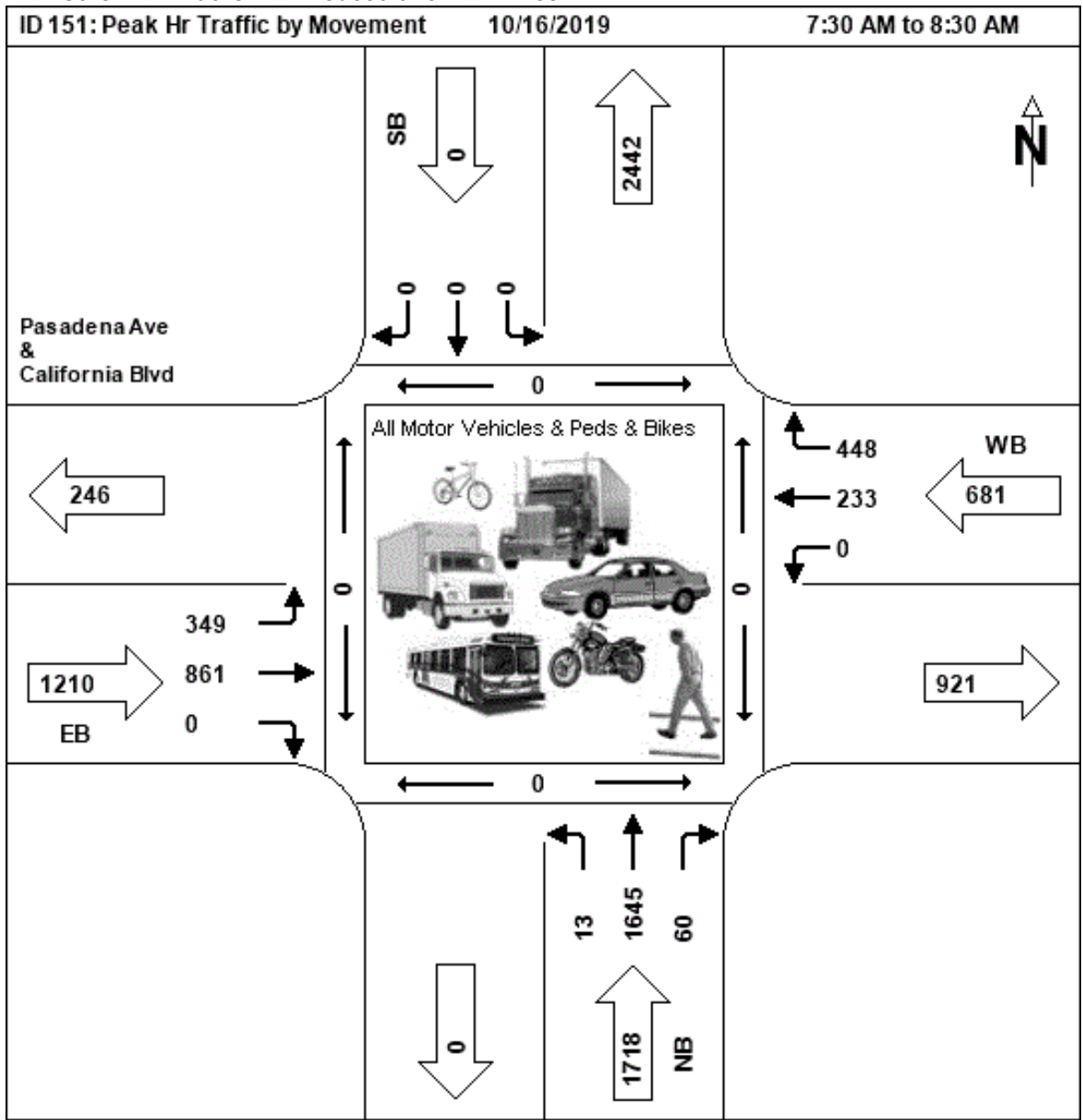
Int ID: 151
 Community: Pasadena
 Road 1: Pasadena Ave
 Road 2: California Blvd
 Corridor: NA
 Road 3:
 Road 4:

|<< < > >>| 1-5 of 5

AM Peak Hour
 10/16/2019

Start Time	NB				App Total	EB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
7:30 AM	4	460	17	0	481	76	220	0	0	296	0	68	124	0	192	969
7:45 AM	2	421	11	0	434	81	255	0	0	336	0	55	130	0	185	955
8:00 AM	4	372	16	0	392	95	202	0	0	297	0	54	112	0	166	855
8:15 AM	3	392	16	0	411	97	184	0	0	281	0	56	82	0	138	830
Total	13	1645	60	0	1718	349	861	0	0	1210	0	233	448	0	681	3609
PHF	0.81	0.89	0.88		0.89	0.90	0.84			0.90	0.86	0.86			0.89	
HV %	0	0	0			0	0				0	0				

Cars Trucks Pedestrians Bikes



**PM Peak Hour
10/16/2019**

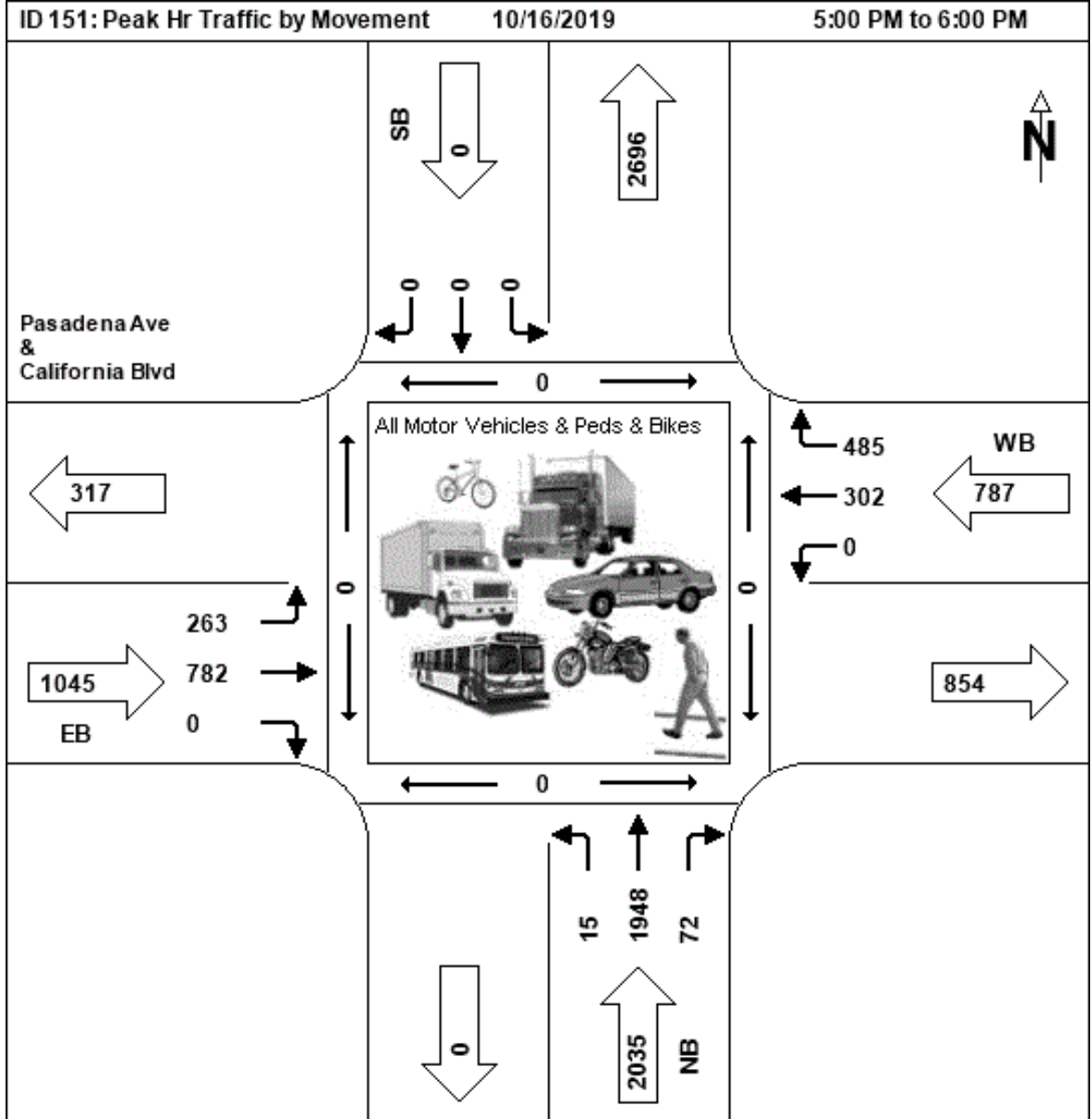
NB

EB

WB

Start Time	NB				App Total	EB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
5:00 PM	3	495	21	0	519	70	202	0	0	272	0	75	130	0	205	996
5:15 PM	5	486	14	0	505	59	180	0	0	239	0	82	125	0	207	951
5:30 PM	3	481	16	0	500	71	198	0	0	269	0	68	117	0	185	954
5:45 PM	4	486	21	0	511	63	202	0	0	265	0	77	113	0	190	966
Total	15	1948	72	0	2035	263	782	0	0	1045	0	302	485	0	787	3867
PHF	0.75	0.98	0.86		0.98	0.93	0.97			0.96		0.92	0.93		0.95	
HV %	0	0	0			0	0					0	0			

Cars Trucks Pedestrians Bikes



Peak Hour Data for Intersection

Int ID: 183
 Community: Pasadena
 Road 1: Fair Oaks Avenue
 Road 2: Del Mar Boulevard

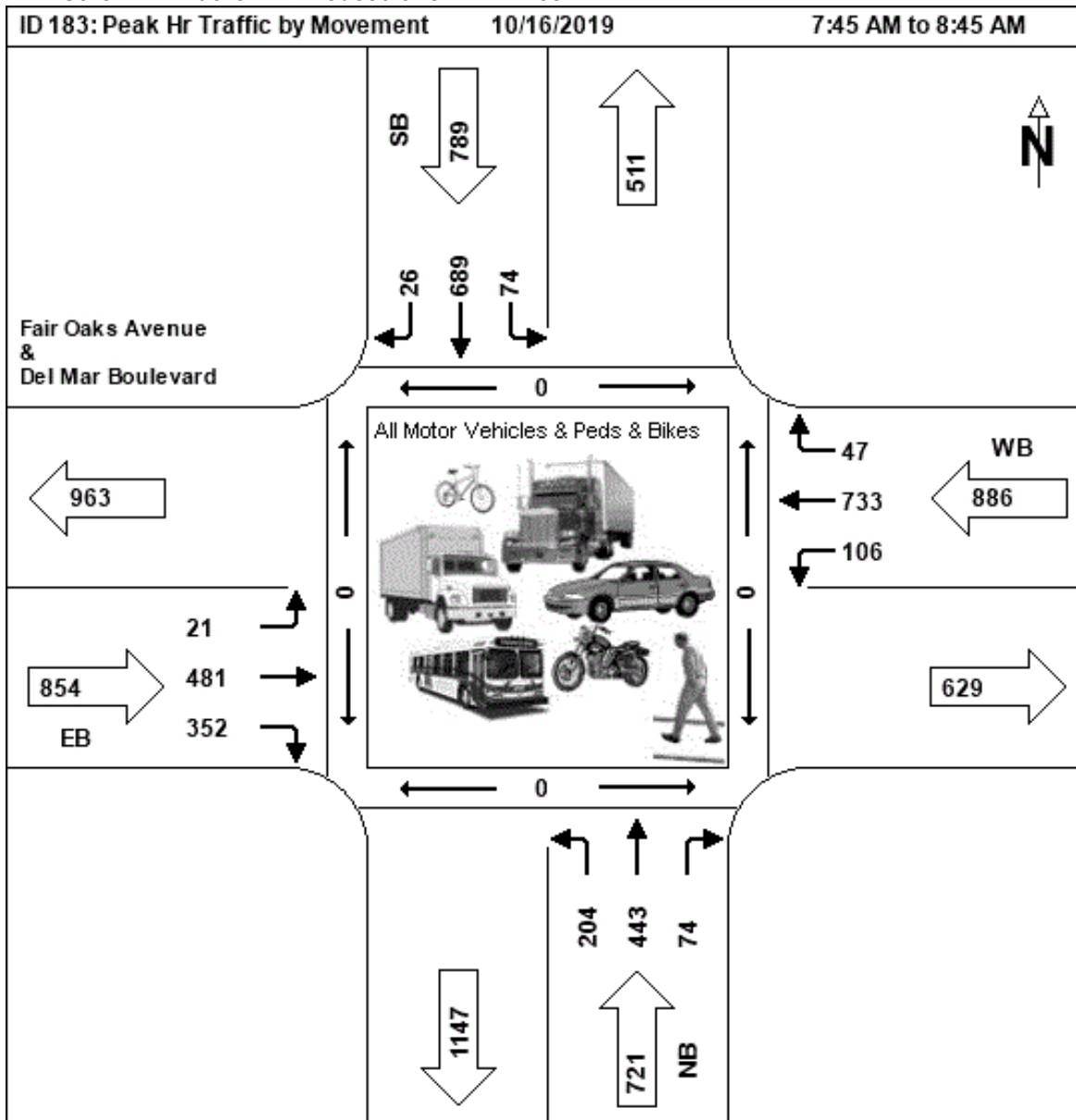
Corridor:
 Road 3:
 Road 4:

|<< < > >>| 1-4 of 4

AM Peak Hour
 10/16/2019

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
7:45 AM	53	112	15	0	180	4	131	80	0	215	21	172	9	0	202	30	226	13	0	269	866
8:00 AM	49	101	24	0	174	5	115	84	0	204	14	182	6	0	202	24	145	16	0	185	765
8:15 AM	54	116	22	0	192	3	118	94	0	215	20	169	8	0	197	26	182	10	0	218	822
8:30 AM	48	114	13	0	175	9	117	94	0	220	19	166	3	0	188	26	180	8	0	214	797
Total	204	443	74	0	721	21	481	352	0	854	74	689	26	0	789	106	733	47	0	886	3250
PHF	0.94	0.95	0.77		0.94	0.58	0.92	0.94		0.97	0.88	0.95	0.72		0.98	0.88	0.81	0.73		0.82	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

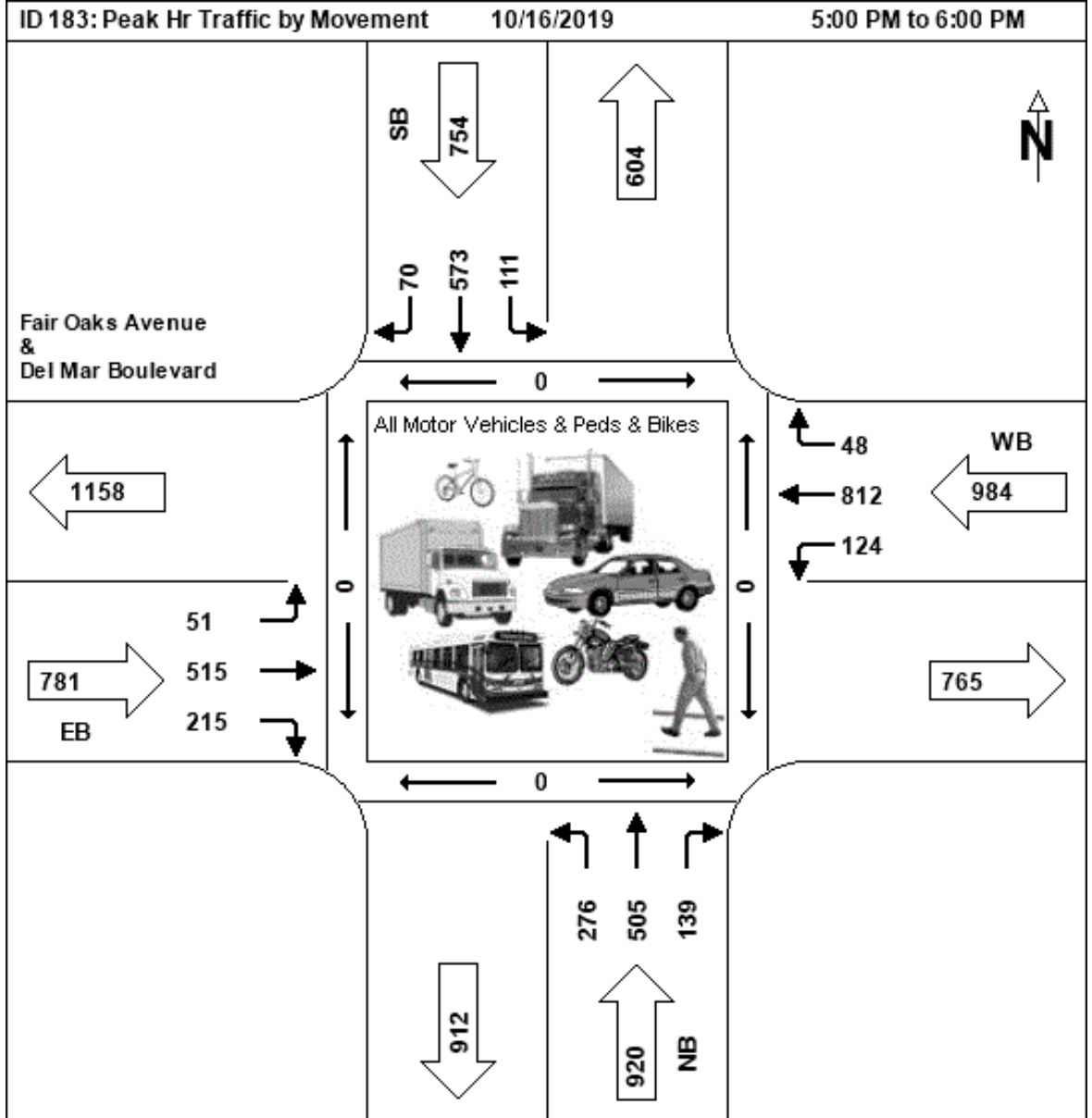
Cars Trucks Pedestrians Bikes



**PM Peak Hour
10/16/2019**

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
5:00 PM	55	96	37	0	188	12	121	51	0	184	25	155	18	0	198	29	233	9	0	271	841
5:15 PM	74	134	30	0	238	16	148	62	0	226	30	156	20	0	206	33	191	12	0	236	906
5:30 PM	69	132	31	0	232	15	132	60	0	207	28	131	15	0	174	31	194	18	0	243	856
5:45 PM	78	143	41	0	262	8	114	42	0	164	28	131	17	0	176	31	194	9	0	234	836
Total	276	505	139	0	920	51	515	215	0	781	111	573	70	0	754	124	812	48	0	984	3439
PHF	0.88	0.88	0.85		0.88	0.80	0.87	0.87		0.86	0.93	0.92	0.88		0.92	0.94	0.87	0.67		0.91	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

Cars Trucks Pedestrians Bikes



Peak Hour Data for Intersection

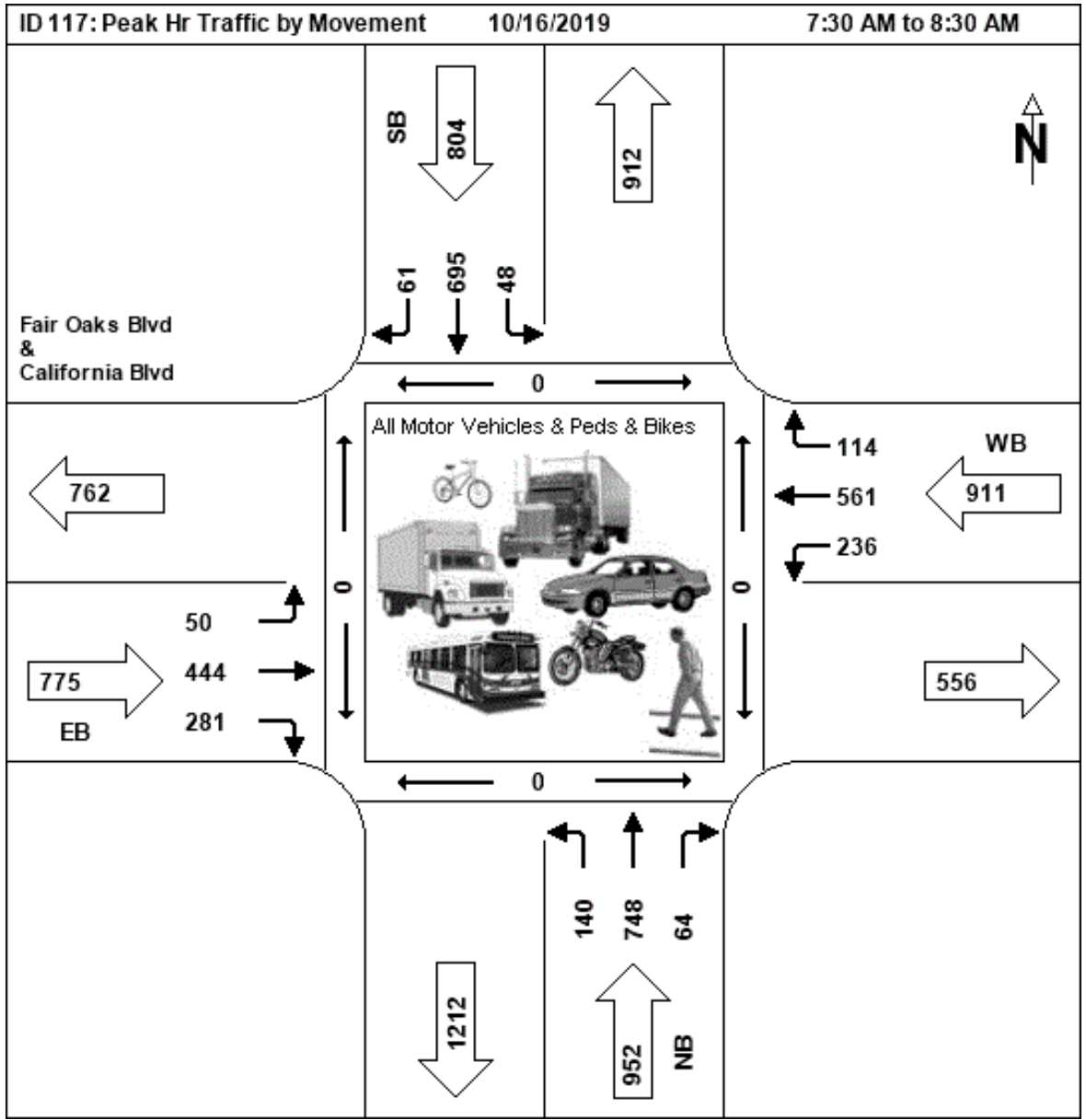
Int ID: 117
 Community: Pasadena
 Road 1: Fair Oaks Blvd
 Road 2: California Blvd
 Corridor: NA
 Road 3:
 Road 4:

|<< < > >>| 1-5 of 5

AM Peak Hour
 10/16/2019

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
7:30 AM	43	196	13	0	252	15	114	78	0	207	6	164	11	0	181	46	151	31	0	228	868
7:45 AM	34	184	13	0	231	18	119	76	0	213	11	172	19	0	202	59	150	26	0	235	881
8:00 AM	35	174	19	0	228	9	115	61	0	185	17	166	12	0	195	64	141	29	0	234	842
8:15 AM	28	194	19	0	241	8	96	66	0	170	14	193	19	0	226	67	119	28	0	214	851
Total	140	748	64	0	952	50	444	281	0	775	48	695	61	0	804	236	561	114	0	911	3442
PHF	0.81	0.95	0.84		0.94	0.69	0.93	0.90		0.91	0.71	0.90	0.80		0.89	0.88	0.93	0.92		0.97	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

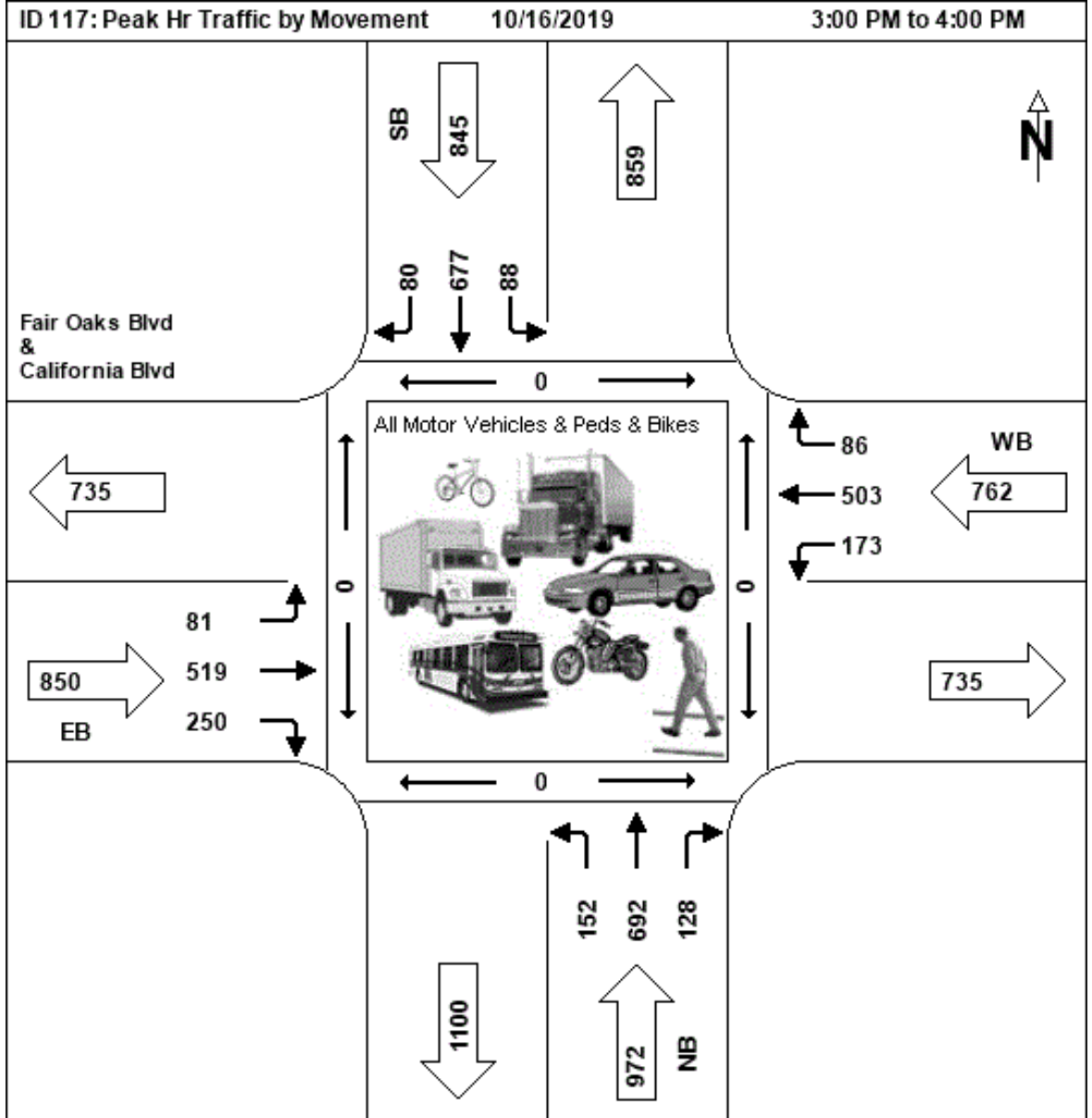
Cars Trucks Pedestrians Bikes



**PM Peak Hour
10/16/2019**

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
3:00 PM	40	174	23	0	237	17	128	59	0	204	17	172	20	0	209	44	107	15	0	166	816
3:15 PM	43	182	30	0	255	16	118	42	0	176	29	174	13	0	216	44	139	19	0	202	849
3:30 PM	28	183	36	0	247	22	132	76	0	230	22	189	24	0	235	40	133	18	0	191	903
3:45 PM	41	153	39	0	233	26	141	73	0	240	20	142	23	0	185	45	124	34	0	203	861
Total	152	692	128	0	972	81	519	250	0	850	88	677	80	0	845	173	503	86	0	762	3429
PHF	0.88	0.95	0.82		0.95	0.78	0.92	0.82		0.89	0.76	0.90	0.83		0.90	0.96	0.90	0.63		0.94	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

Cars Trucks Pedestrians Bikes



Peak Hour Data for Intersection

Int ID: 184
 Community: Pasadena
 Road 1: Fair Oaks Avenue
 Road 2: Glenarm Street

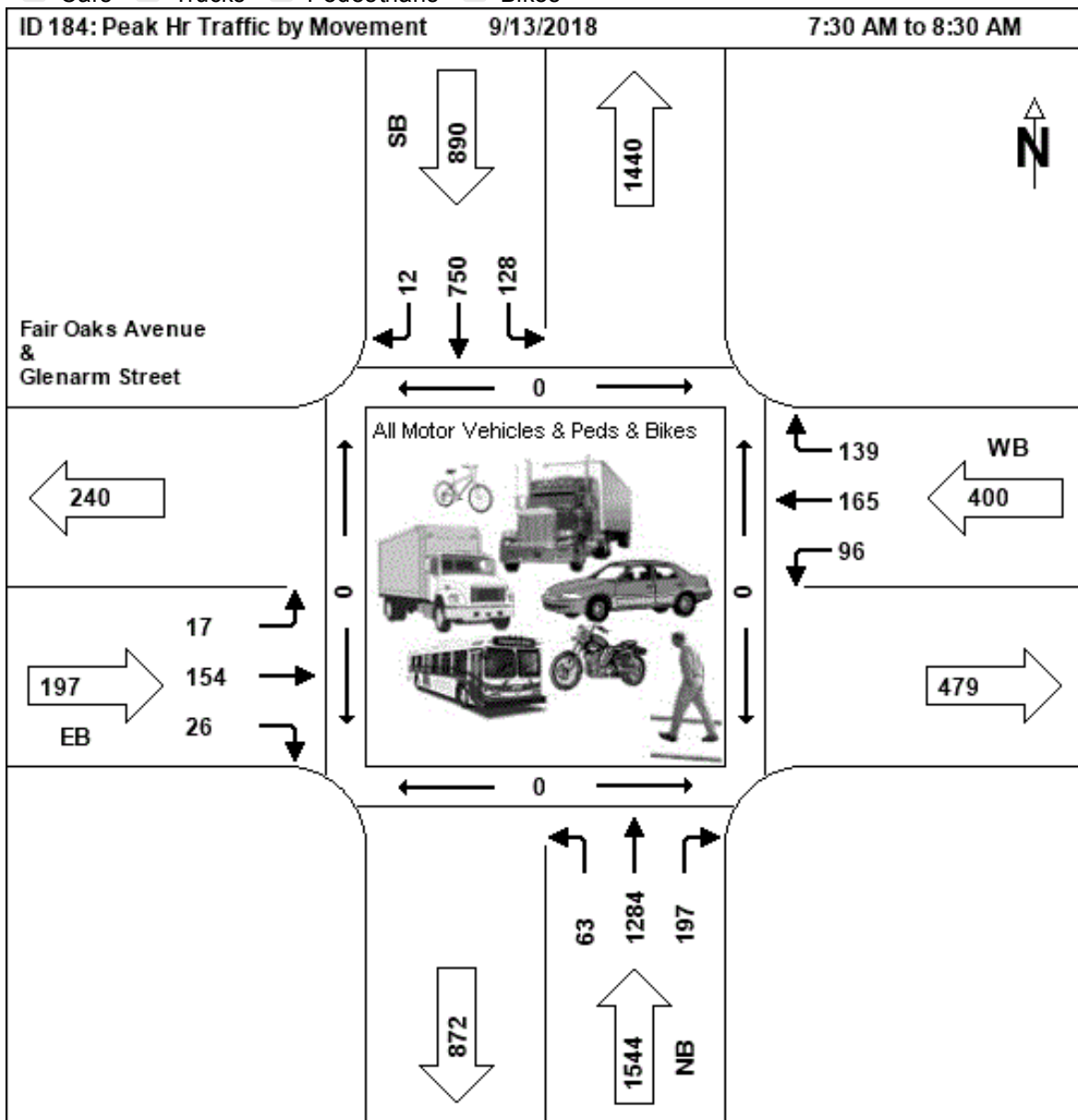
Corridor:
 Road 3:
 Road 4:

|<< < > >>| 1-5 of 5

AM Peak Hour
 09/13/2018

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
7:30 AM	19	298	35	0	352	4	47	7	0	58	40	206	2	0	248	31	56	22	0	109	767
7:45 AM	18	344	61	0	423	4	38	5	0	47	39	229	6	0	274	26	41	35	0	102	846
8:00 AM	12	321	49	0	382	5	36	3	0	44	29	153	2	0	184	21	31	36	0	88	698
8:15 AM	14	321	52	0	387	4	33	11	0	48	20	162	2	0	184	18	37	46	0	101	720
Total	63	1284	197	0	1544	17	154	26	0	197	128	750	12	0	890	96	165	139	0	400	3031
PHF	0.83	0.93	0.81		0.91	0.85	0.82	0.59		0.85	0.80	0.82	0.50		0.81	0.77	0.74	0.76		0.92	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

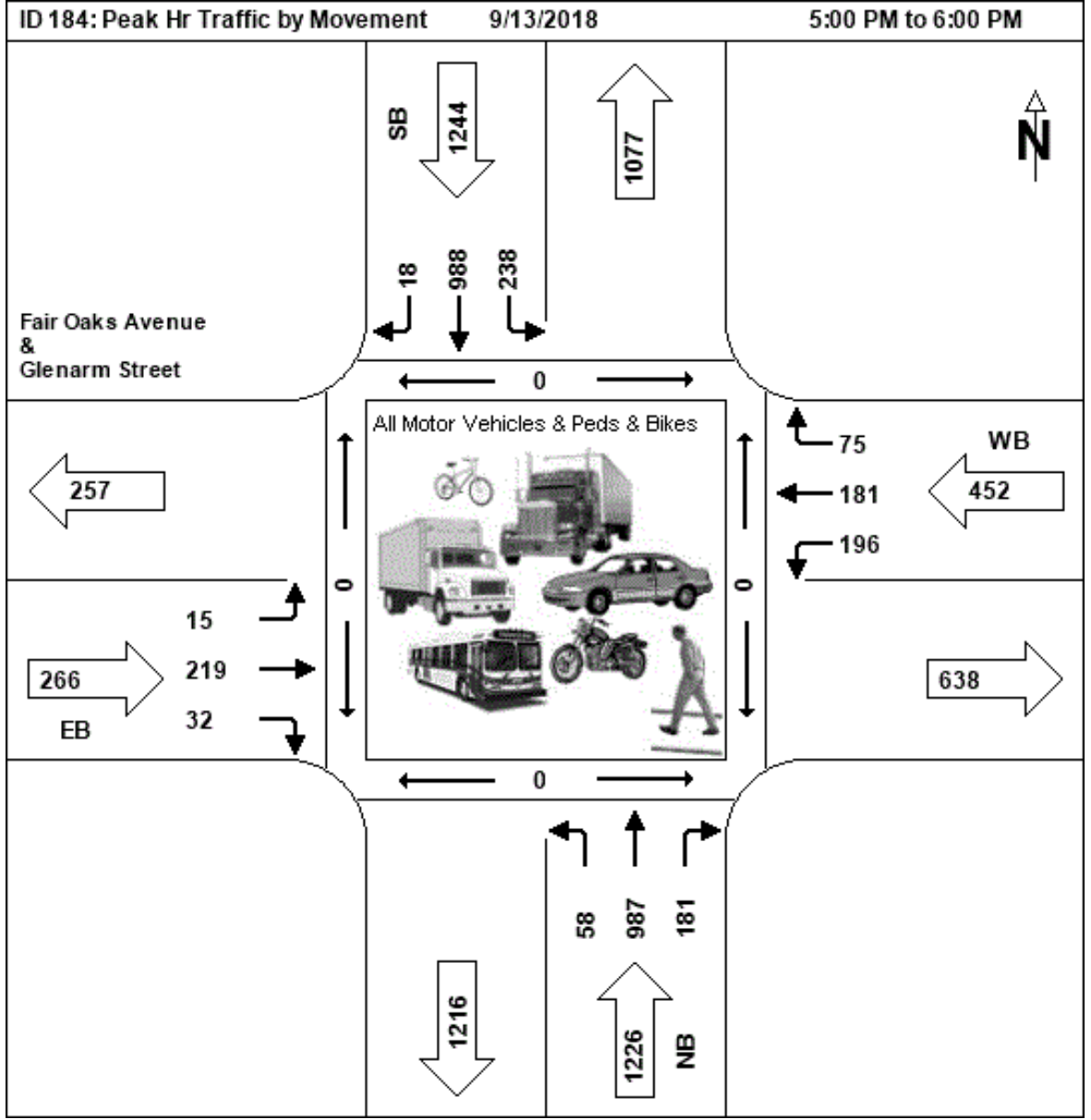
Cars Trucks Pedestrians Bikes



**PM Peak Hour
09/13/2018**

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
5:00 PM	20	242	43	0	305	3	46	7	0	56	56	275	4	0	335	37	41	17	0	95	791
5:15 PM	10	234	41	0	285	3	61	6	0	70	72	245	7	0	324	53	54	12	0	119	798
5:30 PM	15	243	57	0	315	6	46	10	0	62	60	231	6	0	297	52	41	27	0	120	794
5:45 PM	13	268	40	0	321	3	66	9	0	78	50	237	1	0	288	54	45	19	0	118	805
Total	58	987	181	0	1226	15	219	32	0	266	238	988	18	0	1244	196	181	75	0	452	3188
PHF	0.73	0.92	0.79		0.95	0.63	0.83	0.80		0.85	0.83	0.90	0.64		0.93	0.91	0.84	0.69		0.94	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

Cars Trucks Pedestrians Bikes



Peak Hour Data for Intersection

Int ID: 291
 Community: Pasadena
 Road 1: Raymond Avenue
 Road 2: California Boulevard

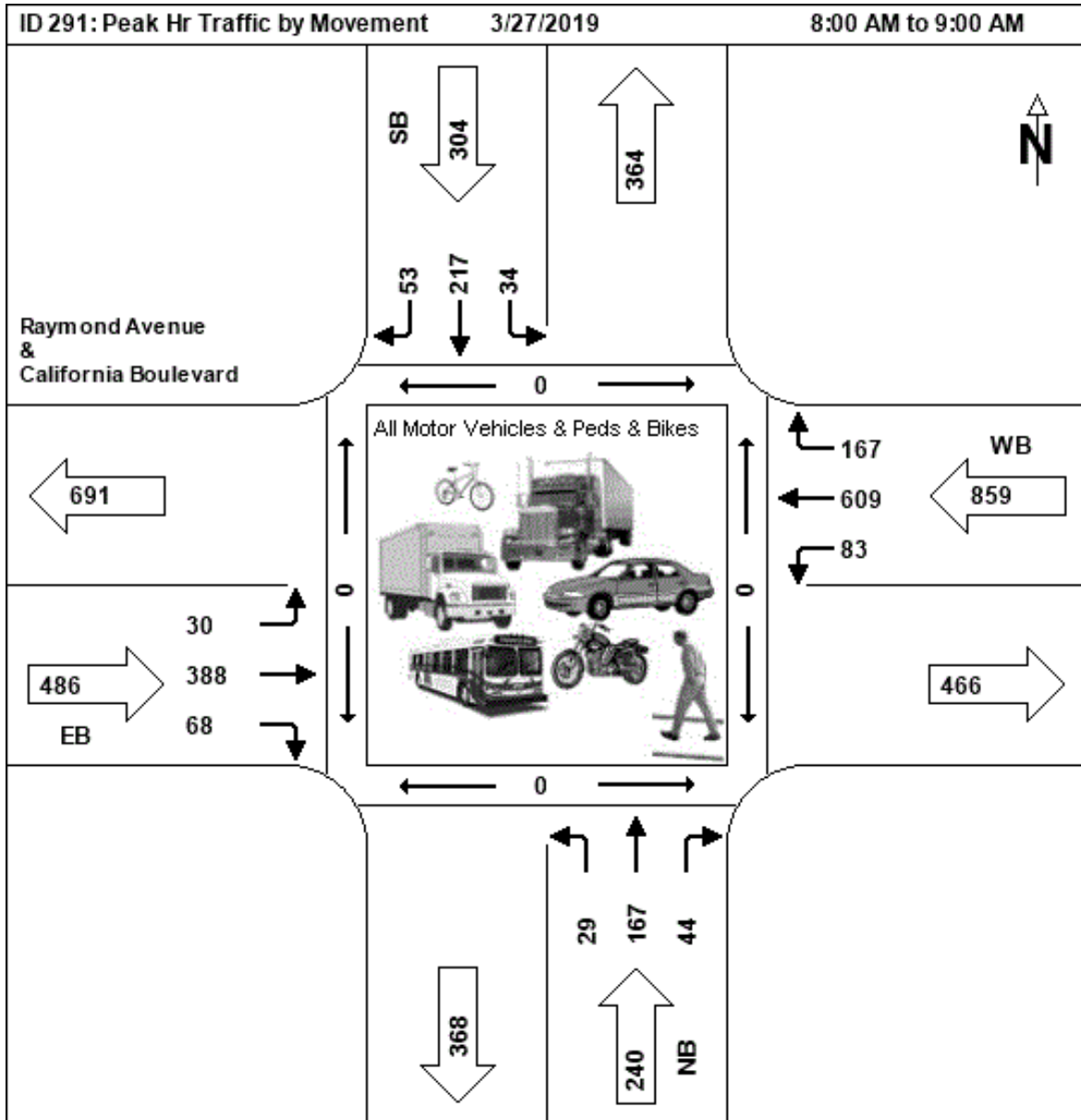
Corridor:
 Road 3:
 Road 4:

|<< < > >>| 1-2 of 2

AM Peak Hour
 03/27/2019

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
8:00 AM	8	42	9	0	59	4	98	17	0	119	9	54	18	0	81	29	167	34	0	230	489
8:15 AM	6	46	14	0	66	4	93	13	0	110	7	47	9	0	63	14	162	44	0	220	459
8:30 AM	2	32	7	0	41	11	104	22	0	137	7	48	15	0	70	17	147	45	0	209	457
8:45 AM	13	47	14	0	74	11	93	16	0	120	11	68	11	0	90	23	133	44	0	200	484
Total	29	167	44	0	240	30	388	68	0	486	34	217	53	0	304	83	609	167	0	859	1889
PHF	0.56	0.89	0.79		0.81	0.68	0.93	0.77		0.89	0.77	0.80	0.74		0.84	0.72	0.91	0.93		0.93	
HV %	0	0	0			0	0	0		0	0	0			0	0	0				

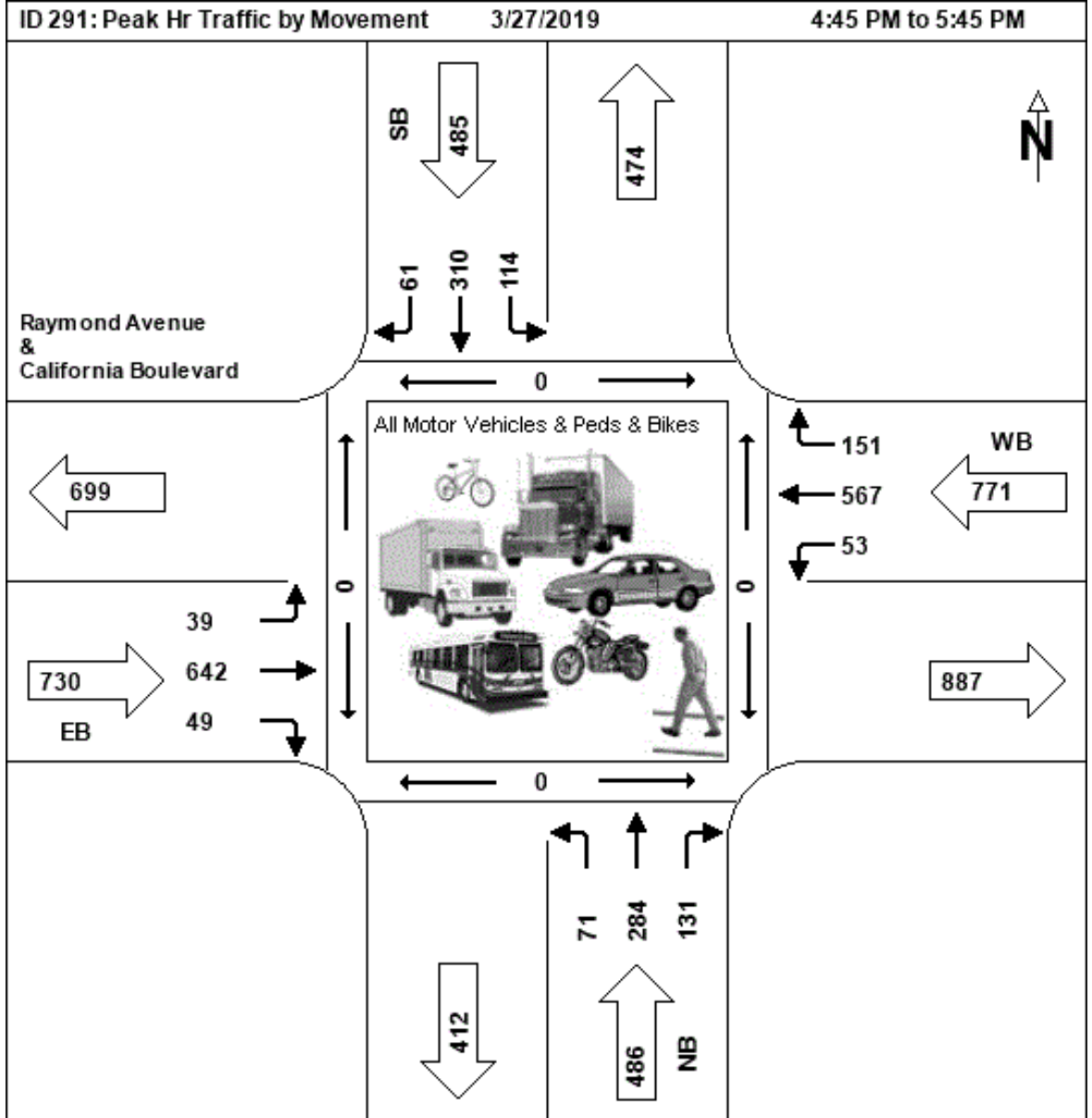
Cars Trucks Pedestrians Bikes



**PM Peak Hour
03/27/2019**

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total	
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped			
4:45 PM	19	69	31	0	119	10	147	20	0	177	29	76	12	0	117	12	140	42	0	194	607	
5:00 PM	23	85	27	0	135	14	157	13	0	184	25	80	19	0	124	9	135	50	0	194	637	
5:15 PM	11	74	44	0	129	5	153	8	0	166	32	76	16	0	124	20	124	34	0	178	597	
5:30 PM	18	56	29	0	103	10	185	8	0	203	28	78	14	0	120	12	168	25	0	205	631	
Total	71	284	131	0	486	39	642	49	0	730	114	310	61	0	485	53	567	151	0	771	2472	
PHF	0.77	0.84	0.74		0.90	0.70	0.87	0.61		0.90	0.89	0.97	0.80		0.98	0.66	0.84	0.76		0.94		
HV %	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0			

Cars Trucks Pedestrians Bikes



Peak Hour Data for Intersection

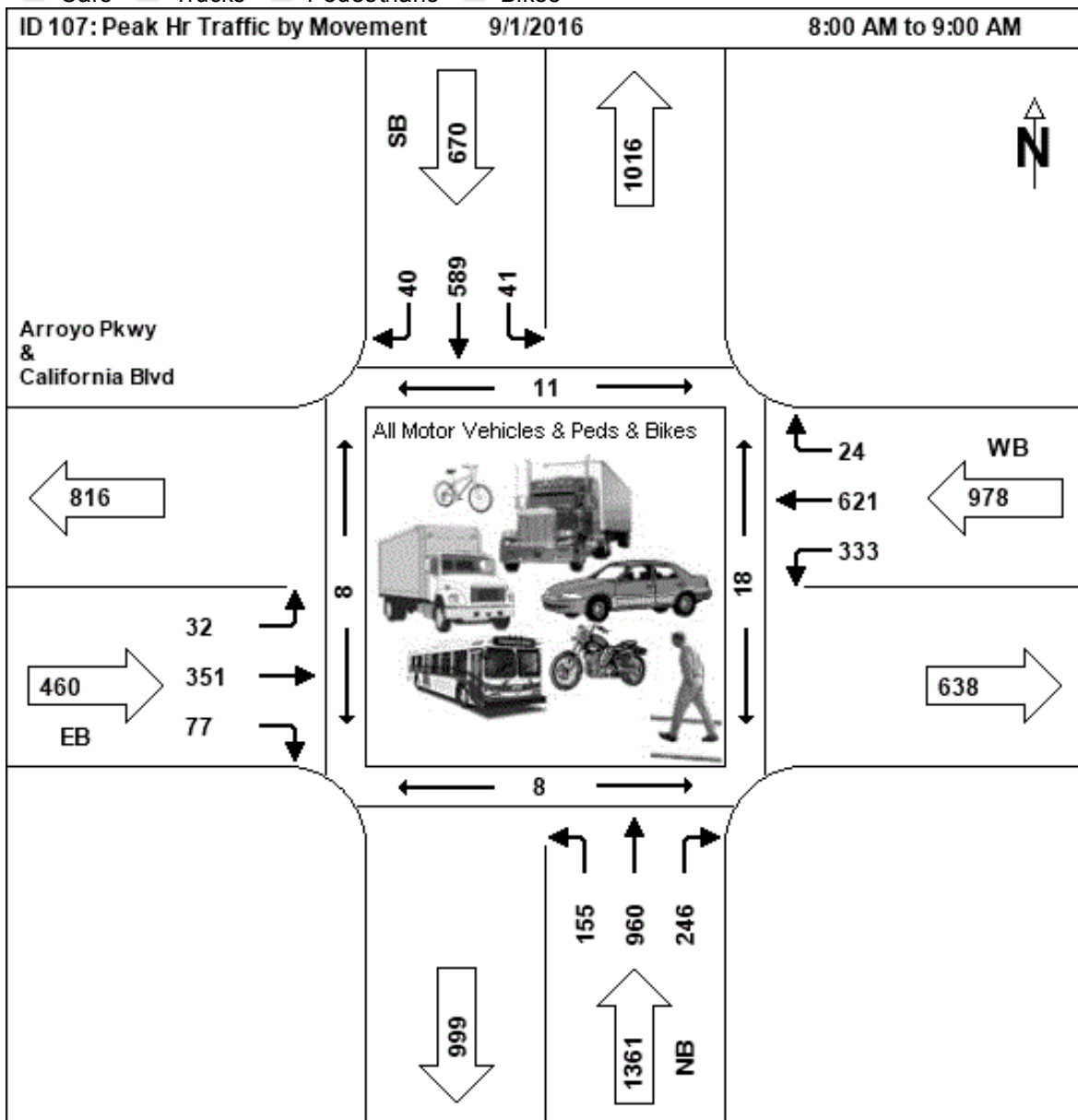
Int ID: 107
 Community: Pasadena
 Road 1: Arroyo Pkwy
 Road 2: California Blvd
 Corridor: NA
 Road 3:
 Road 4:

|<< < > >>| 1-3 of 3

AM Peak Hour
 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
8:00 AM	35	248	74	1	357	4	86	17	4	107	11	151	11	0	173	66	160	7	0	233	870
8:15 AM	29	255	57	3	341	7	78	20	0	105	7	149	13	1	169	107	167	6	4	280	895
8:30 AM	26	211	47	5	284	10	87	14	3	111	16	137	8	7	161	82	149	3	7	234	790
8:45 AM	65	246	68	9	379	11	100	26	1	137	7	152	8	0	167	78	145	8	0	231	914
Total	155	960	246	18	1361	32	351	77	8	460	41	589	40	8	670	333	621	24	11	978	3469
PHF	0.60	0.94	0.83		0.90	0.73	0.88	0.74		0.84	0.64	0.97	0.77		0.97	0.78	0.93	0.75		0.87	
HV %	0	0	0			0	0	0			0	0	0			0	0	0			

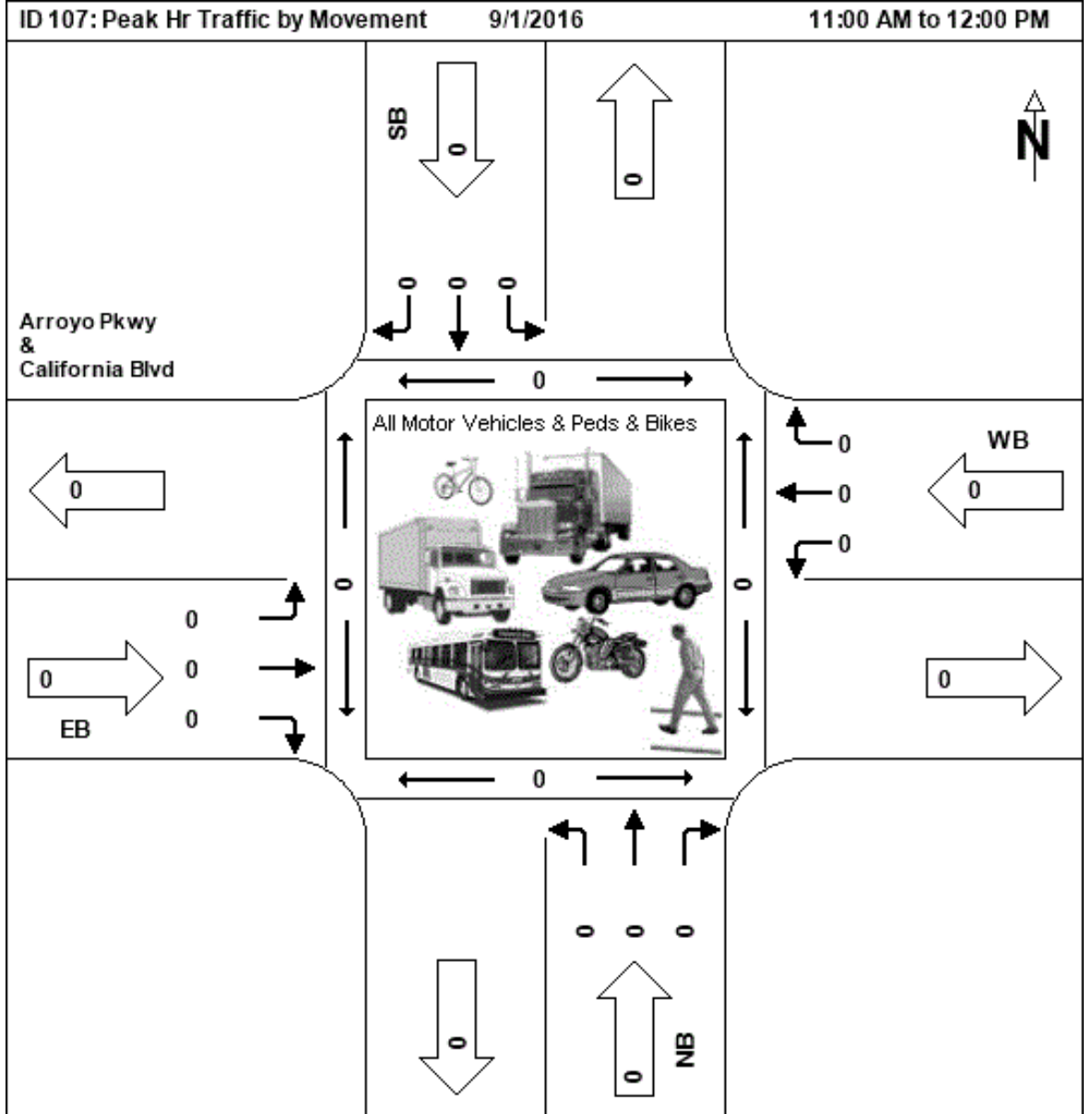
Cars Trucks Pedestrians Bikes



Midday Peak Hour 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF																					
HV %																					

Cars
 Trucks
 Pedestrians
 Bikes

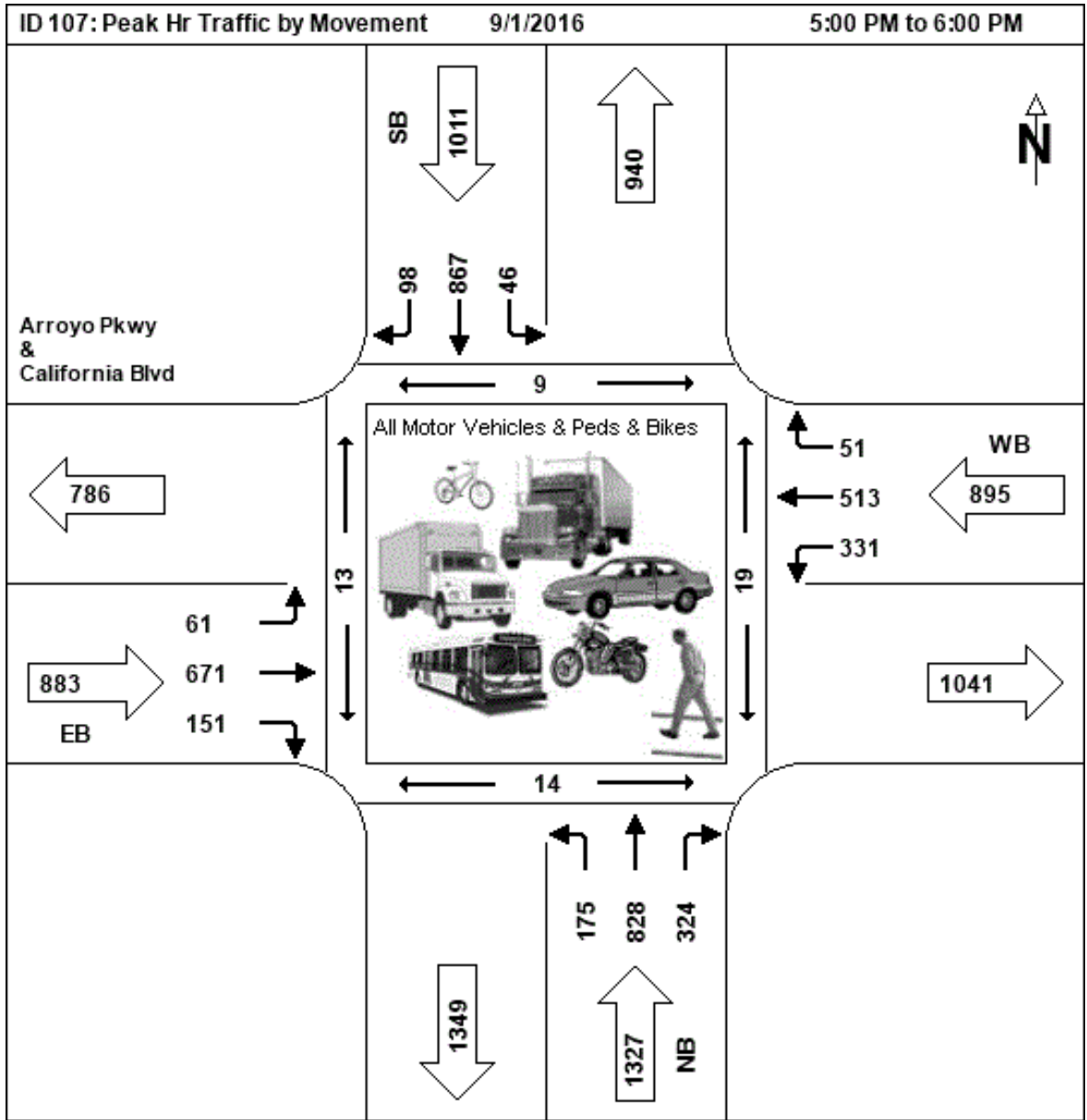


PM Peak Hour 09/01/2016

Start Time	NB				App Total	EB				App Total	SB				App Total	WB				App Total	Int Total
	Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		Left	Thru	Right	Ped		
5:00 PM	44	231	82	3	357	19	154	34	3	207	10	204	21	3	235	80	124	13	2	217	1016
5:15 PM	42	205	84	4	331	14	198	35	8	247	12	222	22	2	256	64	132	8	1	204	1038
5:30 PM	46	175	78	8	299	12	155	46	1	213	10	178	26	7	214	98	135	16	6	249	975
5:45 PM	43	217	80	4	340	16	164	36	2	216	14	263	29	1	306	89	122	14	0	225	1087
Total	175	828	324	19	1327	61	671	151	14	883	46	867	98	13	1011	331	513	51	9	895	4116

PHF 0.95 0.90 0.96 0.93 0.80 0.85 0.82 0.89 0.82 0.82 0.84 0.83 0.84 0.95 0.80 0.90
 HV % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Cars Trucks Pedestrians Bikes



Appendix:
HCM Analysis

590 Fair Oaks Avenue Medical Office Building

Peak Intersection Volumes Summary

590 South Fair Oaks Avenue

Intersection	Direction	AM Peak	PM Peak	AM Peak	PM Peak
		Baseline Year	Baseline Year	Baseline w/ Project	Baseline w/ Project
		Volumes	Volumes	Volumes	Volumes
St. John Ave at California Blvd	NBL	0	0	0	0
	NBT	0	0	0	0
	NBR	0	0	0	0
	SBL	630	647	661	660
	SBT	1,139	1,317	1,139	1,317
	SBR	143	277	143	277
	EBL	0	0	0	0
	EBT	472	372	480	375
	EBR	70	39	70	39
	WBL	24	64	28	82
	WBT	164	333	166	342
WBR	0	0	0	0	
Total Project Peak Hour Intersection Volume =					
AM Peak	45				
PM Peak	42				
Pasadena Ave at California Blvd	NBL	13	15	13	15
	NBT	1,645	1,948	1,645	1,948
	NBR	60	72	76	79
	SBL	0	0	0	0
	SBT	0	0	0	0
	SBR	0	0	0	0
	EBL	349	263	349	263
	EBT	861	782	900	798
	EBR	0	0	0	0
	WBL	0	0	0	0
	WBT	233	302	239	328
WBR	448	485	456	520	
Total Project Peak Hour Intersection Volume =					
AM Peak	69				
PM Peak	84				
Fair Oaks Ave at Del Mar Blvd	NBL	204	276	204	276
	NBT	443	505	445	514
	NBR	74	139	76	148
	SBL	74	111	74	111
	SBT	689	573	697	576
	SBR	26	70	26	70
	EBL	21	51	21	51
	EBT	481	515	481	515
	EBR	352	215	352	215
	WBL	106	124	114	127
	WBT	733	812	733	812
WBR	47	48	47	48	
Total Project Peak Hour Intersection Volume =					
AM Peak	20				
PM Peak	24				
Fair Oaks Ave at California Blvd	NBL	140	152	155	213
	NBT	748	692	752	709
	NBR	64	128	81	198
	SBL	48	88	48	88
	SBT	695	677	711	684
	SBR	61	80	61	80
	EBL	50	81	50	81
	EBT	444	519	444	519
	EBR	281	250	335	273
	WBL	236	173	267	186
	WBT	561	503	561	503
WBR	114	86	114	86	
Total Project Peak Hour Intersection Volume =					
AM Peak	136				
PM Peak	190				
Fair Oaks Ave at Glenarm St	NBL	69	64	69	64
	NBT	1,411	1,084	1,419	1,088
	NBR	216	199	216	199
	SBL	122	228	125	236
	SBT	718	945	720	954
	SBR	11	17	14	26
	EBL	18	16	26	20
	EBT	167	237	167	237
	EBR	28	35	28	35
	WBL	97	198	97	198
	WBT	167	183	167	183
WBR	141	76	179	92	
Total Project Peak Hour Intersection Volume =					
AM Peak	61				
PM Peak	49				

590 Fair Oaks Avenue Medical Office Building

Peak Intersection Volumes Summary
590 South Fair Oaks Avenue

Intersection	Direction	AM Peak	PM Peak	AM Peak	PM Peak
		Baseline Year	Baseline Year	Baseline w/ Project	Baseline w/ Project
		Volumes	Volumes	Volumes	Volumes
Raymond Ave at California Blvd	NBL	30	72	30	72
	NBT	170	290	170	290
	NBR	45	134	45	134
	SBL	34	115	34	115
	SBT	219	313	219	313
	SBR	54	62	54	62
	EBL	30	39	30	39
	EBT	390	645	398	680
	EBR	68	49	77	84
	WBL	87	56	87	56
	WBT	641	597	672	610
Total Project Peak Hour Intersection Volume =					
AM Peak	48				
PM Peak	83				
Arroyo Parkway at California Blvd	NBL	145	163	160	170
	NBT	896	773	896	773
	NBR	230	302	230	302
	SBL	35	40	35	40
	SBT	510	751	510	751
	SBR	35	85	35	85
	EBL	41	77	41	77
	EBT	445	851	449	868
	EBR	98	191	102	209
	WBL	477	474	477	474
	WBT	890	735	905	742
WBR	34	73	34	73	
Total Project Peak Hour Intersection Volume =					
AM Peak	39				
PM Peak	48				
Raymond Ave at Glenarm St	NBL	0	0	0	0
	NBT	0	0	0	0
	NBR	0	0	0	0
	SBL	109	416	117	450
	SBT	0	0	0	0
	SBR	65	153	65	153
	EBL	135	78	135	78
	EBT	285	468	288	477
	EBR	0	0	0	0
	WBL	0	0	0	0
	WBT	296	287	307	330
WBR	208	112	208	112	
Total Project Peak Hour Intersection Volume =					
AM Peak	21				
PM Peak	87				

* Baseline volumes are from counts on file and Streetlight Data Analytics information. Ambient growth was determined from percent growth from trendline. Ambient growth volume was not compounded. The St. John Ave SB off ramp ambient growth volume used the California Blvd percent growth.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑					↖	↑↑	
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	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.95	
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					0.99	1.00	
Frt		0.98		1.00	1.00					1.00	0.98	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3515		1805	3574					1761	3527	
Flt Permitted		1.00		0.31	1.00					0.95	1.00	
Satd. Flow (perm)		3515		597	3574					1761	3527	
Volume (vph)	0	472	70	24	164	0	0	0	0	630	1139	143
Peak-hour factor, PHF	1.00	0.88	0.69	0.53	0.90	1.00	0.93	0.93	0.93	0.91	0.92	0.80
Adj. Flow (vph)	0	536	101	45	182	0	0	0	0	692	1238	179
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	615	0	45	182	0	0	0	0	692	1401	0
Confl. Peds. (#/hr)			4							5		12
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	2%	2%	2%	2%	0%	1%
Turn Type				Perm							Perm	
Protected Phases		2			2							4
Permitted Phases				2							4	
Actuated Green, G (s)		25.6		25.6	25.6					34.2	34.2	
Effective Green, g (s)		26.0		26.0	26.0					36.0	36.0	
Actuated g/C Ratio		0.37		0.37	0.37					0.51	0.51	
Clearance Time (s)		4.4		4.4	4.4					5.8	5.8	
Lane Grp Cap (vph)		1306		222	1327					906	1814	
v/s Ratio Prot		c0.17			0.05						c0.40	
v/s Ratio Perm				0.08						0.39		
v/c Ratio		0.47		0.20	0.14					0.76	0.77	
Uniform Delay, d1		16.8		15.0	14.6					13.6	13.7	
Progression Factor		1.00		0.46	0.45					1.00	1.00	
Incremental Delay, d2		1.2		2.0	0.2					6.1	3.3	
Delay (s)		18.0		8.9	6.7					19.7	17.0	
Level of Service		B		A	A					B	B	
Approach Delay (s)		18.0			7.2			0.0			17.9	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM Average Control Delay			17.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			115.1%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗	↘	↑↑↑				
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				
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	0.91				
Frbp, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.99	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.99				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1805	3574			3574	1509	1778	4975				
Flt Permitted	0.59	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	1127	3574			3574	1509	1778	4975				
Volume (vph)	349	861	0	0	233	448	13	1645	60	0	0	0
Peak-hour factor, PHF	0.87	0.90	1.00	1.00	0.91	0.92	0.67	0.85	0.63	1.00	1.00	1.00
Adj. Flow (vph)	401	957	0	0	256	487	19	1935	95	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	4	0	7	0	0	0	0
Lane Group Flow (vph)	401	957	0	0	256	483	19	2023	0	0	0	0
Confl. Peds. (#/hr)			14	1		32	21		9			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	2%	2%	2%
Parking (#/hr)								0				
Turn Type	Perm				Perm		Perm					
Protected Phases		2			2			4				
Permitted Phases	2					2	4					
Actuated Green, G (s)	25.1	25.1			25.1	25.1	35.2	35.2				
Effective Green, g (s)	26.0	26.0			26.0	26.0	36.0	36.0				
Actuated g/C Ratio	0.37	0.37			0.37	0.37	0.51	0.51				
Clearance Time (s)	4.9	4.9			4.9	4.9	4.8	4.8				
Lane Grp Cap (vph)	419	1327			1327	560	914	2559				
v/s Ratio Prot		0.27			0.07			c0.41				
v/s Ratio Perm	c0.36					0.32	0.01					
v/c Ratio	0.96	0.72			0.19	0.86	0.02	0.79				
Uniform Delay, d1	21.5	18.9			14.9	20.4	8.3	13.9				
Progression Factor	0.85	0.83			1.00	1.00	1.00	1.00				
Incremental Delay, d2	23.1	1.8			0.3	16.1	0.0	2.6				
Delay (s)	41.3	17.5			15.2	36.4	8.4	16.5				
Level of Service	D	B			B	D	A	B				
Approach Delay (s)		24.5			29.1			16.4			0.0	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM Average Control Delay			21.3				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			127.5%				ICU Level of Service				H	
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3251		1805	3560		1805	3482		1805	3575	
Flt Permitted	0.24	1.00		0.12	1.00		0.17	1.00		0.36	1.00	
Satd. Flow (perm)	455	3251		232	3560		325	3482		676	3575	
Volume (vph)	21	481	352	106	733	47	204	443	74	74	689	26
Peak-hour factor, PHF	0.78	0.81	0.78	0.70	0.92	0.79	0.80	0.95	0.80	0.77	0.92	0.70
Adj. Flow (vph)	27	594	451	151	797	59	255	466	92	96	749	37
RTOR Reduction (vph)	0	144	0	0	5	0	0	18	0	0	4	0
Lane Group Flow (vph)	27	901	0	151	851	0	255	540	0	96	782	0
Confl. Peds. (#/hr)			67			37			45			42
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	32.4	28.8		42.0	35.2		36.9	29.1		33.3	27.3	
Effective Green, g (s)	31.5	28.7		41.9	35.1		37.9	30.9		34.3	29.1	
Actuated g/C Ratio	0.35	0.32		0.47	0.39		0.42	0.34		0.38	0.32	
Clearance Time (s)	3.2	3.9		3.2	3.9		3.2	5.8		3.2	5.8	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	201	1037		269	1388		252	1195		323	1156	
v/s Ratio Prot	0.00	c0.28		c0.06	0.24		c0.08	0.15		0.02	0.22	
v/s Ratio Perm	0.04			0.20			c0.35			0.10		
v/c Ratio	0.13	0.87		0.56	0.61		1.01	0.45		0.30	0.68	
Uniform Delay, d1	19.7	28.9		18.6	22.0		22.5	23.0		18.4	26.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	9.8		2.2	2.0		59.8	1.2		0.4	3.2	
Delay (s)	19.9	38.7		20.8	24.0		82.3	24.2		18.8	29.6	
Level of Service	B	D		C	C		F	C		B	C	
Approach Delay (s)		38.2			23.5			42.4			28.4	
Approach LOS		D			C			D			C	

Intersection Summary

HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1530	1770	3414		1770	3475		1770	3478	
Flt Permitted	0.22	1.00	1.00	0.28	1.00		0.15	1.00		0.19	1.00	
Satd. Flow (perm)	409	3539	1530	526	3414		271	3475		358	3478	
Volume (vph)	50	444	281	236	561	114	140	748	64	48	695	61
Peak-hour factor, PHF	0.68	0.90	0.80	0.82	0.88	0.85	0.85	0.91	0.75	0.91	0.95	0.80
Adj. Flow (vph)	74	493	351	288	638	134	165	822	85	53	732	76
RTOR Reduction (vph)	0	0	236	0	21	0	0	9	0	0	10	0
Lane Group Flow (vph)	74	493	115	288	751	0	165	898	0	53	798	0
Confl. Peds. (#/hr)			20			37			26			22
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	27.7	20.9	20.9	34.9	24.9		35.9	28.3		28.3	23.9	
Effective Green, g (s)	26.8	20.8	20.8	34.8	24.8		37.2	29.6		28.8	25.2	
Actuated g/C Ratio	0.34	0.26	0.26	0.43	0.31		0.47	0.37		0.36	0.31	
Clearance Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	5.3		3.2	5.3	
Vehicle Extension (s)	2.5	4.8	4.8	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	239	920	398	384	1058		276	1286		192	1096	
v/s Ratio Prot	0.02	0.14		c0.09	0.22		c0.06	c0.26		0.01	0.23	
v/s Ratio Perm	0.08		0.08	c0.23			0.22			0.09		
v/c Ratio	0.31	0.54	0.29	0.75	0.71		0.60	0.70		0.28	0.73	
Uniform Delay, d1	18.9	25.4	23.7	16.2	24.4		15.0	21.4		17.5	24.4	
Progression Factor	1.47	1.30	3.19	1.00	1.00		0.82	0.91		1.00	1.00	
Incremental Delay, d2	0.5	1.0	0.8	7.6	2.7		2.7	2.9		0.6	4.3	
Delay (s)	28.4	34.0	76.4	23.8	27.1		15.1	22.4		18.1	28.6	
Level of Service	C	C	E	C	C		B	C		B	C	
Approach Delay (s)		49.7			26.2			21.3			28.0	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			70.7%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.93		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1853		1805	1750		1805	3524		1805	3598	
Flt Permitted	0.24	1.00		0.51	1.00		0.26	1.00		0.09	1.00	
Satd. Flow (perm)	453	1853		970	1750		491	3524		166	3598	
Volume (vph)	18	167	28	97	167	141	69	1411	216	122	718	11
Peak-hour factor, PHF	0.85	0.81	0.83	0.81	0.66	0.72	0.59	0.94	0.85	0.82	0.81	0.63
Adj. Flow (vph)	21	206	34	120	253	196	117	1501	254	149	886	17
RTOR Reduction (vph)	0	11	0	0	1	0	0	10	0	0	1	0
Lane Group Flow (vph)	21	229	0	120	448	0	117	1745	0	149	902	0
Confl. Peds. (#/hr)			9			15			3			17
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	26.0	26.0		26.0	26.0		46.1	46.1		46.1	46.1	
Effective Green, g (s)	26.3	26.3		26.3	26.3		45.7	45.7		45.7	45.7	
Actuated g/C Ratio	0.33	0.33		0.33	0.33		0.57	0.57		0.57	0.57	
Clearance Time (s)	4.3	4.3		4.3	4.3		3.6	3.6		3.6	3.6	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	609		319	575		280	2013		95	2055	
v/s Ratio Prot		0.12			c0.26			0.50			0.25	
v/s Ratio Perm	0.05			0.12			0.24			c0.90		
v/c Ratio	0.14	0.38		0.38	0.78		0.42	0.87		1.57	0.44	
Uniform Delay, d1	18.9	20.6		20.6	24.2		9.7	14.6		17.1	9.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.8		3.4	10.1		1.0	4.2		300.3	0.2	
Delay (s)	20.9	22.3		23.9	34.3		10.7	18.8		317.5	10.0	
Level of Service	C	C		C	C		B	B		F	A	
Approach Delay (s)		22.2			32.1			18.3			53.5	
Approach LOS		C			C			B			D	

Intersection Summary

HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3460		1770	3539	1583	1770	3428		1770	3434	
Flt Permitted	0.38	1.00		0.42	1.00	1.00	0.42	1.00		0.51	1.00	
Satd. Flow (perm)	700	3460		791	3539	1583	780	3428		958	3434	
Volume (vph)	30	390	68	87	641	176	30	170	45	34	219	54
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	424	74	95	697	191	33	185	49	37	238	59
RTOR Reduction (vph)	0	7	0	0	0	70	0	27	0	0	25	0
Lane Group Flow (vph)	33	491	0	95	697	121	33	207	0	37	272	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	60.0	57.5		66.4	60.8	60.8	18.4	14.1		18.6	14.2	
Effective Green, g (s)	58.7	57.1		65.3	60.4	60.4	17.1	13.7		17.3	13.8	
Actuated g/C Ratio	0.62	0.60		0.69	0.63	0.63	0.18	0.14		0.18	0.14	
Clearance Time (s)	3.1	3.6		3.1	3.6	3.6	3.1	3.6		3.1	3.6	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	4.8	2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	450	2075		593	2245	1004	175	493		204	498	
v/s Ratio Prot	0.00	0.14		c0.01	c0.20		c0.01	0.06		0.01	c0.08	
v/s Ratio Perm	0.04			0.10		0.08	0.03			0.03		
v/c Ratio	0.07	0.24		0.16	0.31	0.12	0.19	0.42		0.18	0.55	
Uniform Delay, d1	7.1	8.9		5.2	7.9	6.9	32.7	37.1		32.6	37.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.1	0.4	0.2	0.4	1.1		0.3	2.0	
Delay (s)	7.2	9.2		5.3	8.3	7.1	33.1	38.2		32.9	39.8	
Level of Service	A	A		A	A	A	C	D		C	D	
Approach Delay (s)		9.0			7.8			37.6			39.1	
Approach LOS		A			A			D			D	

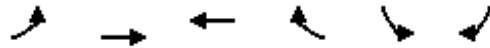
Intersection Summary

HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3520		1770	4929		1770	5036	
Flt Permitted	0.18	1.00	1.00	0.27	1.00		0.35	1.00		0.15	1.00	
Satd. Flow (perm)	343	3539	1583	498	3520		648	4929		273	5036	
Volume (vph)	41	445	98	477	890	34	145	896	230	35	510	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	484	107	518	967	37	158	974	250	38	554	38
RTOR Reduction (vph)	0	0	73	0	3	0	0	48	0	0	9	0
Lane Group Flow (vph)	45	484	34	518	1001	0	158	1176	0	38	583	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt			pm+pt		
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	24.3	20.1	26.2	35.1	26.3		41.0	34.9		36.0	32.4	
Effective Green, g (s)	26.5	21.7	28.7	36.7	27.9		43.8	36.8		38.8	34.3	
Actuated g/C Ratio	0.29	0.24	0.32	0.41	0.31		0.49	0.41		0.43	0.38	
Clearance Time (s)	4.6	5.6	4.9	4.6	5.6		4.9	5.9		4.9	5.9	
Vehicle Extension (s)	2.5	4.8	2.5	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	177	853	575	359	1091		403	2015		193	1919	
v/s Ratio Prot	0.01	0.14	0.00	c0.18	0.28		c0.03	c0.24		0.01	0.12	
v/s Ratio Perm	0.06		0.02	c0.41			0.16			0.08		
v/c Ratio	0.25	0.57	0.06	1.44	0.92		0.39	0.58		0.20	0.30	
Uniform Delay, d1	24.4	30.0	21.3	23.3	29.9		13.3	20.7		15.6	19.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.4	0.0	214.5	12.4		0.5	1.2		0.4	0.4	
Delay (s)	24.9	31.4	21.3	237.8	42.4		13.7	21.9		16.0	19.9	
Level of Service	C	C	C	F	D		B	C		B	B	
Approach Delay (s)		29.2			108.9			21.0			19.7	
Approach LOS		C			F			C			B	
Intersection Summary												
HCM Average Control Delay			54.1			HCM Level of Service		D				
HCM Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			77.8%			ICU Level of Service		D				
Analysis Period (min)			15									

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑↑	↑	↖	↗↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	3610	1900	1615	3502	1615
Flt Permitted	0.57	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1075	3610	1900	1615	3502	1615
Volume (vph)	135	285	296	208	109	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	310	322	226	118	71
RTOR Reduction (vph)	0	0	0	0	0	52
Lane Group Flow (vph)	147	310	322	226	118	19
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	18.7	18.7	18.7	27.4	8.7	8.7
Effective Green, g (s)	18.3	18.3	18.3	27.8	9.5	9.5
Actuated g/C Ratio	0.51	0.51	0.51	0.78	0.27	0.27
Clearance Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	550	1845	971	1615	929	429
v/s Ratio Prot		0.09	c0.17	c0.04	0.03	
v/s Ratio Perm	0.14			0.10		0.01
v/c Ratio	0.27	0.17	0.33	0.14	0.13	0.04
Uniform Delay, d1	5.0	4.7	5.2	1.0	10.0	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.3	0.1	0.1	0.1
Delay (s)	5.3	4.7	5.4	1.1	10.1	9.8
Level of Service	A	A	A	A	B	A
Approach Delay (s)		4.9	3.6		10.0	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	35.8	Sum of lost time (s)	4.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↖	↑↑					↖	↑↑	
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	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.95	
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					0.99	1.00	
Frt		0.98		1.00	1.00					1.00	0.97	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3501		1770	3574					1777	3496	
Flt Permitted		1.00		0.45	1.00					0.95	1.00	
Satd. Flow (perm)		3501		839	3574					1777	3496	
Volume (vph)	0	372	39	64	333	0	0	0	0	647	1317	277
Peak-hour factor, PHF	1.00	0.93	0.73	0.91	0.87	1.00	0.93	0.93	0.93	0.92	0.91	0.87
Adj. Flow (vph)	0	400	53	70	383	0	0	0	0	703	1447	318
RTOR Reduction (vph)	0	8	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	445	0	70	383	0	0	0	0	703	1741	0
Confl. Peds. (#/hr)			4							5		12
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	2%	2%	2%	1%	0%	0%
Turn Type				Perm							Perm	
Protected Phases		2			2							4
Permitted Phases				2							4	
Actuated Green, G (s)		34.6		34.6	34.6					35.2	35.2	
Effective Green, g (s)		35.0		35.0	35.0					37.0	37.0	
Actuated g/C Ratio		0.44		0.44	0.44					0.46	0.46	
Clearance Time (s)		4.4		4.4	4.4					5.8	5.8	
Lane Grp Cap (vph)		1532		367	1564					822	1617	
v/s Ratio Prot		c0.13			0.11						c0.50	
v/s Ratio Perm				0.08						0.40		
v/c Ratio		0.29		0.19	0.24					0.86	1.08	
Uniform Delay, d1		14.5		13.8	14.2					19.1	21.5	
Progression Factor		1.00		0.52	0.52					1.00	1.00	
Incremental Delay, d2		0.5		1.1	0.4					11.1	46.3	
Delay (s)		15.0		8.3	7.7					30.2	67.8	
Level of Service		B		A	A					C	E	
Approach Delay (s)		15.0			7.8			0.0			57.1	
Approach LOS		B			A			A			E	

Intersection Summary

HCM Average Control Delay	44.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗	↘	↑↑↑				
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				
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	0.91				
Frbp, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.99				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1770	3574			3539	1554	1775	4975				
Flt Permitted	0.53	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	979	3574			3539	1554	1775	4975				
Volume (vph)	263	782	0	0	302	485	15	1948	72	0	0	0
Peak-hour factor, PHF	0.80	0.88	1.00	1.00	0.90	0.94	0.64	0.95	0.73	1.00	1.00	1.00
Adj. Flow (vph)	329	889	0	0	336	516	23	2051	99	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	2	0	6	0	0	0	0
Lane Group Flow (vph)	329	889	0	0	336	514	23	2144	0	0	0	0
Confl. Peds. (#/hr)				1		13	21		9			
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	2%	2%
Parking (#/hr)								0				
Turn Type	Perm				Perm		Perm					
Protected Phases		2			2			4				
Permitted Phases	2					2	4					
Actuated Green, G (s)	30.1	30.1			30.1	30.1	40.2	40.2				
Effective Green, g (s)	31.0	31.0			31.0	31.0	41.0	41.0				
Actuated g/C Ratio	0.39	0.39			0.39	0.39	0.51	0.51				
Clearance Time (s)	4.9	4.9			4.9	4.9	4.8	4.8				
Lane Grp Cap (vph)	379	1385			1371	602	910	2550				
v/s Ratio Prot		0.25			0.09			c0.43				
v/s Ratio Perm	c0.34					0.33	0.01					
v/c Ratio	0.87	0.64			0.25	0.85	0.03	0.84				
Uniform Delay, d1	22.6	20.0			16.6	22.4	9.6	16.7				
Progression Factor	1.09	1.09			0.77	0.84	1.00	1.00				
Incremental Delay, d2	10.2	0.9			0.4	14.1	0.1	3.5				
Delay (s)	34.9	22.6			13.2	32.9	9.7	20.3				
Level of Service	C	C			B	C	A	C				
Approach Delay (s)		25.9			25.1			20.1			0.0	
Approach LOS		C			C			C			A	
Intersection Summary												
HCM Average Control Delay		22.8			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.85										
Actuated Cycle Length (s)		80.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		146.9%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

590 South Fair Oaks Ave
PM Existing

5/13/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3386		1805	3567		1805	3438		1805	3524	
Flt Permitted	0.15	1.00		0.13	1.00		0.23	1.00		0.24	1.00	
Satd. Flow (perm)	281	3386		252	3567		431	3438		459	3524	
Volume (vph)	51	515	215	124	812	48	276	505	139	111	573	70
Peak-hour factor, PHF	0.78	0.81	0.78	0.70	0.92	0.79	0.80	0.95	0.80	0.77	0.92	0.70
Adj. Flow (vph)	65	636	276	177	883	61	345	532	174	144	623	100
RTOR Reduction (vph)	0	53	0	0	5	0	0	36	0	0	15	0
Lane Group Flow (vph)	65	860	0	177	939	0	345	670	0	144	708	0
Confl. Peds. (#/hr)			41			23			27			10
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	34.3	27.1		40.7	30.3		36.6	28.8		36.2	28.6	
Effective Green, g (s)	33.4	27.0		39.8	30.2		37.6	30.6		37.2	30.4	
Actuated g/C Ratio	0.37	0.30		0.44	0.34		0.42	0.34		0.41	0.34	
Clearance Time (s)	3.2	3.9		3.2	3.9		3.2	5.8		3.2	5.8	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	213	1016		277	1197		287	1169		291	1190	
v/s Ratio Prot	0.02	0.25		c0.07	c0.26		c0.09	0.19		0.04	0.20	
v/s Ratio Perm	0.09			0.21			c0.41			0.17		
v/c Ratio	0.31	0.85		0.64	0.78		1.20	0.57		0.49	0.60	
Uniform Delay, d1	20.0	29.5		18.9	27.0		23.6	24.3		17.7	24.7	
Progression Factor	1.00	1.00		1.00	1.00		1.19	1.13		1.00	1.00	
Incremental Delay, d2	0.6	8.7		4.2	5.2		115.1	1.7		1.0	2.2	
Delay (s)	20.6	38.2		23.1	32.1		143.3	29.2		18.7	26.9	
Level of Service	C	D		C	C		F	C		B	C	
Approach Delay (s)		37.0			30.7			66.6			25.5	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	40.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1522	1770	3427		1770	3419		1770	3454	
Flt Permitted	0.22	1.00	1.00	0.23	1.00		0.18	1.00		0.18	1.00	
Satd. Flow (perm)	406	3539	1522	427	3427		333	3419		333	3454	
Volume (vph)	81	519	250	173	503	86	152	692	128	88	677	80
Peak-hour factor, PHF	0.68	0.90	0.80	0.82	0.88	0.85	0.85	0.91	0.75	0.91	0.95	0.80
Adj. Flow (vph)	119	577	312	211	572	101	179	760	171	97	713	100
RTOR Reduction (vph)	0	0	234	0	17	0	0	18	0	0	11	0
Lane Group Flow (vph)	119	577	78	211	656	0	179	913	0	97	802	0
Confl. Peds. (#/hr)			22			39			17			28
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	31.8	22.7	22.7	35.6	24.6		43.7	34.0		37.7	31.0	
Effective Green, g (s)	30.9	22.6	22.6	34.7	24.5		44.2	35.3		38.2	32.3	
Actuated g/C Ratio	0.34	0.25	0.25	0.39	0.27		0.49	0.39		0.42	0.36	
Clearance Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	5.3		3.2	5.3	
Vehicle Extension (s)	2.5	4.8	4.8	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	265	889	382	317	933		306	1341		236	1240	
v/s Ratio Prot	0.04	0.16		c0.08	c0.19		c0.06	c0.27		0.03	0.23	
v/s Ratio Perm	0.11		0.05	0.18			0.23			0.15		
v/c Ratio	0.45	0.65	0.21	0.67	0.70		0.58	0.68		0.41	0.65	
Uniform Delay, d1	21.5	30.2	26.6	20.3	29.5		15.2	22.7		17.0	24.1	
Progression Factor	1.00	1.00	1.00	0.71	0.86		1.19	0.83		1.02	0.79	
Incremental Delay, d2	0.9	2.2	0.5	4.5	2.8		2.2	2.6		0.6	2.0	
Delay (s)	22.4	32.3	27.1	18.9	28.2		20.2	21.5		18.0	21.1	
Level of Service	C	C	C	B	C		C	C		B	C	
Approach Delay (s)		29.5			26.0			21.3			20.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1851		1805	1817		1805	3519		1805	3599	
Flt Permitted	0.39	1.00		0.33	1.00		0.24	1.00		0.12	1.00	
Satd. Flow (perm)	736	1851		629	1817		450	3519		228	3599	
Volume (vph)	16	237	35	198	183	76	64	1084	199	228	945	17
Peak-hour factor, PHF	0.64	0.85	0.73	0.90	0.89	0.90	0.64	0.89	0.92	0.89	0.96	0.93
Adj. Flow (vph)	25	279	48	220	206	84	100	1218	216	256	984	18
RTOR Reduction (vph)	0	4	0	0	1	0	0	8	0	0	1	0
Lane Group Flow (vph)	25	323	0	220	289	0	100	1426	0	256	1001	0
Confl. Peds. (#/hr)			9						5			7
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	24.9	24.9		24.9	24.9		57.2	57.2		57.2	57.2	
Effective Green, g (s)	25.2	25.2		25.2	25.2		56.8	56.8		56.8	56.8	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.63	0.63		0.63	0.63	
Clearance Time (s)	4.3	4.3		4.3	4.3		3.6	3.6		3.6	3.6	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	206	518		176	509		284	2221		144	2271	
v/s Ratio Prot		0.17			0.16			0.41			0.28	
v/s Ratio Perm	0.03			c0.35			0.22			c1.12		
v/c Ratio	0.12	0.62		1.25	0.57		0.35	0.64		1.78	0.44	
Uniform Delay, d1	24.1	28.3		32.4	27.7		7.9	10.3		16.6	8.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	5.6		150.7	4.5		0.8	0.6		376.6	0.1	
Delay (s)	25.4	33.8		183.1	32.3		8.6	10.9		393.2	8.6	
Level of Service	C	C		F	C		A	B		F	A	
Approach Delay (s)		33.2			97.3			10.8			86.9	
Approach LOS		C			F			B			F	

Intersection Summary

HCM Average Control Delay	51.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3502		1770	3539	1583	1770	3371		1770	3452	
Flt Permitted	0.36	1.00		0.29	1.00	1.00	0.40	1.00		0.25	1.00	
Satd. Flow (perm)	665	3502		535	3539	1583	747	3371		473	3452	
Volume (vph)	39	645	49	56	597	159	72	290	134	115	313	62
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	701	53	61	649	173	78	315	146	125	340	67
RTOR Reduction (vph)	0	5	0	0	0	85	0	65	0	0	19	0
Lane Group Flow (vph)	42	749	0	61	649	88	78	396	0	125	388	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	49.6	45.2		51.6	46.2	46.2	24.2	17.7		27.8	19.5	
Effective Green, g (s)	48.3	44.8		50.3	45.8	45.8	22.9	17.3		26.5	19.1	
Actuated g/C Ratio	0.54	0.50		0.56	0.51	0.51	0.25	0.19		0.29	0.21	
Clearance Time (s)	3.1	3.6		3.1	3.6	3.6	3.1	3.6		3.1	3.6	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	4.8	2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	400	1743		361	1801	806	254	648		246	733	
v/s Ratio Prot	0.00	c0.21		c0.01	0.18		0.02	c0.12		c0.04	0.11	
v/s Ratio Perm	0.05			0.09		0.06	0.06			0.11		
v/c Ratio	0.10	0.43		0.17	0.36	0.11	0.31	0.61		0.51	0.53	
Uniform Delay, d1	10.1	14.4		9.7	13.3	11.5	26.3	33.3		24.6	31.5	
Progression Factor	1.48	1.49		1.06	0.99	1.28	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7		0.2	0.6	0.3	0.5	2.4		1.2	1.2	
Delay (s)	15.0	22.1		10.4	13.8	15.0	26.8	35.6		25.8	32.7	
Level of Service	B	C		B	B	B	C	D		C	C	
Approach Delay (s)		21.7			13.8			34.4			31.1	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM Average Control Delay			23.5				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			54.7%				ICU Level of Service			A		
Analysis Period (min)			15									

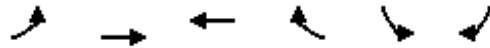
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3491		1770	4871		1770	5008	
Flt Permitted	0.17	1.00	1.00	0.15	1.00		0.20	1.00		0.16	1.00	
Satd. Flow (perm)	325	3539	1583	277	3491		369	4871		294	5008	
Volume (vph)	77	851	191	474	735	73	163	773	302	40	751	85
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	925	208	515	799	79	177	840	328	43	816	92
RTOR Reduction (vph)	0	0	32	0	8	0	0	75	0	0	15	0
Lane Group Flow (vph)	84	925	176	515	870	0	177	1093	0	43	893	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt			pm+pt		
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	26.8	21.3	28.3	36.3	26.2		40.3	33.3		34.3	30.3	
Effective Green, g (s)	29.0	22.9	30.8	37.9	27.8		43.1	35.2		37.1	32.2	
Actuated g/C Ratio	0.32	0.25	0.34	0.42	0.31		0.48	0.39		0.41	0.36	
Clearance Time (s)	4.6	5.6	4.9	4.6	5.6		4.9	5.9		4.9	5.9	
Vehicle Extension (s)	2.5	4.8	2.5	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	203	900	612	299	1078		300	1905		202	1792	
v/s Ratio Prot	0.03	0.26	0.03	c0.21	0.25		c0.05	0.22		0.01	0.18	
v/s Ratio Perm	0.11		0.09	c0.51			c0.23			0.08		
v/c Ratio	0.41	1.03	0.29	1.72	0.81		0.59	0.57		0.21	0.50	
Uniform Delay, d1	22.7	33.5	21.6	23.3	28.6		14.8	21.5		16.6	22.6	
Progression Factor	0.70	0.73	0.57	1.38	0.74		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	36.6	0.2	338.4	4.9		2.5	1.3		0.4	1.0	
Delay (s)	16.9	61.1	12.6	370.4	26.1		17.2	22.8		16.9	23.6	
Level of Service	B	E	B	F	C		B	C		B	C	
Approach Delay (s)		49.8			153.4			22.0			23.3	
Approach LOS		D			F			C			C	

Intersection Summary

HCM Average Control Delay	66.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↙	↑↑	↑	↘	↙↘	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	3610	1900	1615	3502	1615
Flt Permitted	0.54	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1035	3610	1900	1615	3502	1615
Volume (vph)	78	468	287	112	416	153
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	509	312	122	452	166
RTOR Reduction (vph)	0	0	0	0	0	98
Lane Group Flow (vph)	85	509	312	122	452	68
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	12.0	12.0	12.0	24.8	12.8	12.8
Effective Green, g (s)	11.6	11.6	11.6	25.2	13.6	13.6
Actuated g/C Ratio	0.35	0.35	0.35	0.76	0.41	0.41
Clearance Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	362	1261	664	1615	1435	662
v/s Ratio Prot		0.14	c0.16	0.03	c0.13	
v/s Ratio Perm	0.08			0.04		0.04
v/c Ratio	0.23	0.40	0.47	0.08	0.31	0.10
Uniform Delay, d1	7.7	8.2	8.4	1.0	6.6	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	0.7	0.0	0.2	0.1
Delay (s)	8.1	8.5	9.1	1.0	6.8	6.1
Level of Service	A	A	A	A	A	A
Approach Delay (s)		8.4	6.9		6.6	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑↑					↑	↑↓	
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	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.95	
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					0.99	1.00	
Frt		0.98		1.00	1.00					1.00	0.98	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3517		1805	3574					1761	3527	
Flt Permitted		1.00		0.31	1.00					0.95	1.00	
Satd. Flow (perm)		3517		587	3574					1761	3527	
Volume (vph)	0	480	70	28	166	0	0	0	0	661	1139	143
Peak-hour factor, PHF	1.00	0.88	0.69	0.53	0.90	1.00	0.93	0.93	0.93	0.91	0.92	0.80
Adj. Flow (vph)	0	545	101	53	184	0	0	0	0	726	1238	179
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	624	0	53	184	0	0	0	0	726	1401	0
Confl. Peds. (#/hr)			4							5		12
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	2%	2%	2%	2%	0%	1%
Turn Type				Perm							Perm	
Protected Phases		2			2							4
Permitted Phases				2							4	
Actuated Green, G (s)		25.6		25.6	25.6					34.2	34.2	
Effective Green, g (s)		26.0		26.0	26.0					36.0	36.0	
Actuated g/C Ratio		0.37		0.37	0.37					0.51	0.51	
Clearance Time (s)		4.4		4.4	4.4					5.8	5.8	
Lane Grp Cap (vph)		1306		218	1327					906	1814	
v/s Ratio Prot		c0.18			0.05						0.40	
v/s Ratio Perm				0.09						c0.41		
v/c Ratio		0.48		0.24	0.14					0.80	0.77	
Uniform Delay, d1		16.8		15.2	14.6					14.0	13.7	
Progression Factor		1.00		0.46	0.44					1.00	1.00	
Incremental Delay, d2		1.3		2.6	0.2					7.4	3.3	
Delay (s)		18.1		9.6	6.7					21.4	17.0	
Level of Service		B		A	A					C	B	
Approach Delay (s)		18.1			7.3			0.0			18.5	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM Average Control Delay			17.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			116.4%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗	↘	↑↑↑				
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				
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	0.91				
Frbp, ped/bikes	1.00	1.00			1.00	0.95	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.99	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.99				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1805	3574			3574	1509	1778	4965				
Flt Permitted	0.59	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	1120	3574			3574	1509	1778	4965				
Volume (vph)	349	900	0	0	239	456	13	1645	76	0	0	0
Peak-hour factor, PHF	0.87	0.90	1.00	1.00	0.91	0.92	0.67	0.85	0.63	1.00	1.00	1.00
Adj. Flow (vph)	401	1000	0	0	263	496	19	1935	121	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	4	0	10	0	0	0	0
Lane Group Flow (vph)	401	1000	0	0	263	492	19	2046	0	0	0	0
Confl. Peds. (#/hr)			14	1		32	21		9			
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	2%	2%	2%
Parking (#/hr)								0				
Turn Type	Perm				Perm		Perm					
Protected Phases		2			2			4				
Permitted Phases	2					2	4					
Actuated Green, G (s)	25.1	25.1			25.1	25.1	35.2	35.2				
Effective Green, g (s)	26.0	26.0			26.0	26.0	36.0	36.0				
Actuated g/C Ratio	0.37	0.37			0.37	0.37	0.51	0.51				
Clearance Time (s)	4.9	4.9			4.9	4.9	4.8	4.8				
Lane Grp Cap (vph)	416	1327			1327	560	914	2553				
v/s Ratio Prot		0.28			0.07			c0.41				
v/s Ratio Perm	c0.36					0.33	0.01					
v/c Ratio	0.96	0.75			0.20	0.88	0.02	0.80				
Uniform Delay, d1	21.5	19.2			14.9	20.5	8.3	14.0				
Progression Factor	0.86	0.84			1.00	1.00	1.00	1.00				
Incremental Delay, d2	31.4	3.2			0.3	17.6	0.0	2.8				
Delay (s)	49.9	19.4			15.3	38.2	8.4	16.8				
Level of Service	D	B			B	D	A	B				
Approach Delay (s)		28.2			30.2			16.7			0.0	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM Average Control Delay		22.9			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.87										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		116.4%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↗	↕		↗	↕		↗	↕	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.96		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	0.99		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3251		1805	3560		1805	3479		1805	3576	
Flt Permitted	0.24	1.00		0.12	1.00		0.17	1.00		0.35	1.00	
Satd. Flow (perm)	458	3251		234	3560		316	3479		669	3576	
Volume (vph)	21	481	352	114	733	47	204	445	76	74	697	26
Peak-hour factor, PHF	0.78	0.81	0.78	0.70	0.92	0.79	0.80	0.95	0.80	0.77	0.92	0.70
Adj. Flow (vph)	27	594	451	163	797	59	255	468	95	96	758	37
RTOR Reduction (vph)	0	145	0	0	5	0	0	19	0	0	4	0
Lane Group Flow (vph)	27	900	0	163	851	0	255	544	0	96	791	0
Confl. Peds. (#/hr)			67			37			45			42
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	32.2	28.6		42.0	35.2		36.9	29.1		33.3	27.3	
Effective Green, g (s)	31.3	28.5		41.9	35.1		37.9	30.9		34.3	29.1	
Actuated g/C Ratio	0.35	0.32		0.47	0.39		0.42	0.34		0.38	0.32	
Clearance Time (s)	3.2	3.9		3.2	3.9		3.2	5.8		3.2	5.8	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	201	1029		273	1388		249	1194		321	1156	
v/s Ratio Prot	0.00	c0.28		c0.06	0.24		c0.08	0.16		0.02	0.22	
v/s Ratio Perm	0.04			0.22			c0.35			0.10		
v/c Ratio	0.13	0.87		0.60	0.61		1.02	0.46		0.30	0.68	
Uniform Delay, d1	19.8	29.1		18.7	22.0		22.4	23.0		18.4	26.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	10.3		2.9	2.0		63.4	1.3		0.4	3.3	
Delay (s)	20.0	39.4		21.7	24.0		85.8	24.3		18.8	29.8	
Level of Service	C	D		C	C		F	C		B	C	
Approach Delay (s)		38.9			23.7			43.4			28.6	
Approach LOS		D			C			D			C	

Intersection Summary

HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗		↘	↗↗		↘	↗↗	
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1530	1770	3414		1770	3460		1770	3479	
Flt Permitted	0.22	1.00	1.00	0.28	1.00		0.14	1.00		0.18	1.00	
Satd. Flow (perm)	409	3539	1530	526	3414		257	3460		334	3479	
Volume (vph)	50	444	335	267	561	114	155	752	81	48	711	61
Peak-hour factor, PHF	0.68	0.90	0.80	0.82	0.88	0.85	0.85	0.91	0.75	0.91	0.95	0.80
Adj. Flow (vph)	74	493	419	326	638	134	182	826	108	53	748	76
RTOR Reduction (vph)	0	0	228	0	21	0	0	11	0	0	9	0
Lane Group Flow (vph)	74	493	191	326	751	0	182	923	0	53	815	0
Confl. Peds. (#/hr)			20			37			26			22
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	27.7	20.9	20.9	34.9	24.9		35.9	28.3		28.1	23.7	
Effective Green, g (s)	26.8	20.8	20.8	34.8	24.8		37.2	29.6		28.6	25.0	
Actuated g/C Ratio	0.34	0.26	0.26	0.43	0.31		0.47	0.37		0.36	0.31	
Clearance Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	5.3		3.2	5.3	
Vehicle Extension (s)	2.5	4.8	4.8	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	239	920	398	384	1058		275	1280		184	1087	
v/s Ratio Prot	0.02	0.14		c0.11	0.22		c0.07	c0.27		0.01	0.23	
v/s Ratio Perm	0.08		0.12	c0.26			0.24			0.09		
v/c Ratio	0.31	0.54	0.48	0.85	0.71		0.66	0.72		0.29	0.75	
Uniform Delay, d1	18.9	25.4	25.0	16.8	24.4		15.4	21.7		17.8	24.7	
Progression Factor	1.47	1.30	2.40	1.00	1.00		0.83	0.91		1.00	1.00	
Incremental Delay, d2	0.5	1.0	1.7	15.7	2.7		4.9	3.3		0.6	4.8	
Delay (s)	28.4	34.0	61.8	32.5	27.1		17.7	23.0		18.4	29.5	
Level of Service	C	C	E	C	C		B	C		B	C	
Approach Delay (s)		45.4			28.7			22.1			28.8	
Approach LOS		D			C			C			C	

Intersection Summary

HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↘		↗	↕		↗	↘	
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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.93		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1853		1805	1730		1805	3524		1805	3594	
Flt Permitted	0.22	1.00		0.53	1.00		0.24	1.00		0.09	1.00	
Satd. Flow (perm)	426	1853		1008	1730		462	3524		178	3594	
Volume (vph)	26	167	28	97	167	179	69	1419	216	125	720	14
Peak-hour factor, PHF	0.85	0.81	0.83	0.81	0.66	0.72	0.59	0.94	0.85	0.82	0.81	0.63
Adj. Flow (vph)	31	206	34	120	253	249	117	1510	254	152	889	22
RTOR Reduction (vph)	0	10	0	0	1	0	0	11	0	0	1	0
Lane Group Flow (vph)	31	230	0	120	501	0	117	1753	0	152	910	0
Confl. Peds. (#/hr)			9			15			3			17
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	29.0	29.0		29.0	29.0		43.1	43.1		43.1	43.1	
Effective Green, g (s)	29.3	29.3		29.3	29.3		42.7	42.7		42.7	42.7	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.53	0.53		0.53	0.53	
Clearance Time (s)	4.3	4.3		4.3	4.3		3.6	3.6		3.6	3.6	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	156	679		369	634		247	1881		95	1918	
v/s Ratio Prot		0.12			c0.29			0.50			0.25	
v/s Ratio Perm	0.07			0.12			0.25			c0.85		
v/c Ratio	0.20	0.34		0.33	0.79		0.47	0.93		1.60	0.47	
Uniform Delay, d1	17.3	18.3		18.2	22.6		11.6	17.3		18.6	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	1.4		2.3	9.7		1.4	9.0		313.5	0.2	
Delay (s)	20.2	19.7		20.6	32.3		13.1	26.3		332.2	11.8	
Level of Service	C	B		C	C		B	C		F	B	
Approach Delay (s)		19.7			30.1			25.5			57.6	
Approach LOS		B			C			C			E	

Intersection Summary

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗	↖	↖	↖↗		↖	↖↗	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3453		1770	3539	1583	1770	3428		1770	3434	
Flt Permitted	0.35	1.00		0.42	1.00	1.00	0.41	1.00		0.51	1.00	
Satd. Flow (perm)	655	3453		788	3539	1583	772	3428		953	3434	
Volume (vph)	30	398	77	87	672	176	30	170	45	34	219	54
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	433	84	95	730	191	33	185	49	37	238	59
RTOR Reduction (vph)	0	9	0	0	0	71	0	29	0	0	27	0
Lane Group Flow (vph)	33	508	0	95	730	120	33	205	0	37	270	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	61.4	57.8		65.8	60.0	60.0	18.1	13.8		18.3	13.9	
Effective Green, g (s)	60.1	57.4		64.5	59.6	59.6	16.8	13.4		17.0	13.5	
Actuated g/C Ratio	0.63	0.60		0.68	0.63	0.63	0.18	0.14		0.18	0.14	
Clearance Time (s)	3.1	3.6		3.1	3.6	3.6	3.1	3.6		3.1	3.6	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	4.8	2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	445	2082		584	2216	991	172	483		200	487	
v/s Ratio Prot	0.00	0.15		c0.01	c0.21		c0.01	0.06		0.01	c0.08	
v/s Ratio Perm	0.04			0.10		0.08	0.03			0.03		
v/c Ratio	0.07	0.24		0.16	0.33	0.12	0.19	0.42		0.18	0.56	
Uniform Delay, d1	6.7	8.8		5.4	8.4	7.2	33.0	37.4		32.8	38.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.1	0.4	0.2	0.4	1.2		0.3	2.2	
Delay (s)	6.7	9.1		5.5	8.8	7.4	33.4	38.5		33.2	40.3	
Level of Service	A	A		A	A	A	C	D		C	D	
Approach Delay (s)		8.9			8.2			37.9			39.5	
Approach LOS		A			A			D			D	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗		↘	↗↗↗		↘	↗↗↗	
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3520		1770	4929		1770	5036	
Flt Permitted	0.18	1.00	1.00	0.27	1.00		0.35	1.00		0.15	1.00	
Satd. Flow (perm)	342	3539	1583	495	3520		648	4929		272	5036	
Volume (vph)	41	449	102	477	905	34	160	896	230	35	510	35
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	488	111	518	984	37	174	974	250	38	554	38
RTOR Reduction (vph)	0	0	75	0	3	0	0	48	0	0	9	0
Lane Group Flow (vph)	45	488	36	518	1018	0	174	1176	0	38	583	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt			pm+pt		
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	24.4	20.2	26.3	35.2	26.4		40.9	34.8		35.9	32.3	
Effective Green, g (s)	26.6	21.8	28.8	36.8	28.0		43.7	36.7		38.7	34.2	
Actuated g/C Ratio	0.30	0.24	0.32	0.41	0.31		0.49	0.41		0.43	0.38	
Clearance Time (s)	4.6	5.6	4.9	4.6	5.6		4.9	5.9		4.9	5.9	
Vehicle Extension (s)	2.5	4.8	2.5	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	177	857	577	358	1095		402	2010		192	1914	
v/s Ratio Prot	0.01	0.14	0.00	c0.18	0.29		c0.03	c0.24		0.01	0.12	
v/s Ratio Perm	0.06		0.02	c0.41			0.18			0.08		
v/c Ratio	0.25	0.57	0.06	1.45	0.93		0.43	0.59		0.20	0.30	
Uniform Delay, d1	24.4	30.0	21.2	23.2	30.0		13.5	20.7		15.7	19.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	1.4	0.0	216.3	13.8		0.5	1.3		0.4	0.4	
Delay (s)	25.0	31.3	21.3	239.5	43.9		14.0	22.0		16.1	20.0	
Level of Service	C	C	C	F	D		B	C		B	B	
Approach Delay (s)		29.2			109.7			21.0			19.7	
Approach LOS		C			F			C			B	

Intersection Summary

HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↗↗	↰	↰	↰↰	↰
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	3610	1900	1615	3502	1615
Flt Permitted	0.56	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1062	3610	1900	1615	3502	1615
Volume (vph)	135	288	307	208	117	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	147	313	334	226	127	71
RTOR Reduction (vph)	0	0	0	0	0	52
Lane Group Flow (vph)	147	313	334	226	127	19
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	19.1	19.1	19.1	27.9	8.8	8.8
Effective Green, g (s)	18.7	18.7	18.7	28.3	9.6	9.6
Actuated g/C Ratio	0.52	0.52	0.52	0.78	0.26	0.26
Clearance Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	547	1860	979	1615	926	427
v/s Ratio Prot		0.09	c0.18	c0.04	0.04	
v/s Ratio Perm	0.14			0.10		0.01
v/c Ratio	0.27	0.17	0.34	0.14	0.14	0.04
Uniform Delay, d1	5.0	4.7	5.2	1.0	10.2	9.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.1	0.3	0.1	0.1	0.1
Delay (s)	5.3	4.7	5.5	1.0	10.3	10.0
Level of Service	A	A	A	A	B	A
Approach Delay (s)		4.9	3.7		10.2	
Approach LOS		A	A		B	

Intersection Summary

HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	36.3	Sum of lost time (s)	4.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↓		↑	↑↑					↑	↑↓	
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	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.95	
Frbp, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					0.99	1.00	
Frt		0.98		1.00	1.00					1.00	0.97	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		3501		1770	3574					1777	3496	
Flt Permitted		1.00		0.45	1.00					0.95	1.00	
Satd. Flow (perm)		3501		841	3574					1777	3496	
Volume (vph)	0	375	39	82	342	0	0	0	0	660	1317	277
Peak-hour factor, PHF	1.00	0.93	0.73	0.91	0.87	1.00	0.93	0.93	0.93	0.92	0.91	0.87
Adj. Flow (vph)	0	403	53	90	393	0	0	0	0	717	1447	318
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	0	0	24	0
Lane Group Flow (vph)	0	449	0	90	393	0	0	0	0	717	1741	0
Confl. Peds. (#/hr)			4							5		12
Heavy Vehicles (%)	0%	1%	2%	2%	1%	0%	2%	2%	2%	1%	0%	0%
Turn Type				Perm							Perm	
Protected Phases		2			2							4
Permitted Phases				2							4	
Actuated Green, G (s)		35.6		35.6	35.6					34.2	34.2	
Effective Green, g (s)		36.0		36.0	36.0					36.0	36.0	
Actuated g/C Ratio		0.45		0.45	0.45					0.45	0.45	
Clearance Time (s)		4.4		4.4	4.4					5.8	5.8	
Lane Grp Cap (vph)		1575		378	1608					800	1573	
v/s Ratio Prot		c0.13			0.11						c0.50	
v/s Ratio Perm				0.11						0.40		
v/c Ratio		0.29		0.24	0.24					0.90	1.11	
Uniform Delay, d1		13.9		13.6	13.6					20.3	22.0	
Progression Factor		1.00		0.51	0.52					1.00	1.00	
Incremental Delay, d2		0.5		1.5	0.4					14.8	58.0	
Delay (s)		14.3		8.3	7.4					35.0	80.0	
Level of Service		B		A	A					D	E	
Approach Delay (s)		14.3			7.5			0.0			67.0	
Approach LOS		B			A			A			E	
Intersection Summary												
HCM Average Control Delay			51.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			133.6%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑			↑↑	↗	↘	↑↑↑				
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				
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	0.91				
Frbp, ped/bikes	1.00	1.00			1.00	0.97	1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.98	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.99				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	1770	3574			3539	1554	1775	4972				
Flt Permitted	0.50	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	937	3574			3539	1554	1775	4972				
Volume (vph)	263	798	0	0	328	520	15	1948	79	0	0	0
Peak-hour factor, PHF	0.80	0.88	1.00	1.00	0.90	0.94	0.64	0.95	0.73	1.00	1.00	1.00
Adj. Flow (vph)	329	907	0	0	364	553	23	2051	108	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	2	0	7	0	0	0	0
Lane Group Flow (vph)	329	907	0	0	364	551	23	2152	0	0	0	0
Confl. Peds. (#/hr)				1		13	21		9			
Heavy Vehicles (%)	2%	1%	0%	0%	2%	1%	0%	0%	0%	2%	2%	2%
Parking (#/hr)								0				
Turn Type	Perm				Perm		Perm					
Protected Phases		2			2			4				
Permitted Phases	2					2	4					
Actuated Green, G (s)	30.1	30.1			30.1	30.1	40.2	40.2				
Effective Green, g (s)	31.0	31.0			31.0	31.0	41.0	41.0				
Actuated g/C Ratio	0.39	0.39			0.39	0.39	0.51	0.51				
Clearance Time (s)	4.9	4.9			4.9	4.9	4.8	4.8				
Lane Grp Cap (vph)	363	1385			1371	602	910	2548				
v/s Ratio Prot		0.25			0.10			c0.43				
v/s Ratio Perm	0.35					c0.35	0.01					
v/c Ratio	0.91	0.65			0.27	0.91	0.03	0.84				
Uniform Delay, d1	23.1	20.1			16.7	23.2	9.6	16.8				
Progression Factor	1.07	1.06			0.77	0.84	1.00	1.00				
Incremental Delay, d2	24.1	1.9			0.5	20.6	0.1	3.6				
Delay (s)	48.8	23.3			13.4	40.2	9.7	20.4				
Level of Service	D	C			B	D	A	C				
Approach Delay (s)		30.0			29.5		20.3				0.0	
Approach LOS		C			C		C				A	
Intersection Summary												
HCM Average Control Delay		25.0			HCM Level of Service		C					
HCM Volume to Capacity ratio		0.87										
Actuated Cycle Length (s)		80.0			Sum of lost time (s)		8.0					
Intersection Capacity Utilization		133.6%			ICU Level of Service		H					
Analysis Period (min)		15										
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↗	↕		↗	↕		↗	↕	
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3386		1805	3567		1805	3433		1805	3525	
Flt Permitted	0.15	1.00		0.13	1.00		0.23	1.00		0.23	1.00	
Satd. Flow (perm)	281	3386		252	3567		446	3433		446	3525	
Volume (vph)	51	515	215	127	812	48	276	514	148	111	576	70
Peak-hour factor, PHF	0.78	0.81	0.78	0.70	0.92	0.79	0.80	0.95	0.80	0.77	0.92	0.70
Adj. Flow (vph)	65	636	276	181	883	61	345	541	185	144	626	100
RTOR Reduction (vph)	0	53	0	0	5	0	0	38	0	0	14	0
Lane Group Flow (vph)	65	860	0	181	939	0	345	688	0	144	712	0
Confl. Peds. (#/hr)			41			23			27			10
Turn Type	pm+pt		pm+pt		pm+pt		pm+pt		pm+pt		pm+pt	
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6			2			8			4		
Actuated Green, G (s)	34.3	27.1		40.7	30.3		36.4	29.6		36.4	29.6	
Effective Green, g (s)	33.4	27.0		39.8	30.2		37.4	31.4		37.4	31.4	
Actuated g/C Ratio	0.37	0.30		0.44	0.34		0.42	0.35		0.42	0.35	
Clearance Time (s)	3.2	3.9		3.2	3.9		3.2	5.8		3.2	5.8	
Vehicle Extension (s)	2.5	4.0		2.5	4.0		2.5	4.0		2.5	4.0	
Lane Grp Cap (vph)	213	1016		277	1197		276	1198		276	1230	
v/s Ratio Prot	0.02	0.25		c0.07	c0.26		c0.08	0.20		0.03	0.20	
v/s Ratio Perm	0.09			0.22			c0.44			0.18		
v/c Ratio	0.31	0.85		0.65	0.78		1.25	0.57		0.52	0.58	
Uniform Delay, d1	20.0	29.5		18.9	27.0		24.5	23.9		17.7	23.9	
Progression Factor	1.00	1.00		1.00	1.00		1.17	1.11		1.00	1.00	
Incremental Delay, d2	0.6	8.7		4.9	5.2		133.4	1.5		1.4	2.0	
Delay (s)	20.6	38.2		23.8	32.1		161.9	27.9		19.0	25.9	
Level of Service	C	D		C	C		F	C		B	C	
Approach Delay (s)		37.0			30.8			71.1			24.8	
Approach LOS		D			C			E			C	

Intersection Summary

HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗		↘	↗↗		↘	↗↗	
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1522	1770	3427		1770	3374		1770	3455	
Flt Permitted	0.22	1.00	1.00	0.23	1.00		0.13	1.00		0.15	1.00	
Satd. Flow (perm)	417	3539	1522	426	3427		237	3374		280	3455	
Volume (vph)	81	519	273	186	503	86	213	709	198	88	684	80
Peak-hour factor, PHF	0.68	0.90	0.80	0.82	0.88	0.85	0.85	0.91	0.75	0.91	0.95	0.80
Adj. Flow (vph)	119	577	341	227	572	101	251	779	264	97	720	100
RTOR Reduction (vph)	0	0	251	0	17	0	0	31	0	0	11	0
Lane Group Flow (vph)	119	577	90	227	656	0	251	1012	0	97	809	0
Confl. Peds. (#/hr)			22			39			17			28
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	31.9	22.8	22.8	36.1	24.9		43.6	33.8		32.7	26.1	
Effective Green, g (s)	31.0	22.7	22.7	35.2	24.8		44.9	35.1		33.2	27.4	
Actuated g/C Ratio	0.34	0.25	0.25	0.39	0.28		0.50	0.39		0.37	0.30	
Clearance Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	5.3		3.2	5.3	
Vehicle Extension (s)	2.5	4.8	4.8	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	268	893	384	322	944		348	1316		199	1052	
v/s Ratio Prot	0.04	0.16		c0.08	0.19		c0.11	c0.30		0.03	0.23	
v/s Ratio Perm	0.11		0.06	c0.19			0.25			0.15		
v/c Ratio	0.44	0.65	0.24	0.70	0.69		0.72	0.77		0.49	0.77	
Uniform Delay, d1	21.4	30.1	26.8	20.2	29.2		17.7	23.9		20.0	28.4	
Progression Factor	1.00	1.00	1.00	0.72	0.86		1.17	0.84		0.94	0.74	
Incremental Delay, d2	0.9	2.1	0.6	6.2	2.6		6.2	4.0		1.0	4.1	
Delay (s)	22.2	32.2	27.4	20.7	27.8		27.0	24.1		19.9	25.3	
Level of Service	C	C	C	C	C		C	C		B	C	
Approach Delay (s)		29.5			26.1			24.6			24.7	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	26.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↘		↗	↕		↗	↘	
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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.95		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1851		1805	1806		1805	3519		1805	3593	
Flt Permitted	0.36	1.00		0.34	1.00		0.23	1.00		0.12	1.00	
Satd. Flow (perm)	691	1851		637	1806		436	3519		225	3593	
Volume (vph)	20	237	35	198	183	92	64	1088	199	236	954	26
Peak-hour factor, PHF	0.64	0.85	0.73	0.90	0.89	0.90	0.64	0.89	0.92	0.89	0.96	0.93
Adj. Flow (vph)	31	279	48	220	206	102	100	1222	216	265	994	28
RTOR Reduction (vph)	0	4	0	0	1	0	0	8	0	0	1	0
Lane Group Flow (vph)	31	323	0	220	307	0	100	1430	0	265	1021	0
Confl. Peds. (#/hr)			9						5			7
Turn Type	Perm		Perm		Perm		Perm		Perm		Perm	
Protected Phases		2			2			4				4
Permitted Phases	2			2			4			4		
Actuated Green, G (s)	25.2	25.2		25.2	25.2		56.9	56.9		56.9	56.9	
Effective Green, g (s)	25.5	25.5		25.5	25.5		56.5	56.5		56.5	56.5	
Actuated g/C Ratio	0.28	0.28		0.28	0.28		0.63	0.63		0.63	0.63	
Clearance Time (s)	4.3	4.3		4.3	4.3		3.6	3.6		3.6	3.6	
Vehicle Extension (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	196	524		180	512		274	2209		141	2256	
v/s Ratio Prot		0.17			0.17			0.41			0.28	
v/s Ratio Perm	0.04			c0.35			0.23			c1.18		
v/c Ratio	0.16	0.62		1.22	0.60		0.36	0.65		1.88	0.45	
Uniform Delay, d1	24.2	28.0		32.2	27.8		8.1	10.5		16.8	8.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	5.3		139.4	5.1		0.8	0.7		421.4	0.1	
Delay (s)	25.9	33.3		171.7	32.9		8.9	11.2		438.1	8.9	
Level of Service	C	C		F	C		A	B		F	A	
Approach Delay (s)		32.7			90.8			11.0			97.2	
Approach LOS		C			F			B			F	

Intersection Summary

HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3481		1770	3539	1583	1770	3371		1770	3452	
Flt Permitted	0.35	1.00		0.25	1.00	1.00	0.41	1.00		0.24	1.00	
Satd. Flow (perm)	649	3481		471	3539	1583	773	3371		452	3452	
Volume (vph)	39	680	84	56	610	159	72	290	134	115	313	62
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	739	91	61	663	173	78	315	146	125	340	67
RTOR Reduction (vph)	0	8	0	0	0	86	0	67	0	0	20	0
Lane Group Flow (vph)	42	822	0	61	663	87	78	394	0	125	387	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	49.3	44.9		51.3	45.9	45.9	24.0	17.4		28.6	19.7	
Effective Green, g (s)	48.0	44.5		50.0	45.5	45.5	22.7	17.0		27.3	19.3	
Actuated g/C Ratio	0.53	0.49		0.56	0.51	0.51	0.25	0.19		0.30	0.21	
Clearance Time (s)	3.1	3.6		3.1	3.6	3.6	3.1	3.6		3.1	3.6	
Vehicle Extension (s)	2.5	4.8		2.5	4.8	4.8	2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	390	1721		327	1789	800	258	637		254	740	
v/s Ratio Prot	0.00	c0.24		c0.01	0.19		0.02	c0.12		c0.04	0.11	
v/s Ratio Perm	0.05			0.09		0.06	0.06			0.11		
v/c Ratio	0.11	0.48		0.19	0.37	0.11	0.30	0.62		0.49	0.52	
Uniform Delay, d1	10.2	15.1		10.0	13.5	11.6	26.4	33.5		24.1	31.3	
Progression Factor	1.65	1.56		1.10	0.99	1.19	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8		0.2	0.6	0.3	0.5	2.5		1.1	1.2	
Delay (s)	16.9	24.4		11.2	14.0	14.1	26.9	36.0		25.2	32.5	
Level of Service	B	C		B	B	B	C	D		C	C	
Approach Delay (s)		24.0			13.8			34.7			30.8	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM Average Control Delay			24.1				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			90.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			56.8%				ICU Level of Service			B		
Analysis Period (min)			15									

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3492		1770	4871		1770	5008	
Flt Permitted	0.17	1.00	1.00	0.15	1.00		0.20	1.00		0.16	1.00	
Satd. Flow (perm)	324	3539	1583	276	3492		366	4871		295	5008	
Volume (vph)	77	868	209	474	742	73	170	773	302	40	751	85
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	943	227	515	807	79	185	840	328	43	816	92
RTOR Reduction (vph)	0	0	31	0	8	0	0	75	0	0	15	0
Lane Group Flow (vph)	84	943	196	515	878	0	185	1093	0	43	893	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt			pm+pt		
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)	26.8	21.4	28.5	36.4	26.4		40.3	33.2		34.1	30.1	
Effective Green, g (s)	29.0	23.0	31.0	38.0	28.0		43.1	35.1		36.9	32.0	
Actuated g/C Ratio	0.32	0.26	0.34	0.42	0.31		0.48	0.39		0.41	0.36	
Clearance Time (s)	4.6	5.6	4.9	4.6	5.6		4.9	5.9		4.9	5.9	
Vehicle Extension (s)	2.5	4.8	2.5	2.5	4.8		2.5	4.8		2.5	4.8	
Lane Grp Cap (vph)	201	904	616	299	1086		300	1900		201	1781	
v/s Ratio Prot	0.03	0.27	0.03	c0.21	0.25		c0.05	0.22		0.01	0.18	
v/s Ratio Perm	0.11		0.10	c0.52			c0.24			0.08		
v/c Ratio	0.42	1.04	0.32	1.72	0.81		0.62	0.58		0.21	0.50	
Uniform Delay, d1	22.7	33.5	21.7	23.4	28.5		14.9	21.6		16.7	22.7	
Progression Factor	0.69	0.71	0.54	1.37	0.74		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	41.0	0.2	338.4	4.9		3.2	1.3		0.4	1.0	
Delay (s)	16.6	64.9	11.8	370.5	26.1		18.1	22.9		17.1	23.8	
Level of Service	B	E	B	F	C		B	C		B	C	
Approach Delay (s)		52.1			152.7			22.2			23.4	
Approach LOS		D			F			C			C	
Intersection Summary												
HCM Average Control Delay			66.9			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.15									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			89.4%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↗	↖	↖↖	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.97	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1805	3610	1900	1615	3502	1615
Flt Permitted	0.48	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	914	3610	1900	1615	3502	1615
Volume (vph)	78	477	330	112	450	153
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	518	359	122	489	166
RTOR Reduction (vph)	0	0	0	0	0	98
Lane Group Flow (vph)	85	518	359	122	489	68
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	12.9	12.9	12.9	26.2	13.3	13.3
Effective Green, g (s)	12.5	12.5	12.5	26.6	14.1	14.1
Actuated g/C Ratio	0.36	0.36	0.36	0.77	0.41	0.41
Clearance Time (s)	3.6	3.6	3.6	4.8	4.8	4.8
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	330	1304	686	1615	1427	658
v/s Ratio Prot		0.14	c0.19	0.03	c0.14	
v/s Ratio Perm	0.09			0.04		0.04
v/c Ratio	0.26	0.40	0.52	0.08	0.34	0.10
Uniform Delay, d1	7.8	8.2	8.7	1.0	7.1	6.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.3	0.9	0.0	0.2	0.1
Delay (s)	8.3	8.5	9.6	1.0	7.3	6.4
Level of Service	A	A	A	A	A	A
Approach Delay (s)		8.5	7.5		7.0	
Approach LOS		A	A		A	

Intersection Summary

HCM Average Control Delay	7.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	34.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Appendix:
PEQI Calculation Sheet

City of Pasadena
 Department of Transportation
 Pedestrian Environmental Quality Index
 Calculation Summary
 -- Segment --

Segment: Fair Oaks Avenue
 Limits: Between California Boulevard and Pico Street

Indicator Category	Score Weight	Indicator Response	Southbound (West side)	Indicator Response	Northbound (East side)
			Surveyed Response Category Score		Surveyed Response Category Score
Traffic					
Number of Lanes	0.64	4+	0	4+	0
Posted Speed Limit	0.64	Over 25 mph	0	Over 25 mph	0
Traffic Volume ¹	0.64	More than 12,000 V/D	0	More than 12,000 V/D	0
Street Traffic Calming Features (TCFs)	0.64	None	0	None	0
			0		0
Street design					
Width of Sidewalk	1.35	8-12 ft	20	8-12 ft	20
Width of Throughway	1.35	4-6 ft	13	4-6 ft	13
Large SW Obstructions	1.35	None	22	None	22
Sidewalk Impediments	1.35	None	24	None	24
Trees	1.35	Sporadic	7	Sporadic	7
Driveway Cuts	1.35	1 to 5	7	1 to 5	7
Presence of Buffer	1.35	None	0	None	0
Planters/Gardens	1.35	Yes	4	Yes	4
Public Seating	1.35	Yes	4	No	0
			101		97
Land Use					
Public Art/ Historic Sites	0.15	No	0	No	0
Retail Use/Public Places	0.15	1 or 2	7	1 or 2	7
			7		7
Perceived Safety					
Lighting	0.34	None	0	None	0
Illegal Graffiti	0.34	No	2	No	2
Litter	0.34	No	11	No	11
Empty Spaces	0.34	No	4	Yes	0
			17		13
Domain Summary					
	Score Weight		Category Score		Category Score
Traffic	0.64	Traffic	0	Traffic	0
Street Design	1.35	Street Design	101	Street Design	97
Land Use	0.15	Land Use	7	Land Use	7
Safety	0.34	Safety	17	Safety	13
	2.48		125		117
			PEQI Score 50		
			Southbound (West side)	PEQI Score 47	Northbound (East side)

City of Pasadena
 Department of Transportation
 Pedestrian Environmental Quality Index
 Calculation Summary
 -- Segment --

Segment: California Boulevard
 Limits: Between Fair Oaks Ave and Edmondson Alley

Indicator Category	Score Weight	Indicator Response	Westbound (North side)	Indicator Response	Eastbound (South side)
			Surveyed Response Category Score		Surveyed Response Category Score
Traffic					
Number of Lanes	0.64	4+	0	4+	0
Posted Speed Limit	0.64	Over 25 mph	0	Over 25 mph	0
Traffic Volume ¹	0.64	More than 12,000 V/D	0	More than 12,000 V/D	0
Street Traffic Calming Features (TCFs)	0.64	None	0	None	0
			0		0
Street design					
Width of Sidewalk	1.35	8-12 ft	20	8-12 ft	20
Width of Throughway	1.35	4-6 ft	13	4-6 ft	13
Large SW Obstructions	1.35	None	22	None	22
Sidewalk Impediments	1.35	None	24	None	24
Trees	1.35	None	0	None	0
Driveway Cuts	1.35	None	15	None	15
Presence of Buffer	1.35	None	0	None	0
Planters/Gardens	1.35	No	0	No	0
Public Seating	1.35	No	0	No	0
			94		94
Land Use					
Public Art/ Historic Sites	0.15	No	0	No	0
Retail Use/Public Places	0.15	1 or 2	7	1 or 2	7
			7		7
Perceived Safety					
Lighting	0.34	None	0	None	0
Illegal Graffiti	0.34	No	2	No	2
Litter	0.34	No	11	No	11
Empty Spaces	0.34	No	4	Yes	0
			17		13
Domain Summary					
	Score Weight		Category Score		Category Score
Traffic	0.64	Traffic	0	Traffic	0
Street Design	1.35	Street Design	94	Street Design	94
Land Use	0.15	Land Use	7	Land Use	7
Safety	0.34	Safety	17	Safety	13
	2.48		118		114
			PEQI Score 48	PEQI Score 46	
			Westbound (North side)	Eastbound (South side)	

Appendix:
BEQI Calculation Sheet

City of Pasadena
 Department of Transportation
 Bicycle Environmental Quality Index
 Calculation Summary

Segment: Fair Oaks Avenue
 Limits: Between California Blvd and Pico Street

Indicator Category	Score Weight	Indicator Response	Southbound (West side)		Northbound (East side)		
			Surveyed Response Category Score	Indicator Response	Surveyed Response Category Score	Indicator Response	
Street design							
Presence of a Marked Area for Bicycle Traffic	2.05	None	4	None	4	None	
Width of Bike Lane	2.05	None	0	None	0	None	
Bicycle Lane Markings	2.05	None	4	None	4	None	
Connectivity of Bicycle Lanes	2.05	No	13	No	13	No	
Pavement Type/Condition	2.05	Smooth Surface	40	Smooth Surface	40	Smooth Surface	
Street Slope	2.05	< 5%	27	< 5%	27	< 5%	
Driveway Cuts	2.05	Few (Less than Five)	16	Few (Less than Five)	16	Few (Less than Five)	
Presence of Trees	2.05	Sporadically Lined	22	Sporadically Lined	22	Sporadically Lined	
			126		126		
Vehicle Traffic							
Posted Speed Limit	1.39	35	0	35	0	35	
Traffic Volume - Avg # of Vehicles Per Day	1.39	10,000 +	8	10,000 +	8	10,000 +	
Percentage of Heavy Vehicles	1.39	Less than 5%	36	Less than 5%	36	Less than 5%	
Parallel Parking Adjacent to Bicycle Lane/Route	1.39	None	27	None	27	None	
Traffic Calming Features Streets	1.39	0 TCF	11	0 TCF	11	0 TCF	
Number of Lanes	1.39	4+	15	4+	15	4+	
			97		97		
Safety/Other							
Presence of Bicycle Lane Signs	0.42	No	15	No	15	No	
Bicycle/Pedestrian Scale Lighting	0.42	No	15	No	15	No	
			30		30		
Land Use							
Bicycle Parking	0.66	No	12	No	12	No	
Retail Use	0.66	1 - 2	16	1 - 2	16	1 - 2	
Line of Site	0.66	Clear Line of Sight	36	Clear Line of Sight	36	Clear Line of Sight	
			64		64		
Domain Summary	Score Weight		Min Score	Category Score		Min Score	Category Score
Street design	2.05		62	126		62	126
Vehicle Traffic	1.39		59	97		59	97
Safety/Other	0.42		30	30		30	30
Land Use	0.66		33	64		33	64
	4.52		184	317		184	317
			BEQI Score¹	29		BEQI Score¹	29
			Southbound (West side)			Northbound (East side)	

City of Pasadena
 Department of Transportation
 Bicycle Environmental Quality Index
 Calculation Summary

Segment: California Boulevard
 Limits: Between Fair Oaks Avenue and Edmondson Alley

Indicator Category	Score Weight	Indicator Response	Westbound (North side)		Eastbound (South side)		
			Surveyed Response Category Score	Indicator Response	Surveyed Response Category Score	Indicator Response	
Street design							
Presence of a Marked Area for Bicycle Traffic	2.05	None	4	None	4	4	
Width of Bike Lane	2.05	None	0	None	0	0	
Bicycle Lane Markings	2.05	None	4	None	4	4	
Connectivity of Bicycle Lanes	2.05	No	13	No	13	13	
Pavement Type/Condition	2.05	Smooth Surface	40	Smooth Surface	40	40	
Street Slope	2.05	< 5%	27	< 5%	27	27	
Driveway Cuts	2.05	Few (Less than Five)	16	Few (Less than Five)	16	16	
Presence of Trees	2.05	None	15	None	15	15	
			119		119		
Vehicle Traffic							
Posted Speed Limit	1.39	30	0	30	0	0	
Traffic Volume - Avg # of Vehicles Per Day	1.39	10,000 +	8	10,000 +	8	8	
Percentage of Heavy Vehicles	1.39	Less than 5%	36	Less than 5%	36	36	
Parallel Parking Adjacent to Bicycle Lane/Route	1.39	None	27	None	27	27	
Traffic Calming Features Streets	1.39	0 TCF	11	0 TCF	11	11	
Number of Lanes	1.39	4+	15	4+	15	15	
			97		97		
Safety/Other							
Presence of Bicycle Lane Signs	0.42	No	15	No	15	15	
Bicycle/Pedestrian Scale Lighting	0.42	No	15	No	15	15	
			30		30		
Land Use							
Bicycle Parking	0.66	No	12	No	12	12	
Retail Use	0.66	1 - 2	16	1 - 2	16	16	
Line of Site	0.66	Clear Line of Sight	36	Clear Line of Sight	36	36	
			64		64		
Domain Summary							
	Score Weight		Min Score	Category Score		Min Score	Category Score
Street design	2.05		62	119		62	119
Vehicle Traffic	1.39		59	97		59	97
Safety/Other	0.42		30	30		30	30
Land Use	0.66		33	64		33	64
	4.52		184	310		184	310
			BEQI Score ¹ 28			BEQI Score ¹ 28	
			Westbound (North side)			Eastbound (South side)	