HEXAGON TRANSPORTATION CONSULTANTS, INC.

3530-3560 E. 18th Street Residential Development

Traffic Impact Analysis

Prepared for:

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Executive Summary

This report presents the results of the traffic impact analysis conducted for the proposed residential development at 3530-3560 E. 18th Street in Antioch, California. The proposed project would consist of 394 apartments that include 178 senior dwelling units and 216 family dwelling units on a vacant site. The project would have vehicular access to and from E. 18th Street via a stub extension of Holub Lane. Access to and from the southern portion of the site would be provided via a stub extension of Filbert Street.

This study was conducted for the purpose of identifying potential traffic impacts related to the proposed development. The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Antioch and the Contra Costa Transportation Authority (CCTA), which serves as the Congestion Management Agency (CMA) for Contra Costa County. A County Congestion Management Program (CMP) analysis was not required because none of the study intersections are part of the CMP network. However, East 18th Street is considered a route of regional significance. The suburban arterial routes within the study area were evaluated in accordance with the East County Action Plan (ECAP). The traffic study includes an analysis of AM and PM peak hour traffic conditions for four signalized intersections and one unsignalized intersection in the vicinity of the project site. The study also includes an analysis of transit, bicycle and pedestrian access.

Project Trip Generation

Trip generation for the proposed residential development was estimated based on the Institute of Transportation Engineers' *Trip Generation Manual, 10th Edition*. Given that the site is currently vacant, no credits or reductions were assumed for existing uses.

Based on the estimated trip generation rates, the proposed project would generate 1,865 daily trips, 108 trips (31 inbound and 77 outbound) during the AM peak hour, and 138 trips (82 inbound and 56 outbound) during the PM peak hour.

Project Impacts

The result of the intersection level of service analysis are shown in Table ES-1. The analysis determined that under all scenarios with and without the project, when measured against the City of Antioch and ECAP level of service standards, all of the signalized intersections are expected to operate at acceptable levels (high-level LOS D or better). Under cumulative and cumulative plus project conditions during the AM and PM peak hours, the unsignalized intersection of Drive-In Way/Holub Lane & E.18th Street is expected to operate at an unacceptable LOS F. A peak hour signal warrant analysis was conducted for this intersection and found that traffic volumes exceed the published values in the

MUTCD peak hour signal warrant. A level of service analysis was conducted for the same intersection as a signal-controlled intersection and shows an acceptable level of service with the change.

Other Transportation Issues

The peak hour signal warrant analysis was met for the unsignalized intersection of Drive-In Way/Holub Lane & E. 18th Street. It is recommended that a signalized intersection should be studied for this intersection.

The proposed project would not have an adverse effect on the existing transit or bicycle facilities in the study area.

Based on a review of the project site plan and existing pedestrian facilities, Hexagon has provided the following recommendations to improve site access, and on-site circulation.

Recommendations

- **Sight Distance**. Adequate sight distance should be provided at the project driveways. Currently, there are no roadway curves, on-street parking, or landscaping features that obstruct the vision of exiting drivers adjacent to the project site. The site plans do not show any landscaping features that would interfere with the sight distance at the northern and southern site driveways. In order to ensure the safety to the residents, no objects should be placed within the sight distance triangle that would obstruct the vision of exiting drivers.

- **Dead-End Aisles**. The project site plan shows several dead-end parking aisles that intersect the main north-south aisle. While dead-end aisles are generally undesirable, the site plan shows sufficient space at the end of each dead-end aisle to facilitate vehicles backing out of the last parking spaces at the end of the aisle. There is also sufficient space for vehicles to turn around at the end of the dead-end aisle between Buildings 10 and 11. However, the dead-end aisles between Buildings 4 and 5, and between Buildings 6 and 7, and the dead-end aisle west of Buildings 1 and 2 would all have a manual gate at the end of the aisle that would be operable only by emergency vehicles. It is recommended that the spaces in the dead-end aisles be assigned to specific dwelling units to avoid having vehicles attempt to turn around at the end of a dead-end aisle when all parking spaces in the aisle are occupied. Signage should be placed at the beginning of each dead-end aisle to indicate “Dead End – Reserved Resident Parking Only”.

- **Tandem Parking**. The proposed project would provide 58 tandem parking spaces. Per the City’s Zoning Code, the tandem parking spaces must be assigned to the same dwelling unit.

- **Pedestrian Facilities**. The site plan shows a new sidewalk will be constructed along the site’s frontage on East 18th Street as well as sidewalk connections between the public streets and the project site and internal pedestrian pathways throughout the site. It is recommended that the project extend the sidewalk eastward along the south side of East 18th Street from Drive-In Way to the bus stop east of the southbound SR 160 ramp to provide a safe path for residents walking to transit stops and other points of interest in the vicinity of the project site.

Table ES 1
Intersection Level of Service Summary

Study Number	Intersection	Peak Hour	Count Date	Control Type	Existing				Cumulative			
					No Project		with Project		No Project		with Project	
					Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS
1	East 18th Street and Viera Avenue*	AM	5/22/18	Signal	7.9	A	8.0	A	27.3	C	28.8	C
		PM	5/22/18		7.6	A	7.8	A	31.6	C	30.7	C
2	East 18th Street and Phillips Lane*	AM	5/22/18	Signal	5.9	A	5.9	A	8.7	A	8.6	A
		PM	5/22/18		5.5	A	5.5	A	8.7	A	8.8	A
3	East 18th Street and Drive-In Way/Holub Lane*	AM	5/22/18	TWSC [1]	13.1	B	11.7	B	**89.9**	**F**	**141.8**	**F**
		PM	5/22/18		9.7	A	12.4	B	**618.2**	**F**	**969.9**	**F**
3	East 18th Street and Drive-In Way/Holub Lane* *with Improvement as Signalized Intersection*	AM	5/22/18	Signal					9.8	A	10.5	B
		PM	5/22/18						12.0	B	13.4	B
4	East 18th Street and SB SR 160*	AM	5/22/18	Signal	15.4	B	15.9	B	20.6	C	22.0	C
		PM	5/22/18		13.2	B	13.3	B	16.2	B	16.8	B
5	East 18th Street and NB SR 160*	AM	5/22/18	Signal	8.5	A	8.6	A	14.2	B	14.3	B
		PM	5/22/18		11.3	B	11.4	B	24.4	C	25.4	C

[1] Average delay is reported for the worst stop-controlled approach.
TWSC = Two-Way Stop Control
* Denotes an intersection on a Route of Regional Significance
Bold indicates a substandard level of service.
Bold indicates a significant project impact.

1. Introduction

This report presents the results of the Traffic Impact Analysis (TIA) conducted for the proposed residential development located at 3530-3560 East 18th Street in Antioch, California. The proposed project would consist of 394 apartments that include 178 senior dwelling units and 216 family dwelling units on a vacant site. The project would have vehicular access to and from East 18th Street via a stub extension of Drive-In Way/Holub Lane. Access to and from the southern portion of the site would be provided via a stub extension of Filbert Street. A second right-turn only driveway on East 18th Street would be limited to emergency vehicle access only.

The project site and the surrounding study area are shown on Figure 1. The proposed site plan is shown on Figure 2.

Scope of Study

This study was conducted for the purpose of identifying the potential traffic impacts related to the proposed development. The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Antioch and the Contra Costa Transportation Authority (CCTA), which serves as the Congestion Management Agency (CMA) for Contra Costa County. A County Congestion Management Program (CMP) analysis is not required because none of the study intersections are part of the CMP network. However, East 18th Street is considered a route of regional significance. The suburban arterial routes within the study area were evaluated in accordance with the East County Action Plan (ECAP). The traffic study includes an analysis of AM and PM peak-hour traffic conditions for four signalized intersections and one unsignalized intersection in the vicinity of the project site. The study also includes an analysis of transit, bicycle, and pedestrian access.

Study Intersections

1. East 18th Street and Viera Avenue*
2. East 18th Street and Phillips Lane*
3. East 18th Street and Drive-In Way/Holub Lane* (unsignalized)
4. East 18th Street and Southbound SR 160 Ramp*
5. East 18th Street and Northbound SR 160 Ramp*

* Denotes intersections on a route of regional significance

Per CCTA's *Technical Procedures*, a freeway segment level of service analysis is required when a project adds 50 trips or greater to a freeway segment. Because the proposed project is expected to generate less than 50 trips on any freeway segment, freeway segments were not evaluated.

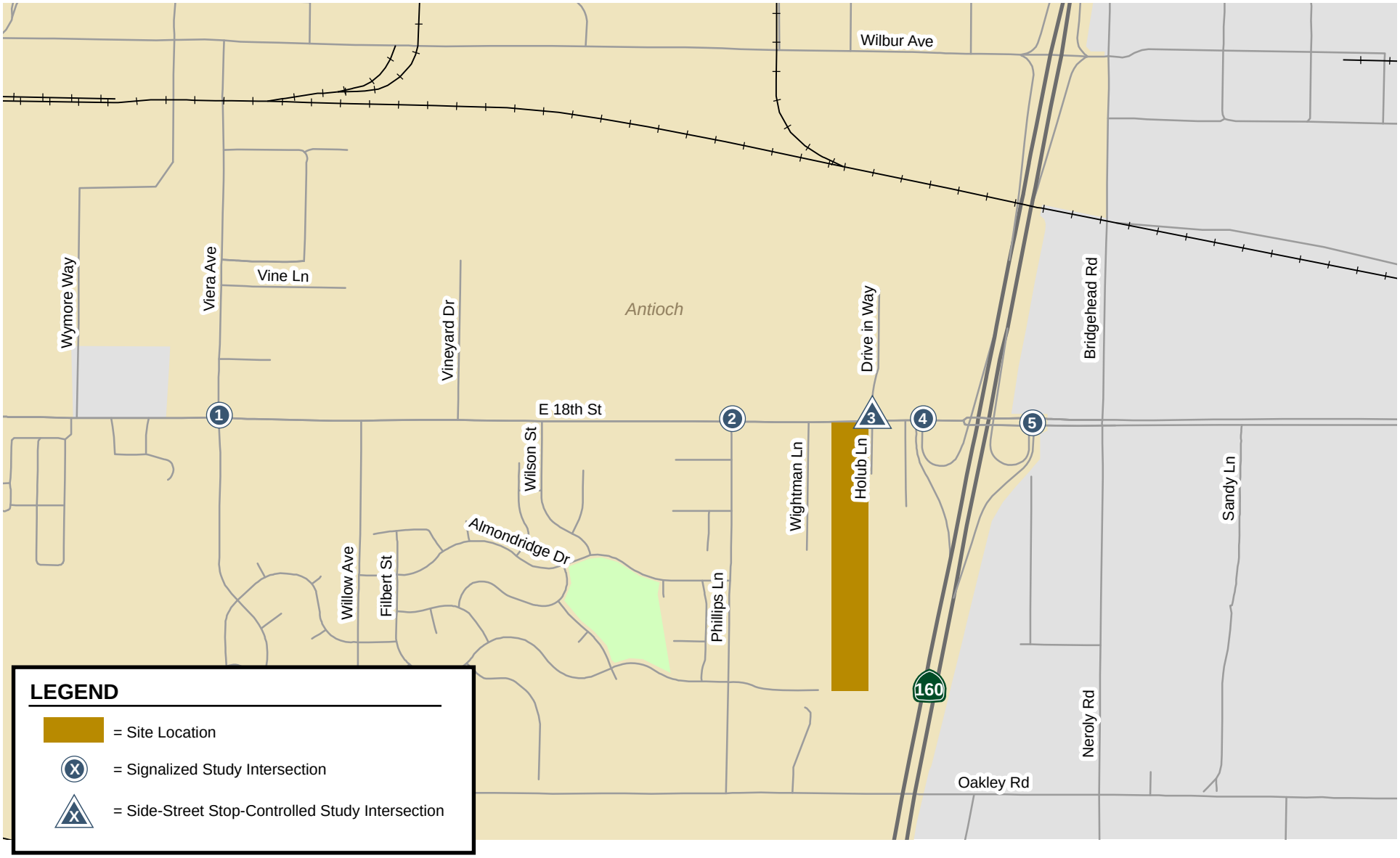

Figure 1
Site Location and Study Intersections

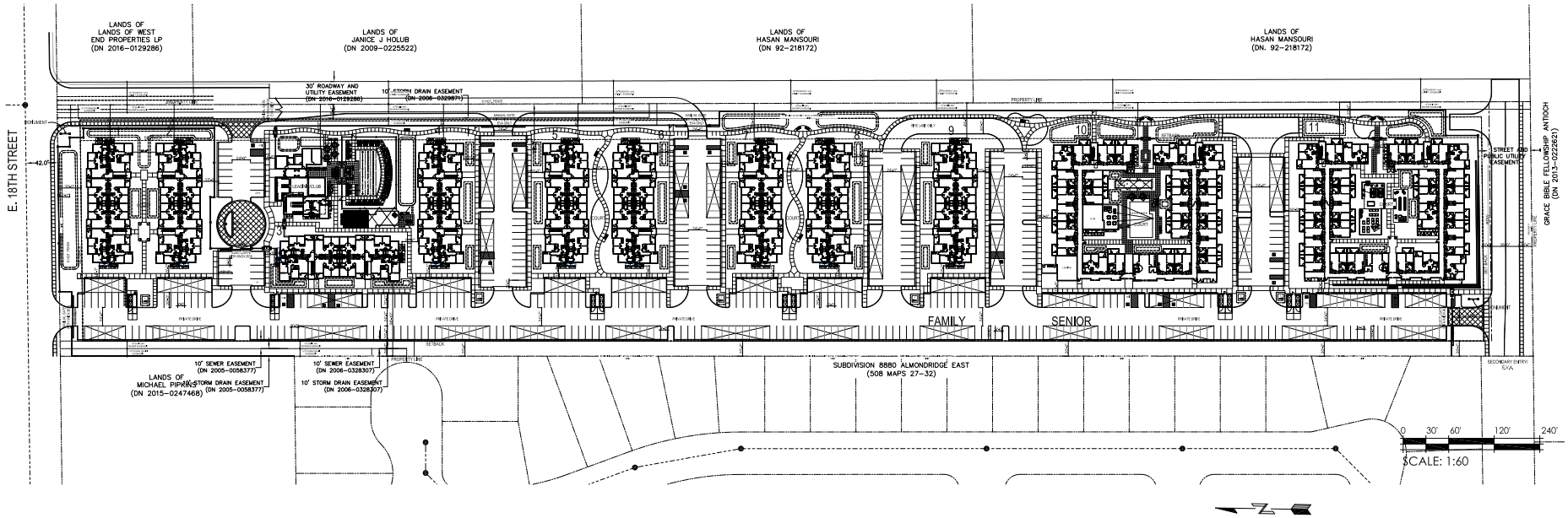

Figure 2
Project Site Plan

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NORTH
Not to Scale

Analysis Time Periods

Traffic conditions at the study intersections were analyzed for both the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour is expected to occur between 7:00 AM and 9:00 AM and the PM peak hour is expected to occur between 4:00 PM and 6:00 PM on a regular weekday. These are the peak commute hours during which most traffic congestion occurs on the roadways.

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing traffic volumes at study intersections were based on traffic counts conducted in May 2018. The five study intersections were evaluated with a level of service analysis using Synchro software in accordance with the *2010 Highway Capacity Manual* methodology.

Scenario 2: *Existing plus Project Conditions.* Existing traffic volumes with the project were estimated by adding to existing traffic volumes the additional traffic generated by the project. Existing plus project conditions were evaluated relative to existing conditions in order to determine the effects the project would have on the existing roadway network.

Scenario 3: *Cumulative Conditions.* Cumulative traffic volumes represent traffic growth through the year 2040. Cumulative traffic volumes were estimated based on the available year 2040 forecasts from the CCTA travel demand forecast model.

Scenario 4: *Cumulative plus Project Conditions.* Cumulative plus project conditions were estimated by adding to the cumulative traffic volumes the additional traffic estimated to be generated by the proposed project. Cumulative plus project conditions were evaluated relative to cumulative conditions to determine potential project impacts.

Methodology

This section presents the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts, previous traffic studies, CCTA, and field observations. The following data were collected from these sources:

- Existing traffic volumes
- Existing lane configurations
- Signal timing and phasing
- Year 2040 traffic volumes from the CCTA travel demand forecast model.

Level of Service Standards and Analysis Methodologies

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The various analysis methods are described below.

Signalized Intersections

The City of Antioch evaluates level of service at signalized intersections based on the *2010 Highway Capacity Manual* (HCM) level of service methodology using Synchro software. The *2010 HCM* method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. The City of Antioch level of service standard for signalized study intersections is mid-level LOS D or better (average delay of 50 seconds or less), except on routes of regional significance, where the standard is high-level LOS D or better (average delay of 55 seconds or less). East 18th Street is a route of regional significance. Thus, all of the signalized study intersections are subject to the high-level LOS D standard.

According to the East County Action Plan (ECAP), the multi-modal transportation service objective (MTSO) for suburban arterial routes is to maintain LOS D or better (average delay of 55 seconds or less) at all signalized intersections. The correlation between average control delay and level of service is shown in Table 1.

Unsignalized Intersections

Level of service at the unsignalized study intersection was based on the *2010 Highway Capacity Manual* (2010 HCM) method using the Synchro software. This method is applicable for both two-way and all-way stop-controlled intersections. The unsignalized study intersection has a stop control on the minor street (Drive-In Way/Holub Lane). The level of service reported for this intersection is based on the average delay of the worst stop-controlled approach. The unsignalized study intersection is on a Route of Regional Significance and is therefore subject to the high-level LOS D standard (average delay of 35 seconds or less). The correlation between average control delay and LOS for unsignalized intersections is shown in Table 2.

Table 1
Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	up to 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	Greater than 80.0

Source: Transportation Research Board, *2010 Highway Capacity Manual,* (Washington, D.C., 2010).

Table 2
Unsignalized Intersection Level of Service Definitions Based on Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, 2010 *Highway Capacity Manual* (Washington, D.C., 2010).

Intersection Operations

For selected high-demand movements at key intersections, the estimated maximum vehicle queues were compared to the existing or planned storage capacity. The queuing analysis is presented for informational purposes only, since neither the City of Antioch nor the CMP have defined any policies related to queuing. Vehicle queues were calculated using a Poisson probability distribution, which estimates the probability of "n" vehicles for a vehicle movement using the following formula:

$$P(x = n) = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

$P(x = n)$ = probability of "n" vehicles in queue per lane

n = number of vehicles in the queue per lane

λ = Average number of vehicles in the queue per lane (vehicles per hour per lane/signal cycles per hour)

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement.

Significance Criteria

Significance criteria are used to establish what constitutes an impact. Impacts on study intersections are based on the significance criteria and level of service standards of the jurisdiction in which the

intersection is located. For this analysis, significance criteria for impacts on study intersections are based on the City of Antioch and the ECAP level of service standards. As mentioned in the previous section, the City of Antioch and the ECAP level of service standard for intersections on routes of regional significance, is high-level LOS D or better (average delay of 55 seconds or less for signalized intersections and 35 seconds or less for unsignalized intersections). All of the study intersections are on a route of regional significance.

According to the City of Antioch, a development is said to create a significant adverse impact on traffic conditions at a study intersection if for either peak hour, any of the following conditions occurs:

1. The level of service at a signalized intersection on a route of regional significance degrades from an acceptable level (high-level LOS D or better with an average delay of 55 seconds or less) under no-project conditions to an unacceptable level (LOS E or F) under project conditions, or
2. The project will add traffic to a signalized intersection on a route of regional significance that operates at an unacceptable level (LOS E or F) under no-project conditions, or
3. The level of service at an unsignalized intersection that is on a route of regional significance degrades from an acceptable level (high-level LOS D or better with average delay of 35 seconds or less) under no-project conditions to an unacceptable level (LOS E or F) under project conditions, and the intersection warrants a traffic signal based on the *California Manual of Uniform Traffic Control Devices* (CA MUTCD) Peak-Hour Signal Warrant (Warrant 3). or
4. The project will add traffic to an unsignalized intersection on a route of regional significance that operates at an unacceptable level (high-level LOS D or better with an average delay of 35 seconds or less), and the intersection warrants a traffic signal based on the *California Manual of Uniform Traffic Control Devices* (CA MUTCD) Peak-Hour Signal Warrant (Warrant 3).

A significant impact is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to its level of service standard or to an average intersection delay that is equal or better than no-project conditions.

Report Organization

The remainder of this report is divided into five chapters. Chapter 2 describes the existing roadway network, transit services, and pedestrian facilities. Chapter 3 describes the methods used to estimate project traffic and its impact on the existing transportation system. Chapter 4 describes cumulative conditions in the year 2040 and its impact on the transportation network, analyzed with and without project traffic. Chapter 5 presents the projects impacts on other transportation issues including an analysis of the site access and on-site circulation, parking, vehicle queuing, and transit, bicycle, and pedestrian facilities. Chapter 6 includes a summary of project impacts, any proposed mitigation measures, and recommended improvements.

2. Existing Conditions

This chapter describes the existing conditions for transportation facilities in the vicinity of the site, including the roadway network, transit service, pedestrian and bicycle facilities.

Existing Roadway Network

Regional access to the project site is provided via State Route 160 (SR 160).

SR 160 is a north/south freeway that extends from SR 4 in Contra Costa County to Business 80 in Sacramento County. In Antioch, SR 160 is a six-lane roadway (three lanes in each direction). SR 160 provides access to and from the project site via an interchange at East 18th Street.

Local access to the site is provided on East 18th Street. These roadways are described below.

East 18th Street is an east/west arterial roadway that extends from "L" Street to SR 160. East 18th Street is a designated route of regional significance between "A" Street and SR 160. In the vicinity of the project site, East 18th Street is a four-lane roadway with a center turn lane.

Viera Avenue is a north/south two-lane roadway that extends from Oakley Road to Wilbur Avenue. Bicycle lanes are present north of East 18th Street.

Phillips Lane is a north/south local roadway that extends from Oakley Road to East 18th Street. Phillips Lane has two lanes, a center turn lane, and bicycle lanes.

Drive-In Way is a short north/south two-lane dead-end street that provides access to local businesses. The project proposes to construct a stub extension of Drive-In Way/Holub Lane south of East 18th Street that will provide access to the project site.

Existing Pedestrian and Bicycle Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the project vicinity, sidewalks portions of East 18th Street. However, there is a gap in the sidewalk on the south side of East 18th Street adjacent to the project site between Phillips Lane and Neroly Road east of SR 160. Marked crosswalks with pedestrian signal heads and push buttons are provided at all of the signalized study intersections, except for the East 18th Street Street/Northbound SR 160 intersection. At the unsignalized study intersection, a marked crosswalk is provided along only the north

stop-controlled approach. The gap in the sidewalk hinders pedestrian travel to shopping centers, schools, nearby bus stops, and other points of interest in the vicinity of the project site.

There are two bicycle facilities in the vicinity of the project site. The existing bicycle facilities within the study area are described below and are shown on Figure 3.

Class II Bike Lanes are preferential use areas within a roadway designated for bicycles. Within the vicinity of the project, Class II bikeways are present along both sides of Viera Avenue between East 18th Street and Wilbur Avenue, and the entire length of Phillips Lane.

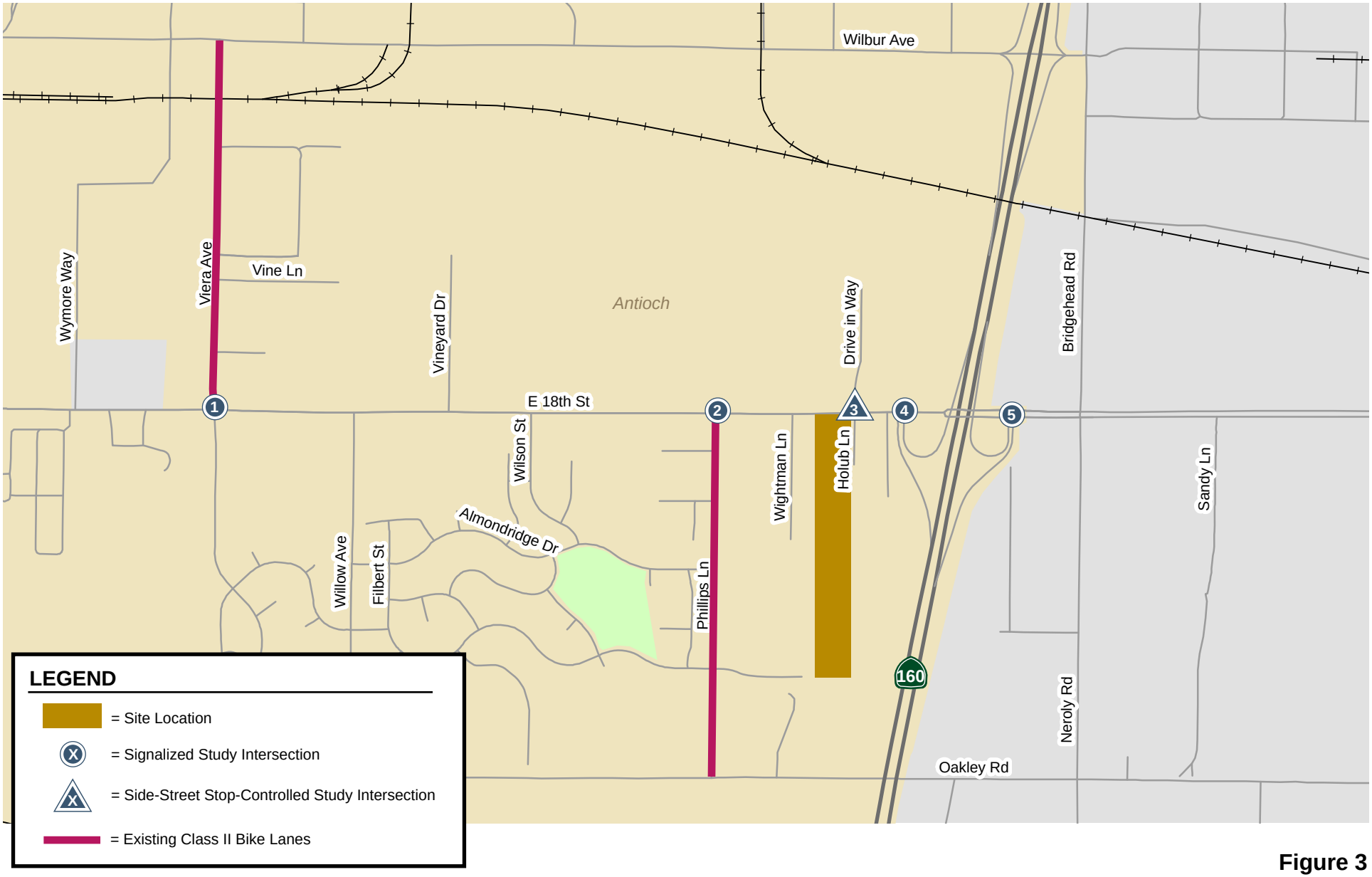

Figure 3
Existing Bicycle Facilities

Existing Transit Service

Existing transit service near the project site is provided by the Eastern Contra Costa Transit Authority (Tri Delta Transit). The study area is served directly by three local bus routes. Bus lines that run through the study area are summarized in Table 3, illustrated in Figure 4, and described below.

Table 3
Existing Transit Services

Bus Route	Route Description	Headway [3]
Local Route 383 [1]	Antioch to Brentwood	60 min
Local Route 391 [1]	Pittsburg Center BART to Brentwood Park & Ride	35 - 40 min
Local Route 393 [2]	Antioch BART to Brentwood Park & Ride	60 min

Notes:
[1] Route operates only on weekdays.
[2] Route operates only on weekends and holidays.
[3] Approximate headways during peak commute periods.

Local Route 383 operates primarily east/west on East 18th Street in the vicinity of the project site. Route 383 runs between the Antioch and Brentwood. The closest bus stops are located on East 18th Street at the southbound SR 160 Ramp intersection, approximately 500 feet from the project site. Weekday service is provided from approximately 7 AM to 5 PM with 60-minute headways during commute hours.

Local Route 391 operates on East 18th Street in the vicinity of the project, and runs between the Pittsburg Center BART Station and the Brentwood Park & Ride lot. The closest bus stops are located on East 18th Street at the southbound SR 160 Ramp intersection, approximately 500 feet from the project site. Weekday service is provided from approximately 6 AM to 1 AM (next day), with 35- to-40-minute headways during commute hours.

Local Route 393 operates on East 18th Street in the vicinity of the project, and runs between Antioch BART Station and the Brentwood Park & Ride lot. The closest bus stops are located on East 18th Street at the southbound SR 160 Ramp intersection, approximately 500 feet from the project site. This route operates on weekends only from approximately 5 AM to 1 AM (next day), with about 60-minute headways.

Figure 4
Existing Transit Services

Existing Intersection Lane Configurations

The existing lane configurations at the study intersections were determined by observations in the field and are shown on Figure 5.

Existing Traffic Volumes

Existing traffic volumes at the five intersections were obtained from peak-hour counts collected on May 22nd, 2018. The existing peak-hour intersection volumes are shown in Figure 6.

3530-3560 E. 18th Street, Antioch, CA

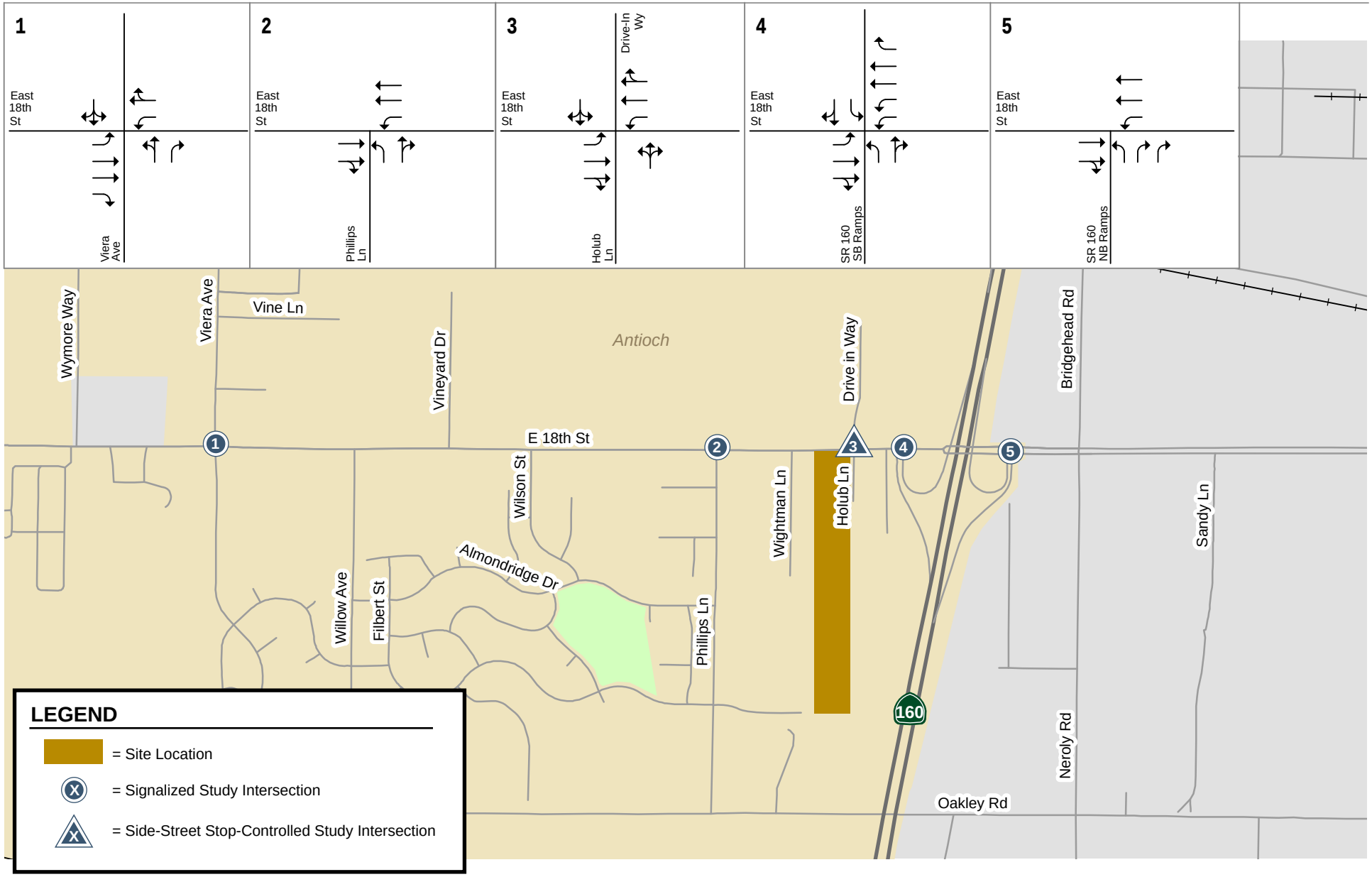

Figure 5
Existing Lane Configurations

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3530-3560 E. 18th Street, Antioch, CA

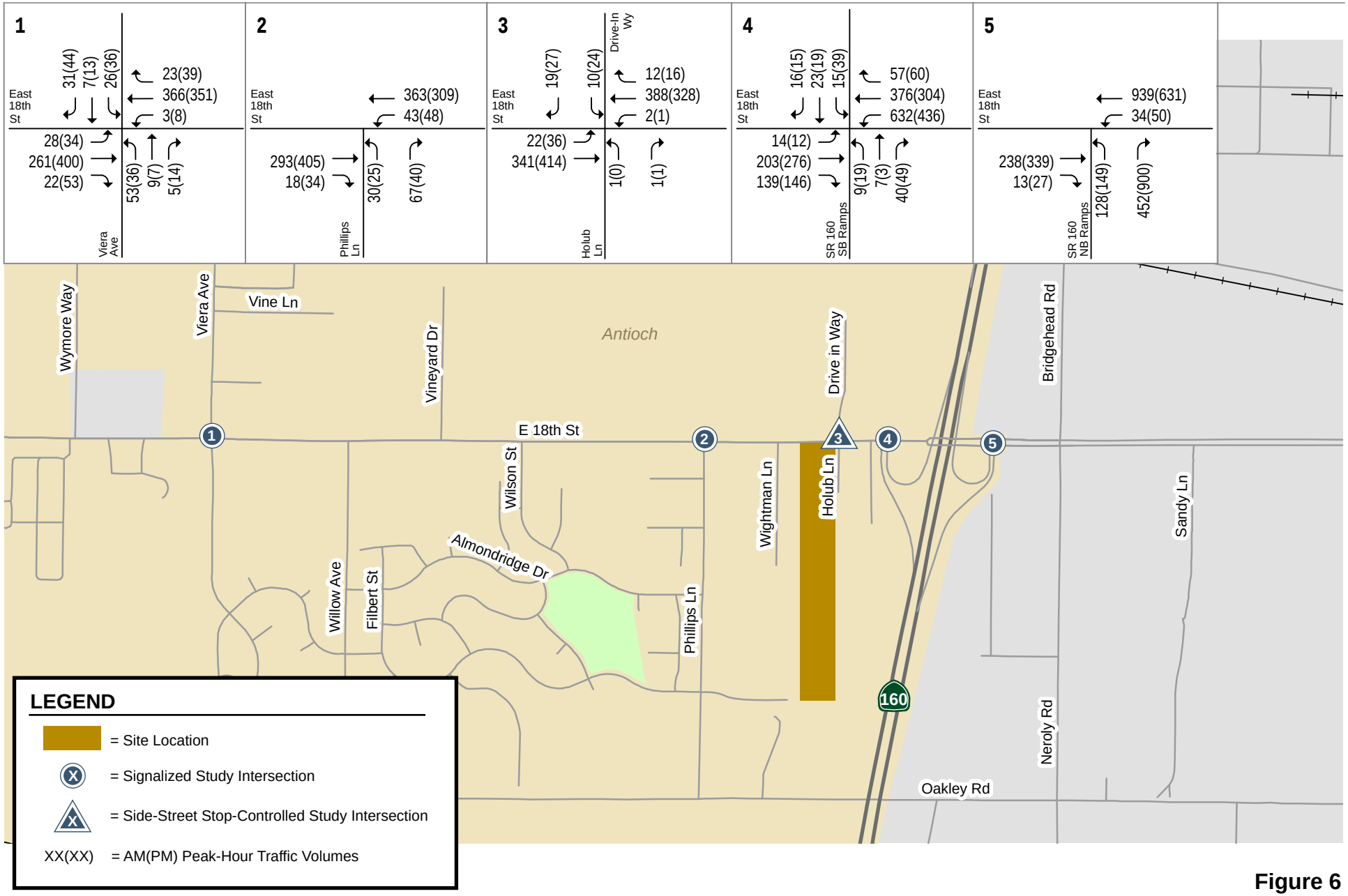

Figure 6
Existing Traffic Volumes

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Not to Scale

Existing Intersection Levels of Service

Intersection levels of service were evaluated against City of Antioch and ECAP standards. The results of the analysis show that all of the signalized study intersections currently operate at an acceptable level of service (high-level LOS D or better), during both the AM and PM peak hours.

The stop-controlled intersection of East 18th Street and Drive-in Way/Holub Lane currently operates at LOS B or better during both peak hours, which complies with the City's high-level LOS D standard for intersections on a Route of Regional Significance.

The results of the intersection level of service analysis under existing conditions are summarized in Table 4. The intersection levels of service calculation sheets are included in Appendix C.

Table 4
Existing Intersection Levels of Service

Study Number	Intersection	Peak Hour	Control Type	Existing Conditions Average Delay	Existing Conditions LOS
1	East 18th Street and Viera Avenue*	AM PM	Signal	7.9 7.6	A A
2	East 18th Street and Phillips Lane*	AM PM	Signal	5.9 5.5	A A
3	East 18th Street and Drive-In Way/Holub Lane*	AM PM	TWSC [1]	13.1 9.7	B A
4	East 18th Street and SB SR 160*	AM PM	Signal	15.4 13.2	B B
5	East 18th Street and NB SR 160*	AM PM	Signal	8.5 11.3	A B

Notes:
TWSC = Two-Way Stop Control
* Denotes an intersection on a Route of Regional Significance
[1] For TWSC intersections, the worst approach's delay and level of service are reported.
Bold indicates a substandard level of service.
Bold indicates a significant project impact.

Observed Existing Traffic Conditions

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated intersection levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, and (2) to identify any locations where the level of service analysis does not accurately reflect existing traffic conditions.

Overall, all study intersections operated adequately during both the AM and PM peak hours of traffic, and the level of service analysis appears to accurately reflect actual existing traffic conditions.

3. Existing Plus Project Conditions

This chapter describes traffic conditions with the project. It begins with a description of the transportation system under existing plus project conditions and the method by which project traffic is estimated. A summary of levels of service under existing plus project traffic conditions is presented in this chapter. Existing plus project conditions are represented by existing traffic conditions with the addition of traffic generated by the project.

Transportation Network under Existing Plus Project Conditions

Under the existing plus project conditions, the proposed project would provide a stub extension of Drive-In Way/Holub Lane south of East 18th Street that would provide access to the project site. The project proposes to widen the northbound approach from one to two lanes: a shared through/left-turn lane and a right-turn lane. The project would also extend Filbert Street approximately 300 feet east to connect to a second project driveway.

Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear were estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic traveling to and from the proposed satellite parking facility was estimated for the AM and PM peak hours. As part of the project trip distribution, the directions to and from which the project trips would travel were estimated. In the project trip assignment, the project trips were assigned to specific streets and intersections. These procedures are described below.

Trip Generation

Trip generation for the proposed residential development was estimated based on trip generation data published in the Institute of Transportation Engineers' *Trip Generation Manual, 10th Edition*. Fitted curve equations for mid-rise multifamily housing (Land Use 221) and senior adult housing-attached (Land Use 252) in general urban/suburban areas were used in the analysis. Based on the estimated trip generation rates, the proposed project would generate 1,865 daily trips, 108 trips (31 inbound and 77 outbound) during the AM peak hour, and 138 (82 inbound and 56 outbound) during the PM peak hour. No credits or reductions were given for existing uses because the site is vacant. The trip generation estimates for the residential development project are shown in Table 5.

Table 5
Project Trip Generation Estimates

Land Use	Size	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	In	Out	Total Trips	Rate	In	Out	Total Trips
Proposed											
Family Apartments	216 du	5.44	1,175	0.34	19	54	73	0.43	57	36	93
Senior Apartments	178 du	3.88	690	0.20	12	23	35	0.25	25	20	45
Total Trips			**1,865**		**31**	**77**	**108**		**82**	**56**	**138**

Notes:
1. Trips based on fitted curve equations for Multifamily Housing (Mid-Rise) (Land Use 221) and Senior Adult Housing-Attached (Land Use 252) in general urban/suburban areas contained in the ITE *Trip Generation Manual, 10 Edition*.

Trip Distribution

The project trip distribution pattern was estimated based on the existing traffic patterns in the project vicinity. It is expected that most of the trips to/from the proposed project would use SR 160 to/from SR 4 or Main Street to and from origins/destinations east of SR 160. The trip distribution pattern with the existing roadway network is shown on Figure 7.

Trip Assignment

The peak-hour trips associated with the proposed project were added to the transportation network in accordance with the distribution patterns discussed above. Project trips would access the site through the stub extension of Drive-In Way/Holub Lane or via a stub extension of Filbert Street. Figure 8 shows the assignment of project traffic on the existing transportation network.

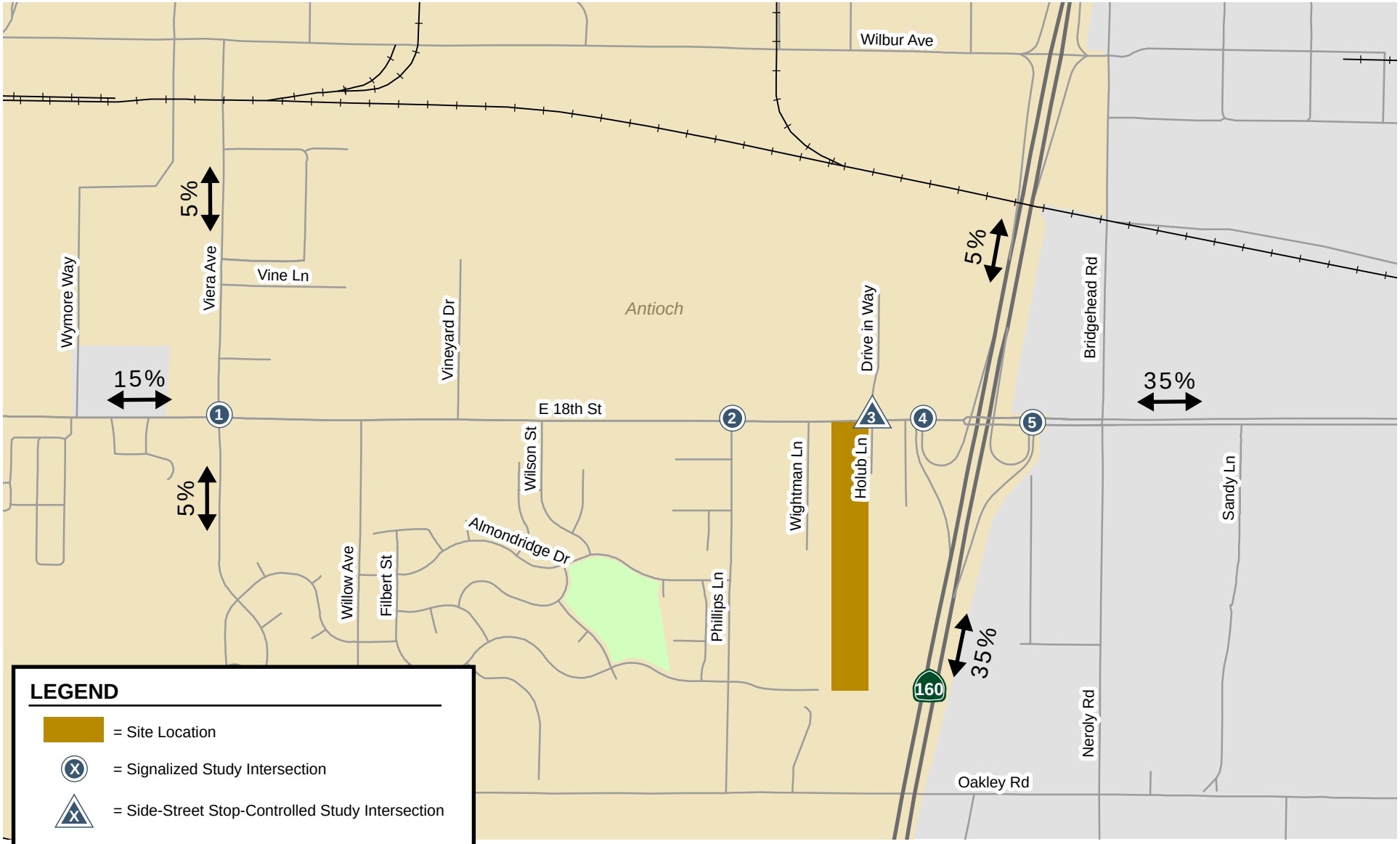


Figure 7
Project Trip Distribution Pattern (Existing Plus Project)

NORTH
Not to Scale

3530-3560 E. 18th Street, Antioch, CA

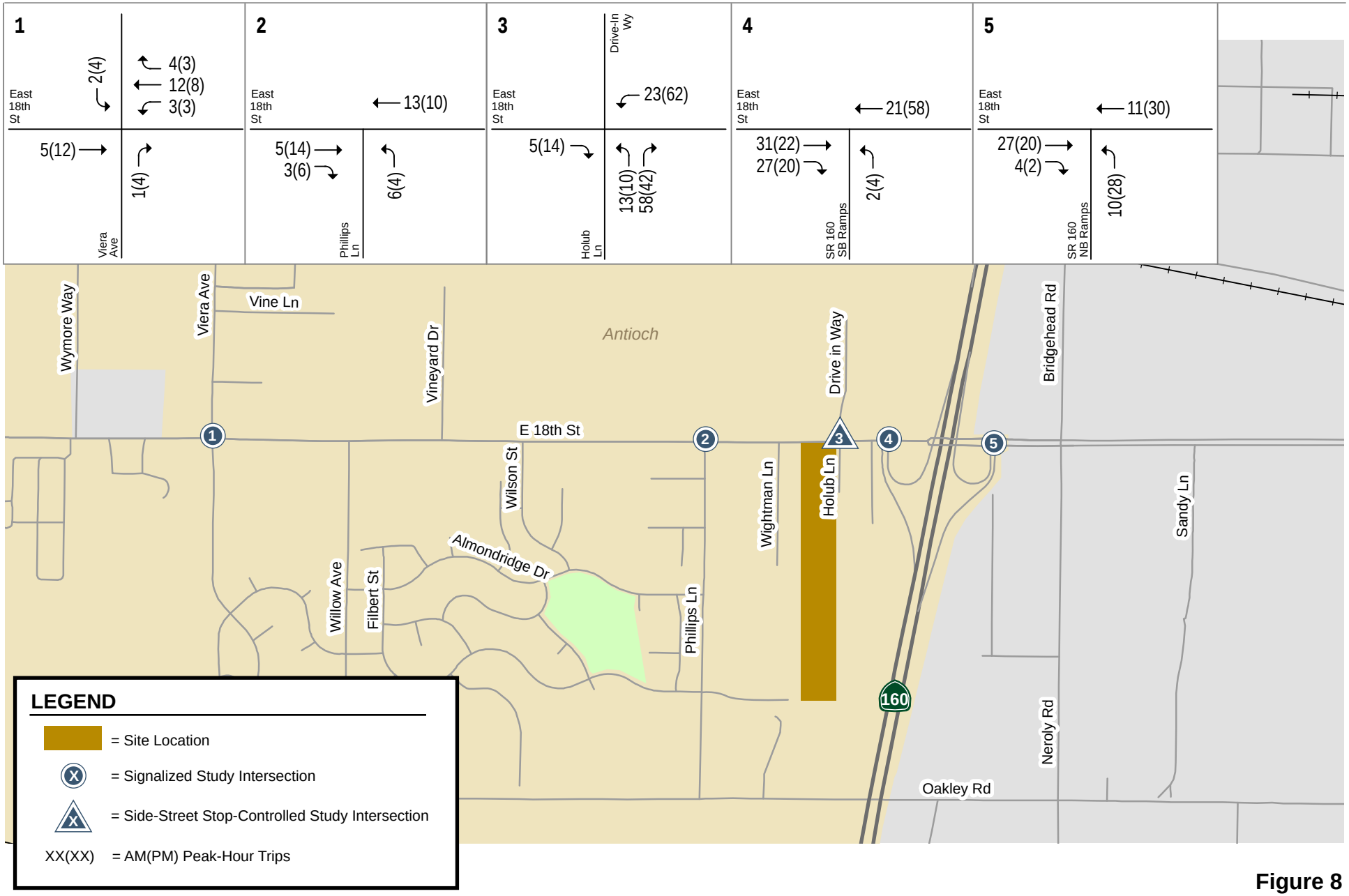


Figure 8
Project Trip Assignment (Existing Plus Project)

HEXAGON

NORTH
Not to Scale

3530-3560 E. 18th Street, Antioch, CA

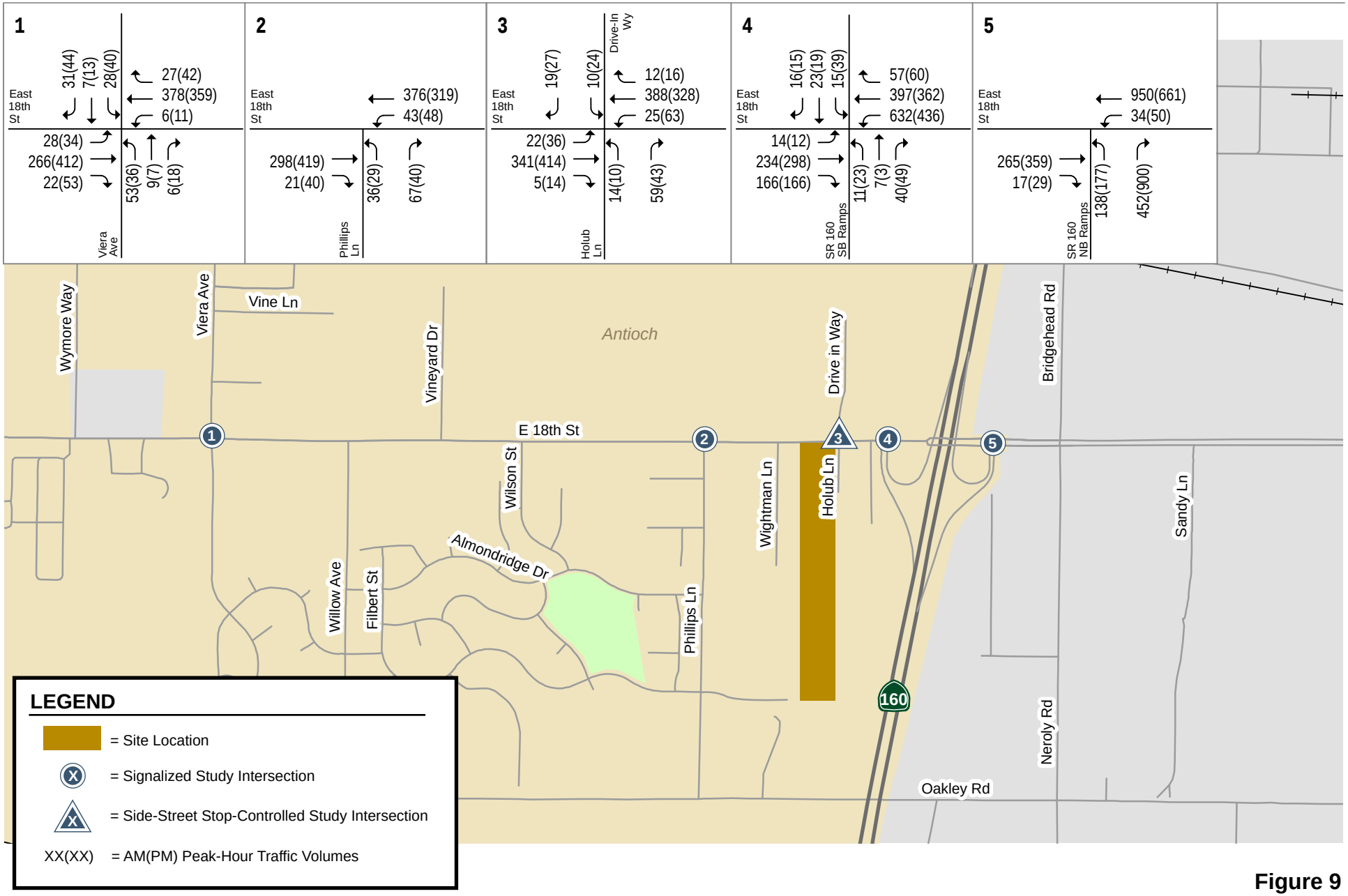


Figure 9
Existing Plus Project Traffic Volumes

HEXAGON

NORTH
Not to Scale

4. Cumulative Conditions

This chapter presents a summary of the traffic conditions that would occur under cumulative conditions with the proposed project. Cumulative conditions represent future traffic conditions with expected growth in the area. Cumulative traffic volumes were estimated using forecasts developed from Contra Costa County's travel demand forecast model and information provided from the City of Antioch regarding potential developments on nearby parcels that are currently vacant. Cumulative conditions reflect a horizon year of 2040.

Roadway Network and Traffic Volumes

The intersection lane configurations under cumulative no project conditions were assumed to be the same as described under existing conditions. The lane configuration under cumulative plus project conditions would change at the Drive-In Way/Holub Lane/E. 18th Street intersection. The project proposes to widen the northbound lane approach from one to two lanes: a shared through/left-turn lane and a right-turn lane. Figure 10 shows the lane configurations under cumulative plus project conditions.

Cumulative volumes at the study intersections were estimated based on year 2040 traffic volumes from the County's travel demand forecast model. The County's travel demand forecast model includes the recently opened East Contra Costa Bay Area Rapid Transit (eBART) extension, which added 10 miles of eBART track from the Pittsburg/Bay Point BART Station to a new Antioch station at Hillcrest Avenue. The model also assumes the planned extension of Viera Avenue south to connect with Sunset Drive /Slatten Ranch Road. The new roadway would provide a convenient connection between the project site and the SR 4/Hillcrest Avenue interchange and alter the distribution and assignment of project trips to the study intersections. The model forecasts do not reflect development of nearby parcels that are currently vacant. Thus, additional trips were added to and from Drive-In Way and Holub Lane to reflect proposed and potential developments north of 18th Street and East of Holub Lane. Traffic associated with these properties was obtained from the Acorn Business Park Traffic Impact Analysis.

Cumulative plus project traffic volumes were estimated by adding to the cumulative traffic volumes the additional traffic estimated to be generated by the project. Cumulative plus project conditions were evaluated relative to cumulative conditions to determine potential project impacts. Figure 11 shows the intersection turning-movement volumes under cumulative conditions without the project. Figures 12 and 13 show the project trip distribution and assignment with the cumulative roadway network. Figure 14 shows the intersection turning-movement volumes under cumulative conditions with the project. A tabular summary of project traffic at each study intersection is contained in Appendix B.

3530-3560 E. 18th Street, Antioch, CA

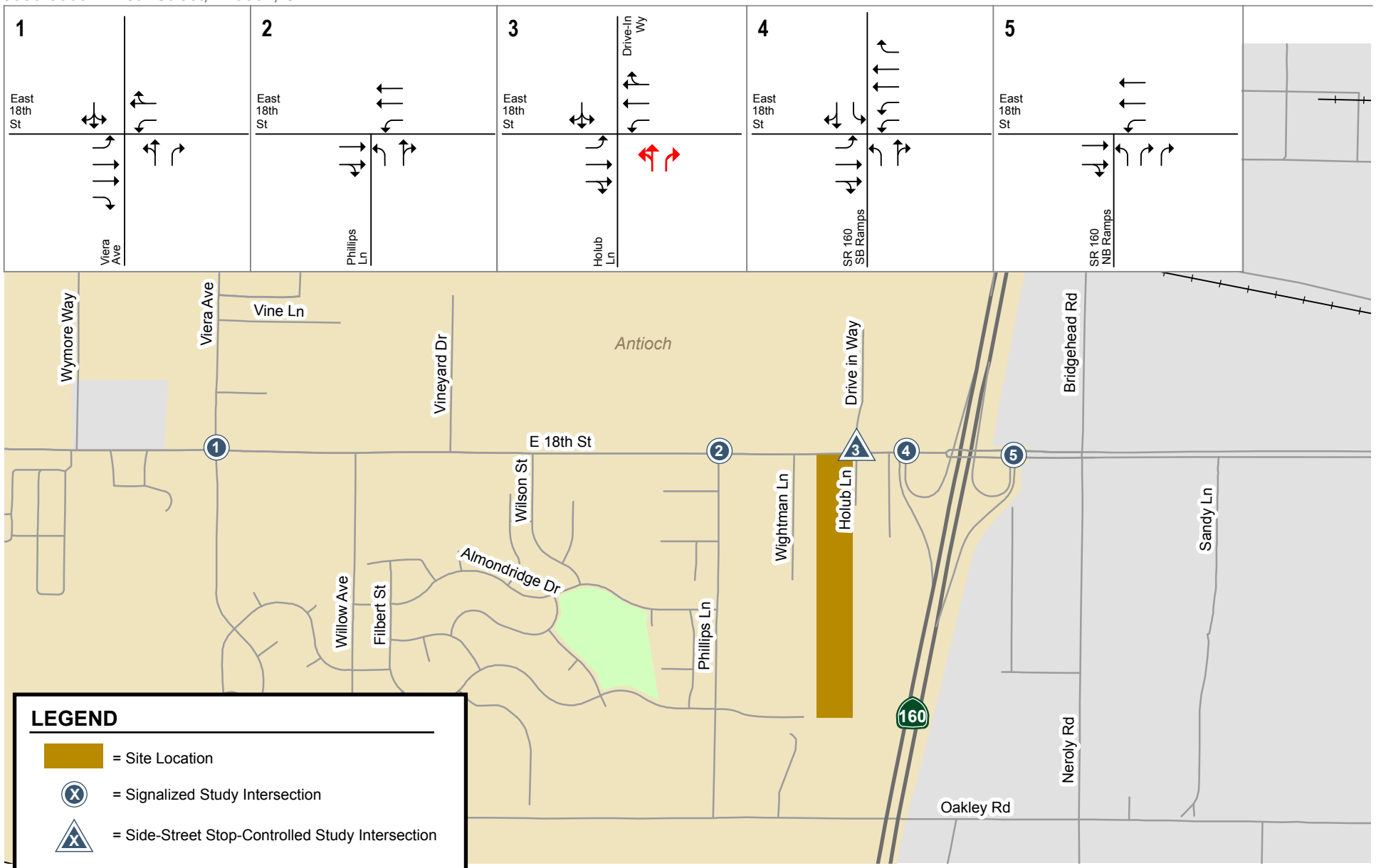


Figure 10
Lane Configurations Under Cumulative Plus Project Conditions

NORTH
Not to Scale

3530-3560 E. 18th Street, Antioch, CA

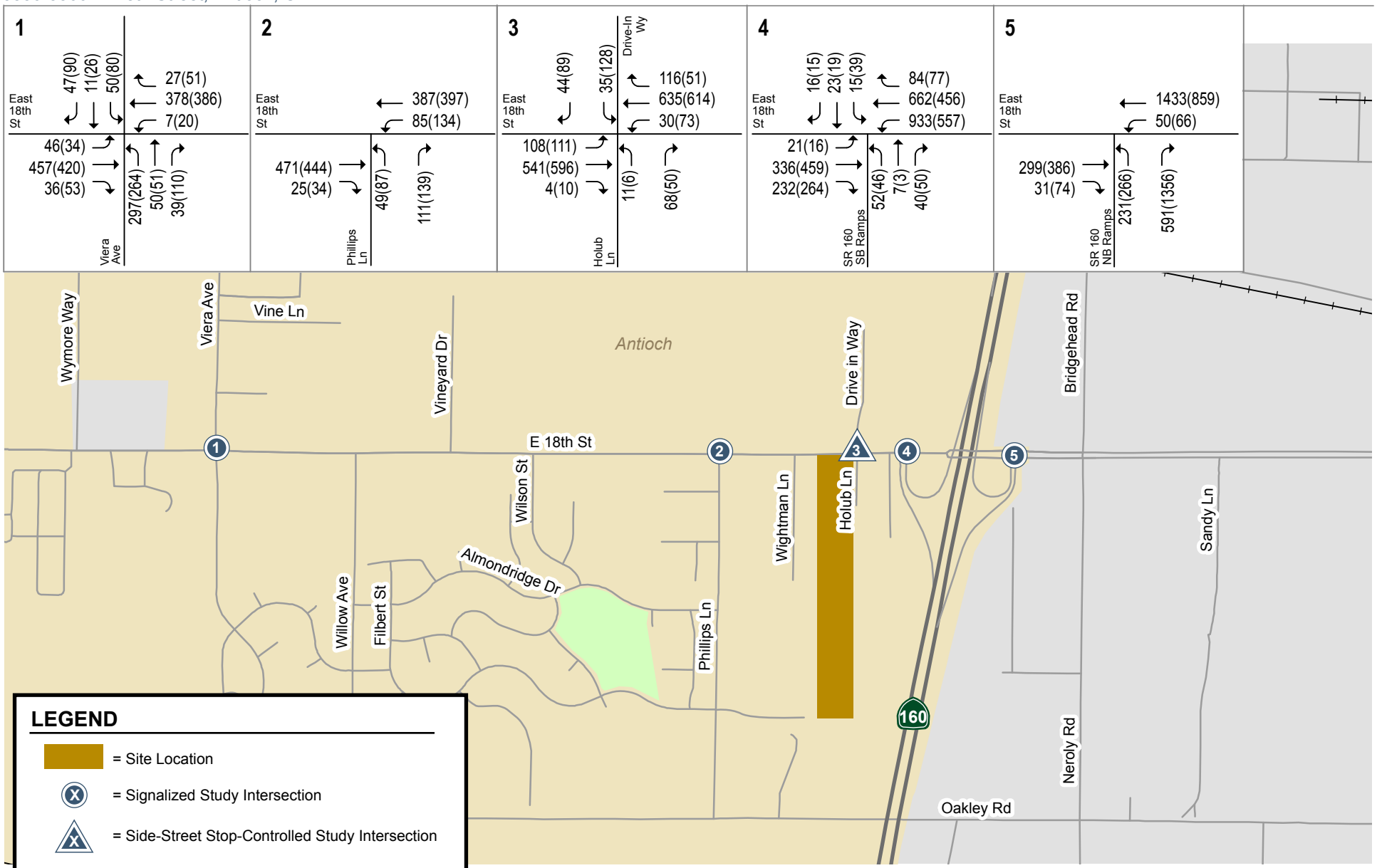


Figure 11
Cumulative Traffic Volumes

HEXAGON

NORTH
Not to Scale

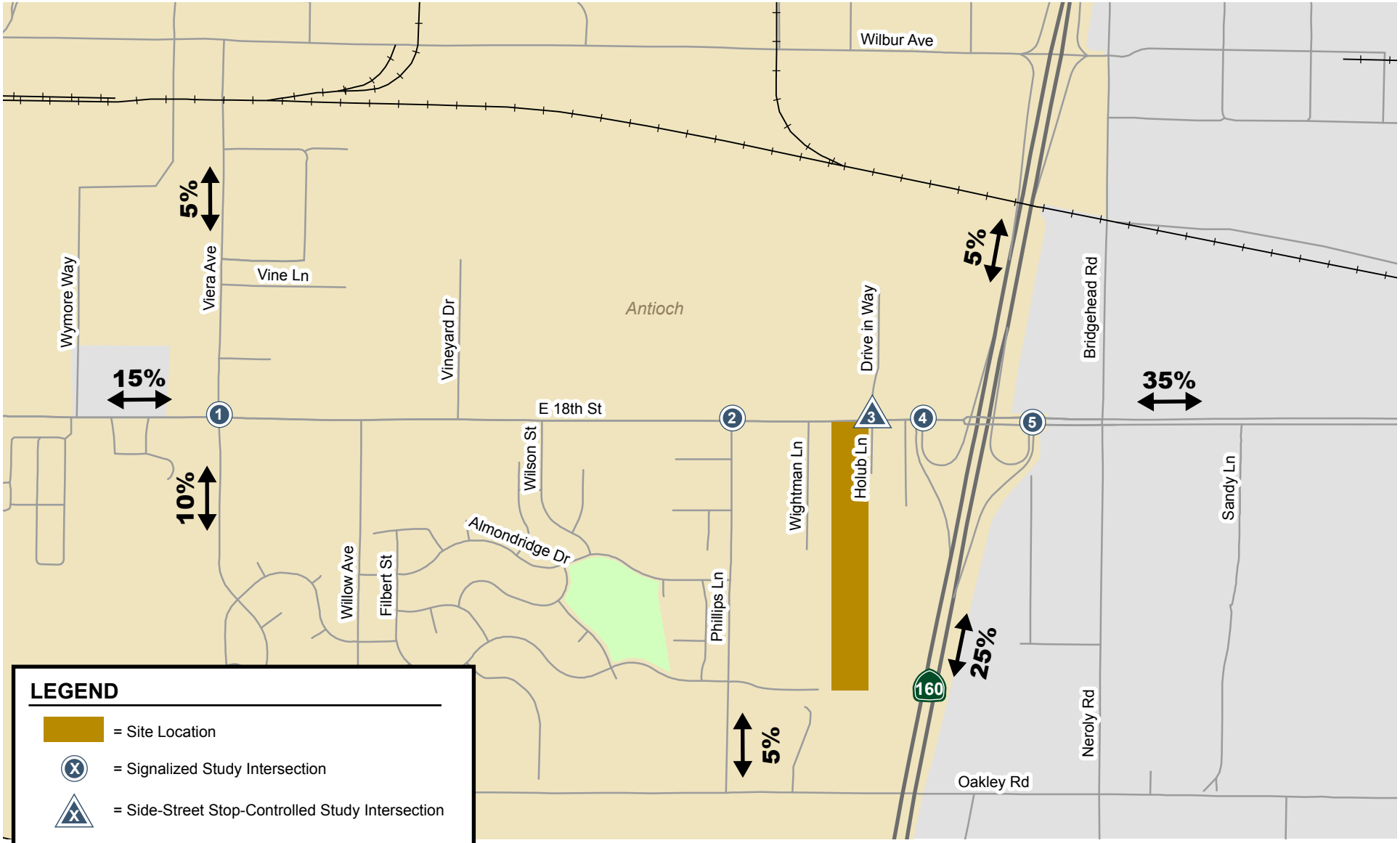


Figure 12
Project Trip Distribution Pattern (Cumulative Plus Project)

NORTH
Not to Scale

3530-3560 E. 18th Street, Antioch, CA

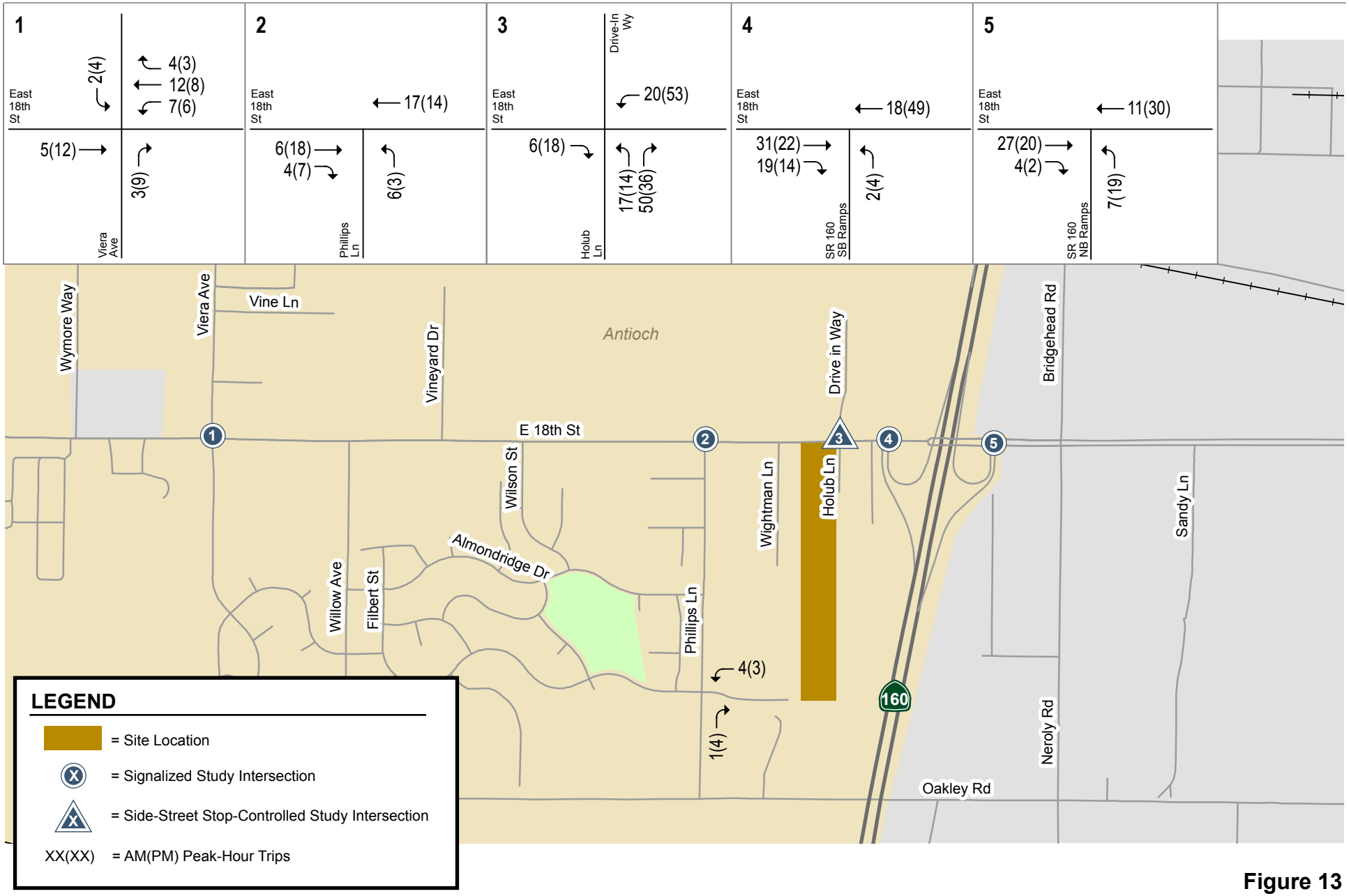


Figure 13
Project Trip Assignment (Cumulative Plus Project)

3530-3560 E. 18th Street, Antioch, CA

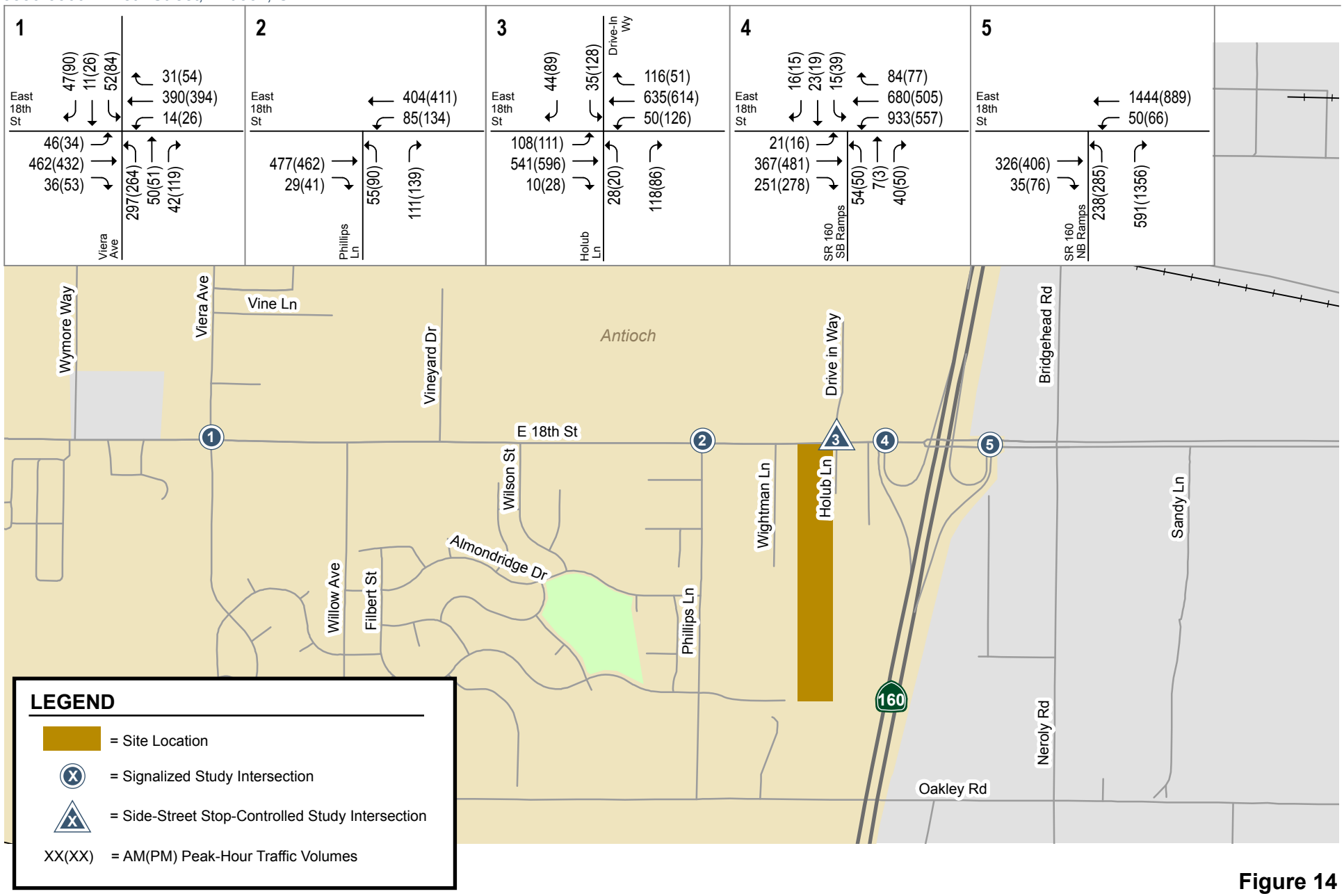


Figure 14
Cumulative Plus Project Traffic Volumes

HEXAGON

NORTH
Not to Scale

Intersection Levels of Service Analysis

The results of the level of service analysis under cumulative conditions are summarized in Table 7. The results show that, measured against the City of Antioch and ECAP level of service standards, all of the signalized intersections will operate at an acceptable level (high-level LOS D or better) for both with and without the proposed project. The level of service calculation sheets are included in Appendix C.

The worst stop-controlled approach at the unsignalized study intersection would operate at LOS F under cumulative and cumulative plus project conditions during both peak hours. Therefore, the additional traffic added by the proposed project results in a significant impact at the intersection of Drive-In Way/Holub Lane and East 18th Street.

Table 7
Cumulative Level of Service Summary

Study Number	Intersection	Peak Hour	Control Type	Cumulative Conditions			
				No Project		With Project	
				Average Delay	LOS	Average Delay	LOS
1	East 18th Street and Viera Avenue*	AM	Signal	27.3	C	28.8	C
		PM		31.6	C	30.7	C
2	East 18th Street and Phillips Lane*	AM	Signal	8.7	A	8.6	A
		PM		8.7	A	8.8	A
3	East 18th Street and Drive-In Way/Holub Lane*	AM	TWSC [1]	**89.9**	**F**	**141.8**	**F**
		PM		**618.2**	**F**	**969.9**	**F**
	with Mitigation	AM	Signal	9.8	A	10.5	B
		PM		12.0	B	13.4	B
4	East 18th Street and SB SR 160*	AM	Signal	14.2	B	14.3	B
		PM		24.4	C	25.4	C
5	East 18th Street and NB SR 160*	AM	Signal	10.7	B	12.5	B
		PM		10.3	B	11.0	B

Notes:
TWSC = Two-Way Stop Control
* Denotes an intersection on a Route of Regional Significance
[1] For TWSC intersections, the worst approach's delay and level of service are reported.
Bold indicates a substandard level of service.
Bold indicates a significant project impact.

Possible Mitigation

Because the level of service analysis shows a substandard level of service for both peak hours at the unsignalized intersection of East 18th Street and Drive-In Way/Holub Lane, a signal warrant analysis was preformed to assess the need for a signal at this intersection (see Appendix D).

The peak hour signal warrant considers the total volume of the major approach (E.18th Street) and the highest volume of the minor street (Holub Lane during the AM peak hour and Drive-In Way during the PM peak hour). The PM peak hour traffic volumes under cumulative conditions with or without the proposed project warrant signalization. It should be noted that during the PM peak hour, the governing minor street approach volume is on Drive-In Way, to which the proposed project would add no traffic.

The cumulative impact at the Drive-In Way/Holub Lane & East 18th Street intersection could be satisfactorily mitigated by the installation of a traffic signal. Table 7 shows the results of the level of service analysis under cumulative conditions with a signalized intersection at E. 18th Street and Drive-In Way/Holub Lane. The analysis shows that with signal, the intersection would operate at an acceptable level of service in both peak hours, with and without the project.

5. Other Transportation Issues

This chapter presents other transportation issues associated with the project. These include an analysis of:

- Vehicle queuing
- Site access and circulation
- Parking
- Potential impacts to transit, bicycle and pedestrian facilities

Unlike the level of service impact methodology, which is adopted by the City Council, the analyses in this chapter are based on professional judgement in accordance with the standards and methods employed by the traffic engineering community.

Queuing Analysis

The operations analysis is based on vehicle queuing for high-demand movements at intersections (see Table). Vehicle queues were estimated using a Poisson probability distribution, which estimates the probability of "n" vehicles for a vehicle movement using the following formula:

$$P(x=n) = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

P (x=n) = probability of "n" vehicles in queue per lane

n = number of vehicles in the queue per lane

λ = average number of vehicles in the queue per lane (vehicles per hour per lane/signal cycles per hour)

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement.

The following movements were examined as part of the queuing analysis for this project:

- Northbound shared left-turn/through at Drive-In Way/Holub Lane and East 18th Street

- Northbound right-turn at Drive-In Way/Holub Lane and East 18th Street
- Westbound left-turn at Drive-In Way/Holub Lane and East 18th Street
- Northbound left-turn at Northbound SR 160 and East 18th Street

The estimated queue lengths based on the Poisson numerical calculations show queuing deficiencies at two locations (see Table 9).

Drive-In Way/Holub Lane and East 18th Street

The northbound approach at the Drive-In Way/Holub Lane/East 18th Street intersection currently has one lane with negligible traffic. The proposed project would widen the northbound approach to two lanes: a shared through/left-turn lane and a right-turn lane. Under existing plus project conditions with the existing two-way stop control, the 95th percentile queue is estimated to be only one vehicle per lane on the northbound approach during both the AM and PM peak hours. Under cumulative plus project conditions, which reflect the potential development of the vacant parcel on the east side of Holub Lane, the northbound through/left-turn lane is expected to have a 95th percentile queue of up to two vehicles (50 feet) under the recommended signal control. Thus, the length of the proposed northbound right-turn lane (205 feet) is expected to be adequate.

The westbound left-turn lane at the Drive-In Way/Holub Lane/ East 18th Street intersection currently serves minimal traffic and provides sufficient storage during both AM and PM peak hours. With the additional trips added by the residential development project, the 95th percentile queue would be only 25 feet, or one vehicle, during the AM and PM peak hours under existing plus project conditions. Under cumulative conditions, with the trips added by the potential development of the parcel east of Holub Lane and with the recommended signal control, the 95th percentile queue would grow to a maximum of two to three vehicles during the AM and PM peak hours, respectively. The additional trips added by the proposed project would add trips to the westbound left-turn movement causing the 95th percentile queue to be three vehicles in the AM peak hour and five vehicles during the PM peak hour. Therefore, the projected maximum queue (125 feet) could be accommodated within the existing turn pocket storage (150 feet).

Northbound SR 160 Ramp and East 18th Street

The northbound left-turn lane at the Northbound SR 160 Ramp and East 18th Street intersection currently provides sufficient storage for the existing queues during both the AM and PM peak hours. With the additional trips added by the residential development project, the 95th percentile queue will increase by up to 25 feet, or one additional vehicle, during the AM and PM peak hours. The increase in queue length would exceed the existing turn pocket storage by one vehicle, possibly causing some left-turn vehicles to queue in the adjacent right-turn lane while waiting to enter the left-turn pocket. Under cumulative conditions, the northbound left-turn lane is not expected to provide sufficient storage in either the AM or PM peak hours. The addition of project trips under cumulative conditions would not have a noticeable effect on the northbound left-turn queue length. Because the Northbound SR 160 Ramp has two right-turn lanes, right-turn traffic could continue to proceed in the right-most turn lane if the inner right-turn lane is blocked by left-turn traffic.

Table 9
Queuing Analysis Summary

Measurement	Drive-In Way/Holub Lane and East 18th Street [3]						NB SR 160 Ramp and East 18th Street	
	NBL/TH		NBR		WBL		NBL	
	AM	PM	AM	PM	AM	PM	AM	PM
Existing								
Cycle/Delay [1] (sec)	0	0	0	0	8.2	8.3	54	54
Total Volume	0	0	0	0	2	1	128	149
Total Avg. Queue (veh.)	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.2
Total Avg. Queue [2] (ft.)	0	0	0	0	0	0	48	56
Total 95th %. Queue (veh.)	0	0	0	0	0	0	4	5
Total 95th %. Queue (ft.)	0	0	0	0	0	0	100	125
Total Storage (ft.)	N/A	N/A	N/A	N/A	150	150	125	125
Adequate (Y/N)	N/A	N/A	N/A	N/A	Y	Y	Y	Y
Existing Plus Project								
Cycle/Delay [1] (sec)	18.9	22.5	10.0	10.1	8.3	8.6	54	54
Total Volume	14	10	59	43	25	63	138	177
Total Avg. Queue (veh.)	0.1	0.1	0.2	0.1	0.1	0.2	2.1	2.7
Total Avg. Queue [2] (ft.)	2	2	4	3	1	4	52	66
Total 95th %. Queue (veh.)	1	1	1	1	1	1	5	6
Total 95th %. Queue (ft.)	25	25	25	25	25	25	125	150
Total Storage (ft.)	205	205	205	205	150	150	125	125
Adequate (Y/N)	Y	Y	Y	Y	Y	Y	Y	**N**
Cumulative								
Cycle/Delay [1] (sec)	0	0	0	0	60	60	54	54
Total Volume	0	0	0	0	30	73	231	266
Total Avg. Queue (veh.)	0.0	0.0	0.0	0.0	0.5	1.2	3.5	4.0
Total Avg. Queue [2] (ft.)	0	0	0	0	13	30	87	100
Total 95th %. Queue (veh.)	0	0	0	0	2	3	7	8
Total 95th %. Queue (ft.)	0	0	0	0	50	75	175	200
Total Storage (ft.)	N/A	N/A	N/A	N/A	150	150	125	125
Adequate (Y/N)	N/A	N/A	N/A	N/A	Y	Y	**N**	**N**
Cumulative Plus Project								
Cycle/Delay [1] (sec)	60	60	60	60	60	60	54	54
Total Volume	28	20	118	86	50	126	238	285
Total Avg. Queue (veh.)	0.5	0.3	2.0	1.4	0.8	2.1	3.6	4.3
Total Avg. Queue [2] (ft.)	12	8	49	36	21	53	89	107
Total 95th %. Queue (veh.)	2	1	4	4	3	5	7	8
Total 95th %. Queue (ft.)	50	25	100	100	75	125	175	200
Total Storage (ft.)	205	205	205	205	150	150	125	125
Adequate (Y/N)	Y	Y	Y	Y	Y	Y	**N**	**N**

Notes:
[1] Vehicle queue calculations based on cycle length for signalized intersections and average delay for unsignalized intersections.
[2] Assumes 25 Feet Per Vehicle
[3] Assumes two-way stop control under existing & existing plus project conditions and signalization under cumulative & cumulative plus project conditions. Northbound approach currently has only one shared lane. Queuing on northbound approach was evaluated only with the proposed project, which would widen the northbound approach to include one shared through/left-turn lane and one right-turn lane.

Site Access and On-Site Circulation

This section describes the site access, circulation, and parking for the proposed project. Site access and on-site circulation were evaluated using commonly accepted traffic engineering principles. This review is based on the January 25, 2019 project site plan labeled "Antioch Family and Senior Apartments" prepared by Architects Orange (See Figure 2).

Project Driveway Operations

Site access was evaluated to determine the adequacy of the site's driveways with regard to the following: traffic volume, delays, vehicle queues, geometric design, and corner sight distance. Vehicular access to the project site would be provided via one full-access driveway on a stub extension of Drive-In Way/Holub Lane that extends south from East 18th Street and one full-access driveway on a stub extension on Filbert Street. The two driveways would be located along the northern and southern edges of the project site. The adjacent property that has access to Holub Lane currently generates a minimal amount of traffic, thus there should not be any issues regarding conflicting movements on the new extension of Drive-In Way. It is anticipated that the land east of Holub Lane may be developed. The level of service and queuing analysis indicate that the proposed lane configuration on Holub Lane would be adequate to serve the development that may occur on both sides of the street.

The City of Antioch requires a minimum of 20 feet for a two-way driveway. Both driveways would have a width of 24 feet. Therefore, the project would meet the City's design standards for driveway widths. The site plan shows an emergency vehicle access lane that would extend approximately 550 feet south from the end of Holub Lane along the frontage of the proposed development. The road would be accessible to emergency vehicles only with a knox box. A second right-turn only driveway would be provided on East 18th Street at the northwest corner of the project site. This driveway will also only be accessible to emergency vehicles by a manual gate with a knox box. The Fire Department will review the site plan to ensure adequate access for fire trucks.

Adequate sight distance should be provided at the project driveways. Adjacent to the project site, there are no roadway curves, on-street parking, or landscaping features that obstruct the vision of exiting drivers. The site plans do not show any landscaping features that would interfere with the sight distance at any of the site driveways. In order to ensure the safety to the residents, no objects should be placed within the sight distance triangle that would obstruct the vision of exiting drivers.

On-Site Circulation

The on-site circulation was reviewed in accordance with the City of Antioch Zoning Code and generally accepted traffic engineering standards. The site entrance on the new extension of Drive-In Way leads to a small parking area adjacent to the leasing office. Beyond the leasing/visitor parking area, there is a call box and turn around area in front of a gate. It is expected that all visitors would enter the site at this location. A second gate would be located on the site's southern entrance adjacent to the new extension of Filbert Street. Generally, it is advisable to provide space on site for vehicles to queue while waiting for the gate to open to avoid possible disruptions to the traffic flow on the public streets. However, Filbert Street does not serve any through traffic at this location.

The site would have one continuous two-way north-south drive aisle that extends the full length of the project site along the western edge of the property and connects to both driveways. All drive aisles would have 90-degree perpendicular parking spaces. The drive aisle width (24 feet) provides sufficient space for vehicles to back out of the parking stalls. Generally, the proposed plan would provide vehicle traffic with adequate connectivity through the parking areas. The site plan shows several dead-end parking aisles that intersect the main north-south aisle. Generally, dead-end aisles are undesirable. The site plan shows sufficient space at the end of each dead-end aisle to facilitate vehicles backing out of

the last parking spaces at the end of the aisle. There is also sufficient space for vehicles to turn around at the end of the dead-end aisle between Buildings 10 and 11. However, the dead-end aisles between Buildings 4 and 5, and between Buildings 6 and 7, and the dead-end aisle west of Buildings 1 and 2 would all have a manual gate at the end of the aisle that would be operable only by emergency vehicles. In order to avoid having vehicles attempt to turn around at the end of a dead-end aisle when all parking spaces in the aisle are occupied, it is recommended that the spaces in these dead-end aisles be assigned to specific dwelling units. Signage should be placed at the start of each dead-end aisle to indicate “Dead End – Reserved Resident Parking Only”.

Parking Supply

The City of Antioch Zoning Code (Section 9-5.1703.1) states that multi-residential uses are required to provide 1.5 parking spaces per unit for units with up to 2 bedrooms and 2 spaces per unit for units with 3 or more bedrooms plus one parking space per 5 units for guest parking. For senior housing facilities, 0.75 spaces per unit, plus guest parking as determined by City staff, are required by the City of Antioch Zoning Code. Staff have requested that senior housing also include one guest space per 5 units. The project as proposed would construct 394 apartments including 178 senior units and 216 family dwelling units (108 2-bedroom units and 108 3-bedroom units). Based on the City’s Zoning Code requirements the project would need a total of 591 parking spaces.

According to the project site plan, the project would provide a total of 593 parking spaces. The site plan indicates there will be 228 open spaces, 305 carport spaces, 58 tandem spaces, a space for guest EV parking, and a space for the US Postal Service. The City of Antioch Zoning Code allows up to 50% tandem spaces. Per the Zoning Code, the tandem parking spaces must be assigned to the same dwelling unit. The architectural site plan indicates all spaces will be 9 feet by 20 feet, meeting the City Zoning Code requirements for parking space dimensions.

ADA requirements require parking lots with more than 500 spaces to have 2% of spaces be accessible stalls. For every 6 accessible stalls, one must be van accessible. With the proposed number of parking spaces, a minimum of 12 accessible stalls (including 2 van accessible) will be needed. The project site plan indicates there will be 17 ADA spaces provided, 4 of which will be van accessible.

Transit, Pedestrian and Bicycle Analysis

Transit in the study area is provided by Tri Delta Transit. The study area is served directly by three local bus routes, which provide service within a ½ mile of the project site: Local Route 383, Local Route 391, and Local Route 393. Combined, these routes provide service between the Brentwood Park & Ride, Pittsburg/Bay Point BART Station, and the Tri Delta Transit Station (see Chapter 2 for detailed discussion). The 2015 U.S. Census reports that bus trips comprise approximately 7.5% of the total commute mode share in the City of Antioch. Assuming the same mode split for the proposed project, this would equate to 8 transit trips during the AM and 10 transit trips during the PM peak commute hours. According to the Tri Delta Short Range Transit Plan, the capacity of their bus fleet ranges between 44 and 56 seats per vehicle. With one or two bus trips in each direction on every route during commute hours and given that the estimated transit volume of riders would be dispersed among the different routes, the project-generated riders would not exceed the carrying capacity of the existing bus service near the project site.

Pedestrian facilities in the study area consist of sidewalks along portions of East 18th Street and other nearby neighborhood roadways (e.g., Filbert Street and Phillips Lane) in the vicinity of the project. However, there is a gap in the sidewalk on the south side of East 18th Street adjacent to the project site between Phillips Lane and Neroly Road east of SR 160. The conceptual site plan shows sidewalks will

be constructed adjacent to both sides of the stub extension of Drive-In Way/Holub Lane. The site plan also shows a sidewalk along the site's frontage on the south side of East 18th Street as well as internal pedestrian pathways throughout the site. Pedestrian travel to and from the project site is aided by marked crosswalks with pedestrian signal heads and push buttons at all but one of the signalized study intersections, and a marked crosswalk along only the northern two-way stop-controlled approach at the unsignalized study intersection. It is recommended that the project extend the sidewalk along the south side of East 19th Street from Drive-In Way to the bus stop east of the southbound SR 160 ramp to provide a safe path for residents walking to transit stops and other points of interest in the vicinity of the project site.

Bicycle lanes are present on portions of both sides of Viera Avenue north of East 18th Street and the entire length of Phillips Lane. Although neither Filbert Street nor the other nearby residential streets have striped bike lanes, the low traffic volumes make these roadways conducive to bicycle traffic.

6. Conclusions

The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Antioch, Contra Costa Transportation Authority (CCTA) Congestion Management Program (CMP), and the East County Action Plan (ECAP). The traffic study includes an analysis of AM and PM peak hour traffic conditions for four signalized intersections and one unsignalized intersection in the vicinity of the project site. The analysis focuses on the peak commute periods between 7:00 and 9:00 AM and between 4:00 and 6:00 PM, because it is during these hours that traffic conditions on the surrounding roadways are generally the most congested.

Intersection Level of Service Analysis

The analysis determined that under all scenarios with and without the project, when measured against the City of Antioch and ECAP level of service standards, all of the signalized intersections are expected to operate at acceptable levels (high-level LOS D or better). The unsignalized intersection of Drive-In Way/Holub Lane & E.18th Street will operate at an unacceptable LOS F during both peak hours under cumulative and cumulative plus project conditions. A level of service analysis was conducted for this intersection as a signalized intersection and shows it would operate at an acceptable level of service as a signal-controlled intersection.

Other Transportation Issues

The peak hour signal warrant analysis was met for the unsignalized intersection of Drive-In Way/Holub Lane & E. 18th Street. It is recommended that a signalized intersection should be studied for this intersection.

The proposed project would not have an adverse effect on the existing transit or bicycle facilities in the study area.

Based on a review of the project site plan and existing pedestrian facilities, Hexagon has provided the following recommendations to improve site access, and on-site circulation.

Recommendations

- **Sight Distance**. Adequate sight distance should be provided at the project driveways. Currently, there are no roadway curves, on-street parking, or landscaping features that obstruct the vision of exiting drivers adjacent to the project site. The site plans do not show any landscaping features that would interfere with the sight distance at the northern and southern site driveways. In order to ensure the safety to the residents, no objects should be placed within the sight distance triangle that would obstruct the vision of exiting drivers.

- **Dead-End Aisles**. The project site plan shows several dead-end parking aisles that intersect the main north-south aisle. While dead-end aisles are generally undesirable, the site plan shows sufficient space at the end of each dead-end aisle to facilitate vehicles backing out of the last parking spaces at the end of the aisle. There is also sufficient space for vehicles to turn around at the end of the dead-end aisle between Buildings 10 and 11. However, the dead-end aisles between Buildings 4 and 5, and between Buildings 6 and 7, and the dead-end aisle west of Buildings 1 and 2 would all have a manual gate at the end of the aisle that would be operable only by emergency vehicles. It is recommended that the spaces in the dead-end aisles be assigned to specific dwelling units to avoid having vehicles attempt to turn around at the end of a dead-end aisle when all parking spaces in the aisle are occupied. Signage should be placed at the beginning of each dead-end aisle to indicate “Dead End – Reserved Resident Parking Only”.

- **Tandem Parking**. The proposed project would provide a total of 593 parking spaces, including 58 tandem spaces. Per the City’s Zoning Code, the tandem parking spaces must be assigned to the same dwelling unit.

Pedestrian Facilities. The site plan shows a new sidewalk will be constructed along the site’s frontage on East 18th Street along with sidewalk connections between the public streets and the project site and internal pedestrian pathways throughout the site. It is recommended that the project extend the sidewalk eastward along the south side of East 18th Street from Drive-In Way to the bus stop east of the southbound SR 160 ramp to provide a safe path for residents walking to transit stops and other points of interest in the vicinity of the project site.

3530-3560 East 18th Street TIA
Technical Appendices

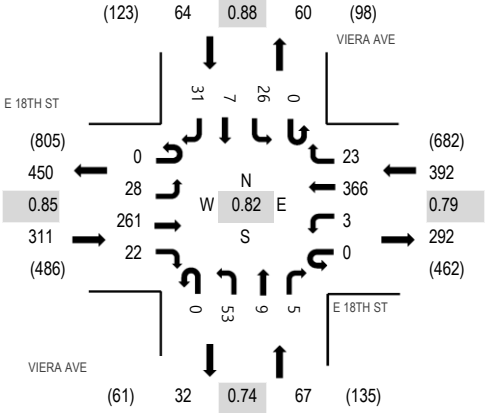
March 27, 2019

Appendix A
Traffic Counts

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

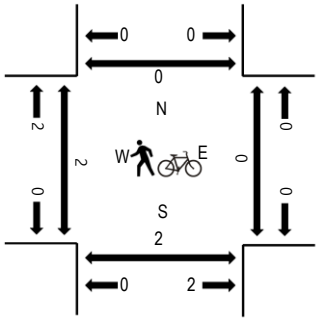
Location: 1 VIERA AVE & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

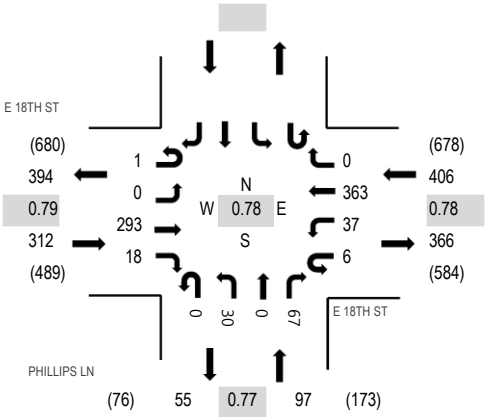
Peak Rolling Hour Flow Rates

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

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

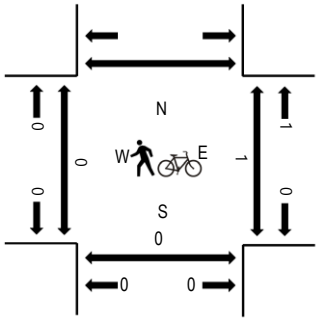
Location: 2 PHILLIPS LN & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

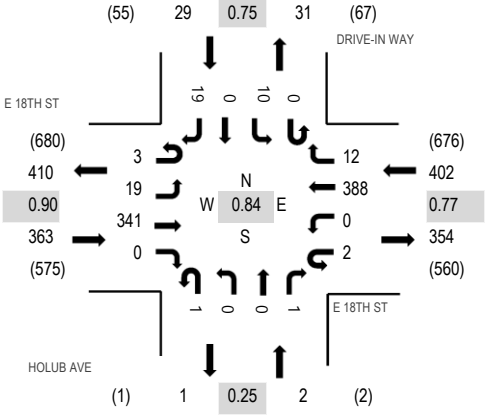
Peak Rolling Hour Flow Rates

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

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

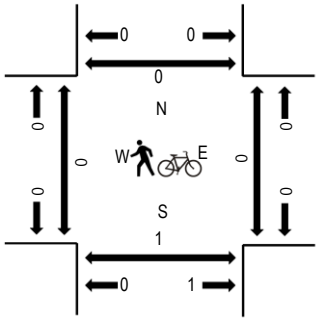
Location: 3 HOLUB AVE & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

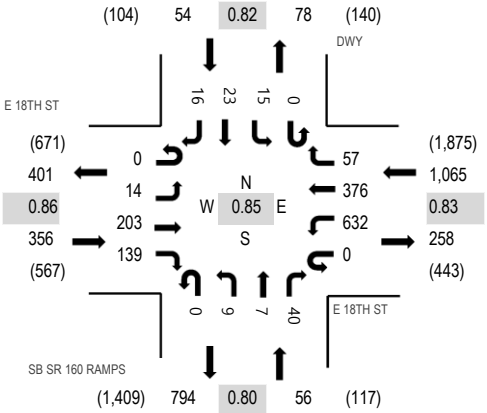
Peak Rolling Hour Flow Rates

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

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

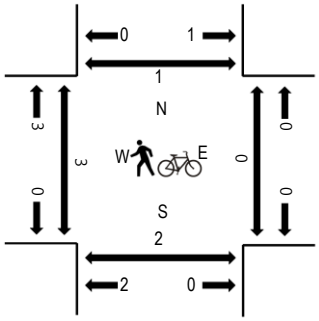
Location: 4 SB SR 160 RAMPS & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

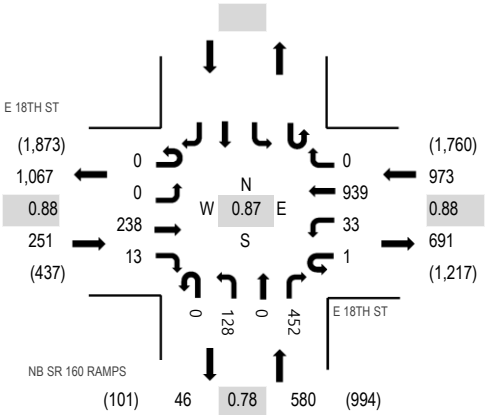
Peak Rolling Hour Flow Rates

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

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

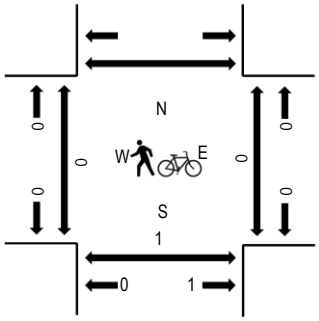
Location: 5 NB SR 160 RAMPS & E 18TH ST AM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

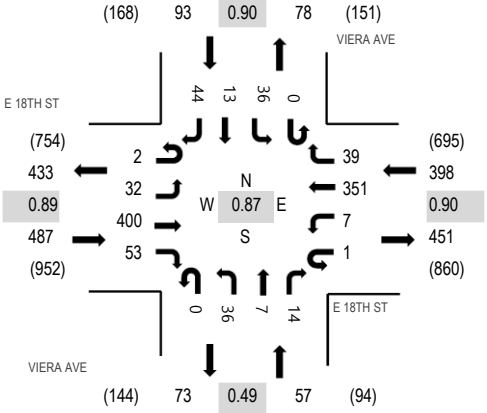
Peak Rolling Hour Flow Rates

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

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

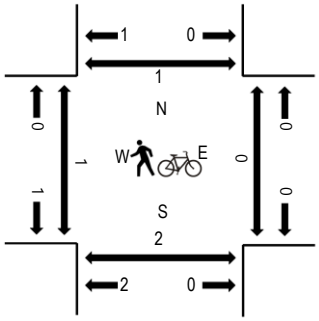
Location: 1 VIERA AVE & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

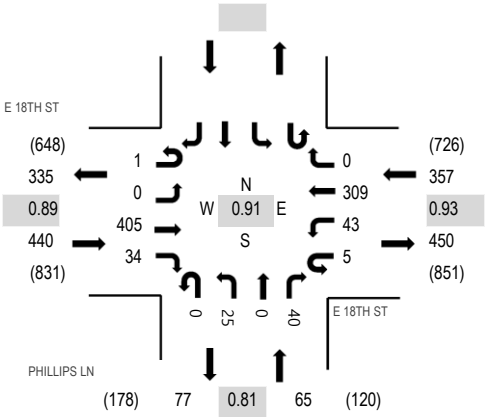
Peak Rolling Hour Flow Rates

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

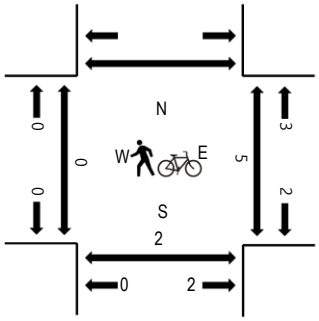
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

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

Peak Rolling Hour Flow Rates

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

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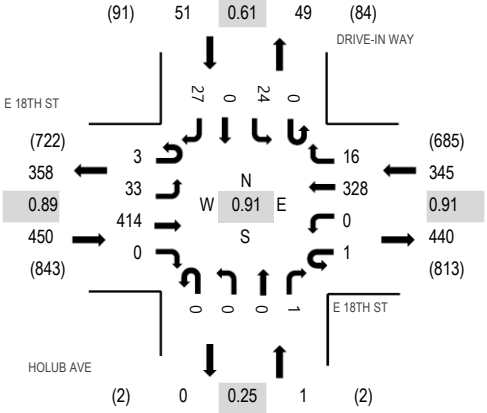
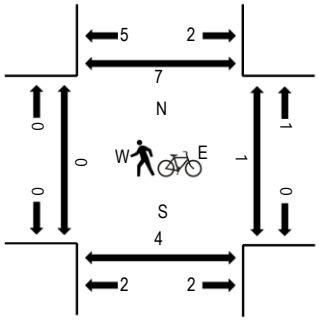
Location: 3 HOLUB AVE & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

Peak Rolling Hour Flow Rates

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

All Traffic Data Services Inc.
(303) 216-2439
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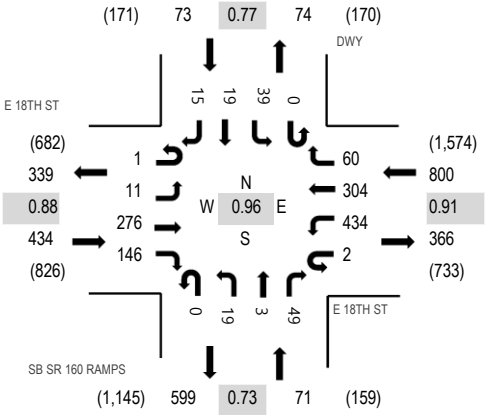
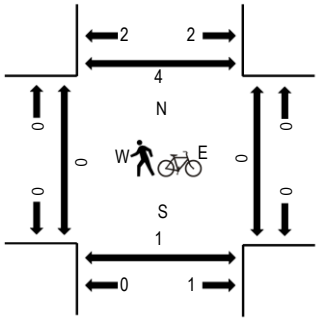
Location: 4 SB SR 160 RAMPS & E 18TH ST PM
Date and Start Time: Tuesday, May 22, 2018
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

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

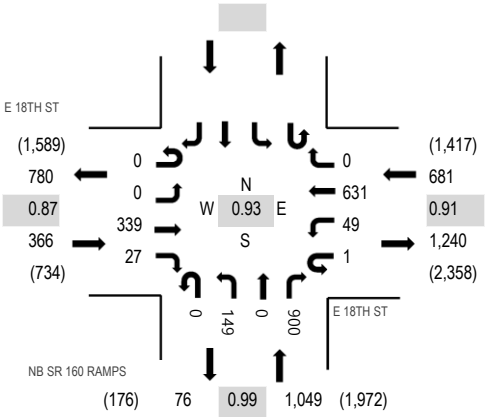
Peak Rolling Hour Flow Rates

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

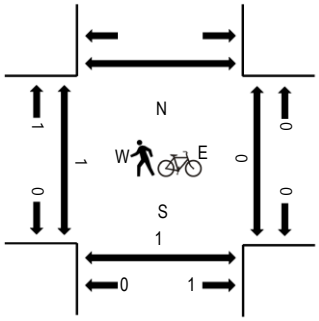
All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

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

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

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

Peak Rolling Hour Flow Rates

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

Appendix B
Volume Summary

Synchro Node Number: 1
Intersection Name: Viera Avenue & East 18th Street
Peak Hour: AM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	31	7	26	23	366	3	5	9	53	22	261	28	834
Project Trips	0	0	2	4	12	3	1	0	0	0	5	0	27
Existing + Project	31	7	28	27	378	6	6	9	53	22	266	28	861
Cumulative Project Trips	0	0	2	4	12	7	3	0	0	0	5	0	33
Cumulative Baseline Conditions	47	11	50	27	378	7	39	50	297	36	457	46	1445
Cumulative + Proj Conditions	47	11	52	31	390	14	42	50	297	36	462	46	1478

Synchro Node Number: 2
Intersection Name: Phillips Lane & East 18th Street
Peak Hour: AM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	0	0	0	0	363	43	67	0	30	18	293	0	814
Project Trips	0	0	0	0	13	0	0	0	6	3	5	0	27
Existing + Project	0	0	0	0	376	43	67	0	36	21	298	0	841
Cumulative Project Trips	0	0	0	0	17	0	0	0	6	4	6	0	33
Cumulative Baseline Conditions	0	0	0	0	387	85	111	0	49	25	471	0	1128
Cumulative + Proj Conditions	0	0	0	0	404	85	111	0	55	29	477	0	1161

Synchro Node Number: 3
Intersection Name: Drive-in Way/Holub Lane & East 18th Street
Peak Hour: AM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	19	0	10	12	388	2	1	0	1	0	341	22	796
Project Trips	0	0	0	0	0	23	58	0	13	5	0	0	99
Existing + Project	19	0	10	12	388	25	59	0	14	5	341	22	895
Cumulative Project Trips	0	0	0	0	0	20	50	0	17	6	0	0	93
Cumulative Baseline Conditions	44	0	35	116	635	30	68	0	11	4	541	108	1592
Cumulative + Proj Conditions	44	0	35	116	635	50	118	0	28	10	541	108	1685

Synchro Node Number: 4
Intersection Name: SB SR 160 & East 18th Street
Peak Hour: AM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	16	23	15	57	376	632	40	7	9	139	203	14	1531
Project Trips	0	0	0	0	21	0	0	0	2	27	31	0	81
Existing + Project	16	23	15	57	397	632	40	7	11	166	234	14	1612
Cumulative Project Trips	0	0	0	0	18	0	0	0	2	19	31	0	70
Cumulative Baseline Conditions	16	23	15	84	662	933	40	7	52	232	336	21	2421
Cumulative + Proj Conditions	16	23	15	84	680	933	40	7	54	251	367	21	2491

Synchro Node Number: 5
Intersection Name: NB SR 160 & East 18th Street
Peak Hour: AM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	0	0	0	0	939	34	452	0	128	13	238	0	1804
Project Trips	0	0	0	0	11	0	0	0	10	4	27	0	52
Existing + Project	0	0	0	0	950	34	452	0	138	17	265	0	1856
Cumulative Project Trips	0	0	0	0	11	0	0	0	7	4	27	0	49
Cumulative Baseline Conditions	0	0	0	0	1433	50	591	0	231	31	299	0	2635
Cumulative + Proj Conditions	0	0	0	0	1444	50	591	0	238	35	326	0	2684

Synchro Node Number: 1
Intersection Name: Viera Avenue & East 18th Street
Peak Hour: PM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	44	13	36	39	351	8	14	7	36	53	400	34	1035
Project Trips	0	0	4	3	8	3	4	0	0	0	12	0	34
Existing + Project	44	13	40	42	359	11	18	7	36	53	412	34	1069
Cumulative Project Trips	0	0	4	3	8	6	9	0	0	0	12	0	42
Cumulative Baseline Conditions	90	26	80	51	386	20	110	51	264	53	420	34	1585
Cumulative + Proj Conditions	90	26	84	54	394	26	119	51	264	53	432	34	1627

Synchro Node Number: 2
Intersection Name: Phillips Lane & East 18th Street
Peak Hour: PM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	0	0	0	0	309	48	40	0	25	34	405	0	861
Project Trips	0	0	0	0	10	0	0	0	4	6	14	0	34
Existing + Project	0	0	0	0	319	48	40	0	29	40	419	0	895
Cumulative Project Trips	0	0	0	0	14	0	0	0	3	7	18	0	42
Cumulative Baseline Conditions	0	0	0	0	397	134	139	0	87	34	444	0	1235
Cumulative + Proj Conditions	0	0	0	0	411	134	139	0	90	41	462	0	1277

Synchro Node Number: 3
Intersection Name: Drive-in Way/Holub Lane & East 18th Street
Peak Hour: PM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	27	0	24	16	328	1	1	0	0	0	414	36	847
Project Trips	0	0	0	0	0	62	42	0	10	14	0	0	128
Existing + Project	27	0	24	16	328	63	43	0	10	14	414	36	975
Cumulative Project Trips	0	0	0	0	0	53	36	0	14	18	0	0	121
Cumulative Baseline Conditions	89	0	128	51	614	73	50	0	6	10	596	111	1728
Cumulative + Proj Conditions	89	0	128	51	614	126	86	0	20	28	596	111	1849

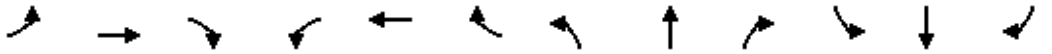
Synchro Node Number: 4
Intersection Name: SB SR 160 & East 18th Street
Peak Hour: PM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	15	19	39	60	304	436	49	3	19	146	276	12	1378
Project Trips	0	0	0	0	58	0	0	0	4	20	22	0	104
Existing + Project	15	19	39	60	362	436	49	3	23	166	298	12	1482
Cumulative Project Trips	0	0	0	0	49	0	0	0	4	14	22	0	89
Cumulative Baseline Conditions	15	19	39	77	456	557	50	3	46	264	459	16	2001
Cumulative + Proj Conditions	15	19	39	77	505	557	50	3	50	278	481	16	2090

Synchro Node Number: 5
Intersection Name: NB SR 160 & East 18th Street
Peak Hour: PM Date of Analysis: 06/01/18
Count Date: 05/22/18
Scenario: 3530-3560 E 18th St Residential Development

	Movements												
	North Approach			East Approach			South Approach			West Approach			
Scenario:	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	*Total*
Existing Conditions	0	0	0	0	631	50	900	0	149	27	339	0	2096
Project Trips	0	0	0	0	30	0	0	0	28	2	20	0	80
Existing + Project	0	0	0	0	661	50	900	0	177	29	359	0	2176
Cumulative Project Trips	0	0	0	0	30	0	0	0	19	2	20	0	71
Cumulative Baseline Conditions	0	0	0	0	859	66	1356	0	266	74	386	0	3007
Cumulative + Proj Conditions	0	0	0	0	889	66	1356	0	285	76	406	0	3078

Appendix C
Level of Service Calculations



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	261	22	3	366	23	53	9	5	26	7	31
Future Volume (veh/h)	28	261	22	3	366	23	53	9	5	26	7	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	34	318	27	4	446	28	65	11	6	32	9	38
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	72	1542	688	10	694	44	401	38	202	232	34	82
Arrive On Green	0.04	0.44	0.44	0.01	0.41	0.41	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1740	3471	1549	1740	1701	107	1280	291	1548	422	257	630
Grp Volume(v), veh/h	34	318	27	4	0	474	76	0	6	79	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1549	1740	0	1808	1571	0	1548	1309	0	0
Q Serve(g_s), s	0.5	1.6	0.3	0.1	0.0	6.0	0.0	0.0	0.1	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.5	1.6	0.3	0.1	0.0	6.0	1.1	0.0	0.1	1.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.06	0.86		1.00	0.41		0.48
Lane Grp Cap(c), veh/h	72	1542	688	10	0	738	438	0	202	348	0	0
V/C Ratio(X)	0.47	0.21	0.04	0.42	0.00	0.64	0.17	0.00	0.03	0.23	0.00	0.00
Avail Cap(c_a), veh/h	305	2309	1030	305	0	1202	1177	0	1029	1146	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.4	4.9	4.5	14.2	0.0	6.8	11.3	0.0	10.8	11.6	0.0	0.0
Incr Delay (d2), s/veh	4.7	0.1	0.0	26.9	0.0	0.9	0.2	0.0	0.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.8	0.1	0.1	0.0	3.1	0.6	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	18.1	4.9	4.5	41.0	0.0	7.7	11.5	0.0	10.9	11.9	0.0	0.0
LnGrp LOS	B	A	A	D		A	B		B	B		
Approach Vol, veh/h		379			478			82			79	
Approach Delay, s/veh		6.1			8.0			11.4			11.9	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.7	4.2	16.7		7.7	5.2	15.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	5.0	19.0		19.0	5.0	19.0
Max Q Clear Time (g_c+I1), s		3.1	2.1	3.6		3.9	2.5	8.0
Green Ext Time (p_c), s		0.7	0.0	4.2		0.7	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	7.9
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	18	43	363	30	67
Future Volume (veh/h)	293	18	43	363	30	67
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	376	23	55	465	38	86
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1199	73	111	2017	201	179
Arrive On Green	0.36	0.36	0.06	0.58	0.11	0.11
Sat Flow, veh/h	3449	205	1757	3597	1757	1568
Grp Volume(v), veh/h	196	203	55	465	38	86
Grp Sat Flow(s),veh/h/ln	1752	1809	1757	1752	1757	1568
Q Serve(g_s), s	2.1	2.1	0.8	1.7	0.5	1.3
Cycle Q Clear(g_c), s	2.1	2.1	0.8	1.7	0.5	1.3
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	626	646	111	2017	201	179
V/C Ratio(X)	0.31	0.31	0.50	0.23	0.19	0.48
Avail Cap(c_a), veh/h	1564	1614	682	5031	1636	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.0	6.0	11.7	2.7	10.3	10.7
Incr Delay (d2), s/veh	0.3	0.3	3.4	0.1	0.5	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.1	0.5	0.8	0.3	0.7
LnGrp Delay(d),s/veh	6.3	6.3	15.1	2.7	10.8	12.7
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	399			520	124	
Approach Delay, s/veh	6.3			4.0	12.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.9	5.6	13.2				18.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		24.0	10.0	23.0				37.0
Max Q Clear Time (g_c+I1), s		3.3	2.8	4.1				3.7
Green Ext Time (p_c), s		0.3	0.0	5.1				6.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.9
HCM 2010 LOS	A

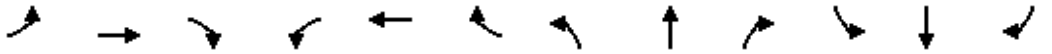
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	341	0	2	388	12	1	0	1	10	0	19
Future Vol, veh/h	22	341	0	2	388	12	1	0	1	10	0	19
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	26	406	0	2	462	14	1	0	1	12	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	476	0	0	407	0	0	695	940	204	729	933	238
Stage 1	-	-	-	-	-	-	459	459	-	474	474	-
Stage 2	-	-	-	-	-	-	236	481	-	255	459	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1068	-	-	1134	-	-	325	259	797	307	261	757
Stage 1	-	-	-	-	-	-	546	560	-	535	551	-
Stage 2	-	-	-	-	-	-	740	547	-	721	560	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1068	-	-	1134	-	-	309	252	796	300	254	757
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	252	-	300	254	-
Stage 1	-	-	-	-	-	-	532	546	-	522	550	-
Stage 2	-	-	-	-	-	-	717	546	-	702	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	13.1	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	1068	-	-	1134	-	-	757
HCM Lane V/C Ratio	0.005	0.025	-	-	0.002	-	-	0.03
HCM Control Delay (s)	13.1	8.5	-	-	8.2	-	-	9.9
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	203	139	632	376	57	9	7	40	15	23	16
Future Volume (veh/h)	14	203	139	632	376	57	9	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	16	239	164	744	442	67	11	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	35	495	326	904	1716	766	25	22	131	39	105	74
Arrive On Green	0.02	0.25	0.25	0.27	0.49	0.49	0.01	0.10	0.10	0.02	0.11	0.11
Sat Flow, veh/h	1740	2004	1322	3375	3471	1550	1740	229	1347	1740	996	701
Grp Volume(v), veh/h	16	206	197	744	442	67	11	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1590	1688	1736	1550	1740	0	1577	1740	0	1697
Q Serve(g_s), s	0.4	4.4	4.7	9.1	3.2	1.0	0.3	0.0	1.4	0.4	0.0	1.1
Cycle Q Clear(g_c), s	0.4	4.4	4.7	9.1	3.2	1.0	0.3	0.0	1.4	0.4	0.0	1.1
Prop In Lane	1.00		0.83	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	35	428	393	904	1716	766	25	0	153	39	0	178
V/C Ratio(X)	0.46	0.48	0.50	0.82	0.26	0.09	0.44	0.00	0.36	0.46	0.00	0.26
Avail Cap(c_a), veh/h	199	715	655	1004	2065	922	199	0	649	199	0	699
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.2	14.1	14.2	15.0	6.4	5.8	21.4	0.0	18.5	21.1	0.0	18.0
Incr Delay (d2), s/veh	8.9	0.8	1.0	5.2	0.1	0.0	11.8	0.0	1.4	8.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.2	2.1	4.8	1.6	0.4	0.2	0.0	0.7	0.3	0.0	0.5
LnGrp Delay(d),s/veh	30.1	14.9	15.1	20.2	6.5	5.9	33.2	0.0	19.9	29.3	0.0	18.7
LnGrp LOS	C	B	B	C	A	A	C		B	C		B
Approach Vol, veh/h		419			1253			66			64	
Approach Delay, s/veh		15.6			14.6			22.1			21.7	
Approach LOS		B			B			C			C	

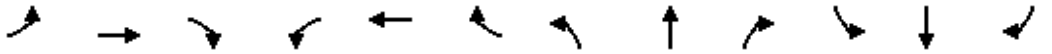
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	8.2	15.7	14.8	4.6	8.6	4.9	25.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	18.0	13.0	18.0	5.0	18.0	5.0	26.0
Max Q Clear Time (g_c+I1), s	2.4	3.4	11.1	6.7	2.3	3.1	2.4	5.2
Green Ext Time (p_c), s	0.0	0.4	0.7	3.9	0.0	0.4	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	238	13	34	939	128	452
Future Volume (veh/h)	238	13	34	939	128	452
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	274	15	39	1079	147	520
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1242	68	79	1830	453	835
Arrive On Green	0.37	0.37	0.04	0.52	0.26	0.26
Sat Flow, veh/h	3472	184	1757	3597	1757	2760
Grp Volume(v), veh/h	141	148	39	1079	147	520
Grp Sat Flow(s),veh/h/ln	1752	1812	1757	1752	1757	1380
Q Serve(g_s), s	2.0	2.0	0.8	7.7	2.5	5.9
Cycle Q Clear(g_c), s	2.0	2.0	0.8	7.7	2.5	5.9
Prop In Lane		0.10	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	644	666	79	1830	453	835
V/C Ratio(X)	0.22	0.22	0.50	0.59	0.32	0.62
Avail Cap(c_a), veh/h	916	947	435	3085	676	1186
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.9	7.9	17.0	6.0	10.9	10.9
Incr Delay (d2), s/veh	0.2	0.2	4.8	0.3	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.1	0.5	3.7	1.2	2.3
LnGrp Delay(d),s/veh	8.1	8.1	21.7	6.3	11.3	11.7
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	289			1118	667	
Approach Delay, s/veh	8.1			6.8	11.6	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		13.4	5.6	17.4				23.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		14.0	9.0	19.0				32.0
Max Q Clear Time (g_c+I1), s		7.9	2.8	4.0				9.7
Green Ext Time (p_c), s		1.5	0.0	7.5				9.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	400	53	8	351	39	36	7	14	36	13	44
Future Volume (veh/h)	34	400	53	8	351	39	36	7	14	36	13	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	460	61	9	403	45	41	8	16	41	15	51
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	81	1612	720	21	694	77	374	53	204	227	38	91
Arrive On Green	0.05	0.46	0.46	0.01	0.43	0.43	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1757	3505	1565	1757	1630	182	1187	409	1565	472	294	697
Grp Volume(v), veh/h	39	460	61	9	0	448	49	0	16	107	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1565	1757	0	1812	1597	0	1565	1463	0	0
Q Serve(g_s), s	0.7	2.5	0.7	0.2	0.0	5.7	0.0	0.0	0.3	1.4	0.0	0.0
Cycle Q Clear(g_c), s	0.7	2.5	0.7	0.2	0.0	5.7	0.7	0.0	0.3	2.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.84		1.00	0.38		0.48
Lane Grp Cap(c), veh/h	81	1612	720	21	0	771	427	0	204	356	0	0
V/C Ratio(X)	0.48	0.29	0.08	0.43	0.00	0.58	0.11	0.00	0.08	0.30	0.00	0.00
Avail Cap(c_a), veh/h	332	2752	1228	326	0	1417	1102	0	970	1095	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.0	5.1	4.6	14.8	0.0	6.6	11.7	0.0	11.5	12.4	0.0	0.0
Incr Delay (d2), s/veh	4.4	0.1	0.1	13.0	0.0	0.7	0.1	0.0	0.2	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.2	0.3	0.1	0.0	2.9	0.4	0.0	0.1	0.9	0.0	0.0
LnGrp Delay(d),s/veh	18.4	5.2	4.6	27.8	0.0	7.3	11.8	0.0	11.7	12.8	0.0	0.0
LnGrp LOS	B	A	A	C		A	B		B	B		
Approach Vol, veh/h		560			457			65			107	
Approach Delay, s/veh		6.0			7.7			11.8			12.8	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.9	4.4	17.9		7.9	5.4	16.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.7	5.6	23.7		18.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		2.7	2.2	4.5		4.1	2.7	7.7
Green Ext Time (p_c), s		0.8	0.0	5.5		0.8	0.0	5.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	405	34	48	309	25	40
Future Volume (veh/h)	405	34	48	309	25	40
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	445	37	53	340	27	44
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1243	103	108	2108	137	122
Arrive On Green	0.38	0.38	0.06	0.60	0.08	0.08
Sat Flow, veh/h	3369	271	1757	3597	1757	1568
Grp Volume(v), veh/h	237	245	53	340	27	44
Grp Sat Flow(s),veh/h/ln	1752	1796	1757	1752	1757	1568
Q Serve(g_s), s	2.4	2.4	0.7	1.1	0.4	0.7
Cycle Q Clear(g_c), s	2.4	2.4	0.7	1.1	0.4	0.7
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	665	681	108	2108	137	122
V/C Ratio(X)	0.36	0.36	0.49	0.16	0.20	0.36
Avail Cap(c_a), veh/h	1827	1872	775	5761	1690	1509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.6	5.6	11.3	2.2	10.8	10.9
Incr Delay (d2), s/veh	0.3	0.3	3.4	0.0	0.7	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.2	0.5	0.5	0.2	0.3
LnGrp Delay(d),s/veh	5.9	5.9	14.7	2.2	11.5	12.7
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	482			393	71	
Approach Delay, s/veh	5.9			3.9	12.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		5.9	5.5	13.5				19.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		24.0	11.0	26.0				41.0
Max Q Clear Time (g_c+I1), s		2.7	2.7	4.4				3.1
Green Ext Time (p_c), s		0.2	0.0	4.9				5.5

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1

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

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	385	0	0	459	0	0	720	925	232	686	916	196
Stage 1	-	-	-	-	-	-	538	538	-	378	378	-
Stage 2	-	-	-	-	-	-	182	387	-	308	538	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1156	-	-	1084	-	-	312	264	764	330	267	806
Stage 1	-	-	-	-	-	-	490	516	-	610	609	-
Stage 2	-	-	-	-	-	-	796	603	-	671	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1156	-	-	1083	-	-	291	252	760	318	255	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	291	252	-	318	255	-
Stage 1	-	-	-	-	-	-	471	496	-	585	604	-
Stage 2	-	-	-	-	-	-	766	598	-	646	496	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	9.7	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	760	1156	-	-	1083	-	-	801
HCM Lane V/C Ratio	0.001	0.034	-	-	0.001	-	-	0.037
HCM Control Delay (s)	9.7	8.2	-	-	8.3	-	-	9.7
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	276	146	436	304	60	19	3	49	39	19	15
Future Volume (veh/h)	12	276	146	436	304	60	19	3	49	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	12	288	152	454	317	62	20	3	51	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	587	301	667	1550	690	44	8	133	81	104	84
Arrive On Green	0.02	0.26	0.26	0.20	0.44	0.44	0.02	0.09	0.09	0.05	0.11	0.11
Sat Flow, veh/h	1757	2238	1150	3408	3505	1561	1757	88	1493	1757	950	760
Grp Volume(v), veh/h	12	224	216	454	317	62	20	0	54	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1636	1704	1752	1561	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.3	4.2	4.4	4.9	2.2	0.9	0.4	0.0	1.3	0.9	0.0	0.8
Cycle Q Clear(g_c), s	0.3	4.2	4.4	4.9	2.2	0.9	0.4	0.0	1.3	0.9	0.0	0.8
Prop In Lane	1.00		0.70	1.00		1.00	1.00		0.94	1.00		0.44
Lane Grp Cap(c), veh/h	27	459	429	667	1550	690	44	0	141	81	0	188
V/C Ratio(X)	0.44	0.49	0.50	0.68	0.20	0.09	0.46	0.00	0.38	0.51	0.00	0.19
Avail Cap(c_a), veh/h	224	803	749	1128	2320	1033	224	0	724	224	0	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	12.3	12.3	14.7	6.7	6.4	18.9	0.0	16.9	18.3	0.0	15.9
Incr Delay (d2), s/veh	10.6	0.8	0.9	1.2	0.1	0.1	7.2	0.0	1.7	4.9	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.2	2.1	2.4	1.1	0.4	0.3	0.0	0.6	0.5	0.0	0.4
LnGrp Delay(d),s/veh	29.7	13.1	13.2	15.9	6.8	6.4	26.1	0.0	18.6	23.2	0.0	16.4
LnGrp LOS	C	B	B	B	A	A	C		B	C		B
Approach Vol, veh/h		452			833			74			77	
Approach Delay, s/veh		13.6			11.7			20.6			20.0	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	7.5	11.7	14.3	5.0	8.3	4.6	21.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	18.0	13.0	18.0	5.0	18.0	5.0	26.0
Max Q Clear Time (g_c+I1), s	2.9	3.3	6.9	6.4	2.4	2.8	2.3	4.2
Green Ext Time (p_c), s	0.0	0.3	0.9	3.5	0.0	0.3	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	339	27	50	631	149	900
Future Volume (veh/h)	339	27	50	631	149	900
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	365	29	54	678	160	968
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	764	60	102	1406	662	1199
Arrive On Green	0.23	0.23	0.06	0.40	0.38	0.38
Sat Flow, veh/h	3383	260	1757	3597	1757	2760
Grp Volume(v), veh/h	194	200	54	678	160	968
Grp Sat Flow(s),veh/h/ln	1752	1799	1757	1752	1757	1380
Q Serve(g_s), s	3.4	3.5	1.1	5.2	2.3	11.0
Cycle Q Clear(g_c), s	3.4	3.5	1.1	5.2	2.3	11.0
Prop In Lane		0.14	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	407	418	102	1406	662	1199
V/C Ratio(X)	0.48	0.48	0.53	0.48	0.24	0.81
Avail Cap(c_a), veh/h	535	549	829	3113	683	1232
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	11.9	16.5	8.0	7.7	8.9
Incr Delay (d2), s/veh	0.9	0.9	4.2	0.3	0.2	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.8	0.6	2.5	1.1	4.7
LnGrp Delay(d),s/veh	12.8	12.8	20.7	8.3	7.9	12.9
LnGrp LOS	B	B	C	A	A	B
Approach Vol, veh/h	394			732	1128	
Approach Delay, s/veh	12.8			9.2	12.1	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		17.6	6.1	12.4				18.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		14.0	17.0	11.0				32.0
Max Q Clear Time (g_c+I1), s		13.0	3.1	5.5				7.2
Green Ext Time (p_c), s		0.6	0.1	2.9				6.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	266	22	6	378	27	53	9	6	28	7	31
Future Volume (veh/h)	28	266	22	6	378	27	53	9	6	28	7	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	34	324	27	7	461	33	65	11	7	34	9	38
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	72	1448	646	16	649	46	416	40	208	246	34	82
Arrive On Green	0.04	0.42	0.42	0.01	0.39	0.39	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1740	3471	1549	1740	1685	121	1276	294	1548	443	250	613
Grp Volume(v), veh/h	34	324	27	7	0	494	76	0	7	81	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1549	1740	0	1805	1570	0	1548	1306	0	0
Q Serve(g_s), s	0.5	1.6	0.3	0.1	0.0	6.3	0.0	0.0	0.1	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.5	1.6	0.3	0.1	0.0	6.3	1.1	0.0	0.1	1.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	0.86		1.00	0.42		0.47
Lane Grp Cap(c), veh/h	72	1448	646	16	0	695	455	0	208	362	0	0
V/C Ratio(X)	0.47	0.22	0.04	0.42	0.00	0.71	0.17	0.00	0.03	0.22	0.00	0.00
Avail Cap(c_a), veh/h	318	2412	1077	318	0	1255	1230	0	1076	1196	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	5.1	4.7	13.5	0.0	7.1	10.7	0.0	10.3	11.0	0.0	0.0
Incr Delay (d2), s/veh	4.7	0.1	0.0	16.4	0.0	1.4	0.2	0.0	0.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.8	0.1	0.1	0.0	3.3	0.5	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	17.5	5.2	4.8	29.9	0.0	8.5	10.9	0.0	10.4	11.4	0.0	0.0
LnGrp LOS	B	A	A	C		A	B		B	B		
Approach Vol, veh/h		385			501			83			81	
Approach Delay, s/veh		6.2			8.8			10.8			11.4	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.7	4.3	15.4		7.7	5.1	14.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	5.0	19.0		19.0	5.0	19.0
Max Q Clear Time (g_c+I1), s		3.1	2.1	3.6		3.8	2.5	8.3
Green Ext Time (p_c), s		0.3	0.0	1.7		0.3	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	298	21	43	376	36	67
Future Volume (veh/h)	298	21	43	376	36	67
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	382	27	55	482	46	86
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	905	64	114	1810	220	196
Arrive On Green	0.27	0.27	0.06	0.52	0.13	0.13
Sat Flow, veh/h	3414	234	1757	3597	1757	1568
Grp Volume(v), veh/h	201	208	55	482	46	86
Grp Sat Flow(s),veh/h/ln	1752	1803	1757	1752	1757	1568
Q Serve(g_s), s	2.1	2.1	0.7	1.7	0.5	1.1
Cycle Q Clear(g_c), s	2.1	2.1	0.7	1.7	0.5	1.1
Prop In Lane		0.13	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	478	492	114	1810	220	196
V/C Ratio(X)	0.42	0.42	0.48	0.27	0.21	0.44
Avail Cap(c_a), veh/h	1805	1858	787	5809	1889	1686
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	6.7	10.1	3.0	8.8	9.0
Incr Delay (d2), s/veh	0.6	0.6	3.2	0.1	0.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	0.4	0.8	0.3	0.6
LnGrp Delay(d),s/veh	7.3	7.3	13.2	3.1	9.2	10.6
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	409			537	132	
Approach Delay, s/veh	7.3			4.1	10.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.8	5.4	10.1				15.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		24.0	10.0	23.0				37.0
Max Q Clear Time (g_c+I1), s		3.1	2.7	4.1				3.7
Green Ext Time (p_c), s		0.4	0.0	2.0				3.6

Intersection Summary	
HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	341	5	25	388	12	14	0	59	10	0	19
Future Vol, veh/h	22	341	5	25	388	12	14	0	59	10	0	19
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	26	406	6	30	462	14	17	0	70	12	0	23

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

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.5	11.7	9.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	792	1068	-	-	1127	-	-	757
HCM Lane V/C Ratio	0.061	0.089	0.025	-	-	0.026	-	-	0.03
HCM Control Delay (s)	18.9	10	8.5	-	-	8.3	-	-	9.9
HCM Lane LOS	C	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	234	166	632	397	57	11	7	40	15	23	16
Future Volume (veh/h)	14	234	166	632	397	57	11	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	16	275	195	744	467	67	13	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	35	448	307	916	1661	741	29	23	134	39	105	74
Arrive On Green	0.02	0.23	0.23	0.27	0.48	0.48	0.02	0.10	0.10	0.02	0.11	0.11
Sat Flow, veh/h	1740	1968	1352	3375	3471	1550	1740	229	1348	1740	996	701
Grp Volume(v), veh/h	16	241	229	744	467	67	13	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1584	1688	1736	1550	1740	0	1577	1740	0	1697
Q Serve(g_s), s	0.4	5.3	5.5	8.7	3.4	1.0	0.3	0.0	1.4	0.4	0.0	1.1
Cycle Q Clear(g_c), s	0.4	5.3	5.5	8.7	3.4	1.0	0.3	0.0	1.4	0.4	0.0	1.1
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	35	395	360	916	1661	741	29	0	157	39	0	178
V/C Ratio(X)	0.45	0.61	0.63	0.81	0.28	0.09	0.45	0.00	0.35	0.46	0.00	0.26
Avail Cap(c_a), veh/h	206	741	676	1040	2140	955	206	0	673	206	0	724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	14.6	14.7	14.4	6.6	6.0	20.5	0.0	17.7	20.4	0.0	17.4
Incr Delay (d2), s/veh	8.8	1.5	1.9	4.5	0.1	0.1	10.3	0.0	1.3	8.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.7	2.5	4.6	1.6	0.4	0.2	0.0	0.7	0.3	0.0	0.5
LnGrp Delay(d),s/veh	29.3	16.2	16.6	18.8	6.7	6.0	30.9	0.0	19.1	28.5	0.0	18.1
LnGrp LOS	C	B	B	B	A	A	C		B	C		B
Approach Vol, veh/h		486			1278			68			64	
Approach Delay, s/veh		16.8			13.7			21.3			21.0	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	8.2	15.4	13.6	4.7	8.4	4.9	24.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	18.0	13.0	18.0	5.0	18.0	5.0	26.0
Max Q Clear Time (g_c+I1), s	2.4	3.4	10.7	7.5	2.3	3.1	2.4	5.4
Green Ext Time (p_c), s	0.0	0.2	0.8	1.9	0.0	0.1	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	265	17	34	950	138	452
Future Volume (veh/h)	265	17	34	950	138	452
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	305	20	39	1092	159	520
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1143	75	79	1765	464	853
Arrive On Green	0.34	0.34	0.05	0.50	0.26	0.26
Sat Flow, veh/h	3433	218	1757	3597	1757	2760
Grp Volume(v), veh/h	159	166	39	1092	159	520
Grp Sat Flow(s),veh/h/ln	1752	1806	1757	1752	1757	1380
Q Serve(g_s), s	2.3	2.3	0.7	7.7	2.5	5.5
Cycle Q Clear(g_c), s	2.3	2.3	0.7	7.7	2.5	5.5
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	600	618	79	1765	464	853
V/C Ratio(X)	0.27	0.27	0.49	0.62	0.34	0.61
Avail Cap(c_a), veh/h	967	997	459	3258	715	1247
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.2	8.2	16.0	6.2	10.2	10.1
Incr Delay (d2), s/veh	0.2	0.2	4.6	0.4	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	0.5	3.7	1.2	2.2
LnGrp Delay(d),s/veh	8.4	8.4	20.7	6.5	10.7	10.8
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	325			1131	679	
Approach Delay, s/veh	8.4			7.0	10.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		13.1	5.6	15.8				21.3
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		14.0	9.0	19.0				32.0
Max Q Clear Time (g_c+I1), s		7.5	2.7	4.3				9.7
Green Ext Time (p_c), s		1.6	0.0	1.4				7.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	412	53	11	359	42	36	7	18	40	13	44
Future Volume (veh/h)	34	412	53	11	359	42	36	7	18	40	13	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	474	61	13	413	48	41	8	21	46	15	51
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	82	1419	633	30	609	71	407	58	220	257	40	93
Arrive On Green	0.05	0.40	0.40	0.02	0.38	0.38	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1757	3505	1564	1757	1622	189	1179	411	1565	512	281	663
Grp Volume(v), veh/h	39	474	61	13	0	461	49	0	21	112	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1564	1757	0	1811	1590	0	1565	1456	0	0
Q Serve(g_s), s	0.6	2.6	0.7	0.2	0.0	5.9	0.0	0.0	0.3	1.4	0.0	0.0
Cycle Q Clear(g_c), s	0.6	2.6	0.7	0.2	0.0	5.9	0.7	0.0	0.3	2.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.10	0.84		1.00	0.41		0.46
Lane Grp Cap(c), veh/h	82	1419	633	30	0	679	465	0	220	390	0	0
V/C Ratio(X)	0.47	0.33	0.10	0.43	0.00	0.68	0.11	0.00	0.10	0.29	0.00	0.00
Avail Cap(c_a), veh/h	365	3027	1351	358	0	1557	1210	0	1067	1202	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.7	5.6	5.1	13.4	0.0	7.2	10.4	0.0	10.3	11.0	0.0	0.0
Incr Delay (d2), s/veh	4.2	0.1	0.1	9.4	0.0	1.2	0.1	0.0	0.2	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.2	0.3	0.2	0.0	3.0	0.3	0.0	0.1	0.8	0.0	0.0
LnGrp Delay(d),s/veh	16.9	5.8	5.1	22.7	0.0	8.4	10.5	0.0	10.5	11.4	0.0	0.0
LnGrp LOS	B	A	A	C		A	B		B	B		
Approach Vol, veh/h		574			474			70			112	
Approach Delay, s/veh		6.4			8.8			10.5			11.4	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.9	4.5	15.1		7.9	5.3	14.3
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.7	5.6	23.7		18.7	5.7	23.6
Max Q Clear Time (g_c+I1), s		2.7	2.2	4.6		4.0	2.6	7.9
Green Ext Time (p_c), s		0.2	0.0	2.9		0.5	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	419	40	48	319	29	40
Future Volume (veh/h)	419	40	48	319	29	40
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	460	44	53	351	32	44
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1043	99	110	1970	147	132
Arrive On Green	0.32	0.32	0.06	0.56	0.08	0.08
Sat Flow, veh/h	3326	308	1757	3597	1757	1568
Grp Volume(v), veh/h	249	255	53	351	32	44
Grp Sat Flow(s),veh/h/ln	1752	1789	1757	1752	1757	1568
Q Serve(g_s), s	2.5	2.6	0.7	1.1	0.4	0.6
Cycle Q Clear(g_c), s	2.5	2.6	0.7	1.1	0.4	0.6
Prop In Lane		0.17	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	565	577	110	1970	147	132
V/C Ratio(X)	0.44	0.44	0.48	0.18	0.22	0.33
Avail Cap(c_a), veh/h	2016	2058	855	6357	1865	1665
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.0	6.1	10.2	2.4	9.7	9.8
Incr Delay (d2), s/veh	0.5	0.5	3.2	0.0	0.7	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.3	0.4	0.5	0.2	0.3
LnGrp Delay(d),s/veh	6.6	6.6	13.5	2.5	10.4	11.2
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	504			404	76	
Approach Delay, s/veh	6.6			3.9	10.9	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		5.9	5.4	11.3				16.7
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		24.0	11.0	26.0				41.0
Max Q Clear Time (g_c+I1), s		2.6	2.7	4.6				3.1
Green Ext Time (p_c), s		0.2	0.0	2.6				2.5

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	2

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

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

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	1.3	12.4	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	217	751	1148	-	-	1066	-	-	801
HCM Lane V/C Ratio	0.051	0.063	0.034	-	-	0.065	-	-	0.037
HCM Control Delay (s)	22.5	10.1	8.2	-	-	8.6	-	-	9.7
HCM Lane LOS	C	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	0.2	0.1	-	-	0.2	-	-	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	298	166	436	362	60	23	3	49	39	19	15
Future Volume (veh/h)	12	298	166	436	362	60	23	3	49	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	12	310	173	454	377	62	24	3	51	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	533	290	674	1493	665	52	8	137	81	103	83
Arrive On Green	0.02	0.24	0.24	0.20	0.43	0.43	0.03	0.09	0.09	0.05	0.11	0.11
Sat Flow, veh/h	1757	2188	1192	3408	3505	1561	1757	88	1493	1757	950	760
Grp Volume(v), veh/h	12	247	236	454	377	62	24	0	54	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1627	1704	1752	1561	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.3	4.7	4.9	4.7	2.6	0.9	0.5	0.0	1.2	0.9	0.0	0.7
Cycle Q Clear(g_c), s	0.3	4.7	4.9	4.7	2.6	0.9	0.5	0.0	1.2	0.9	0.0	0.7
Prop In Lane	1.00		0.73	1.00		1.00	1.00		0.94	1.00		0.44
Lane Grp Cap(c), veh/h	27	427	397	674	1493	665	52	0	145	81	0	186
V/C Ratio(X)	0.44	0.58	0.60	0.67	0.25	0.09	0.46	0.00	0.37	0.51	0.00	0.19
Avail Cap(c_a), veh/h	231	829	769	1164	2393	1066	231	0	748	231	0	809
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	12.7	12.7	14.1	7.0	6.5	18.2	0.0	16.3	17.7	0.0	15.4
Incr Delay (d2), s/veh	10.5	1.2	1.4	1.2	0.1	0.1	6.3	0.0	1.6	4.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.4	2.3	2.3	1.3	0.4	0.3	0.0	0.6	0.5	0.0	0.4
LnGrp Delay(d),s/veh	29.1	13.9	14.2	15.3	7.1	6.6	24.5	0.0	17.8	22.5	0.0	15.9
LnGrp LOS	C	B	B	B	A	A	C		B	C		B
Approach Vol, veh/h		495			893			78			77	
Approach Delay, s/veh		14.4			11.2			19.9			19.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	7.5	11.5	13.3	5.1	8.1	4.6	20.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	5.0	18.0	13.0	18.0	5.0	18.0	5.0	26.0
Max Q Clear Time (g_c+I1), s	2.9	3.2	6.7	6.9	2.5	2.7	2.3	4.6
Green Ext Time (p_c), s	0.0	0.2	0.9	2.0	0.0	0.1	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	359	29	50	661	177	900
Future Volume (veh/h)	359	29	50	661	177	900
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	386	31	54	711	190	968
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	647	52	103	1311	683	1236
Arrive On Green	0.20	0.20	0.06	0.37	0.39	0.39
Sat Flow, veh/h	3380	263	1757	3597	1757	2760
Grp Volume(v), veh/h	205	212	54	711	190	968
Grp Sat Flow(s),veh/h/ln	1752	1798	1757	1752	1757	1380
Q Serve(g_s), s	3.6	3.6	1.0	5.4	2.5	10.1
Cycle Q Clear(g_c), s	3.6	3.6	1.0	5.4	2.5	10.1
Prop In Lane		0.15	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	345	354	103	1311	683	1236
V/C Ratio(X)	0.59	0.60	0.52	0.54	0.28	0.78
Avail Cap(c_a), veh/h	571	586	885	3322	728	1307
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.3	12.3	15.4	8.3	7.1	7.9
Incr Delay (d2), s/veh	1.6	1.6	4.0	0.4	0.2	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.9	0.6	2.6	1.3	4.2
LnGrp Delay(d),s/veh	14.0	14.0	19.5	8.6	7.3	11.0
LnGrp LOS	B	B	B	A	A	B
Approach Vol, veh/h	417			765	1158	
Approach Delay, s/veh	14.0			9.4	10.4	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		17.1	6.0	10.6				16.6
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		14.0	17.0	11.0				32.0
Max Q Clear Time (g_c+I1), s		12.1	3.0	5.6				7.4
Green Ext Time (p_c), s		1.1	0.1	1.0				4.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	457	36	7	378	27	297	50	39	50	11	47
Future Volume (veh/h)	46	457	36	7	378	27	297	50	39	50	11	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	56	557	44	9	461	33	362	61	48	61	13	57
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	69	1214	542	9	532	38	465	60	692	87	36	28
Arrive On Green	0.04	0.35	0.35	0.01	0.32	0.32	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1740	3471	1548	1740	1685	121	795	134	1551	0	81	63
Grp Volume(v), veh/h	56	557	44	9	0	494	423	0	48	131	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1548	1740	0	1805	929	0	1551	144	0	0
Q Serve(g_s), s	1.9	7.5	1.2	0.3	0.0	15.6	0.0	0.0	1.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.9	7.5	1.2	0.3	0.0	15.6	27.0	0.0	1.1	27.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	0.86		1.00	0.47		0.44
Lane Grp Cap(c), veh/h	69	1214	542	9	0	570	525	0	692	152	0	0
V/C Ratio(X)	0.81	0.46	0.08	0.96	0.00	0.87	0.81	0.00	0.07	0.86	0.00	0.00
Avail Cap(c_a), veh/h	115	1320	589	86	0	657	525	0	692	152	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.8	15.2	13.2	30.1	0.0	19.5	17.0	0.0	9.6	17.6	0.0	0.0
Incr Delay (d2), s/veh	26.4	0.4	0.1	152.5	0.0	11.4	9.4	0.0	0.1	37.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.6	0.5	0.5	0.0	9.5	8.3	0.0	0.5	3.7	0.0	0.0
LnGrp Delay(d),s/veh	55.3	15.6	13.2	182.6	0.0	30.9	26.4	0.0	9.6	55.5	0.0	0.0
LnGrp LOS	E	B	B	F		C	C		A	E		
Approach Vol, veh/h		657			503			471			131	
Approach Delay, s/veh		18.8			33.6			24.7			55.5	
Approach LOS		B			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	4.3	25.2		31.0	6.4	23.1
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		27.0	3.0	23.0		27.0	4.0	22.0
Max Q Clear Time (g_c+I1), s		29.0	2.3	9.5		29.0	3.9	17.6
Green Ext Time (p_c), s		0.0	0.0	4.0		0.0	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	471	25	85	387	49	111
Future Volume (veh/h)	471	25	85	387	49	111
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	604	32	109	496	63	142
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1196	63	135	2021	229	204
Arrive On Green	0.35	0.35	0.08	0.58	0.13	0.13
Sat Flow, veh/h	3478	179	1757	3597	1757	1568
Grp Volume(v), veh/h	312	324	109	496	63	142
Grp Sat Flow(s),veh/h/ln	1752	1813	1757	1752	1757	1568
Q Serve(g_s), s	3.8	3.8	1.7	1.9	0.9	2.4
Cycle Q Clear(g_c), s	3.8	3.8	1.7	1.9	0.9	2.4
Prop In Lane		0.10	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	619	640	135	2021	229	204
V/C Ratio(X)	0.50	0.51	0.80	0.25	0.27	0.69
Avail Cap(c_a), veh/h	1155	1195	386	3594	386	344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	7.0	12.4	2.9	10.7	11.4
Incr Delay (d2), s/veh	0.9	0.9	14.5	0.1	0.9	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.0	1.3	0.9	0.5	1.4
LnGrp Delay(d),s/veh	7.9	7.8	26.9	2.9	11.6	17.3
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	636			605	205	
Approach Delay, s/veh	7.9			7.2	15.5	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.6	6.1	13.6				19.7
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		6.0	6.0	18.0				28.0
Max Q Clear Time (g_c+I1), s		4.4	3.7	5.8				3.9
Green Ext Time (p_c), s		0.1	0.1	3.8				4.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	541	4	30	635	116	11	0	68	35	0	44
Future Vol, veh/h	108	541	4	30	635	116	11	0	68	35	0	44
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	129	644	5	36	756	138	13	0	81	42	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	894	0	0	650	0	0	1356	1872	326	1477	1805	447
Stage 1	-	-	-	-	-	-	906	906	-	897	897	-
Stage 2	-	-	-	-	-	-	450	966	-	580	908	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	742	-	-	919	-	-	106	70	664	86	77	553
Stage 1	-	-	-	-	-	-	293	349	-	297	352	-
Stage 2	-	-	-	-	-	-	553	327	-	462	348	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	742	-	-	918	-	-	81	56	663	64	61	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	56	-	64	61	-
Stage 1	-	-	-	-	-	-	242	288	-	245	338	-
Stage 2	-	-	-	-	-	-	481	314	-	335	287	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.3	20.1	89.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	331	742	-	-	918	-	-	126
HCM Lane V/C Ratio	0.284	0.173	-	-	0.039	-	-	0.746
HCM Control Delay (s)	20.1	10.9	-	-	9.1	-	-	89.9
HCM Lane LOS	C	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.1	0.6	-	-	0.1	-	-	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	336	232	933	662	84	52	7	40	15	23	16
Future Volume (veh/h)	21	336	232	933	662	84	52	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	25	395	273	1098	779	99	61	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	28	516	353	1281	2170	969	102	13	78	58	33	23
Arrive On Green	0.02	0.26	0.26	0.38	0.63	0.63	0.06	0.06	0.06	0.03	0.03	0.03
Sat Flow, veh/h	1740	1973	1348	3375	3471	1550	1740	228	1338	1740	987	695
Grp Volume(v), veh/h	25	347	321	1098	779	99	61	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1585	1688	1736	1550	1740	0	1566	1740	0	1682
Q Serve(g_s), s	0.9	11.1	11.2	17.9	6.5	1.5	2.1	0.0	2.1	0.6	0.0	1.6
Cycle Q Clear(g_c), s	0.9	11.1	11.2	17.9	6.5	1.5	2.1	0.0	2.1	0.6	0.0	1.6
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	28	454	415	1281	2170	969	102	0	92	58	0	56
V/C Ratio(X)	0.88	0.76	0.77	0.86	0.36	0.10	0.60	0.00	0.60	0.31	0.00	0.82
Avail Cap(c_a), veh/h	87	550	502	1407	2374	1060	145	0	131	58	0	56
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.4	20.4	20.5	17.1	5.4	4.5	27.5	0.0	27.5	28.3	0.0	28.8
Incr Delay (d2), s/veh	66.1	5.9	7.0	5.4	0.1	0.1	7.8	0.0	8.7	4.2	0.0	62.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	6.0	5.7	9.2	3.1	0.7	1.2	0.0	1.1	0.4	0.0	1.7
LnGrp Delay(d),s/veh	95.5	26.4	27.4	22.5	5.6	4.6	35.3	0.0	36.2	32.5	0.0	90.9
LnGrp LOS	F	C	C	C	A	A	D		D	C		F
Approach Vol, veh/h		693			1976			116			64	
Approach Delay, s/veh		29.4			14.9			35.8			74.5	
Approach LOS		C			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.5	26.8	19.7		6.0	5.0	41.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		5.0	25.0	19.0		2.0	3.0	41.0
Max Q Clear Time (g_c+I1), s		4.1	19.9	13.2		3.6	2.9	8.5
Green Ext Time (p_c), s		0.0	2.8	2.4		0.0	0.0	8.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	299	31	50	1433	231	591
Future Volume (veh/h)	299	31	50	1433	231	591
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	344	36	57	1647	266	679
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1482	154	93	2061	469	882
Arrive On Green	0.46	0.46	0.05	0.59	0.27	0.27
Sat Flow, veh/h	3297	333	1757	3597	1757	2760
Grp Volume(v), veh/h	187	193	57	1647	266	679
Grp Sat Flow(s),veh/h/ln	1752	1785	1757	1752	1757	1380
Q Serve(g_s), s	3.5	3.6	1.7	20.1	7.2	12.2
Cycle Q Clear(g_c), s	3.5	3.6	1.7	20.1	7.2	12.2
Prop In Lane		0.19	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	810	826	93	2061	469	882
V/C Ratio(X)	0.23	0.23	0.61	0.80	0.57	0.77
Avail Cap(c_a), veh/h	810	826	192	2229	479	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.9	8.9	25.5	8.8	17.4	16.9
Incr Delay (d2), s/veh	0.2	0.2	9.0	2.2	1.9	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.8	1.1	10.0	3.7	5.1
LnGrp Delay(d),s/veh	9.1	9.1	34.5	11.0	19.4	21.2
LnGrp LOS	A	A	C	B	B	C
Approach Vol, veh/h	380			1704	945	
Approach Delay, s/veh	9.1			11.8	20.7	
Approach LOS	A			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		18.7	6.9	29.4				36.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		15.0	6.0	25.0				35.0
Max Q Clear Time (g_c+I1), s		14.2	3.7	5.6				22.1
Green Ext Time (p_c), s		0.5	0.0	2.7				10.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	420	53	20	386	51	264	51	110	80	26	90
Future Volume (veh/h)	34	420	53	20	386	51	264	51	110	80	26	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	483	61	23	444	59	303	59	126	92	30	103
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	71	1134	506	47	494	66	430	61	691	106	52	59
Arrive On Green	0.04	0.32	0.32	0.03	0.31	0.31	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1757	3505	1563	1757	1595	212	715	139	1567	39	118	133
Grp Volume(v), veh/h	39	483	61	23	0	503	362	0	126	225	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1563	1757	0	1806	854	0	1567	290	0	0
Q Serve(g_s), s	1.3	6.2	1.6	0.7	0.0	15.3	0.0	0.0	2.8	1.7	0.0	0.0
Cycle Q Clear(g_c), s	1.3	6.2	1.6	0.7	0.0	15.3	23.7	0.0	2.8	25.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.84		1.00	0.41		0.46
Lane Grp Cap(c), veh/h	71	1134	506	47	0	560	492	0	691	216	0	0
V/C Ratio(X)	0.55	0.43	0.12	0.49	0.00	0.90	0.74	0.00	0.18	1.04	0.00	0.00
Avail Cap(c_a), veh/h	171	1157	516	171	0	596	492	0	691	216	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.1	15.3	13.7	27.6	0.0	19.0	15.6	0.0	9.8	19.1	0.0	0.0
Incr Delay (d2), s/veh	6.5	0.3	0.1	7.7	0.0	15.9	5.7	0.0	0.1	72.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.1	0.7	0.5	0.0	10.0	6.3	0.0	1.2	7.7	0.0	0.0
LnGrp Delay(d),s/veh	33.6	15.5	13.8	35.3	0.0	34.9	21.3	0.0	9.9	91.4	0.0	0.0
LnGrp LOS	C	B	B	D		C	C		A	F		
Approach Vol, veh/h		583			526			488			225	
Approach Delay, s/veh		16.6			34.9			18.4			91.4	
Approach LOS		B			C			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.4	5.5	22.6		29.4	6.3	21.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.4	5.6	19.0		25.4	5.6	19.0
Max Q Clear Time (g_c+I1), s		25.7	2.7	8.2		27.4	3.3	17.3
Green Ext Time (p_c), s		0.0	0.0	2.3		0.0	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	444	34	134	397	87	139
Future Volume (veh/h)	444	34	134	397	87	139
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1900	1827	1827	1827	1827
Adj Flow Rate, veh/h	488	37	147	436	96	153
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4
Cap, veh/h	888	67	188	1853	274	244
Arrive On Green	0.27	0.27	0.11	0.53	0.16	0.16
Sat Flow, veh/h	3362	247	1740	3563	1740	1553
Grp Volume(v), veh/h	258	267	147	436	96	153
Grp Sat Flow(s),veh/h/ln	1736	1782	1740	1736	1740	1553
Q Serve(g_s), s	3.3	3.3	2.1	1.7	1.3	2.4
Cycle Q Clear(g_c), s	3.3	3.3	2.1	1.7	1.3	2.4
Prop In Lane		0.14	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	471	484	188	1853	274	244
V/C Ratio(X)	0.55	0.55	0.78	0.24	0.35	0.63
Avail Cap(c_a), veh/h	871	895	605	3485	873	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.1	8.1	11.3	3.2	9.7	10.2
Incr Delay (d2), s/veh	1.0	1.0	7.0	0.1	0.8	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.8	1.3	0.8	0.7	1.2
LnGrp Delay(d),s/veh	9.1	9.1	18.2	3.3	10.5	12.8
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	525			583	249	
Approach Delay, s/veh	9.1			7.1	11.9	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		8.1	6.8	11.0				17.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		13.0	9.0	13.0				26.0
Max Q Clear Time (g_c+I1), s		4.4	4.1	5.3				3.7
Green Ext Time (p_c), s		0.5	0.1	1.7				2.9

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	79.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	596	10	73	614	51	6	0	50	128	0	89
Future Vol, veh/h	111	596	10	73	614	51	6	0	50	128	0	89
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	122	655	11	80	675	56	7	0	55	141	0	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	731	0	0	666	0	0	1403	1796	333	1435	1773	366
Stage 1	-	-	-	-	-	-	905	905	-	863	863	-
Stage 2	-	-	-	-	-	-	498	891	-	572	910	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	856	-	-	906	-	-	98	78	657	~ 92	80	625
Stage 1	-	-	-	-	-	-	294	349	-	312	365	-
Stage 2	-	-	-	-	-	-	518	354	-	467	347	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	856	-	-	906	-	-	69	61	657	~ 70	63	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	61	-	~ 70	63	-
Stage 1	-	-	-	-	-	-	252	299	-	267	333	-
Stage 2	-	-	-	-	-	-	398	323	-	367	297	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.9	17.8	$ 618.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	343	856	-	-	906	-	-	110
HCM Lane V/C Ratio	0.179	0.142	-	-	0.089	-	-	2.168
HCM Control Delay (s)	17.8	9.9	-	-	9.4	-	-	$ 618.2
HCM Lane LOS	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.6	0.5	-	-	0.3	-	-	20.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	459	264	557	456	77	46	3	50	39	19	15
Future Volume (veh/h)	16	459	264	557	456	77	46	3	50	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	478	275	580	475	80	48	3	52	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	617	353	779	1772	790	104	5	88	73	40	32
Arrive On Green	0.01	0.29	0.29	0.23	0.51	0.51	0.06	0.06	0.06	0.04	0.04	0.04
Sat Flow, veh/h	1757	2146	1228	3408	3505	1562	1757	86	1495	1757	950	760
Grp Volume(v), veh/h	17	390	363	580	475	80	48	0	55	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1622	1704	1752	1562	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.4	8.5	8.6	6.6	3.2	1.1	1.1	0.0	1.4	1.0	0.0	0.9
Cycle Q Clear(g_c), s	0.4	8.5	8.6	6.6	3.2	1.1	1.1	0.0	1.4	1.0	0.0	0.9
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.95	1.00		0.44
Lane Grp Cap(c), veh/h	18	504	466	779	1772	790	104	0	93	73	0	72
V/C Ratio(X)	0.94	0.77	0.78	0.74	0.27	0.10	0.46	0.00	0.59	0.56	0.00	0.50
Avail Cap(c_a), veh/h	126	587	544	1061	2014	897	336	0	303	126	0	123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	13.6	13.7	15.0	5.9	5.4	19.0	0.0	19.2	19.6	0.0	19.6
Incr Delay (d2), s/veh	82.5	5.5	6.1	1.9	0.1	0.1	3.2	0.0	5.8	6.5	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.9	4.6	3.3	1.5	0.5	0.6	0.0	0.8	0.6	0.0	0.5
LnGrp Delay(d),s/veh	103.2	19.1	19.8	16.9	6.0	5.4	22.2	0.0	24.9	26.1	0.0	25.0
LnGrp LOS	F	B	B	B	A	A	C		C	C		C
Approach Vol, veh/h		770			1135			103			77	
Approach Delay, s/veh		21.3			11.5			23.6			25.6	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		6.5	13.5	16.0		5.7	4.4	25.1
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		8.0	13.0	14.0		3.0	3.0	24.0
Max Q Clear Time (g_c+I1), s		3.4	8.6	10.6		3.0	2.4	5.2
Green Ext Time (p_c), s		0.1	0.9	1.4		0.0	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.2
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	386	74	66	859	266	1356
Future Volume (veh/h)	386	74	66	859	266	1356
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	415	80	71	924	286	1458
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	593	113	90	1099	993	1560
Arrive On Green	0.20	0.20	0.05	0.31	0.57	0.57
Sat Flow, veh/h	3029	562	1757	3597	1757	2760
Grp Volume(v), veh/h	246	249	71	924	286	1458
Grp Sat Flow(s),veh/h/ln	1752	1746	1757	1752	1757	1380
Q Serve(g_s), s	8.6	8.8	2.6	16.2	5.6	32.2
Cycle Q Clear(g_c), s	8.6	8.8	2.6	16.2	5.6	32.2
Prop In Lane		0.32	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	354	352	90	1099	993	1560
V/C Ratio(X)	0.70	0.71	0.79	0.84	0.29	0.93
Avail Cap(c_a), veh/h	377	375	133	1231	1032	1621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	24.5	31.0	21.1	7.5	13.2
Incr Delay (d2), s/veh	5.1	5.5	17.1	4.9	0.2	10.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	4.8	1.7	8.6	2.7	14.3
LnGrp Delay(d),s/veh	29.6	30.1	48.1	26.1	7.6	23.5
LnGrp LOS	C	C	D	C	A	C
Approach Vol, veh/h	495			995	1744	
Approach Delay, s/veh	29.8			27.6	20.9	
Approach LOS	C			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		41.3	7.4	17.3				24.7
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		38.8	5.0	14.2				23.2
Max Q Clear Time (g_c+I1), s		34.2	4.6	10.8				18.2
Green Ext Time (p_c), s		3.2	0.0	0.9				2.5

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	462	36	14	390	31	297	50	42	52	11	47
Future Volume (veh/h)	46	462	36	14	390	31	297	50	42	52	11	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1827	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	56	563	44	17	476	38	362	61	51	63	13	57
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	69	1223	546	19	540	43	465	60	684	87	35	26
Arrive On Green	0.04	0.35	0.35	0.01	0.32	0.32	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1740	3471	1548	1740	1670	133	807	136	1551	0	80	60
Grp Volume(v), veh/h	56	563	44	17	0	514	423	0	51	133	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1548	1740	0	1803	943	0	1551	140	0	0
Q Serve(g_s), s	2.0	7.7	1.2	0.6	0.0	16.5	0.0	0.0	1.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	7.7	1.2	0.6	0.0	16.5	27.0	0.0	1.2	27.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.07	0.86		1.00	0.47		0.43
Lane Grp Cap(c), veh/h	69	1223	546	19	0	583	525	0	684	148	0	0
V/C Ratio(X)	0.81	0.46	0.08	0.92	0.00	0.88	0.81	0.00	0.07	0.90	0.00	0.00
Avail Cap(c_a), veh/h	114	1304	582	85	0	648	525	0	684	148	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.2	15.3	13.2	30.3	0.0	19.6	17.3	0.0	9.9	18.6	0.0	0.0
Incr Delay (d2), s/veh	26.3	0.4	0.1	93.9	0.0	13.2	9.4	0.0	0.1	45.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.7	0.5	0.8	0.0	10.3	8.4	0.0	0.5	4.1	0.0	0.0
LnGrp Delay(d),s/veh	55.5	15.7	13.3	124.2	0.0	32.8	26.8	0.0	10.0	64.4	0.0	0.0
LnGrp LOS	E	B	B	F		C	C		A	E		
Approach Vol, veh/h		663			531			474			133	
Approach Delay, s/veh		18.9			35.7			25.0			64.4	
Approach LOS		B			D			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		31.0	4.7	25.6		31.0	6.4	23.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		27.0	3.0	23.0		27.0	4.0	22.0
Max Q Clear Time (g_c+I1), s		29.0	2.6	9.7		29.0	4.0	18.5
Green Ext Time (p_c), s		0.0	0.0	4.0		0.0	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	477	29	85	404	55	111
Future Volume (veh/h)	477	29	85	404	55	111
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	612	37	109	518	71	142
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1196	72	136	2026	233	208
Arrive On Green	0.36	0.36	0.08	0.58	0.13	0.13
Sat Flow, veh/h	3451	203	1757	3597	1757	1568
Grp Volume(v), veh/h	319	330	109	518	71	142
Grp Sat Flow(s),veh/h/ln	1752	1809	1757	1752	1757	1568
Q Serve(g_s), s	4.0	4.0	1.7	2.0	1.0	2.4
Cycle Q Clear(g_c), s	4.0	4.0	1.7	2.0	1.0	2.4
Prop In Lane		0.11	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	624	644	136	2026	233	208
V/C Ratio(X)	0.51	0.51	0.80	0.26	0.31	0.68
Avail Cap(c_a), veh/h	1142	1179	382	3553	382	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.0	7.0	12.5	2.9	10.8	11.4
Incr Delay (d2), s/veh	0.9	0.9	14.4	0.1	1.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.1	1.3	1.0	0.5	1.3
LnGrp Delay(d),s/veh	7.9	7.9	26.9	3.0	11.9	17.0
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	649			627	213	
Approach Delay, s/veh	7.9			7.1	15.3	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		7.7	6.1	13.8				20.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		6.0	6.0	18.0				28.0
Max Q Clear Time (g_c+I1), s		4.4	3.7	6.0				4.0
Green Ext Time (p_c), s		0.2	0.1	3.9				5.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	10

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	541	10	50	635	116	28	0	118	35	0	44
Future Vol, veh/h	108	541	10	50	635	116	28	0	118	35	0	44
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	129	644	12	60	756	138	33	0	140	42	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	894	0	0	657	0	0	1407	1923	329	1525	1860	447
Stage 1	-	-	-	-	-	-	909	909	-	945	945	-
Stage 2	-	-	-	-	-	-	498	1014	-	580	915	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	742	-	-	913	-	-	97	65	661	79	71	553
Stage 1	-	-	-	-	-	-	292	347	-	278	334	-
Stage 2	-	-	-	-	-	-	518	310	-	462	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	742	-	-	912	-	-	72	50	660	51	55	553
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	50	-	51	55	-
Stage 1	-	-	-	-	-	-	241	286	-	230	312	-
Stage 2	-	-	-	-	-	-	438	290	-	300	285	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.6	27.3	141.8
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	72	660	742	-	-	912	-	-	103
HCM Lane V/C Ratio	0.463	0.213	0.173	-	-	0.065	-	-	0.913
HCM Control Delay (s)	92.3	11.9	10.9	-	-	9.2	-	-	141.8
HCM Lane LOS	F	B	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.9	0.8	0.6	-	-	0.2	-	-	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	367	251	933	680	84	54	7	40	15	23	16
Future Volume (veh/h)	21	367	251	933	680	84	54	7	40	15	23	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1827	1827	1827	1900	1827	1827	1900
Adj Flow Rate, veh/h	25	432	295	1098	800	99	64	8	47	18	27	19
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	28	539	365	1266	2190	978	104	14	80	57	32	23
Arrive On Green	0.02	0.27	0.27	0.38	0.63	0.63	0.06	0.06	0.06	0.03	0.03	0.03
Sat Flow, veh/h	1740	1980	1342	3375	3471	1550	1740	228	1339	1740	987	694
Grp Volume(v), veh/h	25	378	349	1098	800	99	64	0	55	18	0	46
Grp Sat Flow(s),veh/h/ln	1740	1736	1587	1688	1736	1550	1740	0	1567	1740	0	1681
Q Serve(g_s), s	0.9	12.5	12.6	18.5	6.8	1.5	2.2	0.0	2.1	0.6	0.0	1.7
Cycle Q Clear(g_c), s	0.9	12.5	12.6	18.5	6.8	1.5	2.2	0.0	2.1	0.6	0.0	1.7
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.85	1.00		0.41
Lane Grp Cap(c), veh/h	28	472	432	1266	2190	978	104	0	94	57	0	55
V/C Ratio(X)	0.88	0.80	0.81	0.87	0.37	0.10	0.61	0.00	0.58	0.32	0.00	0.84
Avail Cap(c_a), veh/h	85	536	490	1372	2314	1033	141	0	127	57	0	55
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.2	20.8	20.9	17.8	5.4	4.5	28.2	0.0	28.2	29.1	0.0	29.6
Incr Delay (d2), s/veh	65.5	8.3	9.5	6.1	0.1	0.1	8.0	0.0	8.0	4.5	0.0	69.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	7.1	6.7	9.6	3.3	0.7	1.3	0.0	1.1	0.4	0.0	1.8
LnGrp Delay(d),s/veh	95.7	29.1	30.4	23.9	5.6	4.5	36.2	0.0	36.1	33.6	0.0	98.9
LnGrp LOS	F	C	C	C	A	A	D		D	C		F
Approach Vol, veh/h		752			1997			119			64	
Approach Delay, s/veh		31.9			15.6			36.2			80.5	
Approach LOS		C			B			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		7.7	27.1	20.7		6.0	5.0	42.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		5.0	25.0	19.0		2.0	3.0	41.0
Max Q Clear Time (g_c+I1), s		4.2	20.5	14.6		3.7	2.9	8.8
Green Ext Time (p_c), s		0.0	2.5	2.1		0.0	0.0	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	326	35	50	1444	238	591
Future Volume (veh/h)	326	35	50	1444	238	591
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	375	40	57	1660	274	679
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1482	157	93	2064	468	881
Arrive On Green	0.46	0.46	0.05	0.59	0.27	0.27
Sat Flow, veh/h	3290	339	1757	3597	1757	2760
Grp Volume(v), veh/h	205	210	57	1660	274	679
Grp Sat Flow(s),veh/h/ln	1752	1784	1757	1752	1757	1380
Q Serve(g_s), s	3.9	4.0	1.8	20.4	7.5	12.3
Cycle Q Clear(g_c), s	3.9	4.0	1.8	20.4	7.5	12.3
Prop In Lane		0.19	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	812	827	93	2064	468	881
V/C Ratio(X)	0.25	0.25	0.61	0.80	0.59	0.77
Avail Cap(c_a), veh/h	812	827	191	2222	477	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	9.0	25.6	8.9	17.6	17.0
Incr Delay (d2), s/veh	0.2	0.2	9.1	2.3	2.2	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.0	1.1	10.3	3.9	5.1
LnGrp Delay(d),s/veh	9.2	9.2	34.7	11.1	19.8	21.4
LnGrp LOS	A	A	C	B	B	C
Approach Vol, veh/h	415			1717	953	
Approach Delay, s/veh	9.2			11.9	20.9	
Approach LOS	A			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		18.7	6.9	29.6				36.5
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		15.0	6.0	25.0				35.0
Max Q Clear Time (g_c+I1), s		14.3	3.8	6.0				22.4
Green Ext Time (p_c), s		0.4	0.0	2.9				10.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	432	53	26	394	54	264	51	119	84	26	90
Future Volume (veh/h)	34	432	53	26	394	54	264	51	119	84	26	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1900	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	39	497	61	30	453	62	303	59	137	97	30	103
Adj No. of Lanes	1	2	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	71	1127	503	58	499	68	435	63	687	113	52	63
Arrive On Green	0.04	0.32	0.32	0.03	0.31	0.31	0.44	0.44	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1757	3505	1563	1757	1588	217	733	143	1567	57	119	143
Grp Volume(v), veh/h	39	497	61	30	0	515	362	0	137	230	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1563	1757	0	1805	876	0	1567	320	0	0
Q Serve(g_s), s	1.3	6.5	1.6	1.0	0.0	15.9	0.0	0.0	3.1	2.5	0.0	0.0
Cycle Q Clear(g_c), s	1.3	6.5	1.6	1.0	0.0	15.9	22.9	0.0	3.1	25.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.12	0.84		1.00	0.42		0.45
Lane Grp Cap(c), veh/h	71	1127	503	58	0	568	498	0	687	228	0	0
V/C Ratio(X)	0.55	0.44	0.12	0.52	0.00	0.91	0.73	0.00	0.20	1.01	0.00	0.00
Avail Cap(c_a), veh/h	170	1149	512	170	0	592	498	0	687	228	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.3	15.5	13.9	27.6	0.0	19.1	15.6	0.0	10.0	20.2	0.0	0.0
Incr Delay (d2), s/veh	6.6	0.3	0.1	6.9	0.0	17.4	5.3	0.0	0.1	61.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.1	0.7	0.6	0.0	10.6	6.2	0.0	1.4	7.5	0.0	0.0
LnGrp Delay(d),s/veh	33.9	15.8	14.0	34.5	0.0	36.5	20.9	0.0	10.2	81.4	0.0	0.0
LnGrp LOS	C	B	B	C		D	C		B	F		
Approach Vol, veh/h		597			545			499			230	
Approach Delay, s/veh		16.8			36.4			17.9			81.4	
Approach LOS		B			D			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		29.4	5.9	22.6		29.4	6.3	22.2
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		25.4	5.6	19.0		25.4	5.6	19.0
Max Q Clear Time (g_c+I1), s		24.9	3.0	8.5		27.4	3.3	17.9
Green Ext Time (p_c), s		0.2	0.0	2.3		0.0	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	462	41	134	411	90	139
Future Volume (veh/h)	462	41	134	411	90	139
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1900	1827	1827	1827	1827
Adj Flow Rate, veh/h	508	45	147	452	99	153
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4
Cap, veh/h	900	79	188	1870	274	245
Arrive On Green	0.28	0.28	0.11	0.54	0.16	0.16
Sat Flow, veh/h	3317	285	1740	3563	1740	1553
Grp Volume(v), veh/h	273	280	147	452	99	153
Grp Sat Flow(s),veh/h/ln	1736	1775	1740	1736	1740	1553
Q Serve(g_s), s	3.5	3.6	2.2	1.8	1.3	2.4
Cycle Q Clear(g_c), s	3.5	3.6	2.2	1.8	1.3	2.4
Prop In Lane		0.16	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	484	495	188	1870	274	245
V/C Ratio(X)	0.56	0.57	0.78	0.24	0.36	0.62
Avail Cap(c_a), veh/h	856	876	594	3426	859	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.1	8.1	11.4	3.2	9.9	10.4
Incr Delay (d2), s/veh	1.0	1.0	7.0	0.1	0.8	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.9	1.4	0.8	0.7	1.2
LnGrp Delay(d),s/veh	9.2	9.2	18.4	3.3	10.7	13.0
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	553			599	252	
Approach Delay, s/veh	9.2			7.0	12.1	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		8.2	6.8	11.3				18.2
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		13.0	9.0	13.0				26.0
Max Q Clear Time (g_c+I1), s		4.4	4.2	5.6				3.8
Green Ext Time (p_c), s		0.5	0.1	1.8				3.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	116.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	596	28	126	614	51	20	0	86	128	0	89
Future Vol, veh/h	111	596	28	126	614	51	20	0	86	128	0	89
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	140	-	-	122	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	122	655	31	138	675	56	22	0	95	141	0	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	731	0	0	686	0	0	1529	1922	343	1551	1909	366
Stage 1	-	-	-	-	-	-	915	915	-	979	979	-
Stage 2	-	-	-	-	-	-	614	1007	-	572	930	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	856	-	-	890	-	-	79	65	647	~ 76	66	625
Stage 1	-	-	-	-	-	-	290	345	-	265	322	-
Stage 2	-	-	-	-	-	-	441	312	-	467	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	856	-	-	890	-	-	52	47	647	~ 51	48	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	52	47	-	~ 51	48	-
Stage 1	-	-	-	-	-	-	249	296	-	227	272	-
Stage 2	-	-	-	-	-	-	314	264	-	342	291	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	1.6	31.5	$ 969.9
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	52	647	856	-	-	890	-	-	82
HCM Lane V/C Ratio	0.423	0.146	0.142	-	-	0.156	-	-	2.908
HCM Control Delay (s)	117.7	11.5	9.9	-	-	9.8	-	-	$ 969.9
HCM Lane LOS	F	B	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	1.6	0.5	0.5	-	-	0.5	-	-	23.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	481	278	557	505	77	50	3	50	39	19	15
Future Volume (veh/h)	16	481	278	557	505	77	50	3	50	39	19	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	501	290	580	526	80	52	3	52	41	20	16
Adj No. of Lanes	1	2	0	2	2	1	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	629	363	774	1790	798	106	5	90	73	40	32
Arrive On Green	0.01	0.29	0.29	0.23	0.51	0.51	0.06	0.06	0.06	0.04	0.04	0.04
Sat Flow, veh/h	1757	2139	1234	3408	3505	1562	1757	86	1495	1757	950	760
Grp Volume(v), veh/h	17	410	381	580	526	80	52	0	55	41	0	36
Grp Sat Flow(s),veh/h/ln	1757	1752	1621	1704	1752	1562	1757	0	1581	1757	0	1711
Q Serve(g_s), s	0.4	9.2	9.2	6.7	3.7	1.1	1.2	0.0	1.4	1.0	0.0	0.9
Cycle Q Clear(g_c), s	0.4	9.2	9.2	6.7	3.7	1.1	1.2	0.0	1.4	1.0	0.0	0.9
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.95	1.00		0.44
Lane Grp Cap(c), veh/h	18	515	476	774	1790	798	106	0	95	73	0	71
V/C Ratio(X)	0.94	0.80	0.80	0.75	0.29	0.10	0.49	0.00	0.58	0.56	0.00	0.50
Avail Cap(c_a), veh/h	124	578	535	1044	1982	883	331	0	298	124	0	121
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	13.8	13.8	15.3	6.0	5.4	19.3	0.0	19.4	20.0	0.0	19.9
Incr Delay (d2), s/veh	82.2	6.9	7.6	2.1	0.1	0.1	3.5	0.0	5.4	6.5	0.0	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.3	5.0	3.4	1.8	0.5	0.7	0.0	0.8	0.6	0.0	0.5
LnGrp Delay(d),s/veh	103.2	20.7	21.5	17.3	6.1	5.4	22.8	0.0	24.8	26.4	0.0	25.3
LnGrp LOS	F	C	C	B	A	A	C		C	C		C
Approach Vol, veh/h		808			1186			107			77	
Approach Delay, s/veh		22.8			11.5			23.9			25.9	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		6.6	13.6	16.5		5.8	4.4	25.7
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		8.0	13.0	14.0		3.0	3.0	24.0
Max Q Clear Time (g_c+I1), s		3.4	8.7	11.2		3.0	2.4	5.7
Green Ext Time (p_c), s		0.1	0.9	1.3		0.0	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	406	76	66	889	285	1356
Future Volume (veh/h)	406	76	66	889	285	1356
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	437	82	71	956	306	1458
Adj No. of Lanes	2	0	1	2	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	611	114	90	1115	988	1551
Arrive On Green	0.21	0.21	0.05	0.32	0.56	0.56
Sat Flow, veh/h	3042	550	1757	3597	1757	2760
Grp Volume(v), veh/h	258	261	71	956	306	1458
Grp Sat Flow(s),veh/h/ln	1752	1748	1757	1752	1757	1380
Q Serve(g_s), s	9.2	9.3	2.7	17.1	6.2	32.8
Cycle Q Clear(g_c), s	9.2	9.3	2.7	17.1	6.2	32.8
Prop In Lane		0.31	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	363	362	90	1115	988	1551
V/C Ratio(X)	0.71	0.72	0.79	0.86	0.31	0.94
Avail Cap(c_a), veh/h	372	371	131	1215	1019	1600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	24.7	31.4	21.4	7.8	13.6
Incr Delay (d2), s/veh	6.1	6.5	17.7	5.9	0.2	11.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	5.1	1.7	9.1	3.0	14.6
LnGrp Delay(d),s/veh	30.7	31.2	49.0	27.3	7.9	24.7
LnGrp LOS	C	C	D	C	A	C
Approach Vol, veh/h	519			1027	1764	
Approach Delay, s/veh	31.0			28.8	21.8	
Approach LOS	C			C	C	

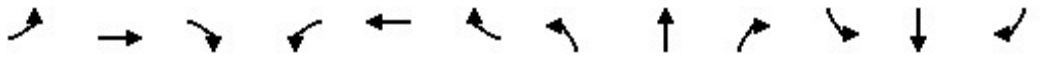
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		41.6	7.4	17.9				25.3
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		38.8	5.0	14.2				23.2
Max Q Clear Time (g_c+I1), s		34.8	4.7	11.3				19.1
Green Ext Time (p_c), s		2.8	0.0	0.8				2.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	541	4	30	635	116	11	0	68	35	0	44
Future Volume (veh/h)	108	541	4	30	635	116	11	0	68	35	0	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	129	644	5	36	756	138	13	0	81	42	0	52
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	182	1584	12	74	1134	207	436	0	232	230	25	122
Arrive On Green	0.10	0.45	0.45	0.04	0.39	0.39	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1740	3530	27	1740	2932	535	1473	0	1553	494	165	816
Grp Volume(v), veh/h	129	317	332	36	447	447	13	0	81	94	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1822	1740	1736	1732	1473	0	1553	1475	0	0
Q Serve(g_s), s	2.4	4.1	4.1	0.7	7.1	7.1	0.0	0.0	1.6	0.7	0.0	0.0
Cycle Q Clear(g_c), s	2.4	4.1	4.1	0.7	7.1	7.1	0.2	0.0	1.6	1.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.31	1.00		1.00	0.45		0.55
Lane Grp Cap(c), veh/h	182	779	817	74	671	670	436	0	232	377	0	0
V/C Ratio(X)	0.71	0.41	0.41	0.49	0.67	0.67	0.03	0.00	0.35	0.25	0.00	0.00
Avail Cap(c_a), veh/h	313	987	1036	260	935	933	990	0	883	973	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	6.2	6.2	15.6	8.5	8.5	12.2	0.0	12.7	12.8	0.0	0.0
Incr Delay (d2), s/veh	5.0	0.3	0.3	4.9	1.2	1.2	0.0	0.0	0.9	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.0	2.1	0.4	3.6	3.6	0.1	0.0	0.7	0.8	0.0	0.0
LnGrp Delay(d),s/veh	19.5	6.6	6.5	20.5	9.6	9.6	12.2	0.0	13.6	13.2	0.0	0.0
LnGrp LOS	B	A	A	C	A	A	B		B	B		
Approach Vol, veh/h		778			930			94			94	
Approach Delay, s/veh		8.7			10.0			13.4			13.2	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.0	5.4	19.0		9.0	7.5	16.9
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	5.0	19.0		19.0	6.0	18.0
Max Q Clear Time (g_c+I1), s		3.6	2.7	6.1		3.8	4.4	9.1
Green Ext Time (p_c), s		0.2	0.0	3.3		0.4	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	596	10	73	614	51	6	0	50	128	0	89
Future Volume (veh/h)	111	596	10	73	614	51	6	0	50	128	0	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	122	655	11	80	675	56	7	0	55	141	0	98
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	172	1213	20	134	1056	88	534	0	366	336	26	139
Arrive On Green	0.10	0.35	0.35	0.08	0.33	0.33	0.24	0.00	0.24	0.24	0.00	0.24
Sat Flow, veh/h	1740	3493	59	1740	3246	269	1400	0	1553	739	108	589
Grp Volume(v), veh/h	122	325	341	80	361	370	7	0	55	239	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1817	1740	1736	1779	1400	0	1553	1437	0	0
Q Serve(g_s), s	2.4	5.3	5.3	1.6	6.2	6.3	0.0	0.0	1.0	4.4	0.0	0.0
Cycle Q Clear(g_c), s	2.4	5.3	5.3	1.6	6.2	6.3	0.1	0.0	1.0	5.3	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.15	1.00		1.00	0.59		0.41
Lane Grp Cap(c), veh/h	172	603	631	134	565	579	534	0	366	501	0	0
V/C Ratio(X)	0.71	0.54	0.54	0.60	0.64	0.64	0.01	0.00	0.15	0.48	0.00	0.00
Avail Cap(c_a), veh/h	345	935	979	296	886	908	882	0	792	887	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.4	9.2	9.2	15.7	10.1	10.1	10.4	0.0	10.7	12.3	0.0	0.0
Incr Delay (d2), s/veh	5.3	0.8	0.7	4.2	1.2	1.2	0.0	0.0	0.2	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.7	2.8	0.9	3.1	3.2	0.1	0.0	0.4	2.2	0.0	0.0
LnGrp Delay(d),s/veh	20.7	10.0	10.0	19.9	11.3	11.3	10.4	0.0	10.9	13.0	0.0	0.0
LnGrp LOS	C	B	A	B	B	B	B		B	B		
Approach Vol, veh/h		788			811			62			239	
Approach Delay, s/veh		11.6			12.2			10.8			13.0	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		12.3	6.7	16.2		12.3	7.5	15.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		18.0	6.0	19.0		18.0	7.0	18.0
Max Q Clear Time (g_c+I1), s		3.0	3.6	7.3		7.3	4.4	8.3
Green Ext Time (p_c), s		0.1	0.0	3.2		1.0	0.1	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	541	10	50	635	116	28	0	118	35	0	44
Future Volume (veh/h)	108	541	10	50	635	116	28	0	118	35	0	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	129	644	12	60	756	138	33	0	140	42	0	52
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	181	1480	28	111	1127	206	443	0	244	228	28	126
Arrive On Green	0.10	0.42	0.42	0.06	0.38	0.38	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	1740	3486	65	1740	2932	535	1463	0	1553	468	180	803
Grp Volume(v), veh/h	129	321	335	60	447	447	33	0	140	94	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1815	1740	1736	1732	1463	0	1553	1452	0	0
Q Serve(g_s), s	2.4	4.4	4.4	1.1	7.2	7.2	0.0	0.0	2.8	0.5	0.0	0.0
Cycle Q Clear(g_c), s	2.4	4.4	4.4	1.1	7.2	7.2	0.6	0.0	2.8	1.8	0.0	0.0
Prop In Lane	1.00		0.04	1.00		0.31	1.00		1.00	0.45		0.55
Lane Grp Cap(c), veh/h	181	737	771	111	667	666	443	0	244	382	0	0
V/C Ratio(X)	0.71	0.44	0.44	0.54	0.67	0.67	0.07	0.00	0.57	0.25	0.00	0.00
Avail Cap(c_a), veh/h	309	924	966	309	924	922	977	0	873	942	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.7	6.9	6.9	15.4	8.6	8.6	12.2	0.0	13.2	12.7	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.4	0.4	4.1	1.2	1.2	0.1	0.0	2.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.1	2.2	0.7	3.6	3.6	0.3	0.0	1.3	0.8	0.0	0.0
LnGrp Delay(d),s/veh	19.8	7.3	7.3	19.4	9.8	9.8	12.3	0.0	15.3	13.1	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	B		B	B		
Approach Vol, veh/h		785			954			173			94	
Approach Delay, s/veh		9.3			10.4			14.8			13.1	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.3	6.2	18.4		9.3	7.5	17.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		19.0	6.0	18.0		19.0	6.0	18.0
Max Q Clear Time (g_c+I1), s		4.8	3.1	6.4		3.8	4.4	9.2
Green Ext Time (p_c), s		0.5	0.0	3.1		0.4	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

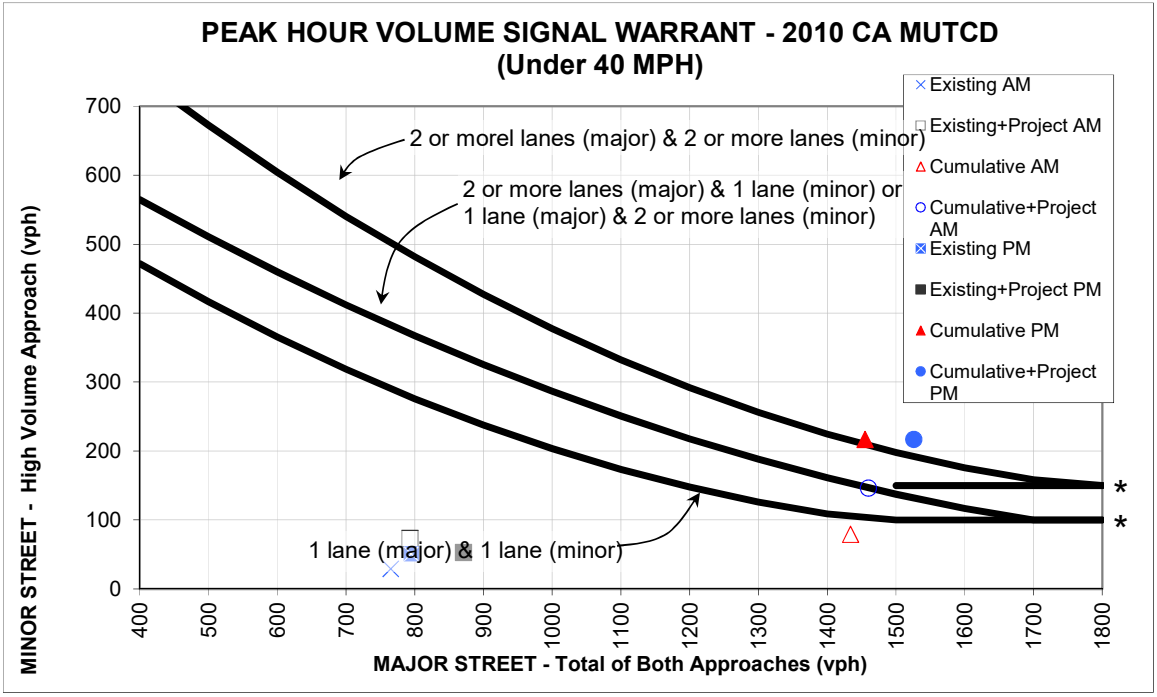
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	596	28	126	614	51	20	0	86	128	0	89
Future Volume (veh/h)	111	596	28	126	614	51	20	0	86	128	0	89
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1827	1827	1900	1900	1827	1827	1900	1827	1900
Adj Flow Rate, veh/h	122	655	31	138	675	56	22	0	95	141	0	98
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	240	1006	48	240	968	80	519	0	360	327	24	134
Arrive On Green	0.14	0.30	0.30	0.14	0.30	0.30	0.23	0.00	0.23	0.23	0.00	0.23
Sat Flow, veh/h	1740	3375	160	1740	3246	269	1380	0	1553	725	105	577
Grp Volume(v), veh/h	122	337	349	138	361	370	22	0	95	239	0	0
Grp Sat Flow(s),veh/h/ln	1740	1736	1799	1740	1736	1779	1380	0	1553	1408	0	0
Q Serve(g_s), s	2.4	6.1	6.1	2.7	6.7	6.7	0.0	0.0	1.8	4.7	0.0	0.0
Cycle Q Clear(g_c), s	2.4	6.1	6.1	2.7	6.7	6.7	0.4	0.0	1.8	5.6	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.15	1.00		1.00	0.59		0.41
Lane Grp Cap(c), veh/h	240	517	536	240	517	530	519	0	360	485	0	0
V/C Ratio(X)	0.51	0.65	0.65	0.57	0.70	0.70	0.04	0.00	0.26	0.49	0.00	0.00
Avail Cap(c_a), veh/h	673	671	696	673	671	688	751	0	644	735	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	11.1	11.1	14.6	11.3	11.3	10.8	0.0	11.4	12.7	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.4	1.4	2.2	2.2	2.1	0.0	0.0	0.4	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.1	3.2	1.4	3.4	3.5	0.2	0.0	0.8	2.3	0.0	0.0
LnGrp Delay(d),s/veh	16.1	12.5	12.4	16.8	13.4	13.4	10.9	0.0	11.7	13.5	0.0	0.0
LnGrp LOS	B	B	B	B	B	B	B		B	B		
Approach Vol, veh/h		808			869			117			239	
Approach Delay, s/veh		13.0			13.9			11.6			13.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		12.4	9.0	14.8		12.4	9.0	14.8
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		15.0	14.0	14.0		15.0	14.0	14.0
Max Q Clear Time (g_c+I1), s		3.8	4.7	8.1		7.6	4.4	8.7
Green Ext Time (p_c), s		0.3	0.2	2.1		0.8	0.2	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Appendix D
Signal Warrant Analysis

Drive In Way/Holub Lane & E.18th Street



* NOTE: 150 vph applies as the lower threshold volume for a minor street approach with 2 or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with 1 lane.

Peak Hour Volume Warrant Per 2003 MUTCD- Under 40 MPH

AM Peak Hour Volumes

		Approach Lanes: One	Approach Lanes: 2 or More	Existing AM	Existing+Project AM	Cumulative AM	Cumulative+ Project AM
Major Street - Both Approaches	E.18th Street		x	765	793	1434	1460
Minor Street - Highest Approach	Holub Lane		x	29	73	79	146
			Warrant Met?	no	no	no	no

PM Peak Hour Volumes

		Approach Lanes: One	Approach Lanes: 2 or More	Existing PM	Existing+Project PM	Cumulative PM	Cumulative+ Project PM
Major Street - Both Approaches	E.18th Street		x	795	871	1455	1526
Minor Street - Highest Approach	Drive In Way	x		51	53	217	217
			Warrant Met?	no	no	yes	yes