Appendix G: Traffic Impact Analysis

THIS PAGE INTENTIONALLY LEFT BLANK

Willow Avenue Commercial Center

Transportation Impact Analysis

Hercules, CA

June 2018

TJKM

Table of Contents

1. Introduction 1

Study Purpose 1

Report Overview 1

Project Location 1

Proposed Land Uses 1

Project Site Plan & Proposed Site Access 1

Analysis Scenarios and Study Area 4

Level of Service Methodology 4

Regulatory Setting 6

City of Hercules 6

Contra Costa Transportation Authority 6

Criteria of Significance 7

2. Existing Conditions 8

Roadway Network 8

Bicycle Facilities 11

Pedestrian Facilities 11

Existing Transit Facilities 13

Existing Peak Hour Intersection Volumes 13

Existing Conditions Traffic Level of Service Analysis 18

Existing Conditions – Sunday Church Traffic 19

3. Project Trip Generation 20

Vehicle Trip Generation 20

Pass-by Trips 20

Sunday Peak Hour Traffic Generation 21

Project Vehicle Assignment 21

4. Existing plus Project Conditions 24

Existing plus Project Conditions Traffic Analysis 24

Impact Findings & Mitigation 24

5. Near-term Conditions 26

Near-term Traffic Growth 26

Near-term Project Impact Findings 26

Impact Findings & Mitigation 26

6. Cumulative Conditions 32

Planned (Year 2040) Roadway Improvements 32

Cumulative Traffic Impact Findings 37

7. Site Access 38

Proposed Driveway Location 38

Site Ingress & Egress Recommendations 39

Appendices

Appendix A – Existing Conditions Intersection Counts (Motor Vehicle, Bicycle & Pedestrian Volumes)

Appendix B – Existing Conditions LOS Analysis

Appendix C – Existing plus Project Conditions LOS Analysis

Appendix D – Near-term No Project Conditions LOS Analysis

Appendix E – Near-term plus Project Conditions LOS Analysis

Appendix F – Cumulative Conditions LOS Analysis

Appendix G – Cumulative plus Project Conditions LOS Analysis

Appendix H – Site Plan with Mitigation (June 6, 2018)

Tables

Table 1: Intersection Level of Service Definitions for Signalized Intersections 5

Table 2: Intersection Level of Service Definitions for Stop-sign Controlled Intersections 5

Table 3A: Existing Conditions Traffic Level of Service Analysis Results 18

Table 4B: Sunday Traffic Volumes to/from Adjacent Church 19

Table 5: Project Vehicle Trip Generation 20

Table 6: Existing plus Project Conditions Traffic Level of Service Analysis Results 24

Table 7: Near-term Conditions Traffic Level of Service Comparison 27

Table 8: Cumulative (Year 2040) Conditions Traffic Level of Service Comparison 37

Table 9: Sight Distance Requirements 40

Figures

Figure 1A: Project Location & Study Intersections 2
Figure 1B: Project Site Plan 3
Figure 2A: Existing Street Network Map 10
Figure 2B: Truck Route Map 10
Figure 2C: Existing & Planned Bicycle Facility Map 12
Figure 2D: Existing & Planned Pedestrian Facility Map 12
Figure 2E: Transit Service Map 13
Figure 3A: Existing Peak Hour Traffic Volumes 14
Figure 3B: Existing Peak Hour Traffic Volumes 15
Figure 3C: Existing Intersection Lane Geometry and Controls 16
Figure 3D: Existing Intersection Lane Geometry and Controls 17
Figure 4A: Project Trip Assignment (Existing plus Project Conditions) 22
Figure 4B: Project Trip Assignment (Existing plus Project Conditions) 23
Figure 5A: Near-term Conditions (without Project) Peak Hour Traffic Volumes 28
Figure 5B: Near-term Conditions (without Project) Peak Hour Traffic Volumes 29
Figure 5C: Project Trip Assignment (Near-term plus Project Conditions) 30
Figure 5D: Project Trip Assignment (Near-term plus Project Conditions) 31
Figure 6A: Planned Year 2040 Roadway Network Improvements 32
Figure 6B: Cumulative (Year 2040) without Project Traffic Volumes 33
Figure 6C: Cumulative (Year 2040) without Project Traffic Volumes 34
Figure 6D: Project Trip Distribution and Assignment (Year 2040 Conditions) 35
Figure 6E: Project Trip Distribution and Assignment (Year 2040 Conditions) 36

1. INTRODUCTION

This report describes results of the Transportation Impact Assessment (TIA) for a proposed commercial development (the "project") on Willow Avenue in the City of Hercules in Contra Costa County.

Study Purpose

The purpose of the TIA is to evaluate potential transportation impacts that could result from the proposed project, identify short- and long-term multi-modal circulation needs where relevant to site access and/or project impacts, identify potential mitigation measures for any significant transportation impacts, and evaluate the adequacy of the proposed site plan for accommodating multi-modal site access.

Report Overview

This report is organized into the following chapters:

- **Chapter 1 Introduction**
- **Chapter 2 Existing Conditions**
- **Chapter 3 Project Characteristics**
- **Chapter 4 Existing plus Project Conditions**
- **Chapter 5 Near-term Conditions**
- **Chapter 6 Cumulative Conditions**
- **Chapter 7 Site Plan Review**

Project Location

The project site is an undeveloped parcel located on the south side of Willow Avenue, between Palm Avenue and State Route 4 (SR-4). The site abuts Palm Avenue to the west, Willow Avenue to the north, SR-4 to the east, and BNSF Railroad tracks to the south. Access to the site would be via Willow Avenue. The location of the project site is shown in **Figure 1A**.

Proposed Land Uses

The project would include approximately 17,800 square feet of commercial development.

Project Site Plan & Proposed Site Access

The proposed site plan is illustrated in **Figure 1B**. Direct access to the site to/from Willow Avenue is proposed via a single driveway. Within the site, 77 motor vehicle parking spaces would be provided on surface lots.

Vicinity Map

LEGEND

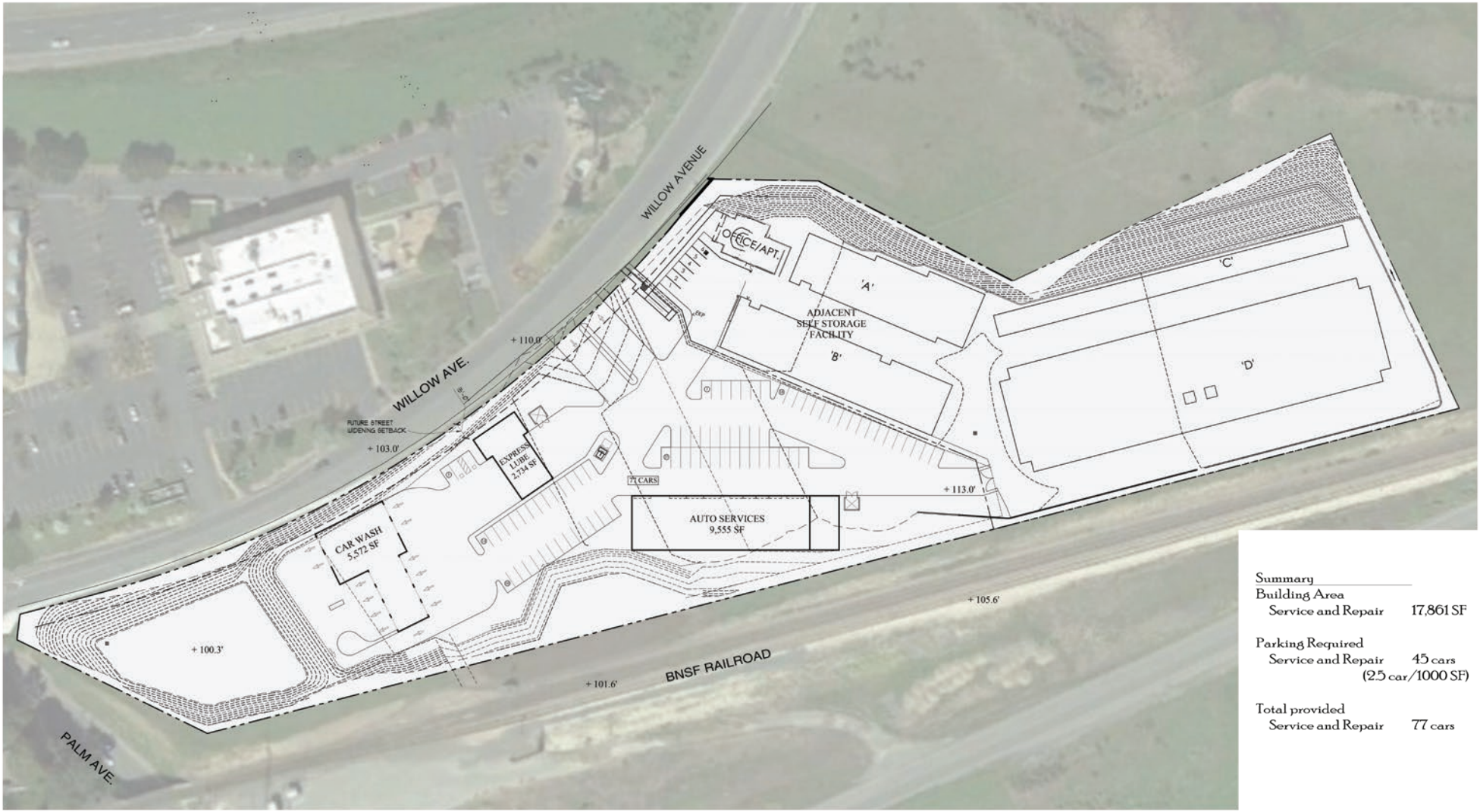
- Study Intersection
- Ramps
- Freeway
- Arterial
- Project Site
- Proposed Access

N

TJKM

Figure 1a

Site Plan



Summary

Building Area
Service and Repair 17,861 SF

Parking Required
Service and Repair 45 cars
(2.5 car/1000 SF)

Total provided
Service and Repair 77 cars

N

TJKM

Figure 1b

Analysis Scenarios and Study Area

Potential transportation impacts were assessed based on the following scenarios addressed in this study:

- ***Existing Conditions*** – This scenario describes existing transportation conditions in the study area based on the current roadway and sidewalk network characteristics, transit service, field observations and intersection counts conducted on October 4, 2016.
- ***Existing plus Project Conditions*** – This scenario is similar to Existing Conditions but with the proposed site modifications and net new trips that would generated by the project.
- ***Near-term Conditions*** – This scenario evaluates transportation conditions based on the addition of traffic volumes from recently approved but not-yet-completed developments in the area. The forecasted traffic growth under Near-term Conditions (without the Project) were derived from the *Hercules Safeway Project Transportation Impact Assessment*, prepared for the City of Hercules in August 2017.
- ***Near-term plus Project Conditions*** – This scenario is similar to Near-term Conditions but with the inclusion of vehicle trips that would be generated by the project. The Near-term plus Project Conditions analysis provides an assessment of project impacts that takes into account other projects that would be completed within a similar timeframe as the project.
- ***Cumulative (2040) Conditions*** – This scenario evaluates future transportation conditions based on forecasted travel volumes for Year 2040 without the project. The traffic forecast, and planned changes to intersection configurations, are derived from information provided by the City of Hercules prepared for the Hercules Circulation Element update conducted during 2017.
- ***Cumulative (2040) plus Project Conditions*** – This scenario is similar to Cumulative Conditions but with the inclusion of vehicle trips that would be generated by the project. The Cumulative plus Project Conditions analysis provides an assessment of project.

TJKM evaluated transportation conditions at nine study intersections during a.m. (7:00 a.m.-9:00 a.m.) and p.m. (4:00 p.m.-6:00 p.m.) peak periods for a typical weekday with clear weather. The study intersections were selected in consultation with City staff based on the anticipated trip generation and travel pattern for project trips. The volumes of motor vehicles, bicycles and pedestrians were counted on Wednesday, November 29, 2017 at a total of ten intersections, including three church driveways to/from Willow Avenue that are located directly across Willow Avenue from the Project site. In addition, Sunday counts were also conducted at the three church driveways and the Palm Avenue/Willow Avenue intersection on Sunday, December 3 from 8:00 a.m. to 1:00 p.m., to provide data relevant to peak traffic periods for the adjacent church.

Level of Service Methodology

Level of service (LOS) is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from A to F, with LOS A indicating no congestion, and LOS F indicating unacceptable congestion and delay. For this study, LOS describes the operating conditions for signalized and unsignalized intersections.

The Highway Capacity Manual (HCM) is a standard reference published by the Transportation Research Board (TRB), and contains specific criteria and methods for assessing LOS. Synchro software is used to calculate LOS in this study. LOS definitions for signalized and unsignalized intersections are provided in **Table 1** and **Table 2**, respectively.

Table 1: Intersection Level of Service Definitions for Signalized Intersections

LOS	Description
A	Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: HCM 2010

Table 2: Intersection Level of Service Definitions for Stop-sign Controlled Intersections

LOS	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: HCM 2010

Regulatory Setting

City of Hercules

The Project would have a significant impact on the environment if it would cause an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, or delay and congestion at intersections), or change the condition of an existing street (e.g., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system. Significance criteria are used to determine whether a Project impact is considered significant and therefore requires mitigation. The City of Hercules strives to maintain LOS D operations at signalized intersections, with the exception of San Pablo Avenue where LOS E is the threshold.

Contra Costa Transportation Authority

The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Agency (CMA) for Contra Costa County. CCTA adopted the most recent Congestion Management Program (CMP) in 2015. The 2015 CMP requires an analysis of any project that is expected to generate more than 100 peak hour vehicle trips. Within the CMP there are Action Plans for specific regions that identify multi-modal traffic service objectives (MTSOs) for specific freeways and roadway segments. The West County Action Plan for Routes of Regional Significance-Update 2014 includes the City of Hercules. Discretionary projects that impact *Routes of Regional Significance* by generating greater than 100 trips shall comply with the requirements of the adopted Action Plans. Freeway segments and roadways in the project study area designated as Routes of Regional Significance include SR 4 (John Muir Parkway), I-80, and San Pablo Avenue. Based on the Project trip generation detailed in Chapter 3, the Project would not increase vehicle trip generation in the area more than what was addressed in the Hercules New Town Center Environmental Impact Report (HNTC EIR), City of Hercules, Certified 2009). Therefore, it does not meet the 100 peak period threshold for requiring additional analysis. The HNTC EIR evaluated traffic impacts on San Pablo Avenue, SR 4, and I-80. Chapter 6 summarizes the HNTC EIR mitigation measures identified for the San Pablo Avenue/John Muir Parkway intersection (#1). The HNTC EIR also identified project impacts to I-80, however those impacts were considered significant and unavoidable since there were no feasible mitigation measures that could be recommended at the time of the EIR development.

Criteria of Significance

Consistent with the significance thresholds identified in the *Hercules Safeway Transportation Impact Analysis* (August 2017), the following thresholds will be considered in the evaluation of the Project from a transportation perspective:

- Would the operations of a signalized study intersection (except those along San Pablo Avenue) decline from LOS D or better to LOS E or F, based on the HCM LOS method, with the addition of Project traffic?
- Would the operations of a signalized study intersection along San Pablo Avenue decline from LOS E or better to LOS F, based on the HCM LOS method, with the addition of Project traffic?
- Would the operations of an unsignalized study intersection decline from an overall acceptable level to an overall unacceptable level with the addition of Project traffic, and would the installation of a traffic signal at an unsignalized intersection, based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3), be warranted?
- Would the Project increase traffic volumes on a street beyond the expected capacity limits and would the increase in traffic be noticeable to existing residents?
- Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- Would the Project substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment)?
- Would construction traffic from the Project have a significant, though temporary, impact on the environment, or would Project construction substantially affect traffic flow and circulation, parking, and pedestrian safety?
- Would the Project fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle routes)?
- Would the Project generate parking demands that are inconsistent with adopted municipal code requirements or otherwise cause parking deficiencies that impact uses outside the Project area?

In addition, the updated *Hercules General Plan Circulation Element (January 2018)* adopted by the City of Hercules in the first quarter of 2018 includes the addition of Multi-modal Transportation Service Objectives. Based on the new Multi-modal Transportation Service Objectives for arterial streets, the following thresholds will be considered when evaluating impacts to Willow Avenue:

- Would the Project be located on an arterial street that does not include bicycle facilities within the public right-of-way, <u>and</u> would the Project generate motor vehicle trips entering or exiting the site that would include conflicting movements within bicyclists?
- Would the Project be located on an arterial street with a transit route serves more than 500 daily riders, at a location that is more than one mile from a transit stop that includes a shelter, <u>and</u> would the Project generate potential transit demand?
- Would the Project be located on an arterial street at a location that does not include controlled pedestrian crossing opportunities within 250 feet of the nearest stop, and would the Project generate potential transit demand?

2. EXISTING CONDITIONS

Roadway Network

Key roadways and freeways in the vicinity are discussed below. **Figure 2A** provides a Hercules Circulation Element map of the citywide arterial and collector street network. Designated truck routes are shown on **Figure 2B**.

State Route 4 (SR-4), also known as the John Muir Parkway, is a four-lane freeway (two motor vehicle lanes per direction) under the jurisdiction of the California Department of Transportation (Caltrans) that provides regional access to Willow Avenue near the Project site. SR-4 has an east/west orientation from the eastern border of the City of Hercules to its termination at San Pablo Avenue, where it becomes John Muir Parkway, which connects with Bayfront Boulevard to the west. SR-4 intersects the I-80 freeway to the west of the Project site. SR-4 has a posted speed limit of 65 miles per hour east of San Pablo Avenue. West of San Pablo Avenue, John Muir Parkway is a four-lane surface street with a posted speed limit of 35 miles per hour to Alfred Nobel Drive. Access to and from the Project site via westbound SR-4 is via existing off- and on-ramps at Willow Avenue, just northeast of the Project site. Access to and from the Project site via eastbound SR-4 off-ramp is via an existing off-and off-ramp to Willow Avenue that is currently located between Sycamore Palm Avenues (west of the Project site), but planned for relocation immediately east of the Project site. In addition, an additional eastbound access point to SR-4 is provided via Sycamore Avenue. SR-4 also provides access to I-80 via the SR-4 westbound on-ramp at Willow Avenue, and SR-4 also provides access from northbound I-80 to the project site. *SR-4 is designated as a Route of Regional Significance between I-80 and Cummings Skyway.*

Interstate 80 (I-80) is a multi-lane freeway connects Hercules with other cities located within the San Francisco Bay Area and Sacramento region. Near the Project site, I-80 is oriented in a roughly north/south direction and has four motor lanes in each direction, including a high occupancy vehicle (HOV) lane. The posted speed limit is 65 miles per hour (mph). Access to I-80 from the Project site is via westbound SR-4, while additional access to northbound I-80 is provided directly from Willow Avenue to the north. Access from I-80 northbound to the Project site is provided via eastbound SR-4, while the most direct access from I-80 southbound to the Project site is via the southbound I-80 exit to Willow Avenue (located north of Viewpoint Boulevard). *I-80 is designated as a Route of Regional Significance.*

Willow Avenue is an arterial street that provides direct access to the Project site, and is a designated Truck Route. The posted speed limit is 35 miles per hour. Adjacent to the project site, Willow Avenue operates in an east/west direction, with one motor vehicle lane per direction, before transitioning to a north/south direction with two motor vehicle lanes per direction to the north of SR-4. The *Hercules Transit Center* is located on Willow Avenue, between, between Sycamore and Palm Avenue, but sidewalks are not yet provided on that segment of Willow Avenue. An existing sidewalk begins along the south side of Willow Avenue, just east of Palm Avenue, immediately bordering the Project site. North of SR-4, Willow Avenue provides two motor vehicle lanes in each direction with a landscaped center median, left-turn pockets at intersections, a northbound bicycle lane, and sidewalks on both sides. The planned future widening of the segment of Willow Avenue between Sycamore Avenue and SR-4 (including the Project

frontage) is identified as a long-term project by the City of Hercules General Plan *Draft Circulation Element Update* (December 2017). Following the planned long-term widening, the segments of Willow Avenue between Sycamore Avenue and SR-4 would include two motor vehicle lanes and one bicycle lane in each direction, sidewalks on both sides, and left-turn pockets at intersections.

Sycamore Avenue is a multi-lane arterial street that intersects Willow Avenue to the west of the Project site, just east of I-80, and connects with Palm Avenue, just south of the railroad tracks that border Project site. Sycamore Avenue primarily operates in an east/west direction to the west of I-80, roughly parallel with Willow Avenue, and provides access to the residential communities south of the Project site and retail land use on the east side of I-80. From Refugio Valley Road on the east side of I-80, to San Pablo Avenue on the west side of I-80, Sycamore Avenue provides two-to-three through lanes for motor vehicles in each direction, dedicated left-turn lanes at intersections, and bicycle lanes, with a posted speed limit of 35 miles per hour. West of San Pablo Avenue Sycamore Avenue narrows to one motor vehicle lane per direction and a posted speed limit of 25 miles per hour. Sidewalks are generally provided on both sides of Sycamore Avenue, with the exception of the northeast side of the Sycamore Avenue segment between the Creekside Center driveway and Willow Avenue.

San Pablo Avenue is a multi-lane arterial street that operates on the west side of I-80 through Hercules, in a roughly north/south direction. San Pablo Avenue begins in downtown Oakland and parallels I-80 through Alameda and Contra Costa Counties before terminating near the south end of the I-80 Carquinez Bridge to the north of Hercules. Within Hercules, San Pablo Avenue provides two-to-three motor vehicles per direction, and bicycle lanes in both directions, with additional turn-lane capacity for motor vehicles at intersections. Sidewalks are provided on the south side of San Pablo Avenue from SR 4/John Muir Parkway. On-street parking is prohibited on the segment within Hercules and the posted speed limit is 40 miles per hour. *San Pablo Avenue is designated as a Route of Regional Significance*.

Refugio Valley Road is primarily a north-south roadway that connects Sycamore Avenue to Bonaire Avenue. It provides access to the residential communities, schools, and parks southeast of Sycamore Avenue. From Sycamore Avenue to Pheasant Drive, Refugio Valley Road provides two motor vehicle lanes in each direction with additional turning movement capacity at intersections and a posted speed limit of 25 miles per hour. Bicycle lanes are provided along both directions of Refugio Valley Road between Partridge Drive and Hercules Middle School/High School campuses. A multi-use pedestrian and bicycle trail is provided along the northeast side of Refugio Valley Road; sidewalks are provided along select segments on the southwest side.

Turquoise Drive is primarily a north-south roadway that connects Sycamore Avenue to Pheasant Drive. It provides access to the residential communities southeast of Sycamore Avenue. Between Sycamore Avenue and Cinnabar Way, two travel lanes are provided in each direction with additional turning movement capacity provided at select intersections; one lane in each direction is provided south of Cinnabar Way. Sidewalks are generally provided along both sides, with some gaps on the northeast side south of Emerald Way. On-street parking is generally allowed south of Crystal Circle. The posted speed limit is 25 miles per hour.

Figure 2A: Existing Street Network Map

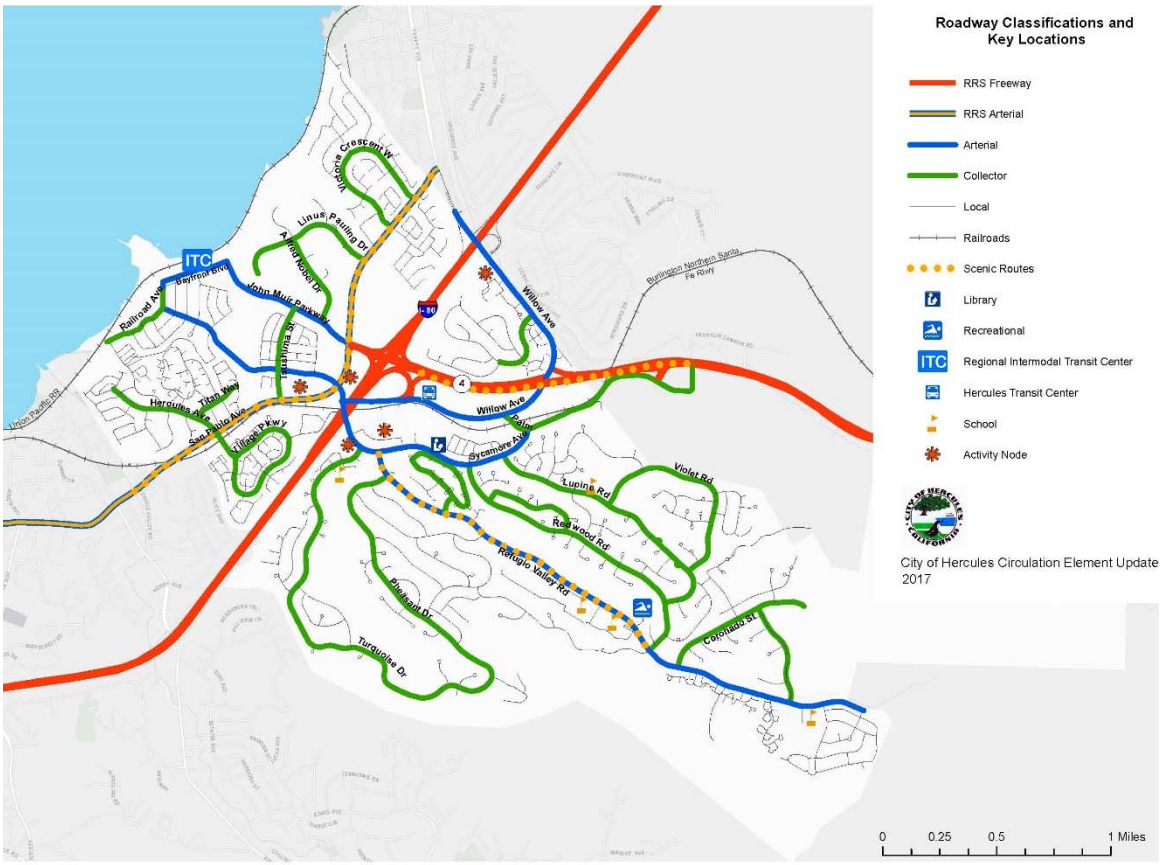
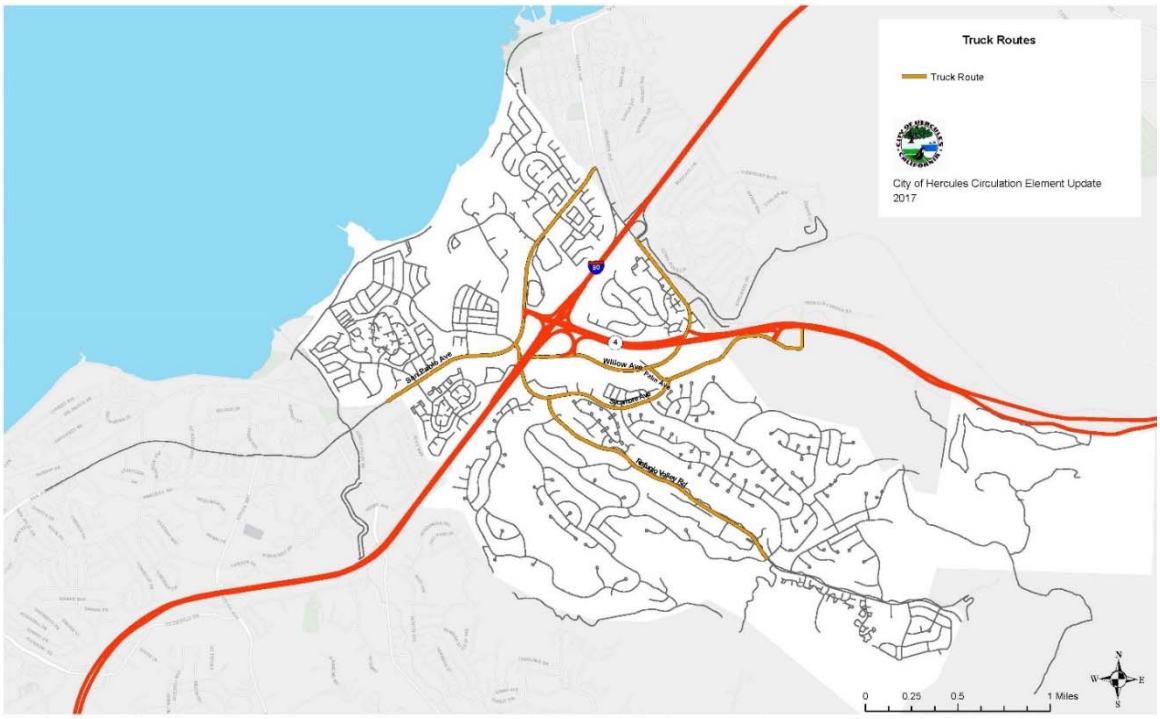


Figure 2B: Truck Route Map



Bicycle Facilities

Types of bicycle facilities include the following:

- Multi-use Paths (Class I) – Paved trails for shared bicycle and pedestrian use that are separated from roadways.
- Bicycle Lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- Bicycle Routes (Class III) – Roadways with shared motor vehicle/bicycle travel lanes, generally designated for bicycle use by signs or other markings may or may not include additional pavement width for cyclists.
- Separated Bikeway (Class IV) – These facilities provide a dedicated area for bicyclists within the paved street width through physical separation from vehicle traffic. Separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

Existing bikeways on Willow Avenue includes a short Class II bike lane segment on eastbound Willow Avenue, adjacent to the Hercules Transit Center that does not extend to the project site. To the north of SR-1, Willow Avenue operates in a north/south direction, and a northbound Class II bicycle lane is provided. Near the Project site, a Class I multi-use trail is provided on the northeast side of Refugio Valley Road. Class II bike lanes are also provided on two segments of Sycamore Avenue, one between San Pablo Avenue and South Front Street (along both directions of Sycamore Avenue), and one from Refugio Valley Road to the east (along both directions of Sycamore Avenue).

Figure 2C provides a map of existing and proposed bikeways within Hercules as identified in the *Draft Hercules General Plan Circulation Element Update* (December 2017). Planned facilities, also identified in the Contra Costa Countywide Bicycle and Pedestrian Plan (CCTA, 2009) include:

- Class II bike lanes on Willow Avenue between Sycamore Avenue and the westbound SR 4 ramps Funding for the new facilities has not been identified, and there is no time-line for their installation.

- Class I bike path on Sycamore Avenue between San Pablo Avenue and Refugio Valley Road

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, curb ramps, and pedestrian signal heads (at signalized intersections). An existing sidewalk is provided on the south wide of Willow Avenue, immediately bordering the project site. The Hercules Transit Center is located to the west of the Project site on Willow Avenue, between Sycamore and Palm Avenue, but sidewalks are not yet provided on that segment of Willow Avenue. North of SR-4, Willow Avenue provides sidewalks on both sides.

Figure 2C: Existing & Planned Bicycle Facility Map

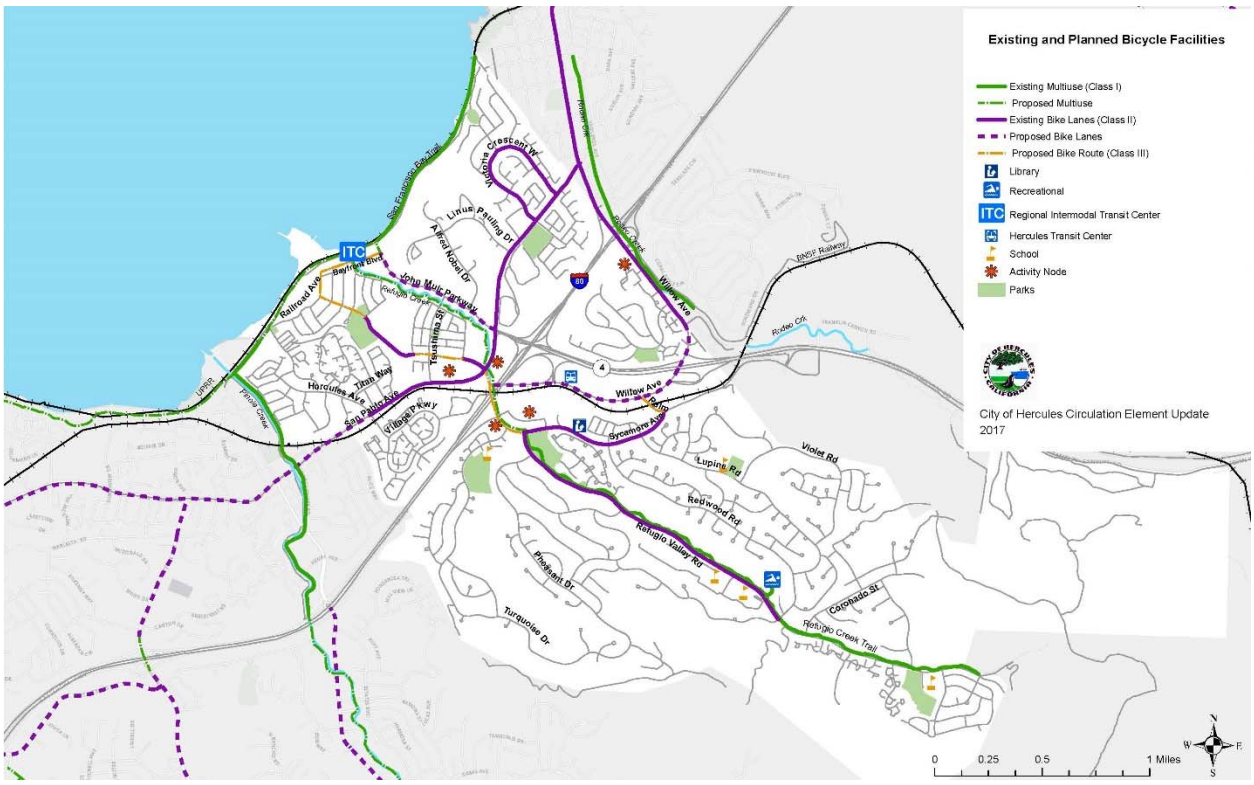


Figure 2D: Existing & Planned Pedestrian Facility Map

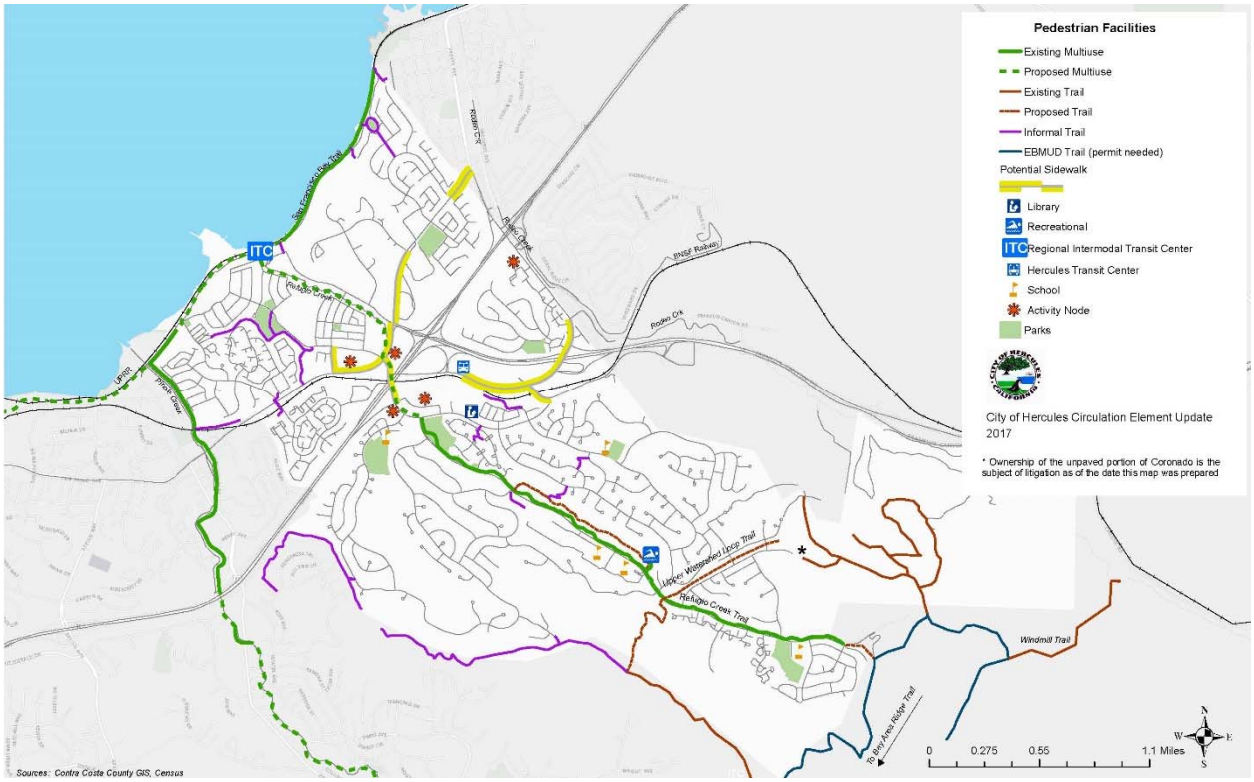
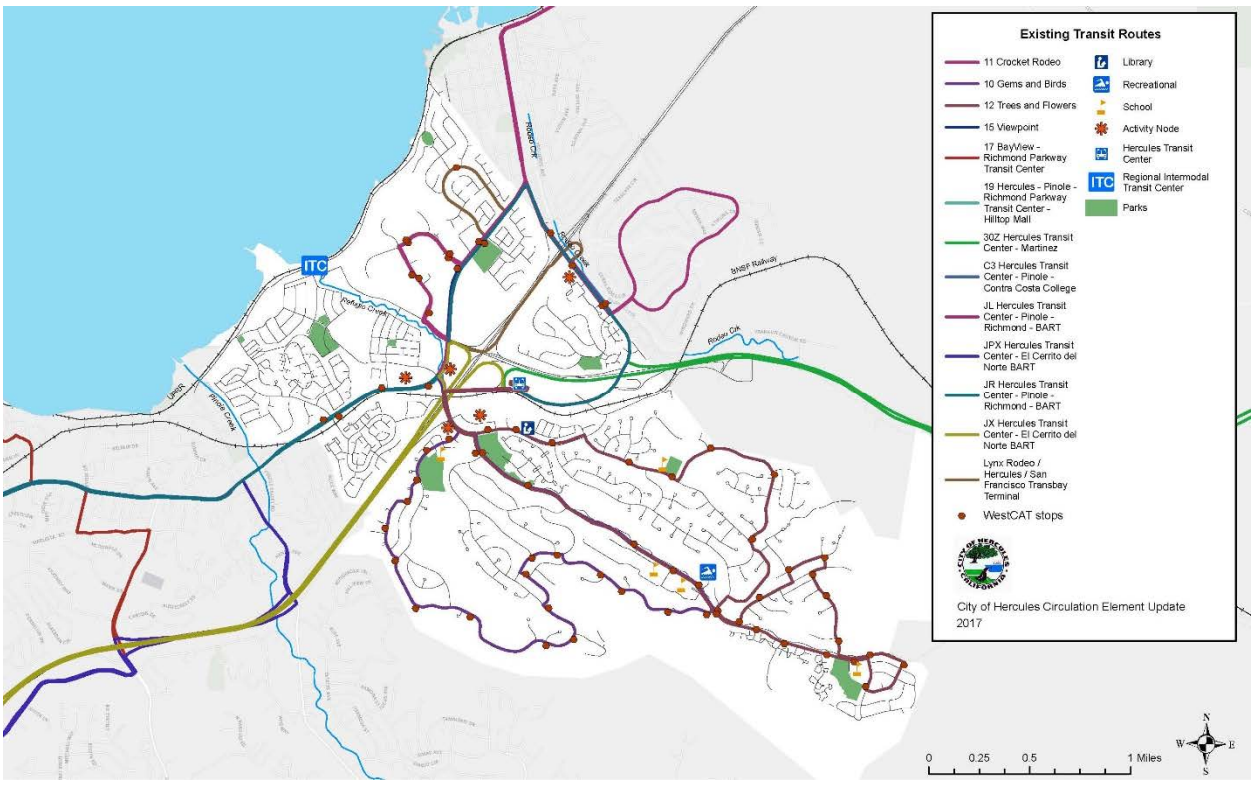


Figure 2E: Transit Service Map



Existing Transit Facilities

The primary transit provider in the area is Western Contra Costa County Transit Authority (WestCAT), who provides the following public transit service that serves the Hercules Transit Center on Willow Avenue near the project site:

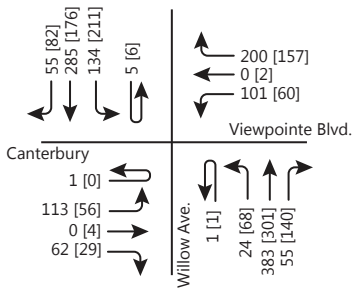
- Local routes 10, 11, 12 and 15 provide weekday service with 30 to 60 minute headways on weekdays. Local routes 11 and 19 provide weekend service with 40 to 75 minute headways.
- Regional routes C3 and 30Z provide weekday service with 30 to 80 minute headways.
- BART station routes JL, JR, JX, and JPX provide 10 to 75 minute headways on weekdays. Routes JL and JR provide 40 to 860 minute headways on weekends.
- Transbay route LYNX provides weekday service with 15 to 95 minute headways.

Existing Peak Hour Intersection Volumes

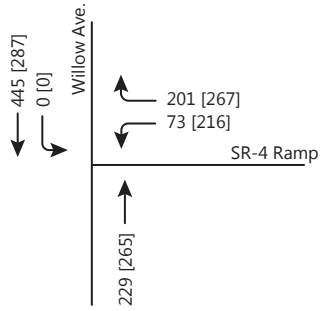
Turning movement volumes for vehicles, bicycles and pedestrians were collected on October 4, 2016 during the a.m. (7:00 a.m.-9:00 a.m.) and p.m. (4:00 p.m.-6:00 p.m.) peak periods. Existing turning movement volumes are illustrated on **Figure 3A and 3B**, and lane geometry and intersection controls are illustrated in **Figure 3C and 3D**. Detailed count sheets including bicycle and pedestrian volumes at each intersection is provided in **Appendix A**.

Existing Conditions Peak Hour Traffic Volumes

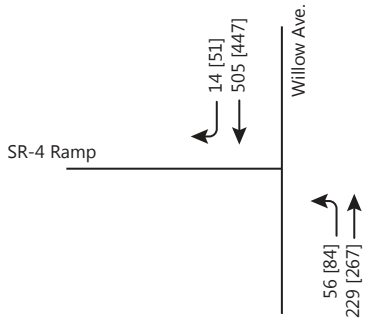
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



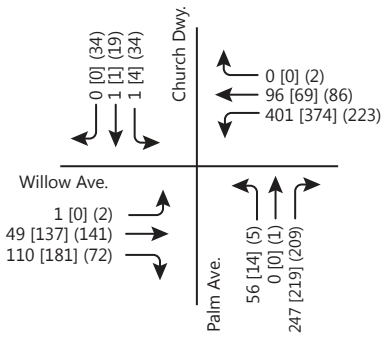
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



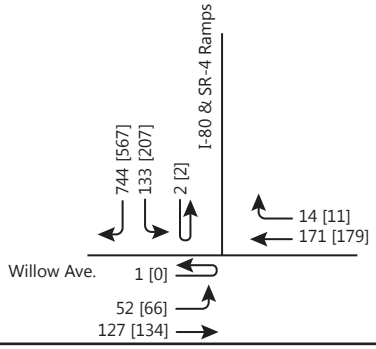
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



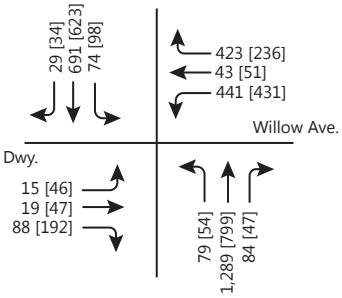
Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.

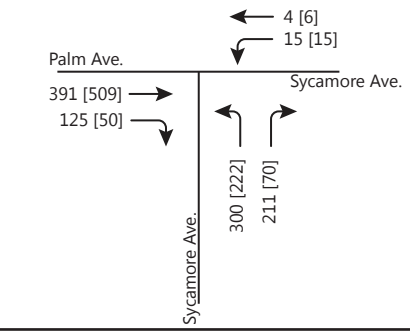


TJKM

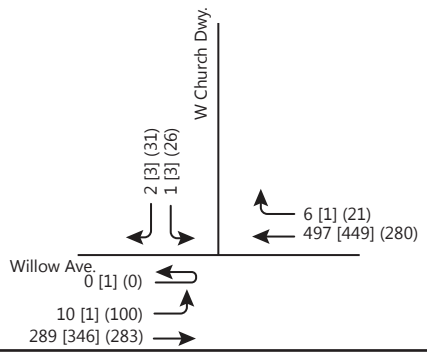
Figure 3a

Existing Conditions Peak Hour Traffic Volumes

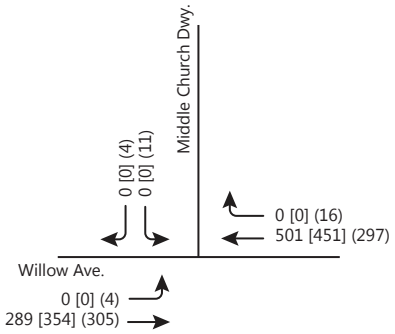
Intersection #7
Palm Ave. / Sycamore Ave.



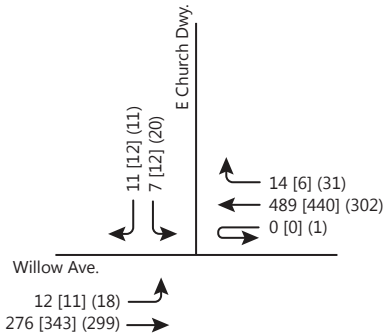
Intersection #8
Willow Ave. / W Church Dwy.



Intersection #9
Middle Church Dwy. / Willow Ave.



Intersection #10
E Church Dwy. / Willow Ave.

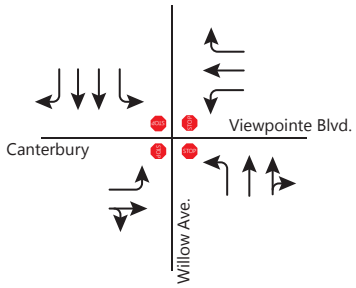


TJKM

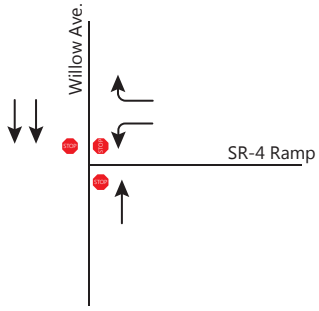
Figure 3b

Existing Conditions Lane Configurations

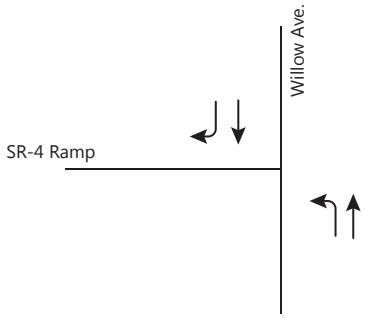
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



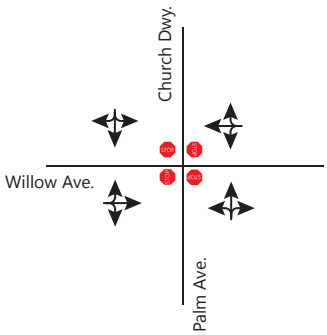
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



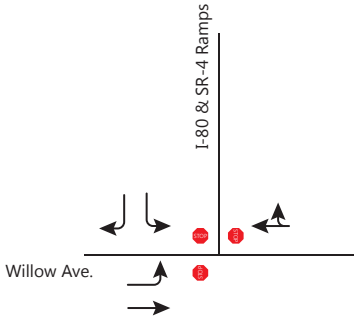
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



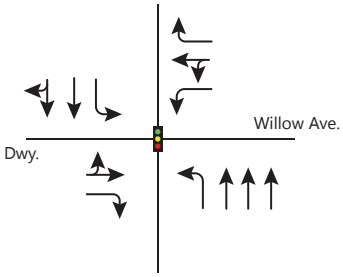
Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.



LEGEND

- X — Study Intersection
- XX — AM Peak Hour Volumes
- [XX] — PM Peak Hour Volumes
- (XX) — Sunday Peak Hour Volumes
- Ramps
- Freeway
- Arterial
- Project Site
- Parks
- Stop Sign
- Traffic Signal

N

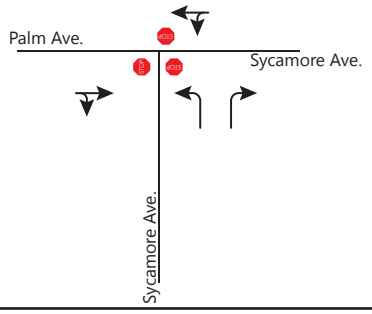
TJKM

115 - 020

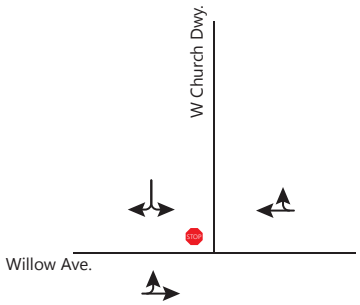
Figure 3c

Existing Conditions Lane Configurations

Intersection #7
Palm Ave. / Sycamore Ave.



Intersection #8
Willow Ave. / W Church Dwy.



Intersection #9
Middle Church Dwy. / Willow Ave.

Intersection #10
E Church Dwy. / Willow Ave.

LEGEND

- Study Intersection
- XX AM Peak Hour Volumes
- [XX] PM Peak Hour Volumes
- (XX) Sunday Peak Hour Volumes
- Ramps
- Freeway
- Arterial
- Project Site
- Parks
- Stop Sign
- Traffic Signal

TJKM

Figure 3d

Existing Conditions Traffic Level of Service Analysis

Table 3A summarizes peak hour levels of service at the six study intersections under Existing Conditions. Detailed LOS worksheets for this scenario are provided in **Appendix B**. Each of the study intersections operate at an acceptable LOS under Existing Conditions.

Table 3A: Existing Conditions Traffic Level of Service Analysis Results

ID	Intersection	Control Type [3]	A.M. Peak Hour		P.M. Peak Hour	
			Average Delay[2]	LOS[1]	Average Delay	LOS
1	Viewpointe Blvd-Canterbury & Willow Avenue	AWSC	18.4	C	15.5	C
2	SR-4 Westbound Off-ramp & Willow Avenue	AWSC	14.2	B	13.7	B
4	Palm Avenue & Willow Avenue	AWC	24.2	C	19.9	C
5	SR-4 Eastbound/I-80 Northbound Off-Ramp & Willow Avenue	AWSC[4]	9.4	A	10.5	B
6	Sycamore Avenue & Willow Avenue	Signalized	27.5	C	27.1	C
7	Sycamore Avenue & Palm Avenue	AWSC	21.2	C	16.7	C
8	Willow Avenue & Church Driveway West	Side-street Stop	15.0	C	14.7	B
9	Willow Avenue & Church Driveway Middle	Side-street Stop	<10	A	<10	A
10	Willow Avenue & Church Driveway East	Side-street Stop	15.7	C	14.8	B

Notes: [1] LOS = Level of Service
[2] Average intersection delay expressed in seconds per vehicle for signalized intersections. Worst approach delay for is presented for stop controlled intersections.
[3] Signal = signalized intersection. AWSC = All-way Stop-sign Controlled. Worst approach delay for is presented for Sides-street Stop controlled intersections (also frequently referred to as Two-way Stop-controlled intersections).
[4] Free right turn from I-80/SR-4 Eastbound Off-ramp to westbound Willow Avenue is not subject to the all-way stop-sign control.
Bold indicates intersections that operate at deficient LOS.

Existing Conditions – Sunday Church Traffic

Table 3B summarizes the Sunday peak-hour volume for traffic to and from the adjacent church, on the north side of Willow Avenue bordering the Project site, based on counts conducted at intersections providing access to/from the church on Sunday, December 3, 2017 from 8:00 a.m. to 1:00 p.m., coinciding with scheduled services. Turning movement volumes at the four intersection also shown at those on Figures 3A and 3B.

Table 4B: Sunday Traffic Volumes to/from Adjacent Church

ID	Intersection	Sunday Peak Hour				Weekday Peak Hour
		Inbound to Church	Outbound from Church	Total to & from Church	Total Intersection Volume	Total Intersection Volume
4	Palm Avenue & Willow Avenue	5	87	92	741	999
8	Willow Avenue & Church Driveway West	100	57	157	682	805
9	Willow Avenue & Church Driveway Middle	20	15	35	637	805
10	Willow Avenue & Church Driveway East	49	31	80	682	824
Total		**174**	**190**	**364**	**686 (avg)**	**858 (avg)**

As summarized on Table 3B:

- Church traffic is dispersed between each of the four driveways, with relatively low volumes of inbound and outbound volumes at each individual driveway. Total intersection volumes during the Sunday church peak hour are roughly 20 percent lower than the weekday peak hour.
- In and out movements to/from the church on Sunday primarily occur at the two westernmost access points to/from the church on Willow Avenue – the westernmost church driveway (study intersection #8) and the intersection of Palm Avenue & Willow Avenue (study intersection #8). The majority of inbound vehicles enter at the westernmost church driveway (study intersection #8) while the largest volume of outbound vehicles exit via Palm Avenue (study intersection #4).
- The proposed project driveway would be located across from the easternmost church driveway on Willow Avenue (study intersection #10). Just 22 percent of church traffic used this driveway, with relatively low volumes both inbound and outbound. The inbound volume consisted of 49 vehicles (of which 31 are inbound right-turns, and 18 are inbound left-turns), and the outbound volume consisted of 31 outbound vehicles (20 outbound left-turns and 11 outbound right-turns).
- Church volumes were lowest at the middle driveway (study intersection #9), which is used by less than 10 percent of church traffic (just 20 inbound and 15 outbound vehicles during the Sunday peak hour).

3. PROJECT TRIP GENERATION

Vehicle Trip Generation

The project vehicle trip generation rates were obtained from the reference *Trip Generation, 9th Edition*, published by the Institute of Transportation Engineers (ITE). Based on the applicable rates for each of the proposed land use types, the Project is forecasted to generate 1,709 daily vehicle trips, 138 weekday a.m. peak hour vehicle trips and 190 weekday p.m. peak hour vehicle trips as summarized in **Table 4**.

Table 5: Project Vehicle Trip Generation

Land Use (ITE Code)	Size	Daily		AM Peak Hour					PM Peak Hour				
		Rate	Trips	Rate	In %	In	Out	Total	Rate	In %	In	Out	Total
Mini-Warehouse (151)	125. ,865 ksf	2.50	315	0.14	55%	10	8	18	0.26	50%	17	16	33
U-Haul Truck Rental (N/A)	8 trucks	3.32	27	0.51	48%	2	2	4	0.38	56%	2	1	3
Apartment (220)	1 dwelling	6.65	7	0.51	20%	0	1	1	0.62	32%	0	1	1
Tire Store (848)	9.555 ksf	24.87	238	2.89	63%	18	10	28	4.15	43%	17	23	40
Automobile Care Center (942)	2.734 k sf	23.72	65	2.25	66%	4	2	6	3.11	48%	4	5	9
Car Wash – Self Service (947)	4 stalls	108.00	432	5.54	50%	11	11	22	5.54	50%	11	11	22
Car Wash – Automated (948)	2 stalls	312.71	625	29.66	51%	30	29	59	41.00	51%	42	40	82
Total		**-**	**1,709**	-	-	75	63	**138**	-	-	93	97	**190**

Note: [1] ksf = 1,000 s.f.
Sources: ITE Trip Generation Manual, 9th Edition, 2012

Pass-by Trips

Retail commercial uses often attract a significant amount of "pass-by" trips, by motorists already traveling on the adjacent major street and stopping for services along the way. Among the proposed land uses on site, Car Wash facilities typically attract pass-by trips, with a trip reduction of about 15 percent for trips attributable to the Car Wash, which would equate with roughly a nine percent reduction in total daily vehicle trips to/from the site. However, existing traffic volumes on this segment of Willow Avenue are relatively low near the project site – less than 850 vehicles during the p.m. peak hour – and will still be relatively low under Near-term Conditions, before increasing under Cumulative Conditions with the

planned relocation of the SR-4 Eastbound Ramps. Therefore, to provide a conservative assessment, taking into account the relatively low existing and near-term volumes, the traffic level of service (LOS) analysis did not apply a trip generation credit to reflect pass-by trips. Nonetheless, for purposes of determining the Project's fair share contribution to cumulative improvements, where relevant, it would be reasonable to apply a nine percent reduction for any cumulative traffic fees that may be assessed.

Sunday Peak Hour Traffic Generation

I.T.E. does not provide comprehensive trip generation data for the Sunday peak hour, but given the proposed uses: the peak hour volume on a Sunday may be similar to the weekday p.m. peak hour.

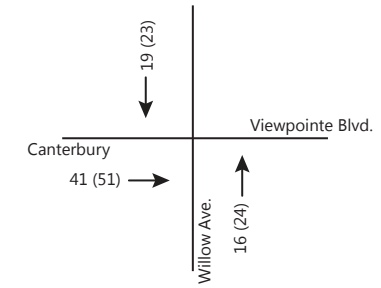
Based on review of the existing Sunday peak hour traffic described earlier in this report: the addition of Project traffic would not significantly affect Sunday peak conditions because (1) most of the church traffic primarily enters the church site via the westernmost church driveway – and exits via Palm Avenue; (2) the volume of inbound and outbound church traffic at the two easternmost church driveways are relatively low during the Sunday peak hour; and (3) total traffic volumes during the Sunday peak hour are 20 percent lower than the weekday peak hour.

Project Vehicle Assignment

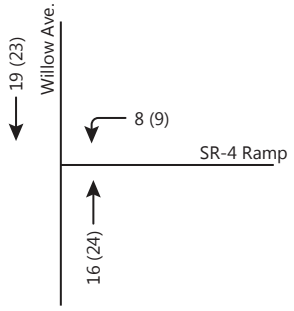
Figures 4A and 4B illustrates the project vehicle trip assignment to/from each study intersection under Existing Conditions, based on the current roadway network and relative proximity to adjacent neighborhoods and regional freeways. Under Cumulative (Year 2040) conditions, the vehicle trip assignment will differ, as described in Chapter 6, with a larger portion of trips to/from the east, with the planned relocation of the SR-4 Eastbound Ramps at Willow Avenue to a location east of the project site on Willow Avenue.

Project Trip Assignment (Existing Plus Project)

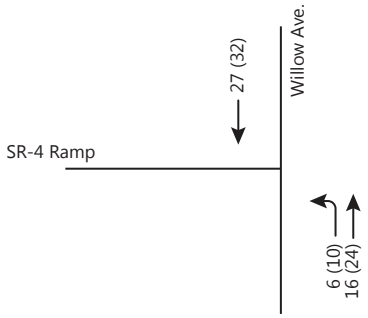
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



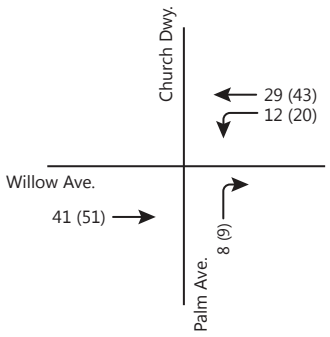
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



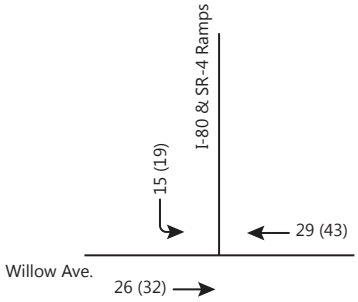
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.

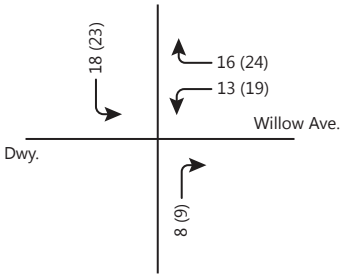
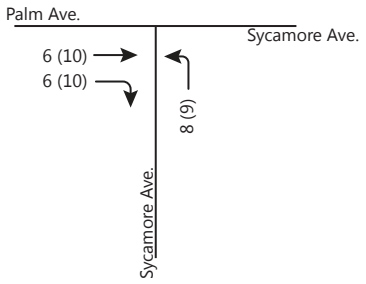


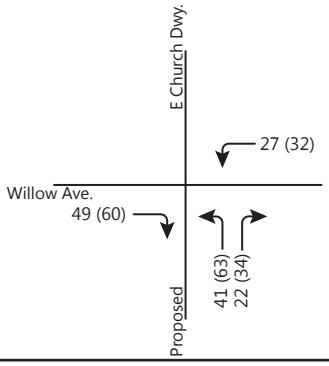
Figure 4a

Project Trip Assignment (Existing Plus Project)

Intersection #7
Palm Ave. / Sycamore Ave.



Intersection #10
E Church Dwy. / Willow Ave.



TJKM

Figure 4b

4. EXISTING PLUS PROJECT CONDITIONS

This chapter evaluates the effect of the project with the addition of Project trips based on Existing Conditions.

Existing plus Project Conditions Traffic Analysis

Table 5 summarizes peak hour levels of service at the study intersections under Existing plus Project Conditions. Detailed LOS worksheets for this scenario are provided in **Appendix D**. As shown, LOS at the all-way stop-controlled intersection of Willow Avenue and Palm Avenue would degrade from C to E during the a.m. peak hour, primarily due to the relatively high volume of westbound traffic during the a.m. peak hour sharing a single westbound approach lane.

Table 6: Existing plus Project Conditions Traffic Level of Service Analysis Results

ID	Intersection	Control	Peak Hour	Existing Conditions		Existing plus Project Conditions		
				Average Delay	LOS	Average Delay	LOS	Significant LOS Impact?
1	Viewpointe Blvd-Canterbury & Willow Avenue	All-way Stop	A.M.	18.4	C	19.4	C	No
			P.M.	15.5	C	15.6	C	No
2	SR-4 WB Off-ramp & Willow Avenue	All-way Stop	A.M.	14.2	B	15.3	C	No
			P.M.	13.7	B	14.7	B	No
4	Palm Avenue & Willow Avenue	All-way Stop	A.M.	24.2	C	**39.7**	**E**	**Yes**
			P.M.	19.9	C	33.7	D	No
5	SR-4 EB Off-Ramp & Willow Avenue	Side-street Stop	A.M.	9.4	A	10.3	B	No
			P.M.	10.5	B	11.6	B	No
6	Sycamore Avenue & Willow Avenue	All-way Stop	A.M.	27.5	C	28.1	C	No
			P.M.	27.1	C	27.9	C	No
7	Sycamore Avenue & Palm Avenue	Signalized	A.M.	21.2	C	22.7	C	No
			P.M.	16.7	C	18.3	C	No
8	Willow Avenue & Church Driveway West	Side-street Stop	A.M.	15.0	C	16.2	C	No
			P.M.	14.7	B	16.5	C	No
9	Willow Avenue & Church Driveway Middle	Side-street Stop	A.M.	<10	A	<10	A	No
			P.M.	<10	A	<10	A	No
10	Willow Avenue & Church Dwy East -Proposed Project Driveway	Side-street Stop	A.M.	15.7	C	29.8	D	No
			P.M.	14.8	B	26.1	D	No

Notes: [1] LOS = Level of Service
[2] Average intersection delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. Worst approach delay is presented for side-street stop controlled intersections.
Bold indicates intersections that operate at deficient LOS. City of Hercules standards define LOS D or better as acceptable. .

Impact Findings & Mitigation

At stop-sign controlled intersections, the City of Hercules considers LOS impacts significant if both of the following occur:

- The operations of an unsignalized study intersection declines from an overall acceptable level to an overall unacceptable level with the addition of Project traffic; and
- Installation of a traffic signal is warranted, based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3).

Installation of a traffic signal at Palm Avenue/Willow Avenue is warranted under Existing Conditions (without the proposed Project) based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3). Based on the side-street approach volume on Palm Avenue (303 vehicles approaching Willow Avenue during the impacted a.m. peak hour), signalization is warranted if the two-way approach volume exceeds 400 vehicles on Willow Avenue. The existing two-way approach volume on Willow Avenue is 657 vehicles, thus meeting the peak-hour signal warrant. However, signalization of this intersection is planned to occur concurrent with the planned widening of Willow Avenue to two lanes per direction, as indicated in the *Hercules Circulation Element* update.

As an interim mitigation, under Existing plus Project and Near-term plus Project conditions, the recommended mitigation is to restripe and/or widen the westbound approach to provide a second westbound lane on Willow approaching Palm (within 200 feet including the transition from one to two westbound lanes) to provide separate left-turn and through lanes in westbound direction, with a storage length of at least 25 feet in the added lane. The a.m. peak hour LOS improves to acceptable LOS D (25.1 seconds of average vehicle delay) with Mitigation. Therefore, the project impact to traffic LOS under Existing plus Project Conditions would be ***less than significant with the recommended mitigation T-1***. The updated site plan with mitigation (including mitigation T-1, provision of a second westbound lane within a minimum 25 feet of storage approaching Palm Avenue) is shown on **Appendix H**.

The Project would be located on an arterial street that does not include bicycle facilities within the public right-of-way, therefore potentially conflicting and the Multimodal Transportation Service Objectives contained in the Hercules *Circulation Element* update. The project would generate motor vehicle trips entering and exiting the site that would include conflicting movements with bicyclists traveling eastbound on Willow Avenue. In addition, outbound motor vehicle trips traveling west on Willow Avenue would conflict with some westbound bicycle movements approaching the intersection of Willow Avenue with Palm Avenue. Therefore the provision of bicycle lanes or bicycle shared-lane treatments on the segment of Willow Street bordering the Project site is recommended. Therefore, the project impact to bicycle conditions under Existing plus Project Conditions would be ***less than significant with the recommended mitigation T-2***. The updated site plan with mitigation (including mitigation T-2, provision of bicycle lanes and bicycle shared-lane treatments on the segments of Willow Avenue bordering the Project site) is shown on **Appendix H**.

The Project would not conflict with the Multimodal Transportation Service Objectives applicable to transit or pedestrian travel on arterial streets, since the Project is located less than one mile from an existing transit stop that includes shelters, and controlled pedestrian crossings are provided at the intersection of Willow Avenue and Palm Avenue.

5. NEAR-TERM CONDITIONS

This scenario evaluates traffic conditions based on the addition of anticipated traffic from approved, but not yet constructed or fully occupied, developments in the area, added to existing traffic volumes.

Near-term Traffic Growth

Near-term traffic growth, without the proposed Project, was derived from the Hercules Safeway Project Transportation Impact Assessment, prepared for the City of Hercules in August 2017. With the addition of anticipated traffic at the study intersections, including the Safeway project, **Figure 5A and 5B** illustrates Near-term No Project Conditions traffic volumes without the Project. **Figures 5C and 5D** illustrates the Project Trip Assignment pattern for Near-term plus Project conditions, which does not differ from the Existing plus Project trip assignment pattern.

Table 6 summarizes peak hour levels of service at the study intersections under Near-term Conditions, without and with the proposed Project. Detailed LOS worksheets for this scenario are provided in **Appendix D and E**.

Near-term Project Impact Findings

Under Near-term plus Project conditions, impact findings remain consistent with the findings under Existing plus Project Conditions. The recommended mitigation is to restripe and/or widen the westbound approach to provide a second westbound through lane on Willow approaching Palm (within 200 feet including the transition from one to two lanes) to provide separate left-turn and through lanes in westbound direction. AM LOS improves to D (25.1) with Mitigation.

Near-term Impact Findings & Mitigation

The impact findings and recommended mitigation are identical to that of Existing plus Project Conditions. At stop-sign controlled intersections, the City of Hercules considers LOS impacts significant if both of the following occur:

- The operations of an unsignalized study intersection declines from an overall acceptable level to an overall unacceptable level with the addition of Project traffic; and
- Installation of a traffic signal is warranted, based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3).

Installation of a traffic signal at Palm Avenue/Willow Avenue is warranted under Existing Conditions (without the proposed Project) based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour Signal Warrant (Warrant 3). Based on the side-street approach volume on Palm Avenue (303 vehicles approaching Willow Avenue during the impacted a.m. peak hour), signalization is warranted if the two-way approach volume exceeds 400 vehicles on Willow Avenue. The existing two-way approach volume on Willow Avenue is 657 vehicles, thus meeting the peak-hour signal warrant. However,

signalization of this intersection is planned to occur concurrent with the planned widening of Willow Avenue to two lanes per direction, as indicated in the *Hercules Circulation Element* update.

As a near-term mitigation, under Existing plus Project and Near-term plus Project conditions, the recommended mitigation is to restripe and/or widen the westbound approach to provide a second westbound lane on Willow approaching Palm (within 200 feet including the transition from one to two westbound lanes) to provide separate left-turn and through lanes in westbound direction with a storage length of at least 25 feet in the added lane. LOS improves to acceptable LOS D (32.1 seconds of average vehicle delay) with Mitigation during the a.m. peak hour and acceptable LOS C (23.6 seconds of average delay) during the p.m. peak hour. Therefore, the project impact to intersection LOS under Near-term plus Project Conditions would be considered ***less than significant with the recommended mitigation T-1.*** The updated site plan with mitigation is shown on **Appendix H**.

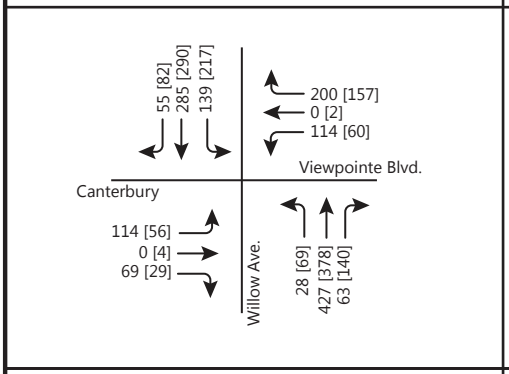
Table 7: Near-term Conditions Traffic Level of Service Comparison

ID	Intersection	Control	Peak Hour	Near-term Conditions (without Project)		Near-term plus Project Conditions		
				Average Delay	LOS	Average Delay	LOS	Significant LOS Impact?
1	Viewpointe Blvd-Canterbury & Willow Avenue	All-way Stop	A.M.	20.8	C	22.5	C	No
			P.M.	16.4	C	17.2	C	No
2	SR-4 WB Off-ramp & Willow Avenue	All-way Stop	A.M.	18.0	C	20.4	C	No
			P.M.	14.6	B	15.7	C	No
4	Palm Avenue & Willow Avenue	All-way Stop	A.M.	**43.8**	**E**	**>50**	**F**	**Yes**
			P.M.	23.6	C	**39.1**	**E**	**Yes**
5	SR-4 EB Off-Ramp & Willow Avenue	All-way Stop	A.M.	10.3	B	11.0	B	No
			P.M.	11.0	B	12.1	B	No
6	Sycamore Avenue & Willow Avenue	Signalized	A.M.	27.6	C	28.4	C	No
			P.M.	29.7	C	30.6	C	No
7	Sycamore Avenue & Palm Avenue	All-way Stop	A.M.	30.8	D	33.9	D	No
			P.M.	22.4	C	34.4	D	No
8	Willow Avenue & Church Driveway West	Side-street Stop	A.M.	16.6	C	18.1	C	No
			P.M.	15.9	C	17.7	C	No
9	Willow Avenue & Church Driveway Middle	Side-street Stop	A.M.	<10	A	<10	A	No
			P.M.	<10	A	<10	A	No
10	Willow Avenue & Church Driveway East - Proposed Project Driveway	Side-street Stop	A.M.	17.7	C	**39.0**	**E**	**No***
			P.M.	16.2	C	32.4	D	No

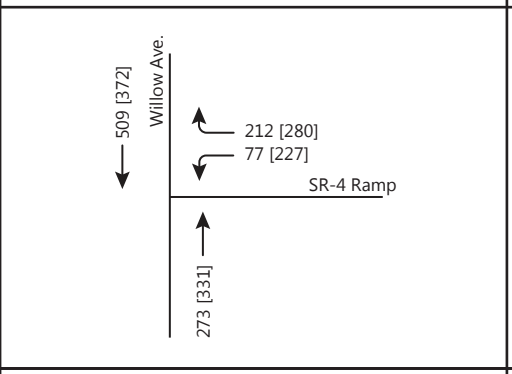
Notes: [1] LOS = Level of Service
[2] Average intersection delay expressed in seconds per vehicle for signalized and all-way stop-controlled intersections. Worst approach delay is presented for side-street stop controlled intersections.
Bold indicates intersections that operate at deficient LOS.
***LOS at Intersection #10 under Near-term Plus Project Conditions reflects anticipated delay to outbound traffic exiting the Project driveway via a single-lane stop-sign controlled approach to Willow Avenue. LOS impact is less than significant (LTS) because intersection volumes will not warrant signalization.**

Near-Term No Project Conditions Peak Hour Traffic Volumes

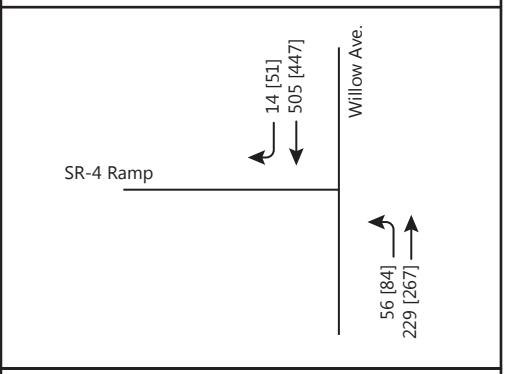
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



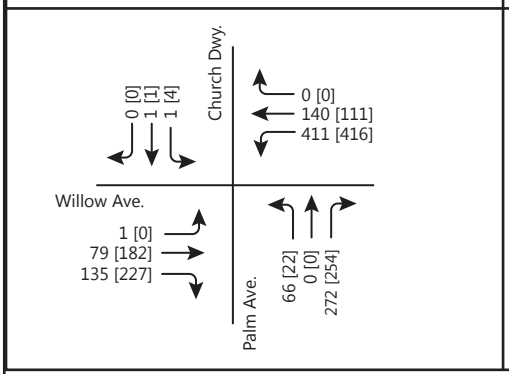
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



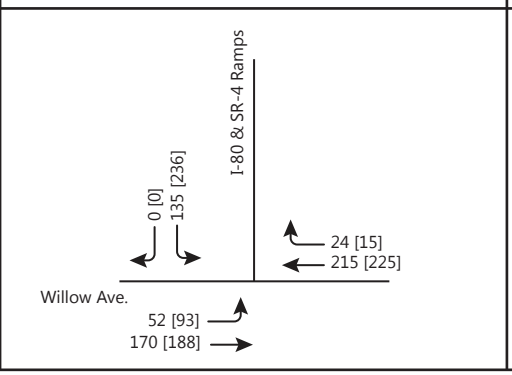
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.

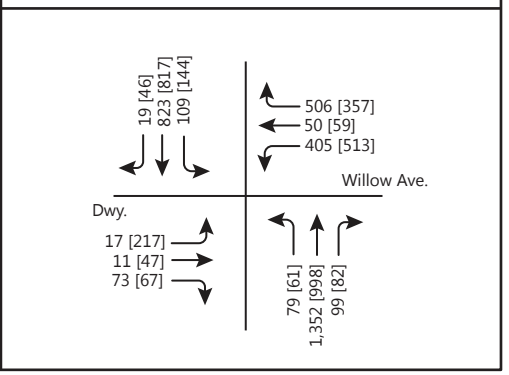
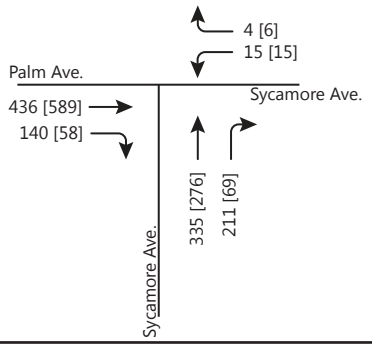


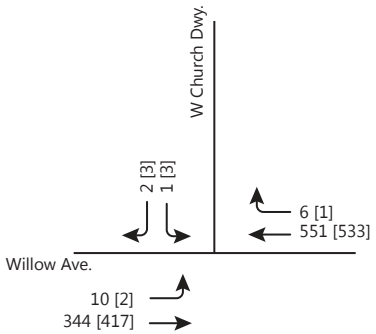
Figure 5a

Near-Term No Project Conditions Peak Hour Traffic Volumes

Intersection #7
Palm Ave. / Sycamore Ave.

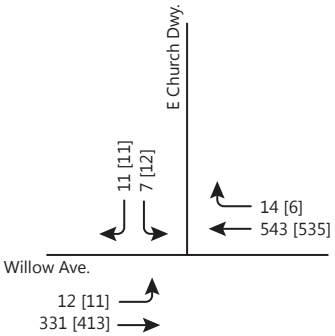


Intersection #8
Willow Ave. / W Church Dwy.



Intersection #9
Middle Church Dwy. / Willow Ave.

Intersection #10
E Church Dwy. / Willow Ave.



LEGEND

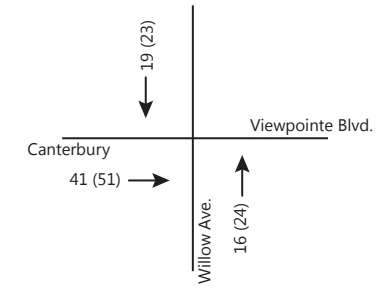
- Study Intersection
- XX AM Peak Hour Volumes
- [XX] PM Peak Hour Volumes
- (XX) Sunday Peak Hour Volumes
- Ramps
- Freeway
- Arterial
- Project Site
- Parks

TJKM

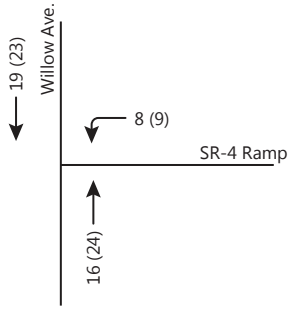
Figure 5b

Project Trip Assignment (Near-term Plus Project)

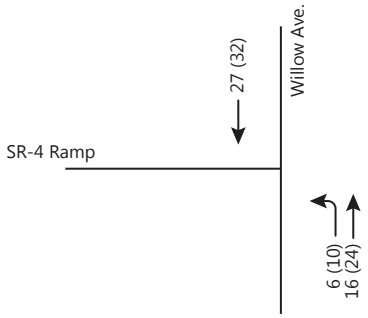
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



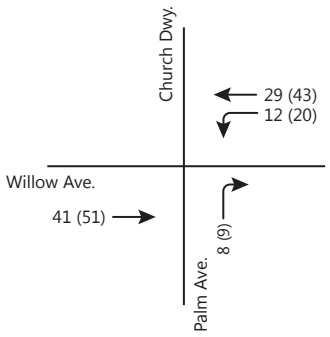
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



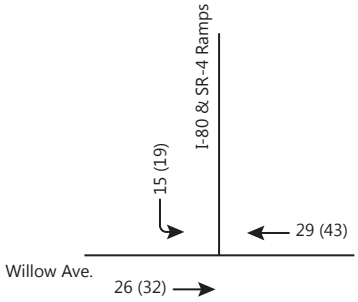
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.

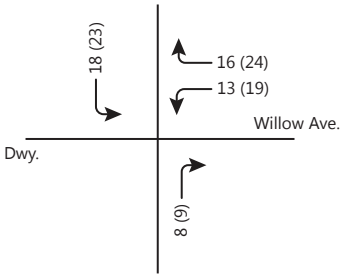
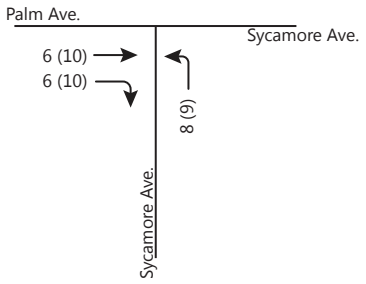


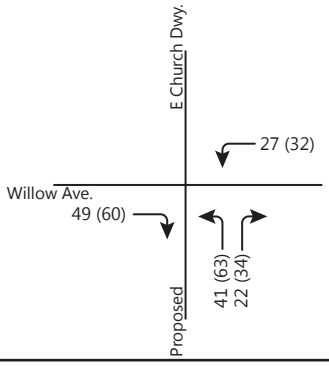
Figure 5c

Project Trip Assignment (Near-term Plus Project)

Intersection #7
Palm Ave. / Sycamore Ave.



Intersection #10
E Church Dwy. / Willow Ave.



TJKM

Figure 5d

6. CUMULATIVE CONDITIONS

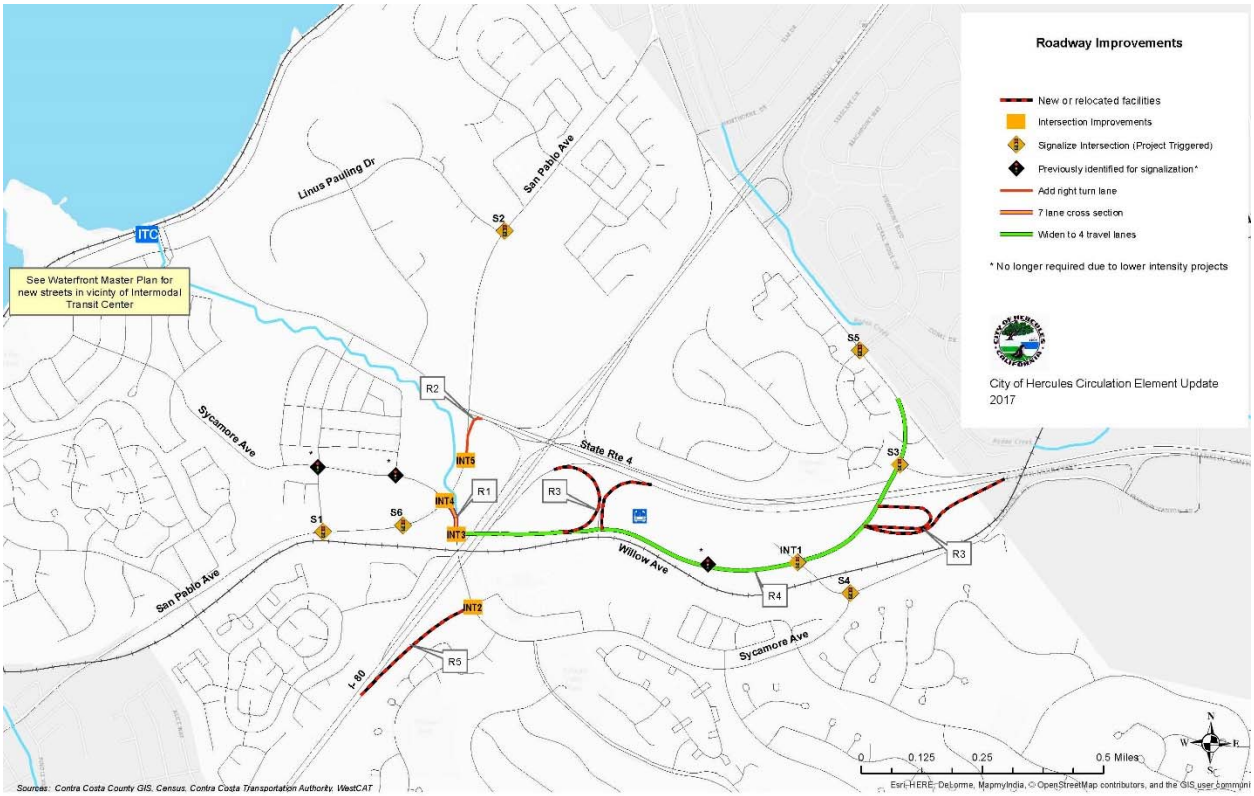
This scenario evaluates the project impact on Cumulative (Year 2040) Conditions.

Planned (Year 2040) Roadway Improvements

Planned improvements at study intersections were derived from the Hercules Circulation Element update. Key improvements that are envisioned for construction before 2040, at locations shown on **Figure 6A**, include:

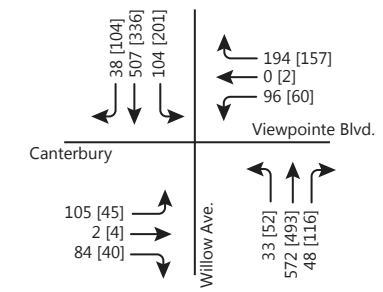
- Planned installation of traffic signals at the Willow Avenue intersections with Viewpoint Boulevard, SR-4 Westbound Ramps, SR-4 Eastbound Ramps, Palm Avenue and Sycamore Avenue, and at the intersection of Sycamore Avenue and Palm Avenue/
- Planned relocation of the SR-4 Eastbound On/Off Ramps to/from Willow Avenue, that currently terminate west of Palm Avenue, to a location immediately east of the Project site.
- Planned widening of Willow Avenue (to two lanes per direction between SR-4 and Sycamore Avenue, matching the provision of lanes currently provided on segments of Willow Avenue to the north of SR-4.

Figure 6A: Planned Year 2040 Roadway Network Improvements

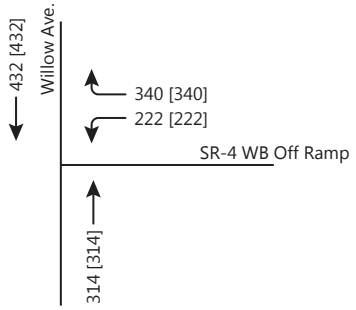


Cumulative 2040 No Project Conditions Peak Hour Traffic Volumes

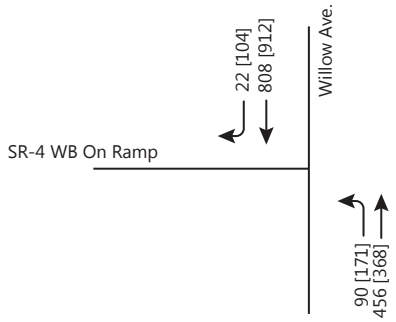
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



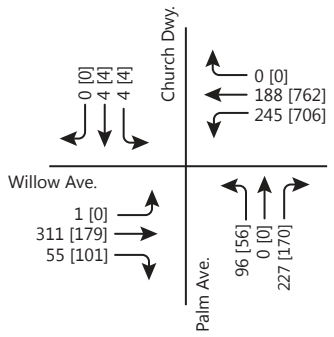
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



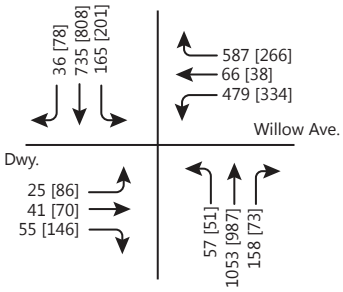
Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.

Existing Ramps to be Relocated to #11 under 2040 No Project

Intersection #6
Willow Ave. / Sycamore Ave.

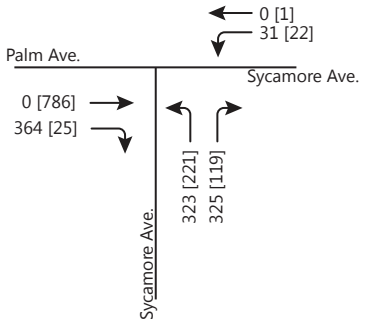


TJKM

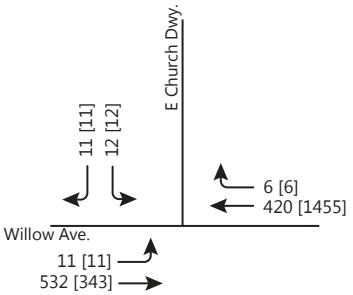
Figure 6b

Cumulative 2040 No Project Conditions Peak Hour Traffic Volumes

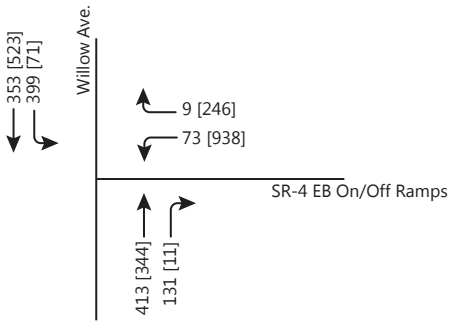
Intersection #7
Palm Ave. / Sycamore Ave.



Intersection #10
E Church Dwy. / Willow Ave.



Intersection #11
Willow Ave. / SR-4 EB On/Off Ramps

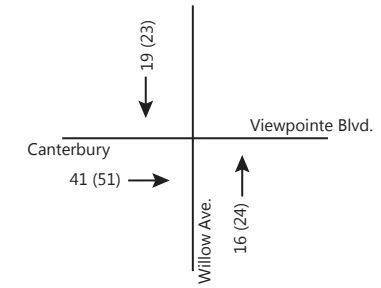


TJKM

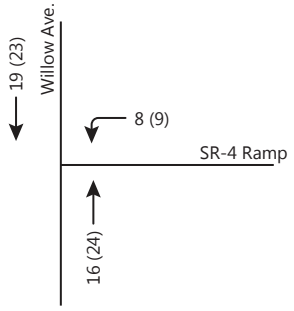
Figure 6c

Project Trip Assignment (Cumalative 2040)

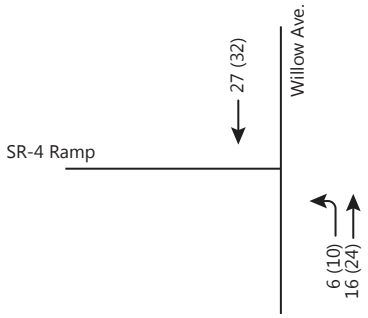
Intersection #1
Willow Ave. / Viewpointe Blvd. Canterbury St.



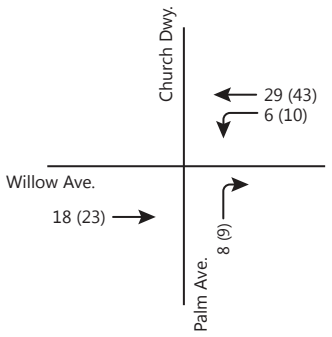
Intersection #2
Willow Ave. / SR-4 Westbound Off-ramp



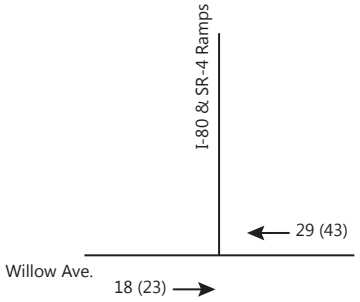
Intersection #3
Willow Ave. / SR-4 Westbound On-ramp



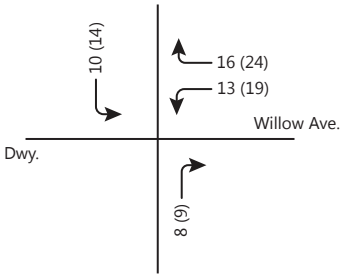
Intersection #4
Willow Ave. / Palm Ave.



Intersection #5
I-80 & SR-4 Ramps / Willow Ave.



Intersection #6
Willow Ave. / Sycamore Ave.



LEGEND

- X — Study Intersection
- XX — AM Peak Hour Volumes
- [XX] — PM Peak Hour Volumes
- (XX) — Sunday Peak Hour Volumes
- Ramps
- Freeway
- Arterial
- Project Site
- Parks

N

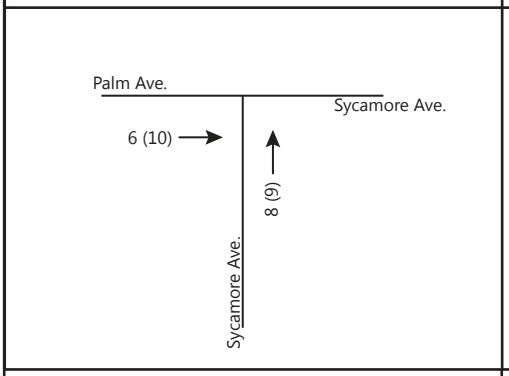
TJKM

115 - 020

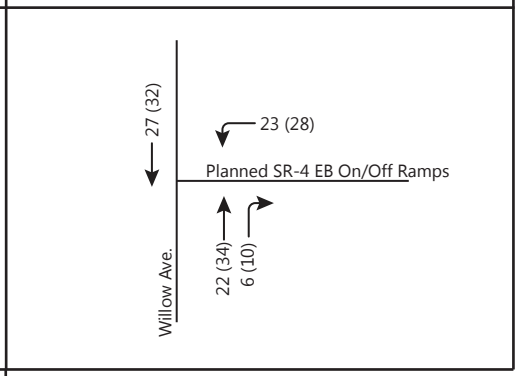
Figure 6d

Project Trip Assignment (Cumalative 2040)

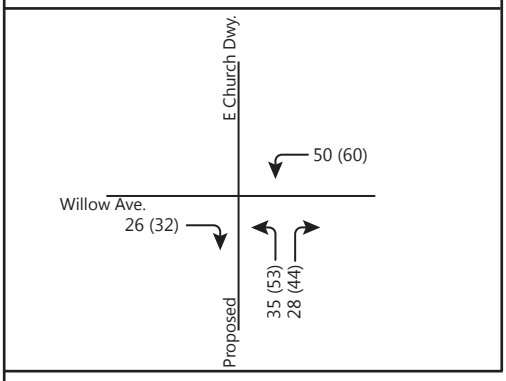
Intersection #7
Palm Ave. / Sycamore Ave.



Intersection #11
Willow Ave. / Planned SR-4 EB On/Off Ramps



Intersection #10
E Church Dwy. / Willow Ave.



TJKM

Figure 6e

Cumulative Traffic Impact Findings

Forecasted traffic volumes under Cumulative (No Project) Conditions were determined based on the traffic forecasts and LOS analysis prepared for the Hercules Circulation Element. Forecasted traffic volumes under Cumulative (Year 2040) Conditions are shown on **Figure 6B and 6C**. Under Cumulative (Year 2040) conditions, the vehicle trip assignment will differ, as described in Chapter 6, with a larger portion of trips to/from the east, with the planned relocation of the SR-4 Eastbound Ramps at Willow Avenue to a location east of the project site on Willow Avenue. The distribution of Project vehicle trips at each study intersection under Cumulative (Year 2040) Conditions are shown on **Figures 6D and 6E**.

Table 7 summarizes peak hour levels of service at the study intersections under Cumulative Conditions, with and without the Project. Detailed LOS worksheets for this scenario are provided in **Appendix F**.

Table 8: Cumulative (Year 2040) Conditions Traffic Level of Service Comparison

ID	Intersection		Peak Hour	Cumulative (2040) No Project Conditions		Cumulative (2040) Plus Project Conditions		
				Average Delay	LOS	Average Delay	LOS	Significant LOS Impact?
1	Viewpointe Blvd-Canterbury & Willow Avenue	Signalized	A.M.	6.7	A	6.7	A	No
			P.M.	5.7	A	5.7	A	No
2	SR-4 WB Off-ramp & Willow Avenue	Signalized	A.M.	6.9	A	7.0	A	No
			P.M.	6.9	A	7.0	A	No
4	Palm Avenue & Willow Avenue	Signalized	A.M.	8.3	A	8.5	A	No
			P.M.	14.8	B	16.6	B	No
5	(Replaced by #11)							
6	Sycamore Avenue & Willow Avenue	Signalized	A.M.	28.8	C	29.4	C	No
			P.M.	28.9	C	29.6	C	No
7	Sycamore Avenue & Palm Avenue	Signalized	A.M.	5.3	A	5.3	A	No
			P.M.	5.2	A	5.3	A	No
8	Willow Avenue & Church Driveway West	Side-street Stop	A.M.	12.8	B	14.7	B	No
			P.M.	33.1	D	**36.0**	**E**	**No***
9	Willow Avenue & Church Driveway Middle	Side-street Stop	A.M.	<10	A	<10	A	No
			P.M.	<10	A	<10	A	No
10	Willow Avenue & Church Driveway East - Proposed Project Driveway	Side-street Stop	A.M.	12.7	B	18.8	C	No
			P.M.	**37.1**	**E**	**>50**	**F**	**No***
11	SR-4 EB Ramps (Relocated) & Willow Avenue	Signalized	A.M.	3.9	A	4.2	A	No
			P.M.	8.5	A	8.8	A	No

Notes: [1] LOS = Level of Service
[2] Average intersection delay expressed in seconds per vehicle for signalized intersections. Worst approach delay for is presented for stop controlled intersections.
Bold indicates intersections that operate at deficient LOS.

Under this scenario, each of the signalized intersections would operate acceptably. Unacceptable LOS would be limited to just two stop-sign controlled study intersections – the proposed Project driveway intersection with Willow Avenue, and the existing church driveway intersection with Willow Avenue just east of Palm Avenue. At both of the locations with failing LOS under Cumulative (Year 2040) plus Project

conditions, side-street approach volumes would not trigger a signal warrant. The anticipated volume approaching Willow Avenue via a driveway would be less than 100 peak-hour vehicles exiting the Project site, and the recent counts indicate a smaller number (less than 30 vehicles) exit the church via multiple driveways during the a.m. peak hour from the project site. Therefore, since the failing LOS at signalized study intersections would occur with a volume that would not warrant signal intersection, ***LOS impacts under Cumulative (Year 2040) Conditions are less than significant at all study intersections.***

7. SITE ACCESS

This section assesses the proposed site access provisions and provides recommendations to facilitate both ingress and egress, based on the preliminary site plan illustrated in **Figure 1B**. The project site is an undeveloped parcel located on the south side of Willow Avenue, between Palm Avenue and State Route 4 (SR-4). The site abuts Palm Avenue to the west, Willow Avenue to the north, SR-4 to the east, and BNSF Railroad tracks to the south. Access to the site would be via Willow Avenue. Within the site, 77 motor vehicle parking spaces would be provided on surface lots.

Proposed Driveway Location

Direct access to the site to/from Willow Avenue is proposed via a single driveway on the eastern/uphill end of the site. There are three key constraints to the proposed driveway location:

1. **Limited site distance for westbound motorists making an inbound left-turn.** Given the existing curve and change in elevation on this segment of Willow Avenue, there is limited site visibility for westbound motorists on Willow Avenue when making a left-turn into the Project driveway, as those left-turning inbound motorists may not be able to view on-coming motorists traveling in the eastbound (uphill) direction. The recommended sight distance applicable to the inbound left-turn is 285 feet, based on 35 mile per hour (mph) roadway design speeds. Although the updated Site Plan with mitigation (as shown in Appendix H) indicates that 435 feet of sight distance would be provided (applicable to the inbound left-turn). However, the line of sight of sight as shown in **Appendix H** could be impeded by the roadway edge (including vegetation) and change in elevation of the roadway itself as it rounds the curve. Subject to confirmation by the Project engineer during preparation of final engineering drawings for the Project: the applicable sight distance for permissive left-turns inbound to the project site is anticipated to exceed the minimum requirement of 285 feet. Therefore the Project is anticipated to provide adequate sight distance applicable to permissive left-turn movements inbound to the Project site.

2. **Proximity to planned SR-4 Eastbound Ramps.** When the SR-4 Eastbound Ramps are relocated, a signalized intersection would be installed where Willow Avenue intersects those ramps, on the south side of Willow Avenue, very close to the eastern boundary of the Project site. Such close proximity could result in future access limitations, particularly if the future widening of Willow

Avenue to two motor vehicle lanes per direction includes a landscape median, as is currently provided on the existing four-lane segments of Willow Avenue to the north of SR-4.

3. **Lengthy delays for motorists exiting the Project site via a left-turn to travel west on Windsor Avenue.** Although not considered a significant impact for intersection LOS purposes, outbound motorists exiting the Project site via a left-turn would experience average delays exceeding 50 seconds (thus considered LOS F at stop-sign controlled intersections.

Site Ingress & Egress Recommendations

Based on the above constraints, the following recommendations are applicable:

A. Maximize driveway approach visibility in both directions, such that westbound motorists approaching the driveway to make an inbound left-turn will have an adequate view of motorists traveling in the opposite direction (eastbound/uphill) and vice versa: ensure that adequate site visibility is provided for uphill motorists approaching the point where westbound motorists would make an inbound left-turn. Based on a speed of 35 miles per hour (mph), the American Association of State Highway and Transportation Officials (AASHTO) *Geometric Design of Highways and Streets*, 2004, the recommended "stopping sight distance" is approximately 250 feet. The provision of 300 feet of visibility may be desirable given prevailing speeds on other streets in the area. Improving site distance at the currently proposed driveway location could potentially be achieved by grading a portion of the north side of Willow Avenue, if feasible. Based on the June 6, 2018 site plan set, visibility is anticipated is exceed 400 feet approaching the driveway in both directions, therefore exceeding minimum sight distance requirements for driveway stopping sight distance.
B. Consider driveway relocation options, if feasible given the site's topography constraints. Relocation of the proposed driveway to a location directly across from the middle church driveway (second church driveway from Palm Avenue) would provide adequate site distance, and could include an inbound left-turn pocket that could allow outbound left-turn movements to make use of the downstream median area to merge into traffic, potentially reducing delays to outbound left-turns. However, given the slope of the site, measures to allow direct access from the currently proposed driveway location may be preferable.
C. Revise the site plan if needed to accommodate the planned future widening of Willow Avenue to two motor vehicle lanes per direction, and accommodate the inclusion of bicycle lanes in both direction.
D. Provide two outbound lanes from the driveway – one lane for right-turn exits, and one lane for left-turn exits. If feasible, provide a second outbound driveway to reduce delays to motorist exiting the site. The updated Site Plan with mitigations prepared June 6, 2018 includes two outbound lanes as shown on **Appendix H**.

Table 9: Sight Distance Requirements

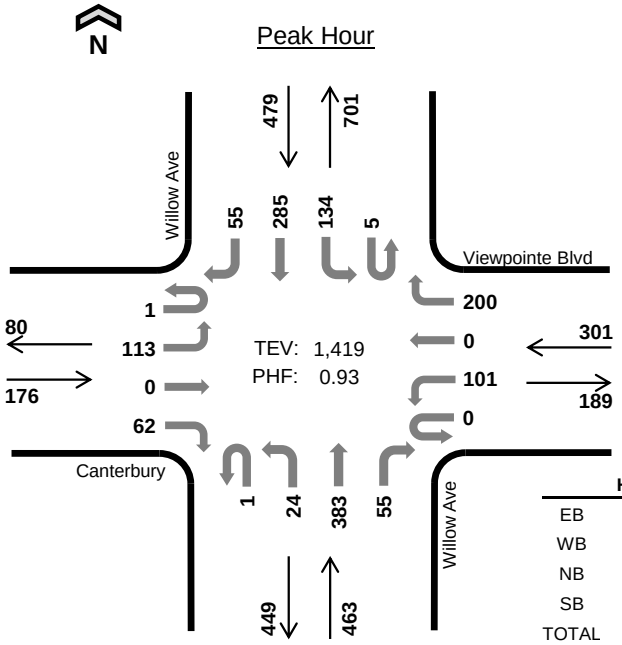
Design Speed	Type of Sight Distance	Minimum Sight Distance	Source of Minimum Standard	Estimated Sight Distance Provided
35 miles per hour (mph)	Driveway Stopping Sight Distance	250 feet	Caltrans *Highway Design Manual*, Chapter 200, Table 201.1	400 feet+
	Permissive Left-turn	285 feet	Federal Highway Administration, *Signalized Intersections: Informational Guide,* Chapter 12, Table 120	400 feet+

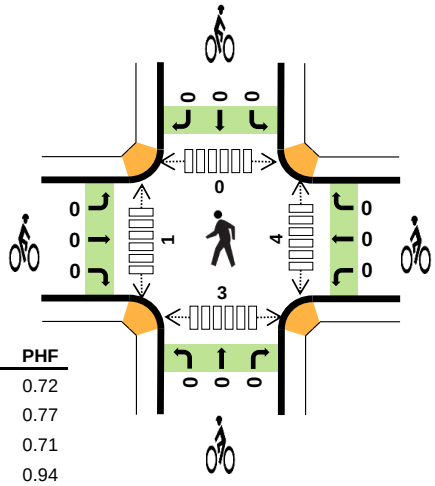
Appendix A

Existing Conditions Turning Movement Volumes

Willow Ave
Canterbury

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.0%	0.72
WB	3.0%	0.77
NB	2.2%	0.71
SB	1.7%	0.94
TOTAL	1.9%	0.93

Two-Hour Count Summaries

Interval Start		Canterbury Eastbound UT	LT	TH	RT	Viewpointe Blvd Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	39	1	16	0	33	0	52	0	1	28	7	0	11	27	10	225	0
7:15 AM		0	16	1	13	0	34	0	61	0	3	65	6	1	18	30	6	254	0
7:30 AM		0	33	4	12	0	29	1	96	0	6	78	13	1	12	42	4	331	0
7:45 AM		**0**	**44**	**0**	**17**	**0**	**30**	**0**	**68**	**1**	**5**	**91**	**8**	**2**	**28**	**71**	**16**	**381**	1,191
8:00 AM		**1**	**24**	**0**	**13**	**0**	**25**	**0**	**50**	**0**	**1**	**68**	**14**	**0**	**32**	**80**	**16**	**324**	1,290
8:15 AM		**0**	**32**	**0**	**17**	**0**	**27**	**0**	**58**	**0**	**6**	**91**	**16**	**0**	**40**	**78**	**9**	**374**	1,410
8:30 AM		**0**	**13**	**0**	**15**	**0**	**19**	**0**	**24**	**0**	**12**	**133**	**17**	**3**	**34**	**56**	**14**	**340**	**1,419**
8:45 AM		0	19	0	6	0	16	0	40	0	4	79	9	0	23	23	6	225	1,263
Count Total		1	220	6	109	0	213	1	449	1	38	633	90	7	198	407	81	2,454	0
Peak Hour	**All**	**1**	**113**	**0**	**62**	**0**	**101**	**0**	**200**	**1**	**24**	**383**	**55**	**5**	**134**	**285**	**55**	**1,419**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**5**	**5**	**0**	**4**	**4**	**0**	**27**	**0**
	HV%	**0%**	**0%**	**-**	**0%**	**-**	**2%**	**-**	**4%**	**0%**	**0%**	**1%**	**9%**	**0%**	**3%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	2	1	3	*8*	0	0	0	0	*0*	1	3	0	6	*10*
7:15 AM	0	3	1	4	*8*	0	0	0	0	*0*	0	3	0	5	*8*
7:30 AM	1	2	2	1	*6*	0	0	0	0	*0*	0	2	0	4	*6*
7:45 AM	**0**	**3**	**3**	**2**	***8***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**2**	***4***
8:00 AM	**0**	**2**	**3**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
8:15 AM	**0**	**3**	**1**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**1**	*2*
8:30 AM	**0**	**1**	**3**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	1	1	4	1	*7*	0	0	0	0	*0*	1	0	1	1	*3*
Count Total	4	17	18	17	*56*	0	0	0	0	*0*	6	9	1	19	*35*
Peak Hour	**0**	**9**	**10**	**8**	***27***	**0**	**0**	**0**	**0**	***0***	**4**	**1**	**0**	**3**	***8***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Canterbury				Viewpointe Blvd				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	0	0	0	0	2	0	0	1	0	0	0	1	2	8	0
7:15 AM	0	0	0	0	0	1	0	2	0	0	1	0	0	3	1	0	8	0
7:30 AM	0	0	1	0	0	1	0	1	0	0	1	1	0	0	0	1	6	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**1**	**1**	**0**	**8**	30
8:00 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**6**	28
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**0**	**7**	27
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**1**	**1**	**0**	**6**	**27**
8:45 AM	0	1	0	0	0	0	0	1	0	0	3	1	0	0	0	1	7	26
Count Total	0	2	2	0	0	4	0	13	0	0	11	7	0	7	6	4	56	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**7**	**0**	**0**	**5**	**5**	**0**	**4**	**4**	**0**	**27**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Canterbury			Viewpointe Blvd			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

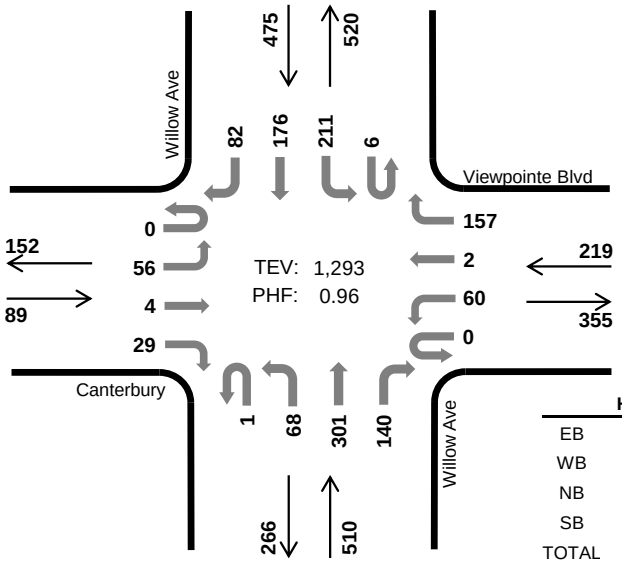
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Willow Ave
Canterbury

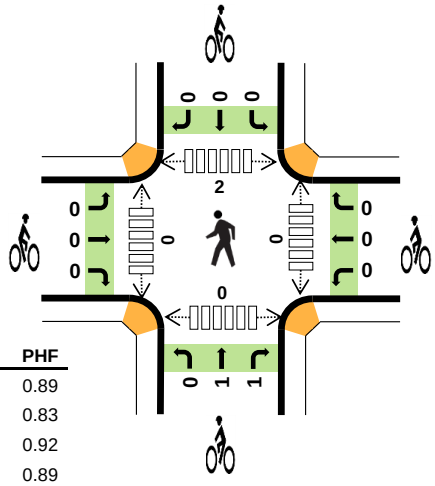
Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

N

Peak Hour



	HV %:	PHF
EB	4.5%	0.89
WB	2.7%	0.83
NB	1.8%	0.92
SB	0.8%	0.89
TOTAL	1.8%	0.96



Two-Hour Count Summaries

Interval Start		Canterbury Eastbound UT	LT	TH	RT	Viewpointe Blvd Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	11	0	8	0	25	2	25	1	12	48	32	0	45	33	19	261	0
4:15 PM		0	6	1	7	0	18	0	36	0	12	53	37	0	45	48	14	277	0
4:30 PM		0	17	0	9	0	18	0	31	0	15	56	28	0	48	41	16	279	0
4:45 PM		0	12	0	11	0	20	1	34	0	21	80	30	0	42	42	21	314	1,131
5:00 PM		**0**	**14**	**1**	**10**	**0**	**9**	**1**	**30**	**0**	**19**	**75**	**24**	**2**	**50**	**56**	**25**	**316**	1,186
5:15 PM		**0**	**15**	**0**	**6**	**0**	**19**	**0**	**47**	**1**	**12**	**87**	**39**	**1**	**52**	**37**	**21**	**337**	1,246
5:30 PM		**0**	**10**	**2**	**7**	**0**	**20**	**1**	**34**	**0**	**13**	**70**	**36**	**2**	**58**	**50**	**20**	**323**	1,290
5:45 PM		**0**	**17**	**1**	**6**	**0**	**12**	**0**	**46**	**0**	**24**	**69**	**41**	**1**	**51**	**33**	**16**	**317**	**1,293**
Count Total		0	102	5	64	0	141	5	283	2	128	538	267	6	391	340	152	2,424	0
Peak Hour	**All**	**0**	**56**	**4**	**29**	**0**	**60**	**2**	**157**	**1**	**68**	**301**	**140**	**6**	**211**	**176**	**82**	**1,293**	**0**
	HV	**0**	**3**	**1**	**0**	**0**	**0**	**1**	**5**	**0**	**2**	**7**	**0**	**0**	**2**	**2**	**0**	**23**	**0**
	HV%	**-**	**5%**	**25%**	**0%**	**-**	**0%**	**50%**	**3%**	**0%**	**3%**	**2%**	**0%**	**0%**	**1%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	1	2	2	2	*7*	0	0	0	0	*0*	0	0	0	1	*1*
4:15 PM	0	2	2	1	*5*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	1	2	5	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**1**	**1**	**1**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
5:15 PM	**1**	**2**	**3**	**1**	***7***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**1**	**0**	*1*
5:30 PM	**1**	**0**	**3**	**1**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**1**	**3**	**2**	**1**	***7***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Count Total	6	13	20	9	*48*	0	0	2	0	*2*	0	0	2	2	*4*
Peak Hour	**4**	**6**	**9**	**4**	***23***	**0**	**0**	**2**	**0**	***2***	**0**	**0**	**2**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Canterbury				Viewpointe Blvd				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	2	0	0	0	2	0	2	0	0	7	0
4:15 PM	0	0	0	0	0	2	0	0	0	0	2	0	0	0	1	0	5	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1	4	0
4:45 PM	0	0	0	1	0	1	0	1	0	0	2	3	0	1	0	0	9	25
5:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**4**	22
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**7**	24
5:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**0**	**5**	25
5:45 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**7**	**23**
Count Total	0	3	1	2	0	3	1	9	0	2	13	5	0	5	3	1	48	0
Peak Hour	**0**	**3**	**1**	**0**	**0**	**0**	**1**	**5**	**0**	**2**	**7**	**0**	**0**	**2**	**2**	**0**	**23**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Canterbury			Viewpointe Blvd			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**2**
Count Total	0	0	0	0	0	0	0	1	1	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**0**

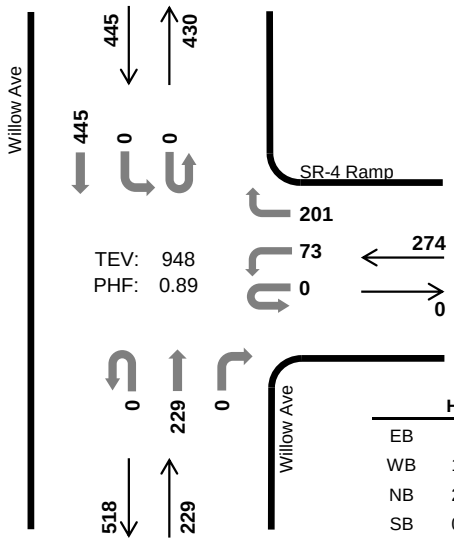
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Willow Ave
SR-4 Ramp

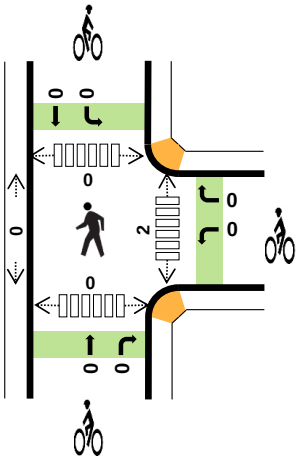
Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

N

Peak Hour



	HV %:	PHF
EB	-	-
WB	1.5%	0.75
NB	2.6%	0.61
SB	0.9%	0.90
TOTAL	1.5%	0.89



Two-Hour Count Summaries

Interval Start		0 Eastbound UT	LT	TH	RT	SR-4 Ramp Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM		0	0	0	0	0	17	0	12	0	0	17	0	0	0	75	0	121	0
7:15 AM		0	0	0	0	0	20	0	42	0	0	27	0	0	0	85	0	174	0
7:30 AM		0	0	0	0	0	17	0	41	0	0	56	0	0	0	83	0	197	0
7:45 AM		**0**	**0**	**0**	**0**	**0**	**19**	**0**	**46**	**0**	**0**	**40**	**0**	**0**	**0**	**121**	**0**	**226**	718
8:00 AM		**0**	**0**	**0**	**0**	**0**	**18**	**0**	**44**	**0**	**0**	**33**	**0**	**0**	**0**	**124**	**0**	**219**	816
8:15 AM		**0**	**0**	**0**	**0**	**0**	**16**	**0**	**40**	**0**	**0**	**62**	**0**	**0**	**0**	**118**	**0**	**236**	878
8:30 AM		**0**	**0**	**0**	**0**	**0**	**20**	**0**	**71**	**0**	**0**	**94**	**0**	**0**	**0**	**82**	**0**	**267**	**948**
8:45 AM		0	0	0	0	0	14	0	55	0	0	35	0	0	0	48	0	152	874
Count Total		0	0	0	0	0	141	0	351	0	0	364	0	0	0	736	0	1,592	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**73**	**0**	**201**	**0**	**0**	**229**	**0**	**0**	**0**	**445**	**0**	**948**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**14**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**4%**	**-**	**0%**	**-**	**-**	**3%**	**-**	**-**	**-**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	0	1	*1*	0	0	0	0	*0*	1	0	0	0	*1*
7:15 AM	0	2	1	1	*4*	0	0	0	0	*0*	3	0	0	0	*3*
7:30 AM	0	0	3	2	*5*	0	0	0	0	*0*	6	0	0	0	*6*
7:45 AM	**0**	**1**	**1**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:00 AM	**0**	**0**	**2**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
8:15 AM	**0**	**1**	**1**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**2**	**2**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	8	0	0	*8*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	0	14	10	8	*32*	0	0	0	0	*0*	13	0	0	0	*13*
Peak Hr	**0**	**4**	**6**	**4**	***14***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	0				SR-4 Ramp				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	1	0	4	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	14
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**3**	16
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	15
8:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**14**
8:45 AM	0	0	0	0	0	5	0	3	0	0	0	0	0	0	0	0	8	18
Count Total	0	0	0	0	0	10	0	4	0	0	10	0	0	0	8	0	32	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**14**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	0			SR-4 Ramp			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

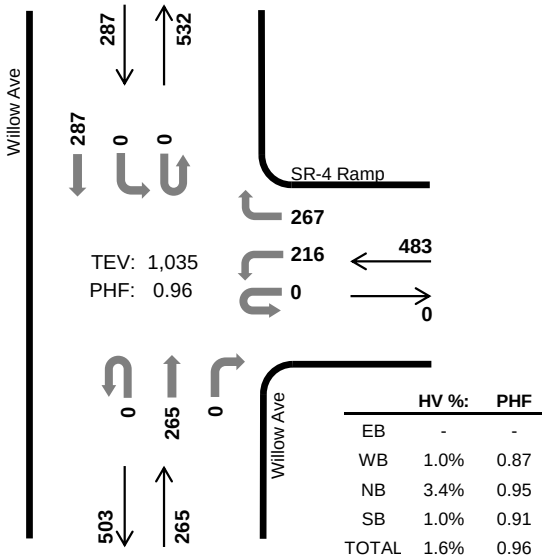
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Willow Ave
SR-4 Ramp

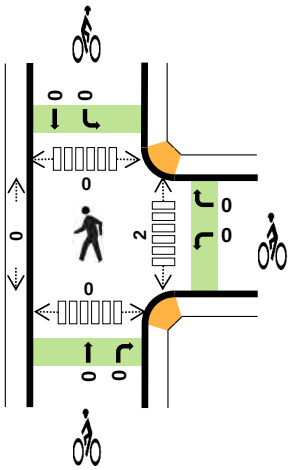
Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

N

Peak Hour



	HV %:	PHF
EB	-	-
WB	1.0%	0.87
NB	3.4%	0.95
SB	1.0%	0.91
TOTAL	1.6%	0.96



Two-Hour Count Summaries

Interval Start		0 Eastbound UT	LT	TH	RT	SR-4 Ramp Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	0	0	0	0	30	0	30	0	0	76	0	0	0	67	0	203	0
4:15 PM		0	0	0	0	0	34	0	39	0	0	68	0	0	0	75	0	216	0
4:30 PM		0	0	0	0	0	38	0	47	0	0	60	0	0	0	67	0	212	0
4:45 PM		**0**	**0**	**0**	**0**	**0**	**46**	**0**	**71**	**0**	**0**	**64**	**0**	**0**	**0**	**69**	**0**	**250**	881
5:00 PM		**0**	**0**	**0**	**0**	**0**	**47**	**0**	**54**	**0**	**0**	**67**	**0**	**0**	**0**	**78**	**0**	**246**	924
5:15 PM		**0**	**0**	**0**	**0**	**0**	**65**	**0**	**74**	**0**	**0**	**70**	**0**	**0**	**0**	**61**	**0**	**270**	978
5:30 PM		**0**	**0**	**0**	**0**	**0**	**58**	**0**	**68**	**0**	**0**	**64**	**0**	**0**	**0**	**79**	**0**	**269**	**1,035**
5:45 PM		0	0	0	0	0	52	0	68	0	0	67	0	0	0	49	0	236	1,021
Count Total		0	0	0	0	0	370	0	451	0	0	536	0	0	0	545	0	1,902	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**216**	**0**	**267**	**0**	**0**	**265**	**0**	**0**	**0**	**287**	**0**	**1,035**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**0**	**0**	**9**	**0**	**0**	**0**	**3**	**0**	**17**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**1%**	**-**	**-**	**3%**	**-**	**-**	**-**	**1%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	1	2	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	2	2	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	1	3	1	*5*	0	0	0	0	*0*	1	0	0	0	*1*
4:45 PM	**0**	**1**	**4**	**2**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**1**	**0**	**1**	***2***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
5:15 PM	**0**	**1**	**3**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**2**	**2**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	0	2	1	*3*	0	0	1	0	*1*	0	0	0	0	*0*
Count Total	0	9	18	10	*37*	0	0	1	0	*1*	3	0	0	0	*3*
Peak Hr	**0**	**5**	**9**	**3**	***17***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	0				SR-4 Ramp				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	2	0	5	0
4:15 PM	0	0	0	0	0	2	0	0	0	0	2	0	0	0	3	0	7	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	1	0	5	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**2**	**0**	**7**	24
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	21
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**4**	18
5:30 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**4**	**17**
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	13
Count Total	0	0	0	0	0	7	0	2	0	0	18	0	0	0	10	0	37	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**0**	**0**	**9**	**0**	**0**	**0**	**3**	**0**	**17**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	0			SR-4 Ramp			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

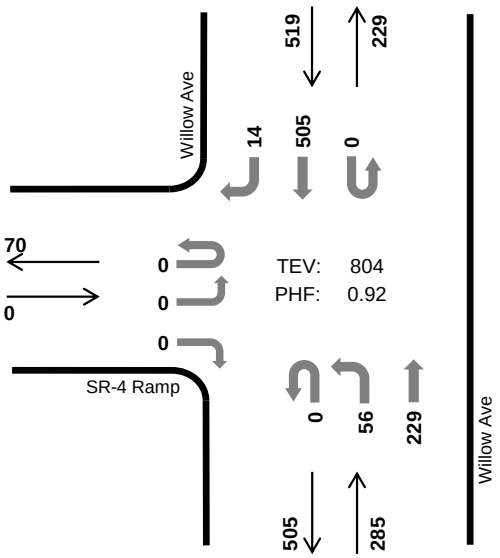
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

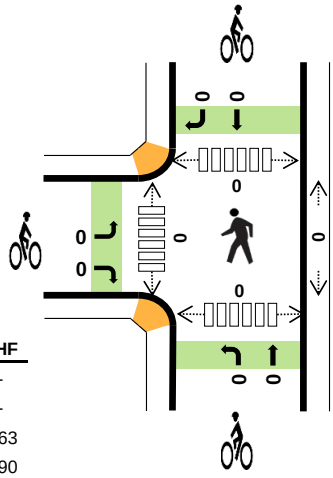
Willow Ave
SR-4 Ramp

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

N

Peak Hour





	HV %:	PHF
EB	-	-
WB	-	-
NB	3.2%	0.63
SB	1.3%	0.90
TOTAL	2.0%	0.92

Two-Hour Count Summaries

Interval Start	SR-4 Ramp Eastbound UT	LT	TH	RT	0 Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	0	0	17	17	0	0	0	83	8	125	0
7:15 AM	0	0	0	0	0	0	0	0	0	13	27	0	0	0	99	4	143	0
7:30 AM	0	0	0	0	0	0	0	0	0	18	55	0	0	0	101	2	176	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**39**	**0**	**0**	**0**	**138**	**1**	**190**	634
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**33**	**0**	**0**	**0**	**143**	**1**	**190**	699
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**62**	**0**	**0**	**0**	**125**	**7**	**206**	762
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**95**	**0**	**0**	**0**	**99**	**5**	**218**	**804**
8:45 AM	0	0	0	0	0	0	0	0	0	10	34	0	0	0	56	4	104	718
Count Total	0	0	0	0	0	0	0	0	0	114	362	0	0	0	844	32	1,352	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**56**	**229**	**0**	**0**	**0**	**505**	**14**	**804**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**0**	**0**	**0**	**7**	**0**	**16**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5%**	**3%**	**-**	**-**	**-**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	2	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	3	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**0**	**2**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**2**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**0**	**2**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	0	0	5	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	0	16	18	*34*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**9**	**7**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	SR-4 Ramp				0				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	3	0	5	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	5	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**3**	**0**	**5**	18
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**3**	18
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**0**	**4**	17
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**1**	**0**	**4**	**16**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	16
Count Total	0	0	0	0	0	0	0	0	0	6	10	0	0	0	16	2	34	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**	**0**	**0**	**0**	**7**	**0**	**16**	**0**

Two-Hour Count Summaries - Bikes

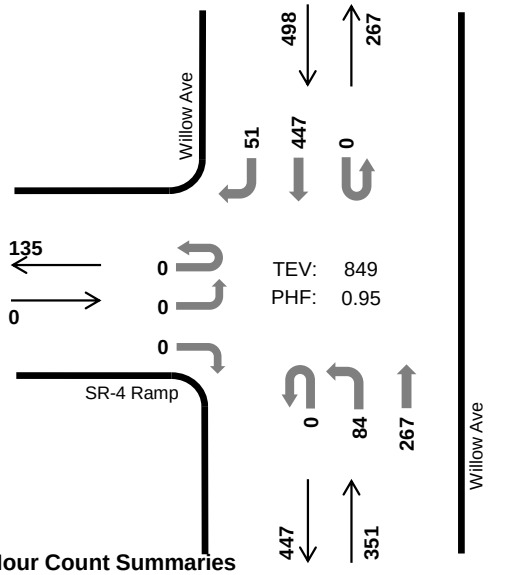
Interval Start	SR-4 Ramp			0			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

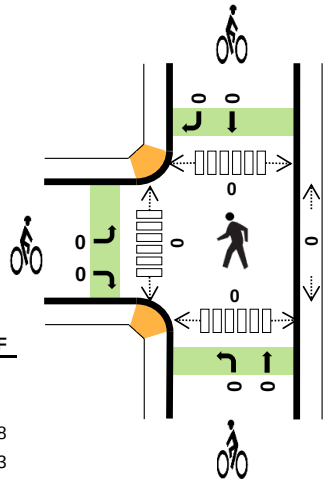
Willow Ave
SR-4 Ramp

Peak Hour

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	-	-
WB	-	-
NB	2.8%	0.98
SB	1.2%	0.93
TOTAL	1.9%	0.95



Two-Hour Count Summaries

Interval Start	SR-4 Ramp Eastbound UT	LT	TH	RT	0 Westbound UT	LT	TH	RT	Willow Ave Northbound UT	LT	TH	RT	Willow Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM	0	0	0	0	0	0	0	0	0	29	77	0	0	0	82	13	201	0
4:15 PM	0	0	0	0	0	0	0	0	0	27	68	0	0	0	98	11	204	0
4:30 PM	0	0	0	0	0	0	0	0	1	22	59	0	0	0	99	8	189	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22**	**65**	**0**	**0**	**0**	**100**	**12**	**199**	793
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**66**	**0**	**0**	**0**	**111**	**15**	**216**	808
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**70**	**0**	**0**	**0**	**111**	**15**	**211**	815
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23**	**66**	**0**	**0**	**0**	**125**	**9**	**223**	**849**
5:45 PM	0	0	0	0	0	0	0	0	0	24	66	0	0	0	92	11	193	843
Count Total	0	0	0	0	0	0	0	0	1	186	537	0	0	0	818	94	1,636	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**84**	**267**	**0**	**0**	**0**	**447**	**51**	**849**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**9**	**0**	**0**	**0**	**5**	**1**	**16**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**3%**	**-**	**-**	**-**	**1%**	**2%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	0	2	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	2	5	*7*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	4	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**0**	**0**	**4**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**1**	**2**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**2**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	0	0	2	1	*3*	0	0	1	0	*1*	0	0	0	0	*0*
Count Total	0	0	20	17	*37*	0	0	1	0	*1*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**10**	**6**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	SR-4 Ramp				0				Willow Ave				Willow Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	5	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3	7	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	3	0	0	0	2	0	6	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**1**	**6**	24
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	22
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**4**	19
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**3**	**16**
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	13
Count Total	0	0	0	0	0	0	0	0	0	2	18	0	0	0	12	5	37	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**9**	**0**	**0**	**0**	**5**	**1**	**16**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	SR-4 Ramp			0			Willow Ave			Willow Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

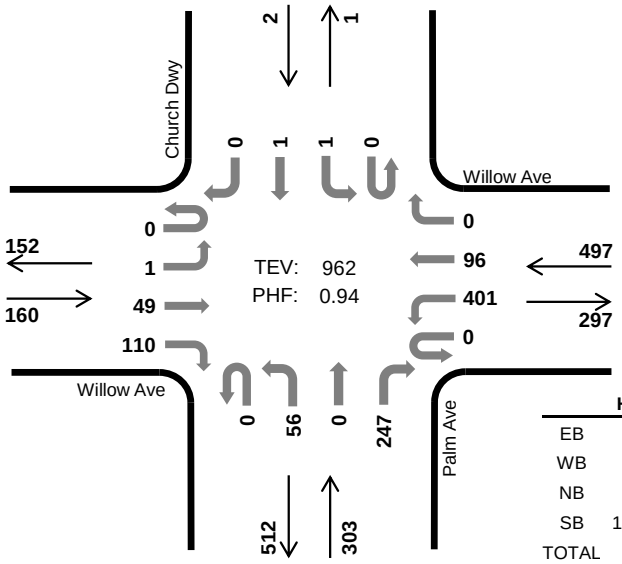
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

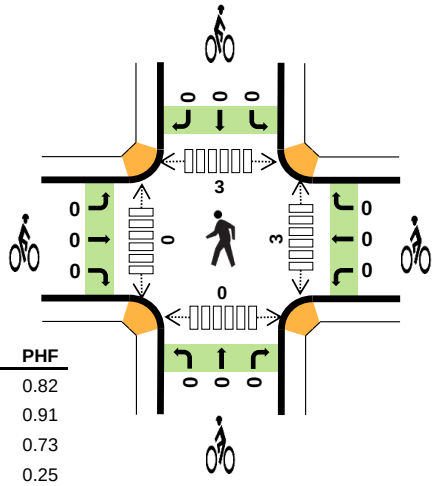
Palm Ave
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

N

Peak Hour





	HV %:	PHF
EB	5.6%	0.82
WB	1.4%	0.91
NB	1.7%	0.73
SB	100.0%	0.25
TOTAL	2.4%	0.94

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				Palm Ave Northbound				Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	7	10	0	63	22	0	0	14	0	29	0	0	0	1	146	0
7:15 AM		0	0	11	14	0	62	33	0	0	10	0	30	0	0	0	0	160	0
7:30 AM		0	0	15	6	0	80	23	0	0	12	0	59	0	0	1	0	196	0
7:45 AM		**0**	**0**	**10**	**23**	**0**	**105**	**31**	**0**	**0**	**9**	**0**	**42**	**0**	**0**	**0**	**0**	**220**	722
8:00 AM		**0**	**0**	**8**	**29**	**0**	**112**	**21**	**0**	**0**	**20**	**0**	**41**	**0**	**0**	**0**	**0**	**231**	807
8:15 AM		**0**	**0**	**16**	**33**	**0**	**99**	**21**	**0**	**0**	**15**	**0**	**72**	**0**	**0**	**0**	**0**	**256**	903
8:30 AM		**0**	**1**	**15**	**25**	**0**	**85**	**23**	**0**	**0**	**12**	**0**	**92**	**0**	**1**	**1**	**0**	**255**	**962**
8:45 AM		0	0	6	15	0	44	10	0	0	4	0	43	0	0	2	0	124	866
Count Total		0	1	88	155	0	650	184	0	0	96	0	408	0	1	4	1	1,588	0
Peak Hour	**All**	**0**	**1**	**49**	**110**	**0**	**401**	**96**	**0**	**0**	**56**	**0**	**247**	**0**	**1**	**1**	**0**	**962**	**0**
	HV	**0**	**1**	**5**	**3**	**0**	**4**	**3**	**0**	**0**	**2**	**0**	**3**	**0**	**1**	**1**	**0**	**23**	**0**
	HV%	**-**	**100%**	**10%**	**3%**	**-**	**1%**	**3%**	**-**	**-**	**4%**	**-**	**1%**	**-**	**100%**	**100%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	3	1	0	*6*	0	0	0	0	*0*	0	0	1	0	*1*
7:30 AM	2	1	2	0	*5*	0	0	0	0	*0*	2	0	2	4	*8*
7:45 AM	**1**	**3**	**2**	**0**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**2**	**0**	*4*
8:00 AM	**2**	**1**	**2**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**4**	**2**	**1**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	*2*
8:30 AM	**2**	**1**	**0**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	1	0	1	0	*2*
Count Total	15	13	8	2	*38*	0	0	0	0	*0*	6	0	7	4	*17*
Peak Hour	**9**	**7**	**5**	**2**	***23***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**3**	**0**	***6***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				Palm Ave				Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	1	1	0	2	1	0	0	0	0	1	0	0	0	0	6	0
7:30 AM	0	0	1	1	0	1	0	0	0	0	0	2	0	0	0	0	5	0
7:45 AM	**0**	**0**	**0**	**1**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**6**	20
8:00 AM	**0**	**0**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	22
8:15 AM	**0**	**0**	**3**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	23
8:30 AM	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**5**	**23**
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	18
Count Total	0	1	9	5	0	8	5	0	0	2	0	6	0	1	1	0	38	0
Peak Hour	**0**	**1**	**5**	**3**	**0**	**4**	**3**	**0**	**0**	**2**	**0**	**3**	**0**	**1**	**1**	**0**	**23**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			Palm Ave			Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

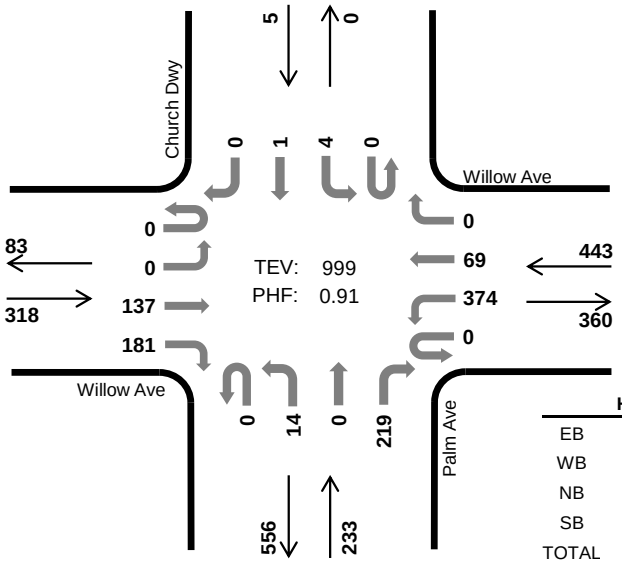
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

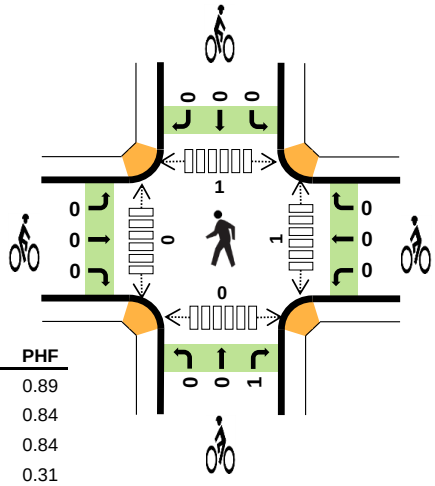
Palm Ave
Willow Ave

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

N

Peak Hour





	HV %:	PHF
EB	3.1%	0.89
WB	1.1%	0.84
NB	0.9%	0.84
SB	0.0%	0.31
TOTAL	1.7%	0.91

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				Palm Ave Northbound				Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	39	31	0	65	10	0	0	2	0	68	0	0	0	0	215	0
4:15 PM		0	0	36	34	0	80	23	0	0	6	0	52	0	0	0	1	232	0
4:30 PM		0	0	35	35	0	84	17	0	0	4	0	51	0	1	0	0	227	0
4:45 PM		0	1	31	30	0	86	16	1	0	8	0	52	0	0	1	0	226	900
5:00 PM		**0**	**0**	**28**	**33**	**0**	**92**	**17**	**0**	**0**	**5**	**0**	**64**	**0**	**0**	**0**	**0**	**239**	924
5:15 PM		**0**	**0**	**32**	**52**	**0**	**95**	**13**	**0**	**0**	**1**	**0**	**45**	**0**	**3**	**1**	**0**	**242**	934
5:30 PM		**0**	**0**	**41**	**43**	**0**	**111**	**21**	**0**	**0**	**3**	**0**	**53**	**0**	**1**	**0**	**0**	**273**	980
5:45 PM		**0**	**0**	**36**	**53**	**0**	**76**	**18**	**0**	**0**	**5**	**0**	**57**	**0**	**0**	**0**	**0**	**245**	**999**
Count Total		0	1	278	311	0	689	135	1	0	34	0	442	0	5	2	1	1,899	0
Peak Hour	**All**	**0**	**0**	**137**	**181**	**0**	**374**	**69**	**0**	**0**	**14**	**0**	**219**	**0**	**4**	**1**	**0**	**999**	**0**
	HV	**0**	**0**	**8**	**2**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**17**	**0**
	HV%	**-**	**-**	**6%**	**1%**	**-**	**1%**	**4%**	**-**	**-**	**0%**	**-**	**1%**	**-**	**0%**	**0%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	1	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	3	3	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	2	1	0	*6*	0	0	0	0	*0*	1	0	1	0	*2*
4:45 PM	2	1	2	0	*5*	0	0	0	0	*0*	1	0	1	0	*2*
5:00 PM	**2**	**2**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	*2*
5:15 PM	**3**	**1**	**1**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**3**	**1**	**1**	**0**	***5***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Count Total	19	12	6	0	*37*	0	0	1	0	*1*	3	0	3	0	*6*
Peak Hour	**10**	**5**	**2**	**0**	***17***	**0**	**0**	**1**	**0**	***1***	**1**	**0**	**1**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				Palm Ave				Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	3	0
4:15 PM	0	0	2	1	0	1	2	0	0	0	0	0	0	0	0	0	6	0
4:30 PM	0	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	6	0
4:45 PM	0	0	2	0	0	0	1	0	0	0	0	2	0	0	0	0	5	20
5:00 PM	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	21
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	20
5:30 PM	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	17
5:45 PM	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**17**
Count Total	0	0	16	3	0	4	8	0	0	0	0	6	0	0	0	0	37	0
Peak Hour	**0**	**0**	**8**	**2**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**17**	**0**

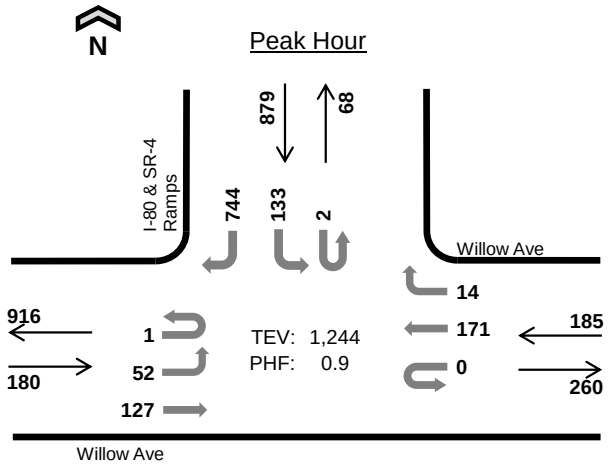
Two-Hour Count Summaries - Bikes

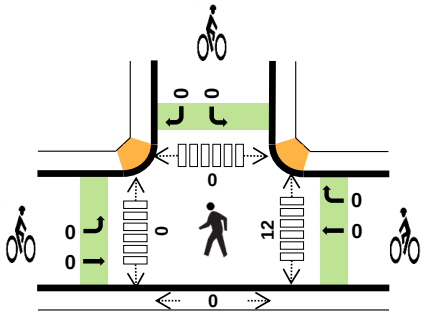
Interval Start	Willow Ave			Willow Ave			Palm Ave			Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**
Count Total	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

I-80 & SR-4 Ramps
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	12.2%	0.88
WB	15.1%	0.78
NB	-	-
SB	3.2%	0.93
TOTAL	6.3%	0.90

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				I-80 & SR-4 Ramps Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	23	38	0	0	0	44	6	0	0	0	0	0	14	0	77	202	0
7:15 AM		0	19	36	0	0	0	49	4	0	0	0	0	0	18	0	97	223	0
7:30 AM		0	14	35	0	0	0	33	7	0	0	0	0	0	9	0	110	208	0
7:45 AM		**0**	**14**	**37**	**0**	**0**	**0**	**40**	**3**	**0**	**0**	**0**	**0**	**1**	**27**	**0**	**183**	**305**	938
8:00 AM		**0**	**14**	**28**	**0**	**0**	**0**	**39**	**4**	**0**	**0**	**0**	**0**	**1**	**35**	**0**	**191**	**312**	1,048
8:15 AM		**1**	**12**	**37**	**0**	**0**	**0**	**55**	**4**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**198**	**345**	1,170
8:30 AM		**0**	**12**	**25**	**0**	**0**	**0**	**37**	**3**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**172**	**282**	**1,244**
8:45 AM		0	7	27	0	1	0	27	1	0	0	0	0	0	18	0	176	257	1,196
Count Total		1	115	263	0	1	0	324	32	0	0	0	0	2	192	0	1,204	2,134	0
Peak Hour	**All**	**1**	**52**	**127**	**0**	**0**	**0**	**171**	**14**	**0**	**0**	**0**	**0**	**2**	**133**	**0**	**744**	**1,244**	**0**
	HV	**0**	**0**	**22**	**0**	**0**	**0**	**25**	**3**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**17**	**78**	**0**
	HV%	**0%**	**0%**	**17%**	**-**	**-**	**-**	**15%**	**21%**	**-**	**-**	**-**	**-**	**0%**	**8%**	**-**	**2%**	**6%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	6	0	4	*14*	0	0	0	0	*0*	2	0	0	0	*2*
7:15 AM	6	6	0	7	*19*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	5	8	0	8	*21*	0	0	0	0	*0*	3	0	0	0	*3*
7:45 AM	**6**	**4**	**0**	**9**	***19***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	*2*
8:00 AM	**7**	**10**	**0**	**6**	***23***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	*3*
8:15 AM	**6**	**8**	**0**	**7**	***21***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**0**	*4*
8:30 AM	**3**	**6**	**0**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	***3***
8:45 AM	6	8	0	4	*18*	0	0	0	0	*0*	3	0	0	0	*3*
Count Total	43	56	0	51	*150*	0	0	0	0	*0*	20	0	0	0	*20*
Peak Hr	**22**	**28**	**0**	**28**	***78***	**0**	**0**	**0**	**0**	***0***	**12**	**0**	**0**	**0**	***12***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				I-80 & SR-4 Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	4	0	0	0	5	1	0	0	0	0	0	1	0	3	14	0
7:15 AM	0	0	6	0	0	0	6	0	0	0	0	0	0	2	0	5	19	0
7:30 AM	0	0	5	0	0	0	7	1	0	0	0	0	0	1	0	7	21	0
7:45 AM	**0**	**0**	**6**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**6**	**19**	73
8:00 AM	**0**	**0**	**7**	**0**	**0**	**0**	**9**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**23**	82
8:15 AM	**0**	**0**	**6**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**21**	84
8:30 AM	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**15**	**78**
8:45 AM	0	0	6	0	0	0	7	1	0	0	0	0	0	1	0	3	18	77
Count Total	0	0	43	0	0	0	50	6	0	0	0	0	0	16	0	35	150	0
Peak Hour	**0**	**0**	**22**	**0**	**0**	**0**	**25**	**3**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**17**	**78**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			I-80 & SR-4 Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

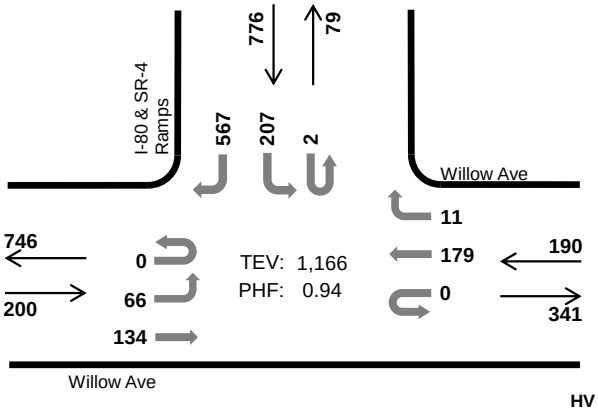
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

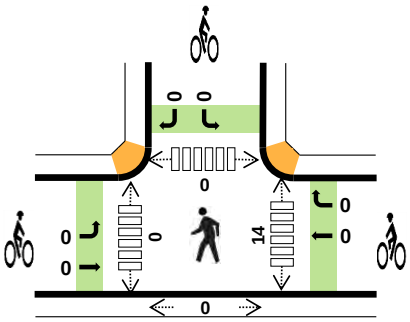
I-80 & SR-4 Ramps
Willow Ave

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM

N

Peak Hour





	HV %:	PHF
EB	11.0%	0.81
WB	12.1%	0.78
NB	-	-
SB	1.4%	0.92
TOTAL	4.8%	0.94

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				I-80 & SR-4 Ramps Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	6	28	0	0	0	26	5	0	0	0	0	0	46	0	134	245	0
4:15 PM		0	23	37	0	0	0	40	3	0	0	0	0	1	44	0	141	289	0
4:30 PM		0	17	32	0	0	0	33	3	0	0	0	0	0	45	0	146	276	0
4:45 PM		0	16	30	0	0	0	42	4	0	0	0	0	0	43	0	145	280	1,090
5:00 PM		**0**	**29**	**33**	**0**	**0**	**0**	**35**	**1**	**0**	**0**	**0**	**0**	**0**	**38**	**0**	**149**	**285**	1,130
5:15 PM		**0**	**7**	**32**	**0**	**0**	**0**	**36**	**3**	**0**	**0**	**0**	**0**	**0**	**50**	**0**	**147**	**275**	1,116
5:30 PM		**0**	**19**	**33**	**0**	**0**	**0**	**57**	**4**	**0**	**0**	**0**	**0**	**1**	**58**	**0**	**123**	**295**	1,135
5:45 PM		**0**	**11**	**36**	**0**	**0**	**0**	**51**	**3**	**0**	**0**	**0**	**0**	**1**	**61**	**0**	**148**	**311**	**1,166**
Count Total		0	128	261	0	0	0	320	26	0	0	0	0	3	385	0	1,133	2,256	0
Peak Hour	**All**	**0**	**66**	**134**	**0**	**0**	**0**	**179**	**11**	**0**	**0**	**0**	**0**	**2**	**207**	**0**	**567**	**1,166**	**0**
	HV	**0**	**0**	**22**	**0**	**0**	**0**	**21**	**2**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**1**	**56**	**0**
	HV%	**-**	**0%**	**16%**	**-**	**-**	**-**	**12%**	**18%**	**-**	**-**	**-**	**-**	**0%**	**5%**	**-**	**0%**	**5%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	3	5	0	4	*12*	0	0	0	0	*0*	6	1	0	0	*7*
4:15 PM	9	6	0	3	*18*	0	0	0	0	*0*	4	0	0	0	*4*
4:30 PM	5	5	0	2	*12*	0	0	0	0	*0*	2	1	0	0	*3*
4:45 PM	5	8	0	3	*16*	0	0	0	0	*0*	4	0	0	0	*4*
5:00 PM	**5**	**7**	**0**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	*3*
5:15 PM	**6**	**2**	**0**	**2**	***10***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	*3*
5:30 PM	**3**	**8**	**0**	**4**	***15***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**0**	*4*
5:45 PM	**8**	**6**	**0**	**2**	***16***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**0**	***4***
Count Total	44	47	0	23	*114*	0	0	0	0	*0*	30	2	0	0	*32*
Peak Hr	**22**	**23**	**0**	**11**	***56***	**0**	**0**	**0**	**0**	***0***	**14**	**0**	**0**	**0**	***14***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				I-80 & SR-4 Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	3	0	0	0	4	1	0	0	0	0	0	4	0	0	12	0
4:15 PM	0	0	9	0	0	0	6	0	0	0	0	0	0	1	0	2	18	0
4:30 PM	0	0	5	0	0	0	4	1	0	0	0	0	0	2	0	0	12	0
4:45 PM	0	0	5	0	0	0	7	1	0	0	0	0	0	3	0	0	16	58
5:00 PM	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**15**	61
5:15 PM	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**10**	53
5:30 PM	**0**	**0**	**3**	**0**	**0**	**0**	**7**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**15**	56
5:45 PM	**0**	**0**	**8**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**16**	**56**
Count Total	0	0	44	0	0	0	42	5	0	0	0	0	0	20	0	3	114	0
Peak Hour	**0**	**0**	**22**	**0**	**0**	**0**	**21**	**2**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**1**	**56**	**0**

Two-Hour Count Summaries - Bikes

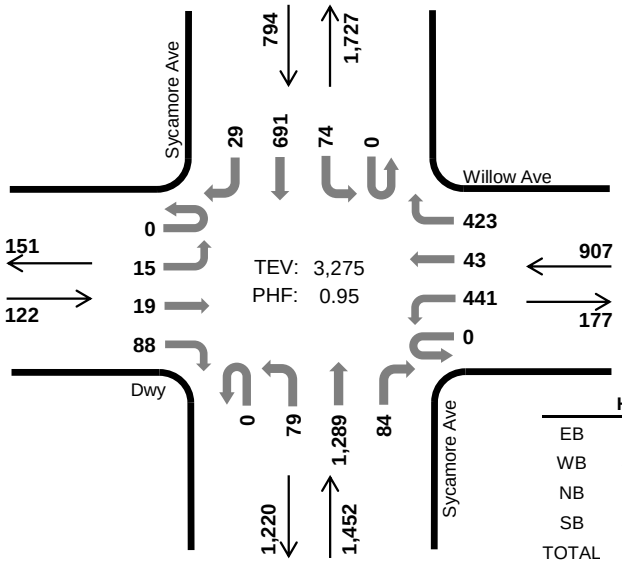
Interval Start	Willow Ave			Willow Ave			0			I-80 & SR-4 Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

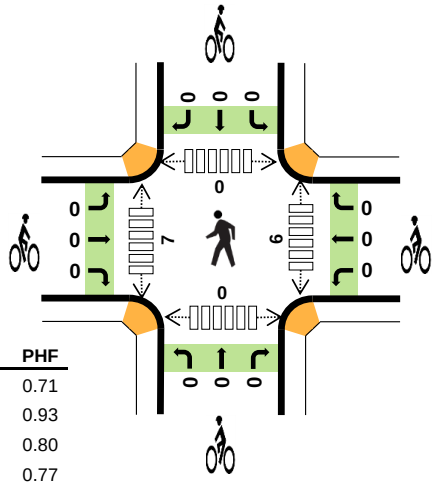
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sycamore Ave
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour





	HV %:	PHF
EB	0.0%	0.71
WB	4.9%	0.93
NB	2.2%	0.80
SB	3.4%	0.77
TOTAL	3.1%	0.95

Two-Hour Count Summaries

Interval Start		Dwy Eastbound UT	Dwy Eastbound LT	Dwy Eastbound TH	Dwy Eastbound RT	Willow Ave Westbound UT	Willow Ave Westbound LT	Willow Ave Westbound TH	Willow Ave Westbound RT	Sycamore Ave Northbound UT	Sycamore Ave Northbound LT	Sycamore Ave Northbound TH	Sycamore Ave Northbound RT	Sycamore Ave Southbound UT	Sycamore Ave Southbound LT	Sycamore Ave Southbound TH	Sycamore Ave Southbound RT	15-min Total	Rolling One Hour
7:00 AM		0	5	4	7	1	48	8	68	0	22	205	34	0	23	74	6	505	0
7:15 AM		0	7	6	14	0	70	11	71	0	15	244	28	0	23	81	9	579	0
7:30 AM		0	4	4	11	0	58	10	73	0	23	269	23	0	18	89	9	591	0
7:45 AM		**0**	**6**	**11**	**26**	**0**	**96**	**10**	**104**	**0**	**15**	**266**	**20**	**0**	**23**	**166**	**7**	**750**	2,425
8:00 AM		**0**	**3**	**3**	**25**	**0**	**116**	**15**	**105**	**0**	**14**	**285**	**18**	**0**	**19**	**236**	**3**	**842**	2,762
8:15 AM		**0**	**2**	**3**	**18**	**0**	**140**	**5**	**100**	**0**	**16**	**344**	**23**	**0**	**22**	**182**	**10**	**865**	3,048
8:30 AM		**0**	**4**	**2**	**19**	**0**	**89**	**13**	**114**	**0**	**34**	**394**	**23**	**0**	**10**	**107**	**9**	**818**	**3,275**
8:45 AM		0	4	4	14	0	86	9	103	0	15	266	12	0	18	85	4	620	3,145
Count Total		0	35	37	134	1	703	81	738	0	154	2,273	181	0	156	1,020	57	5,570	0
Peak Hour	**All**	**0**	**15**	**19**	**88**	**0**	**441**	**43**	**423**	**0**	**79**	**1,289**	**84**	**0**	**74**	**691**	**29**	**3,275**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**15**	**1**	**28**	**0**	**0**	**26**	**6**	**0**	**16**	**11**	**0**	**103**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**2%**	**7%**	**-**	**0%**	**2%**	**7%**	**-**	**22%**	**2%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	9	2	7	*20*	0	0	0	0	*0*	0	1	0	0	*1*
7:15 AM	0	11	6	9	*26*	0	0	0	0	*0*	1	1	0	0	*2*
7:30 AM	1	14	6	6	*27*	0	0	0	0	*0*	1	2	0	0	*3*
7:45 AM	**0**	**9**	**6**	**5**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**0**	**0**	***4***
8:00 AM	**0**	**13**	**7**	**8**	***28***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**0**	**0**	***3***
8:15 AM	**0**	**10**	**8**	**11**	***29***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***
8:30 AM	**0**	**12**	**11**	**3**	***26***	**0**	**0**	**0**	**0**	***0***	**2**	**3**	**0**	**0**	***5***
8:45 AM	0	8	6	11	*25*	0	0	0	0	*0*	1	2	0	0	*3*
Count Total	3	86	52	60	*201*	0	0	0	0	*0*	9	13	0	0	*22*
Peak Hour	**0**	**44**	**32**	**27**	***103***	**0**	**0**	**0**	**0**	***0***	**6**	**7**	**0**	**0**	***13***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dwy				Willow Ave				Sycamore Ave				Sycamore Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	1	0	2	0	7	0	1	1	0	0	4	2	1	20	0
7:15 AM	0	0	0	0	0	3	1	7	0	0	4	2	0	5	4	0	26	0
7:30 AM	0	1	0	0	0	7	0	7	0	0	6	0	0	4	2	0	27	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**5**	**0**	**0**	**4**	**2**	**0**	**4**	**1**	**0**	**20**	93
8:00 AM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**7**	**0**	**0**	**6**	**1**	**0**	**6**	**2**	**0**	**28**	101
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**8**	**0**	**0**	**6**	**2**	**0**	**5**	**6**	**0**	**29**	104
8:30 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**8**	**0**	**0**	**10**	**1**	**0**	**1**	**2**	**0**	**26**	**103**
8:45 AM	0	0	0	0	0	3	0	5	0	1	5	0	0	6	5	0	25	108
Count Total	0	2	0	1	0	30	2	54	0	2	42	8	0	35	24	1	201	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**15**	**1**	**28**	**0**	**0**	**26**	**6**	**0**	**16**	**11**	**0**	**103**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Dwy			Willow Ave			Sycamore Ave			Sycamore Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

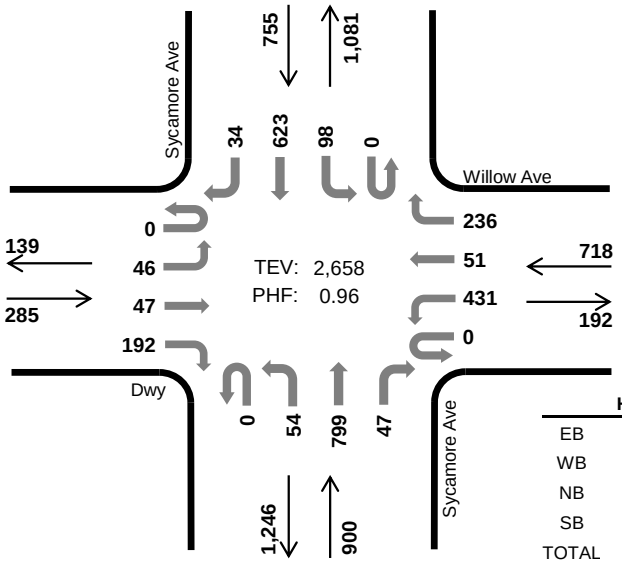
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Sycamore Ave
Willow Ave

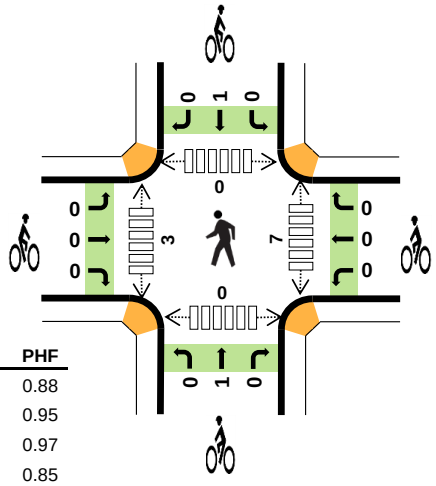
Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

N

Peak Hour



	HV %:	PHF
EB	0.4%	0.88
WB	2.9%	0.95
NB	2.0%	0.97
SB	2.6%	0.85
TOTAL	2.3%	0.96



Two-Hour Count Summaries

Interval Start		Dwy				Willow Ave				Sycamore Ave				Sycamore Ave				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	12	8	29	0	98	9	49	0	16	219	14	0	17	142	11	624	0
4:15 PM		0	13	14	28	0	117	16	57	0	6	195	15	0	30	151	7	649	0
4:30 PM		**0**	**14**	**11**	**48**	**0**	**121**	**16**	**52**	**0**	**15**	**204**	**7**	**0**	**29**	**134**	**8**	**659**	0
4:45 PM		**0**	**12**	**14**	**45**	**0**	**115**	**10**	**59**	**0**	**12**	**198**	**11**	**0**	**19**	**138**	**9**	**642**	2,574
5:00 PM		**0**	**9**	**10**	**41**	**0**	**107**	**13**	**60**	**0**	**13**	**199**	**19**	**0**	**31**	**185**	**7**	**694**	2,644
5:15 PM		**0**	**11**	**12**	**58**	**0**	**88**	**12**	**65**	**0**	**14**	**198**	**10**	**0**	**19**	**166**	**10**	**663**	**2,658**
5:30 PM		0	8	15	27	0	123	13	53	0	19	182	22	0	15	148	10	635	2,634
5:45 PM		0	10	9	41	0	121	13	50	0	17	182	18	0	20	147	12	640	2,632
Count Total		0	89	93	317	0	890	102	445	0	112	1,577	116	0	180	1,211	74	5,206	0
Peak Hour	**All**	**0**	**46**	**47**	**192**	**0**	**431**	**51**	**236**	**0**	**54**	**799**	**47**	**0**	**98**	**623**	**34**	**2,658**	**0**
	HV	**0**	**0**	**0**	**1**	**0**	**5**	**0**	**16**	**0**	**0**	**14**	**4**	**0**	**16**	**4**	**0**	**60**	**0**
	HV%	**-**	**0%**	**0%**	**1%**	**-**	**1%**	**0%**	**7%**	**-**	**0%**	**2%**	**9%**	**-**	**16%**	**1%**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	4	6	4	*14*	0	0	0	1	*1*	2	4	0	0	*6*
4:15 PM	0	7	3	9	*19*	0	0	0	0	*0*	3	2	0	0	*5*
4:30 PM	**0**	**5**	**7**	**6**	***18***	**0**	**0**	**0**	**0**	***0***	**1**	**2**	**0**	**0**	*3*
4:45 PM	**0**	**7**	**5**	**6**	***18***	**0**	**0**	**1**	**0**	***1***	**1**	**0**	**0**	**0**	*1*
5:00 PM	**1**	**6**	**4**	**4**	***15***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
5:15 PM	**0**	**3**	**2**	**4**	***9***	**0**	**0**	**0**	**1**	***1***	**4**	**1**	**0**	**0**	***5***
5:30 PM	0	6	2	2	*10*	0	0	0	0	*0*	2	1	0	0	*3*
5:45 PM	0	7	4	9	*20*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	1	45	33	44	*123*	0	0	1	2	*3*	15	10	0	0	*25*
Peak Hour	**1**	**21**	**18**	**20**	***60***	**0**	**0**	**1**	**1**	***2***	**7**	**3**	**0**	**0**	***10***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dwy				Willow Ave				Sycamore Ave				Sycamore Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	3	0	0	4	2	0	2	2	0	14	0
4:15 PM	0	0	0	0	0	2	0	5	0	0	0	3	0	6	3	0	19	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**7**	**0**	**0**	**4**	**2**	**0**	**18**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**4**	**1**	**0**	**4**	**2**	**0**	**18**	69
5:00 PM	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**4**	**0**	**0**	**3**	**1**	**0**	**4**	**0**	**0**	**15**	70
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**4**	**0**	**0**	**9**	**60**
5:30 PM	0	0	0	0	0	2	0	4	0	1	0	1	0	2	0	0	10	52
5:45 PM	0	0	0	0	0	2	0	5	0	0	1	3	0	6	3	0	20	54
Count Total	0	0	0	1	0	12	0	33	0	1	19	13	0	32	12	0	123	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**5**	**0**	**16**	**0**	**0**	**14**	**4**	**0**	**16**	**4**	**0**	**60**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Dwy			Willow Ave			Sycamore Ave			Sycamore Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	2
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	1	0	0	2	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**2**	**0**

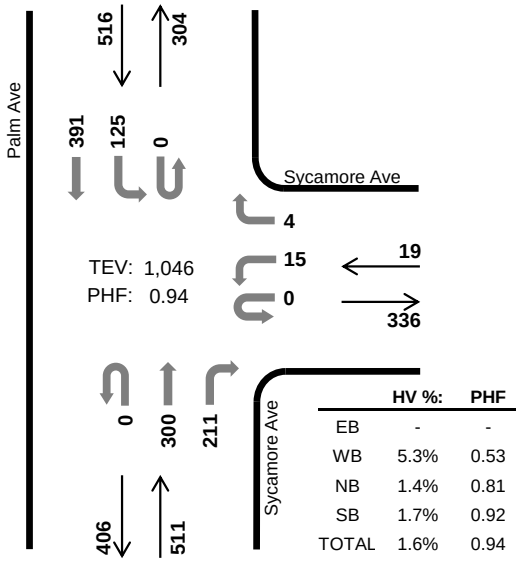
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Palm Ave
Sycamore Ave

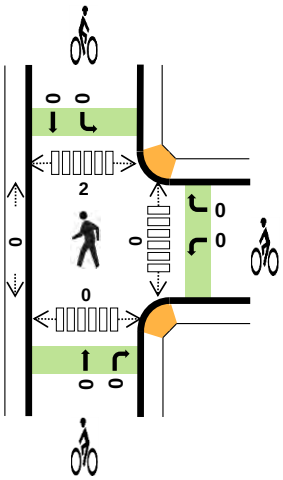
N

Peak Hour

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	5.3%	0.53
NB	1.4%	0.81
SB	1.7%	0.92
TOTAL	1.6%	0.94



Two-Hour Count Summaries

Interval Start	0 Eastbound UT	LT	TH	RT	Sycamore Ave Westbound UT	LT	TH	RT	Sycamore Ave Northbound UT	LT	TH	RT	Palm Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	0	0	0	0	0	0	0	0	42	57	0	39	38	0	176	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	42	57	0	28	43	0	171	0
7:30 AM	0	0	0	0	0	3	0	0	0	0	69	58	0	44	42	0	216	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**52**	**54**	**0**	**43**	**82**	**0**	**234**	797
8:00 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**61**	**52**	**0**	**28**	**112**	**0**	**257**	878
8:15 AM	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**1**	**0**	**0**	**86**	**49**	**0**	**28**	**106**	**0**	**278**	985
8:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**101**	**56**	**0**	**26**	**91**	**0**	**277**	**1,046**
8:45 AM	0	0	0	0	0	1	0	0	0	0	47	42	0	24	36	0	150	962
Count Total	0	0	0	0	0	19	0	4	1	0	500	425	0	260	550	0	1,759	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**4**	**0**	**0**	**300**	**211**	**0**	**125**	**391**	**0**	**1,046**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**2**	**0**	**1**	**8**	**0**	**17**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**7%**	**-**	**0%**	**-**	**-**	**2%**	**1%**	**-**	**1%**	**2%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	0	0	0	1	*1*	0	1	0	1	*2*	0	0	0	0	*0*
7:15 AM	0	0	2	3	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	1	*1*
7:45 AM	**0**	**1**	**3**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	*2*
8:00 AM	**0**	**0**	**2**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**0**	**2**	**2**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	0	1	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	1	12	14	*27*	0	1	0	1	*2*	0	0	2	1	*3*
Peak Hr	**0**	**1**	**7**	**9**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**2**	**0**	***2***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	0				Sycamore Ave				Sycamore Ave				Palm Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	0	5	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**8**	17
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**3**	19
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**4**	18
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**17**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	10
Count Total	0	0	0	0	0	1	0	0	0	0	8	4	0	1	13	0	27	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**5**	**2**	**0**	**1**	**8**	**0**	**17**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	0			Sycamore Ave			Sycamore Ave			Palm Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	1	0	0	2	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	1	0	0	0	0	0	1	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

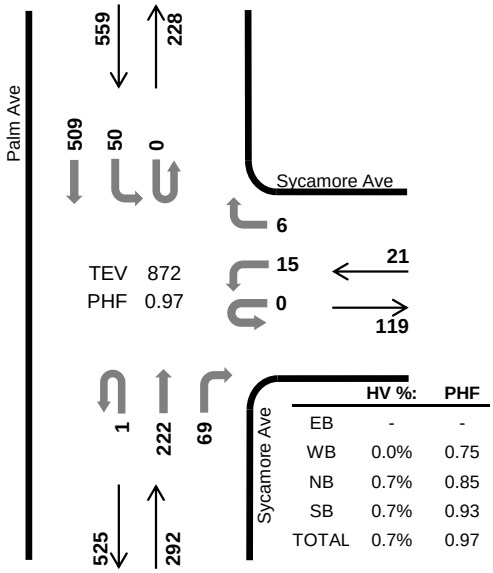
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Palm Ave
Sycamore Ave

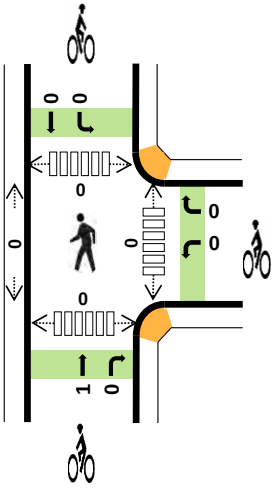
N

Peak Hour

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	-	-
WB	0.0%	0.75
NB	0.7%	0.85
SB	0.7%	0.93
TOTAL	0.7%	0.97



Two-Hour Count Summaries

Interval Start		0 Eastbound UT	LT	TH	RT	Sycamore Ave Westbound UT	LT	TH	RT	Sycamore Ave Northbound UT	LT	TH	RT	Palm Ave Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	0	0	0	0	1	0	0	0	0	69	14	0	18	78	0	180	0
4:15 PM		0	0	0	0	0	3	0	4	0	0	54	24	0	30	85	0	200	0
4:30 PM		0	0	0	0	0	0	0	3	0	0	53	13	0	24	93	0	186	0
4:45 PM		0	0	0	0	0	5	0	2	0	0	60	26	0	18	96	0	207	773
5:00 PM		**0**	**0**	**0**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**66**	**20**	**0**	**13**	**114**	**0**	**218**	811
5:15 PM		**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**44**	**19**	**0**	**16**	**132**	**0**	**214**	825
5:30 PM		**0**	**0**	**0**	**0**	**0**	**5**	**0**	**2**	**1**	**0**	**54**	**12**	**0**	**13**	**138**	**0**	**225**	864
5:45 PM		**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**58**	**18**	**0**	**8**	**125**	**0**	**215**	**872**
Count Total		0	0	0	0	0	24	0	15	1	0	458	146	0	140	861	0	1,645	0
Peak Hour	**All**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**6**	**1**	**0**	**222**	**69**	**0**	**50**	**509**	**0**	**872**	**0**
	HV	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**4**	**0**	**6**	**0**
	HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**-**	**1%**	**0%**	**-**	**0%**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	0	0	2	1	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	1	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	2	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	3	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	**0**	**0**	**0**	**2**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**0**	**0**	**0**	**1**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:45 PM	**0**	**0**	**1**	**1**	***2***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***
Count Total	0	0	10	7	*17*	0	0	1	0	*1*	0	0	0	0	*0*
Peak Hr	**0**	**0**	**2**	**4**	***6***	**0**	**0**	**1**	**0**	***1***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	0				Sycamore Ave				Sycamore Ave				Palm Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	3	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	3	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3	11
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	10
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	8
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	7
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**2**	**6**
Count Total	0	0	0	0	0	0	0	0	0	0	6	4	0	1	6	0	17	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**4**	**0**	**6**	**0**

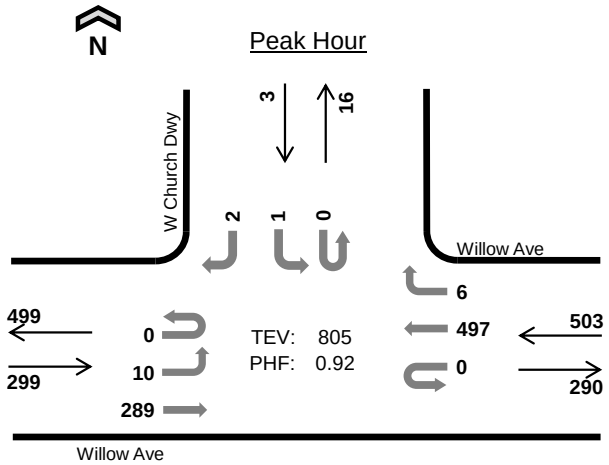
Two-Hour Count Summaries - Bikes

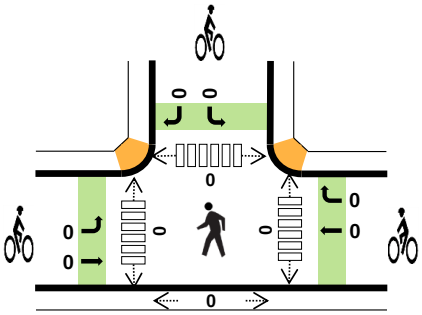
Interval Start	0			Sycamore Ave			Sycamore Ave			Palm Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

W Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.0%	0.67
WB	1.4%	0.90
NB	-	-
SB	0.0%	0.38
TOTAL	2.0%	0.92

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				W Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	1	34	0	0	0	83	0	0	0	0	0	0	0	0	2	120	0
7:15 AM		0	0	43	0	0	0	94	0	0	0	0	0	0	0	0	0	137	0
7:30 AM		0	1	70	0	0	0	101	1	0	0	0	0	0	0	0	0	173	0
7:45 AM		**0**	**2**	**53**	**0**	**0**	**0**	**138**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**195**	625
8:00 AM		**0**	**2**	**44**	**0**	**0**	**0**	**134**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**183**	688
8:15 AM		**0**	**4**	**83**	**0**	**0**	**0**	**119**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**208**	759
8:30 AM		**0**	**2**	**109**	**0**	**0**	**0**	**106**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**219**	**805**
8:45 AM		0	1	47	0	0	0	56	0	0	0	0	0	0	0	0	0	104	714
Count Total		0	13	483	0	0	0	831	7	0	0	0	0	0	1	0	4	1,339	0
Peak Hour	**All**	**0**	**10**	**289**	**0**	**0**	**0**	**497**	**6**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**805**	**0**
	HV	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**
	HV%	**-**	**0%**	**3%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**3**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	16	13	0	0	*29*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**9**	**7**	**0**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				W Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	17
8:15 AM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**16**
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	12
Count Total	0	0	16	0	0	0	13	0	0	0	0	0	0	0	0	0	29	0
Peak Hour	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			W Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

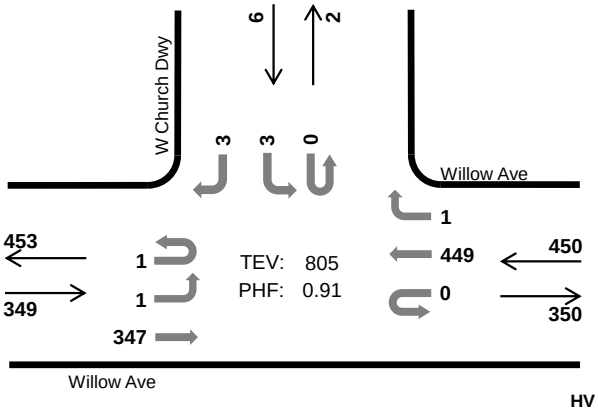
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

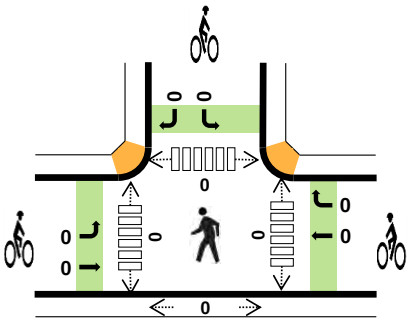
W Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

N

Peak Hour





	HV %:	PHF
EB	2.9%	0.94
WB	1.1%	0.88
NB	-	-
SB	0.0%	0.75
TOTAL	1.9%	0.91

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				W Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	105	0	0	0	77	1	0	0	0	0	0	0	0	0	183	0
4:15 PM		0	1	91	0	0	0	101	0	0	0	0	0	0	0	0	0	193	0
4:30 PM		0	0	86	0	0	0	99	0	0	0	0	0	0	0	0	2	187	0
4:45 PM		**0**	**0**	**84**	**0**	**0**	**0**	**104**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**189**	752
5:00 PM		**0**	**1**	**90**	**0**	**0**	**0**	**108**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**201**	770
5:15 PM		**0**	**0**	**81**	**0**	**0**	**0**	**109**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**193**	770
5:30 PM		**1**	**0**	**92**	**0**	**0**	**0**	**128**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**222**	**805**
5:45 PM		0	3	88	0	0	0	91	1	0	0	0	0	0	1	0	1	185	801
Count Total		1	5	717	0	0	0	817	3	0	0	0	0	0	4	0	6	1,553	0
Peak Hour	**All**	**1**	**1**	**347**	**0**	**0**	**0**	**449**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**3**	**805**	**0**
	HV	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**
	HV%	**0%**	**0%**	**3%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**4**	**1**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	3	1	0	0	*4*	1	0	0	0	*1*	0	0	0	0	*0*
Count Total	21	12	0	0	*33*	1	0	0	0	*1*	0	0	0	0	*0*
Peak Hr	**10**	**5**	**0**	**0**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				W Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
4:15 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
4:30 PM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	19
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	19
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	18
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**15**
5:45 PM	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	4	14
Count Total	0	1	20	0	0	0	12	0	0	0	0	0	0	0	0	0	33	0
Peak Hour	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**

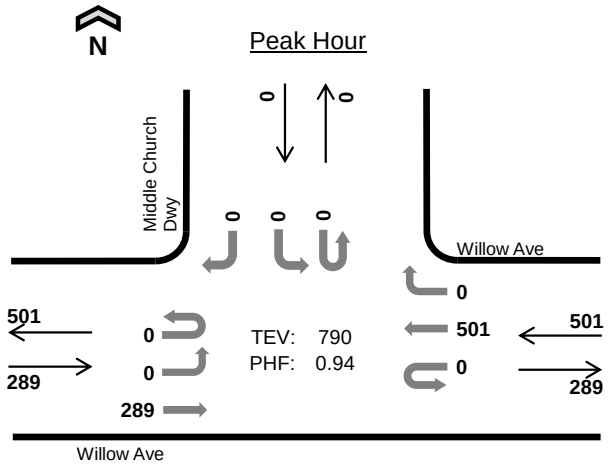
Two-Hour Count Summaries - Bikes

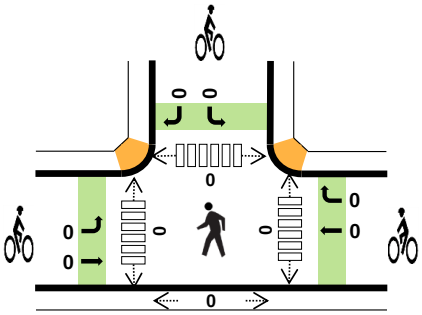
Interval Start	Willow Ave			Willow Ave			0			W Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Middle Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.1%	0.66
WB	1.4%	0.88
NB	-	-
SB	-	-
TOTAL	2.0%	0.94

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				Middle Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	34	0	0	0	81	0	0	0	0	0	0	0	0	0	115	0
7:15 AM		0	0	42	0	0	0	98	0	0	0	0	0	0	0	0	0	140	0
7:30 AM		0	0	72	0	0	0	101	0	0	0	0	0	0	0	0	0	173	0
7:45 AM		**0**	**0**	**51**	**0**	**0**	**0**	**136**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**187**	615
8:00 AM		**0**	**0**	**45**	**0**	**0**	**0**	**143**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**188**	688
8:15 AM		**0**	**0**	**83**	**0**	**0**	**0**	**121**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**204**	752
8:30 AM		**0**	**0**	**110**	**0**	**0**	**0**	**101**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**211**	**790**
8:45 AM		0	0	48	0	0	0	56	0	0	0	0	0	0	0	0	0	104	707
Count Total		0	0	485	0	0	0	837	0	0	0	0	0	0	0	0	0	1,322	0
Peak Hour	**All**	**0**	**0**	**289**	**0**	**0**	**0**	**501**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**790**	**0**
	HV	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**
	HV%	**-**	**-**	**3%**	**-**	**-**	**-**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**3**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	16	16	0	0	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**9**	**7**	**0**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				Middle Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	17
8:15 AM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**16**
8:45 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	15
Count Total	0	0	16	0	0	0	16	0	0	0	0	0	0	0	0	0	32	0
Peak Hour	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**

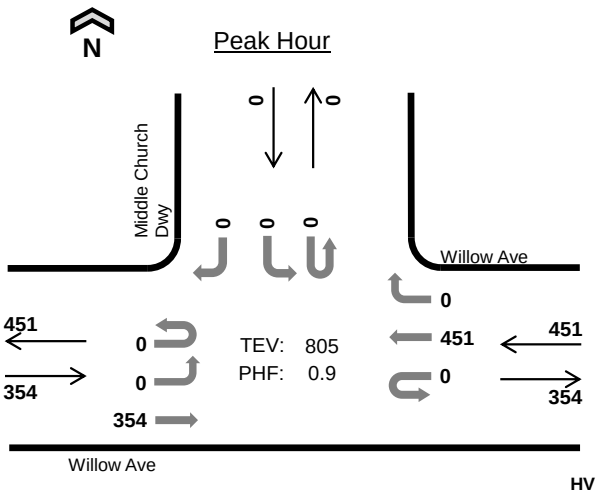
Two-Hour Count Summaries - Bikes

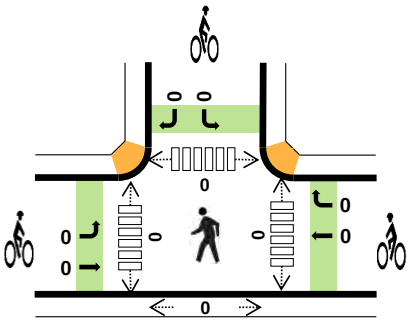
Interval Start	Willow Ave			Willow Ave			0			Middle Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Middle Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM





	HV %:	PHF
EB	2.8%	0.93
WB	1.1%	0.87
NB	-	-
SB	-	-
TOTAL	1.9%	0.90

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				Middle Church Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	103	0	0	0	81	0	0	0	0	0	0	0	0	0	184	0
4:15 PM		0	0	91	0	0	0	97	0	0	0	0	0	0	0	0	0	188	0
4:30 PM		0	0	86	0	0	0	100	0	0	0	0	0	0	0	0	0	186	0
4:45 PM		**0**	**0**	**87**	**0**	**0**	**0**	**103**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**190**	748
5:00 PM		**0**	**0**	**92**	**0**	**0**	**0**	**111**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**203**	767
5:15 PM		**0**	**0**	**80**	**0**	**0**	**0**	**108**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**188**	767
5:30 PM		**0**	**0**	**95**	**0**	**0**	**0**	**129**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**224**	**805**
5:45 PM		0	0	87	0	0	0	91	0	0	0	0	0	0	0	0	0	178	793
Count Total		0	0	721	0	0	0	820	0	0	0	0	0	0	0	0	0	1,541	0
Peak Hour	**All**	**0**	**0**	**354**	**0**	**0**	**0**	**451**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**805**	**0**
	HV	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**
	HV%	**-**	**-**	**3%**	**-**	**-**	**-**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**4**	**1**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	2	1	0	0	*3*	1	0	0	0	*1*	0	0	0	0	*0*
Count Total	20	12	0	0	*32*	1	0	0	0	*1*	0	0	0	0	*0*
Peak Hr	**10**	**5**	**0**	**0**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				Middle Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0
4:15 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	19
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	18
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	18
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**15**
5:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	13
Count Total	0	0	20	0	0	0	12	0	0	0	0	0	0	0	0	0	32	0
Peak Hour	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**

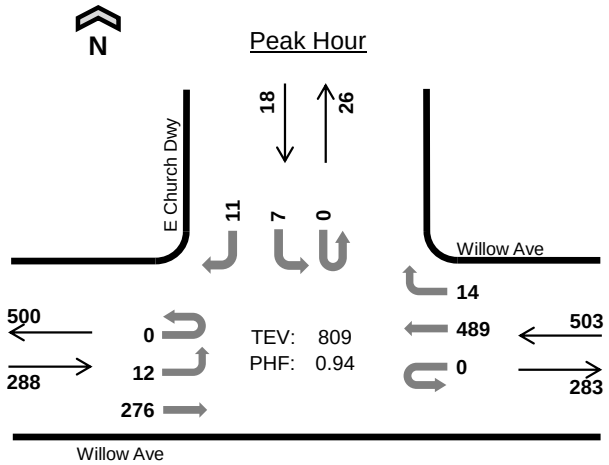
Two-Hour Count Summaries - Bikes

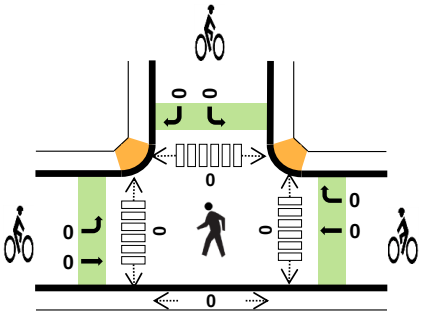
Interval Start	Willow Ave			Willow Ave			0			Middle Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

E Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.1%	0.65
WB	1.4%	0.88
NB	-	-
SB	0.0%	0.50
TOTAL	2.0%	0.94

Two-Hour Count Summaries

Interval Start	Willow Ave Eastbound UT	LT	TH	RT	Willow Ave Westbound UT	LT	TH	RT	0 Northbound UT	LT	TH	RT	E Church Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
7:00 AM	0	0	34	0	0	0	81	2	0	0	0	0	0	0	0	0	117	0
7:15 AM	0	2	40	0	0	0	100	0	0	0	0	0	0	2	0	0	144	0
7:30 AM	0	1	71	0	0	0	99	0	0	0	0	0	0	1	0	1	173	0
7:45 AM	**0**	**1**	**51**	**0**	**0**	**0**	**135**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**192**	626
8:00 AM	**0**	**2**	**42**	**0**	**0**	**0**	**141**	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**191**	700
8:15 AM	**0**	**5**	**77**	**0**	**0**	**0**	**122**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**211**	767
8:30 AM	**0**	**4**	**106**	**0**	**0**	**0**	**91**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**7**	**215**	**809**
8:45 AM	0	4	43	0	0	0	54	3	0	0	0	0	0	4	0	3	111	728
Count Total	0	19	464	0	0	0	823	19	0	0	0	0	0	14	0	15	1,354	0
Peak Hour All	**0**	**12**	**276**	**0**	**0**	**0**	**489**	**14**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**11**	**809**	**0**
Peak Hour HV	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**
Peak Hour HV%	**-**	**0%**	**3%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	2	1	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**3**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**3**	**2**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	16	16	0	0	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hr	**9**	**7**	**0**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				E Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	5	0
7:30 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	17
8:15 AM	**0**	**0**	**3**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	17
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**16**
8:45 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	15
Count Total	0	0	16	0	0	0	16	0	0	0	0	0	0	0	0	0	32	0
Peak Hour	**0**	**0**	**9**	**0**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			E Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

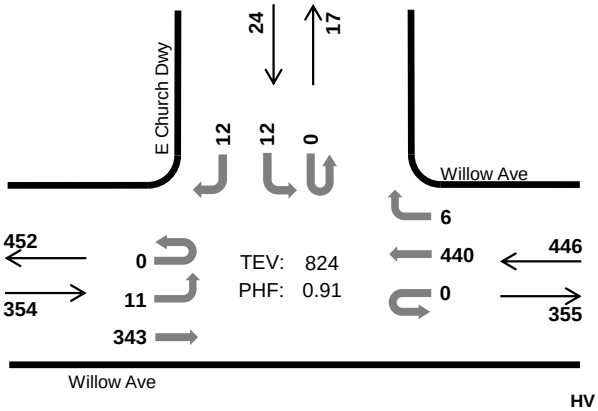
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

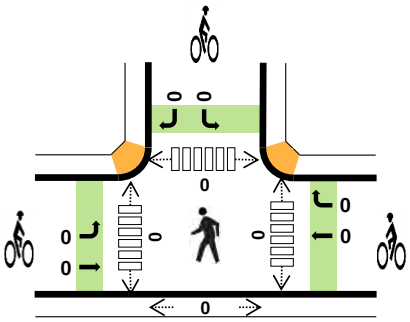
E Church Dwy
Willow Ave

Date: 11-29-2017
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

N

Peak Hour





	HV %:	PHF
EB	2.8%	0.93
WB	1.1%	0.88
NB	-	-
SB	0.0%	0.86
TOTAL	1.8%	0.91

Two-Hour Count Summaries

Interval Start		Willow Ave Eastbound UT	LT	TH	RT	Willow Ave Westbound UT	LT	TH	RT	0 Northbound UT	LT	TH	RT	E Church Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
4:00 PM		0	2	101	0	0	0	80	2	0	0	0	0	0	5	0	1	191	0
4:15 PM		0	1	90	0	0	0	98	1	0	0	0	0	0	1	0	1	192	0
4:30 PM		0	4	82	0	0	0	99	1	0	0	0	0	0	2	0	1	189	0
4:45 PM		**0**	**2**	**85**	**0**	**0**	**0**	**99**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**193**	765
5:00 PM		**0**	**5**	**85**	**0**	**0**	**0**	**108**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**206**	780
5:15 PM		**0**	**3**	**79**	**0**	**0**	**0**	**107**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**1**	**199**	787
5:30 PM		**0**	**1**	**94**	**0**	**0**	**0**	**126**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**226**	**824**
5:45 PM		0	2	84	0	1	0	91	0	0	0	0	0	0	0	0	0	178	809
Count Total		0	20	700	0	1	0	808	10	0	0	0	0	0	20	0	15	1,574	0
Peak Hour	**All**	**0**	**11**	**343**	**0**	**0**	**0**	**440**	**6**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**12**	**824**	**0**
	HV	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**
	HV%	**-**	**0%**	**3%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
4:00 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	2	2	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	**4**	**1**	**0**	**0**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**3**	**1**	**0**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:30 PM	**2**	**1**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:45 PM	2	1	0	0	*3*	1	0	0	0	*1*	0	0	0	0	*0*
Count Total	20	12	0	0	*32*	1	0	0	0	*1*	0	0	0	0	*0*
Peak Hr	**10**	**5**	**0**	**0**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				E Church Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0
4:15 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0
4:30 PM	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	0
4:45 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	19
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	18
5:15 PM	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	18
5:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**15**
5:45 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	13
Count Total	0	0	20	0	0	0	12	0	0	0	0	0	0	0	0	0	32	0
Peak Hour	**0**	**0**	**10**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			E Church Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Existing Conditions Turning Movement Volumes

Sunday Counts at Intersections 4, 8, 9 & 10

Palm Ave / Willow Ave (#4)

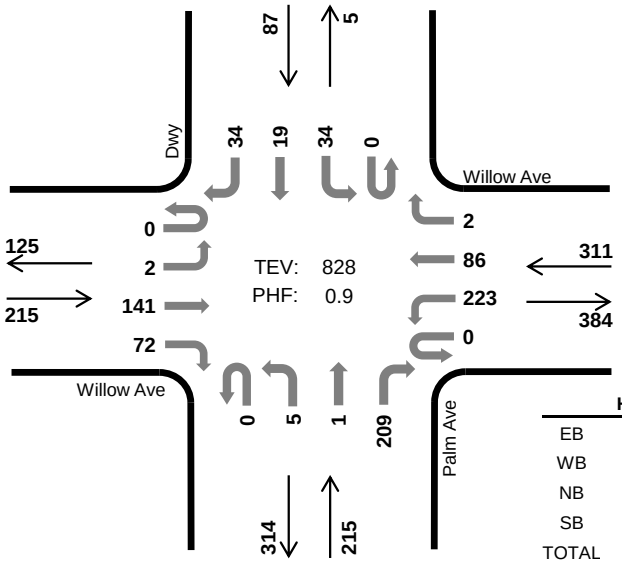
Church Driveways (#8 to #10)

Palm Ave
Willow Ave

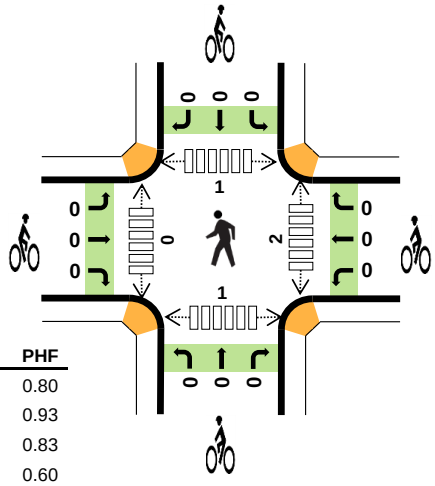
Date: 12-03-2017
Count Period: 8:00 AM to 1:00 PM
Peak Hour: 10:30 AM to 11:30 AM

N

Peak Hour



	HV %:	PHF
EB	0.0%	0.80
WB	1.0%	0.93
NB	0.0%	0.83
SB	0.0%	0.60
TOTAL	0.4%	0.90



Five-Hour Count Summaries

Interval Start		Willow Ave Eastbound UT	LT	TH	RT	Willow Ave Westbound UT	LT	TH	RT	Palm Ave Northbound UT	LT	TH	RT	Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
10:30 AM		0	0	23	18	0	57	27	0	0	2	0	46	0	14	4	13	204	0
10:45 AM		0	0	54	13	0	50	29	0	0	0	0	49	0	14	6	16	231	0
11:00 AM		0	1	39	18	0	51	18	1	0	3	0	62	0	6	3	3	205	0
11:15 AM		0	1	25	23	0	65	12	1	0	0	1	52	0	0	6	2	188	828
Peak Hour	All	0	2	141	72	0	223	86	2	0	5	1	209	0	34	19	34	828	0
	HV	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	0%	-	0%	3%	0%	-	0%	0%	0%	-	0%	0%	0%	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
10:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	1	0	*1*
10:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	1	*1*
11:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
11:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	2	0	0	0	*2*
Peak Hour	0	3	0	0	*3*	0	0	0	0	*0*	2	0	1	1	*4*

Five-Hour Count Summaries

Interval Start	Willow Ave Eastbound				Willow Ave Westbound				Palm Ave Northbound				Dwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	13	6	0	16	2	0	0	0	0	23	0	1	0	0	61	0
8:15 AM	0	1	17	7	0	37	7	0	0	1	0	26	0	0	0	0	96	0
8:30 AM	0	0	29	5	0	28	4	0	0	0	0	38	0	0	0	0	104	0
8:45 AM	0	1	32	6	0	30	7	1	1	1	0	45	0	0	0	0	124	385
9:00 AM	0	1	43	10	0	33	6	0	0	3	0	57	0	0	0	0	153	477
9:15 AM	0	0	16	15	0	28	9	0	0	3	0	65	0	1	0	0	137	518
9:30 AM	0	0	16	14	0	50	11	0	0	0	0	52	0	0	0	0	143	557
9:45 AM	0	1	11	12	0	32	7	0	0	2	0	43	0	0	0	0	108	541
10:00 AM	0	0	13	17	0	42	11	0	0	1	0	40	0	2	0	0	126	514
10:15 AM	0	0	7	17	0	52	5	1	0	2	0	44	0	0	1	1	130	507
10:30 AM	**0**	**0**	**23**	**18**	**0**	**57**	**27**	**0**	**0**	**2**	**0**	**46**	**0**	**14**	**4**	**13**	**204**	568
10:45 AM	**0**	**0**	**54**	**13**	**0**	**50**	**29**	**0**	**0**	**0**	**0**	**49**	**0**	**14**	**6**	**16**	**231**	691
11:00 AM	**0**	**1**	**39**	**18**	**0**	**51**	**18**	**1**	**0**	**3**	**0**	**62**	**0**	**6**	**3**	**3**	**205**	770
11:15 AM	**0**	**1**	**25**	**23**	**0**	**65**	**12**	**1**	**0**	**0**	**1**	**52**	**0**	**0**	**6**	**2**	**188**	**828**
11:30 AM	0	0	17	21	1	51	6	0	0	1	0	49	0	0	0	0	146	770
11:45 AM	0	0	19	14	0	47	8	0	0	0	0	44	0	5	1	2	140	679
12:00 PM	0	0	22	31	0	49	13	0	0	1	0	35	0	1	0	0	152	626
12:15 PM	0	0	20	28	0	62	19	0	0	2	0	44	0	0	0	0	175	613
12:30 PM	0	0	17	19	0	73	19	0	0	1	0	43	0	21	5	12	210	677
12:45 PM	0	0	12	24	0	72	39	0	0	3	0	51	0	20	13	17	251	788
Count Total	0	6	445	318	1	925	259	4	1	26	1	908	0	85	39	66	3,084	0
Peak Hour All	**0**	**2**	**141**	**72**	**0**	**223**	**86**	**2**	**0**	**5**	**1**	**209**	**0**	**34**	**19**	**34**	**828**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**3%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**0%**	**0%**	**0%**	**0%**	**0**

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	1	1	*2*
8:45 AM	0	0	0	0	*0*	0	0	1	0	*1*	0	0	0	0	*0*
9:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
9:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:45 AM	0	0	2	0	*2*	0	0	1	0	*1*	0	0	0	0	*0*
10:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
10:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
10:30 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
10:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
11:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**0**	***2***
11:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
12:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
12:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:45 PM	1	0	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	3	14	3	0	*20*	0	0	2	0	*2*	2	0	2	2	*6*
Peak Hour	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**1**	***4***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				Palm Ave				Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	6
10:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
12:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	3
12:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	5
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	7
Count Total	0	0	2	1	0	4	10	0	0	0	0	3	0	0	0	0	20	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

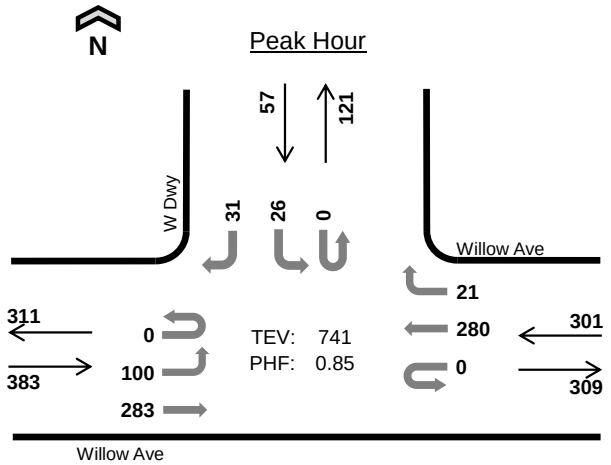
Five-Hour Count Summaries - Bikes

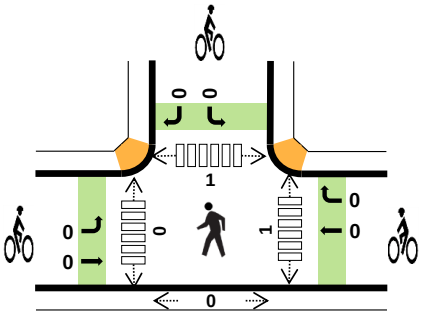
Interval Start	Willow Ave			Willow Ave			Palm Ave			Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	2	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

W Dwy
Willow Ave

Date: 12-03-2017
Count Period: 8:00 AM to 1:00 PM
Peak Hour: 10:30 AM to 11:30 AM





	HV %:	PHF
EB	0.0%	0.79
WB	1.0%	0.92
NB	-	-
SB	0.0%	0.43
TOTAL	0.4%	0.85

Five-Hour Count Summaries

Interval Start		Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				W Dwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
10:30 AM		0	13	65	0	0	0	82	0	0	0	0	0	0	9	0	6	175	0
10:45 AM		0	44	77	0	0	0	54	9	0	0	0	0	0	12	0	21	217	0
11:00 AM		0	27	79	0	0	0	66	8	0	0	0	0	0	3	0	4	187	0
11:15 AM		0	16	62	0	0	0	78	4	0	0	0	0	0	2	0	0	162	741
Peak Hour	All	0	100	283	0	0	0	280	21	0	0	0	0	0	26	0	31	741	0
	HV	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	-	1%	0%	-	-	-	-	-	0%	-	0%	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
10:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	1	0	1	0	*2*
10:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
11:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	0	0	*3*	0	0	0	0	*0*	1	0	1	0	*2*

Five-Hour Count Summaries

Interval Start	Willow Ave				Willow Ave				0				W Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	14	22	0	0	0	18	11	0	0	0	0	0	0	0	0	65	0
8:15 AM	0	13	32	0	0	0	43	3	0	0	0	0	0	1	0	1	93	0
8:30 AM	0	21	42	0	0	0	33	5	0	0	0	0	0	0	0	0	101	0
8:45 AM	0	37	45	0	0	0	38	10	0	0	0	0	0	0	0	0	130	389
9:00 AM	0	38	61	0	0	0	35	8	0	0	0	0	0	0	0	4	146	470
9:15 AM	0	12	71	0	0	0	36	3	0	0	0	0	0	1	0	1	124	501
9:30 AM	0	6	60	0	0	0	60	1	0	0	0	0	0	0	0	1	128	528
9:45 AM	0	3	52	0	0	0	39	1	0	0	0	0	0	1	0	0	96	494
10:00 AM	0	3	51	0	0	0	53	0	0	0	0	0	0	0	0	0	107	455
10:15 AM	0	4	48	0	0	0	55	0	0	0	0	0	0	0	0	4	111	442
10:30 AM	**0**	**13**	**65**	**0**	**0**	**0**	**82**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**6**	**175**	489
10:45 AM	**0**	**44**	**77**	**0**	**0**	**0**	**54**	**9**	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**21**	**217**	610
11:00 AM	**0**	**27**	**79**	**0**	**0**	**0**	**66**	**8**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**187**	690
11:15 AM	**0**	**16**	**62**	**0**	**0**	**0**	**78**	**4**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**162**	**741**
11:30 AM	0	3	65	0	0	0	58	0	0	0	0	0	0	0	0	1	127	693
11:45 AM	0	4	62	0	0	0	54	1	0	0	0	0	0	2	0	1	124	600
12:00 PM	0	2	58	0	0	0	62	0	0	0	0	0	0	0	0	1	123	536
12:15 PM	0	1	59	0	0	0	82	0	0	0	0	0	0	1	0	0	143	517
12:30 PM	0	2	81	0	0	0	82	0	0	0	0	0	0	10	0	10	185	575
12:45 PM	0	2	81	0	0	0	81	2	0	0	0	0	0	22	0	28	216	667
Count Total	0	265	1,173	0	0	0	1,109	66	0	0	0	0	0	64	0	83	2,760	0
Peak Hour All	**0**	**100**	**283**	**0**	**0**	**0**	**280**	**21**	**0**	**0**	**0**	**0**	**0**	**26**	**0**	**31**	**741**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**0**

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	9	0	0	0	*9*
8:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	0	0	0	*0*	1	0	0	0	*1*	5	0	0	0	*5*
9:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
9:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:45 AM	2	0	0	0	*2*	1	0	0	0	*1*	0	0	0	0	*0*
10:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
10:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
10:30 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	*2*
10:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
11:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
12:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
12:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	5	14	0	0	*19*	2	0	0	0	*2*	15	0	1	0	*16*
Peak Hr	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	***2***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				W Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
9:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
10:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
12:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3
12:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	5	0	0	0	14	0	0	0	0	0	0	0	0	0	19	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			W Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	0	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

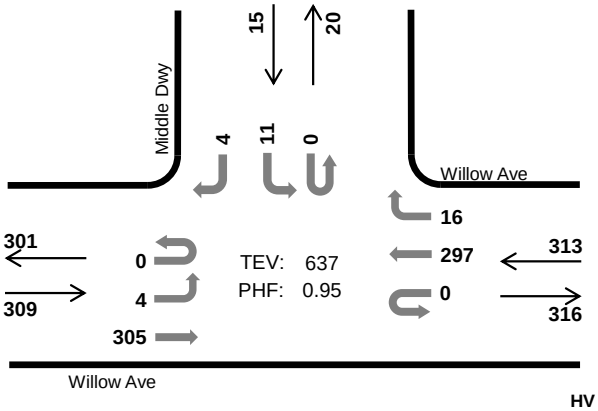
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

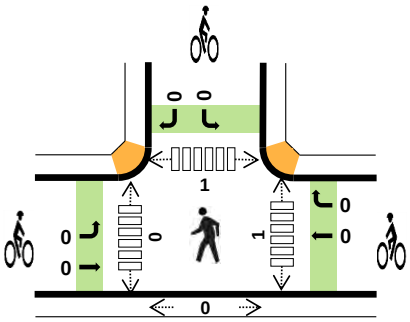
Middle Dwy
Willow Ave

Date: 12-03-2017
Count Period: 8:00 AM to 1:00 PM
Peak Hour: 10:30 AM to 11:30 AM

N

Peak Hour





	HV %:	PHF
EB	0.0%	0.86
WB	1.0%	0.94
NB	-	-
SB	0.0%	0.47
TOTAL	0.5%	0.95

Five-Hour Count Summaries

Interval Start		Willow Ave Eastbound UT	LT	TH	RT	Willow Ave Westbound UT	LT	TH	RT	0 Northbound UT	LT	TH	RT	Middle Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
10:30 AM		0	1	71	0	0	0	80	3	0	0	0	0	0	2	0	2	159	0
10:45 AM		0	2	88	0	0	0	62	7	0	0	0	0	0	7	0	1	167	0
11:00 AM		0	1	82	0	0	0	74	5	0	0	0	0	0	2	0	1	165	0
11:15 AM		0	0	64	0	0	0	81	1	0	0	0	0	0	0	0	0	146	637
Peak Hour	All	0	4	305	0	0	0	297	16	0	0	0	0	0	11	0	4	637	0
	HV	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	-	-	1%	0%	-	-	-	-	-	0%	-	0%	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
10:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	1	0	*1*
10:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	1	0	0	0	*1*
11:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	0	0	*3*	0	0	0	0	*0*	1	0	1	0	*2*

Five-Hour Count Summaries

Interval Start	Willow Ave Eastbound				Willow Ave Westbound				0 Northbound				Middle Dwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	22	0	0	0	29	0	0	0	0	0	0	0	0	0	51	0
8:15 AM	0	1	32	0	0	0	46	3	0	0	0	0	0	0	0	0	82	0
8:30 AM	0	2	40	0	0	0	37	2	0	0	0	0	0	0	0	0	81	0
8:45 AM	0	0	45	0	0	0	48	6	0	0	0	0	0	0	0	0	99	313
9:00 AM	0	1	60	0	0	0	41	7	0	0	0	0	0	0	0	2	111	373
9:15 AM	0	0	71	0	0	0	38	1	0	0	0	0	0	1	0	1	112	403
9:30 AM	0	0	60	0	0	0	61	0	0	0	0	0	0	1	0	0	122	444
9:45 AM	0	0	54	0	0	0	39	0	0	0	0	0	0	0	0	0	93	438
10:00 AM	0	0	51	0	0	0	54	1	0	0	0	0	0	0	0	0	106	433
10:15 AM	0	1	48	0	0	0	55	0	0	0	0	0	0	0	0	0	104	425
10:30 AM	**0**	**1**	**71**	**0**	**0**	**0**	**80**	**3**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**159**	462
10:45 AM	**0**	**2**	**88**	**0**	**0**	**0**	**62**	**7**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**1**	**167**	536
11:00 AM	**0**	**1**	**82**	**0**	**0**	**0**	**74**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**165**	595
11:15 AM	**0**	**0**	**64**	**0**	**0**	**0**	**81**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**146**	**637**
11:30 AM	0	0	65	0	0	0	57	1	0	0	0	0	0	0	0	1	124	602
11:45 AM	0	0	63	0	0	0	55	0	0	0	0	0	0	0	0	0	118	553
12:00 PM	0	0	58	0	0	0	61	0	0	0	0	0	0	1	0	1	121	509
12:15 PM	0	0	61	0	0	0	82	0	0	0	0	0	0	0	0	0	143	506
12:30 PM	0	0	89	0	0	0	82	2	0	0	0	0	0	3	0	1	177	559
12:45 PM	0	1	104	0	0	0	82	1	0	0	0	0	0	6	0	1	195	636
Count Total	0	10	1,228	0	0	0	1,164	40	0	0	0	0	0	23	0	11	2,476	0
Peak Hour All	**0**	**4**	**305**	**0**	**0**	**0**	**297**	**16**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**4**	**637**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**0**

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	0	0	0	*0*	1	0	0	0	*1*	0	0	0	0	*0*
9:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
9:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:45 AM	2	0	0	0	*2*	1	0	0	0	*1*	0	0	0	0	*0*
10:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
10:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
10:30 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
10:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
11:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
11:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
12:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
12:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	5	14	0	0	*19*	2	0	0	0	*2*	1	0	1	0	*2*
Peak Hr	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**1**	**0**	***2***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				Middle Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
9:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
10:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
12:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3
12:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	5	0	0	0	14	0	0	0	0	0	0	0	0	0	19	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

Five-Hour Count Summaries - Bikes

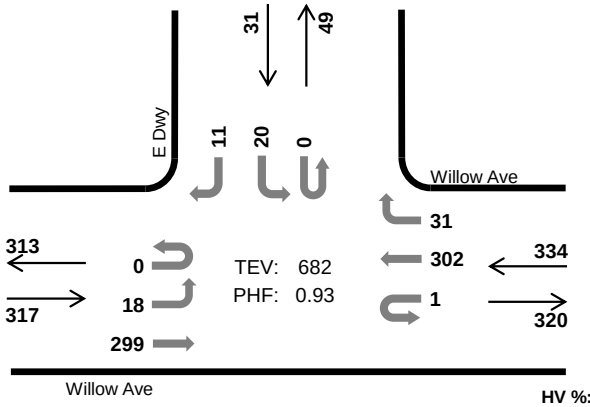
Interval Start	Willow Ave			Willow Ave			0			Middle Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	0	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

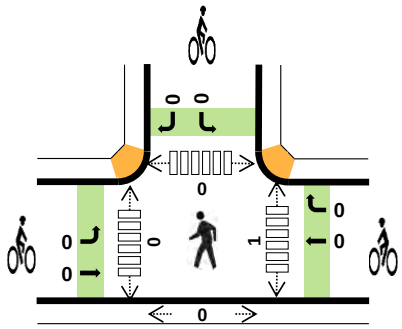
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

E Dwy
Willow Ave

Peak Hour

Date: 12-03-2017
Count Period: 8:00 AM to 1:00 PM
Peak Hour: 10:30 AM to 11:30 AM





	HV %:	PHF
EB	0.0%	0.85
WB	0.9%	0.92
NB	-	-
SB	0.0%	0.48
TOTAL	0.4%	0.93

Five-Hour Count Summaries

Interval Start		Willow Ave Eastbound UT	LT	TH	RT	Willow Ave Westbound UT	LT	TH	RT	0 Northbound UT	LT	TH	RT	E Dwy Southbound UT	LT	TH	RT	15-min Total	Rolling One Hour
10:30 AM		0	4	73	0	0	0	78	5	0	0	0	0	0	3	0	4	167	0
10:45 AM		0	6	87	0	0	0	66	8	0	0	0	0	0	13	0	3	183	0
11:00 AM		0	6	76	0	1	0	73	12	0	0	0	0	0	3	0	4	175	0
11:15 AM		0	2	63	0	0	0	85	6	0	0	0	0	0	1	0	0	157	682
Peak Hour	All	0	18	299	0	1	0	302	31	0	0	0	0	0	20	0	11	682	0
	HV	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0
	HV%	-	0%	0%	-	0%	-	1%	0%	-	-	-	-	-	0%	-	0%	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
10:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	1	0	0	0	*1*
10:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
11:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	0	0	*3*	0	0	0	0	*0*	1	0	0	0	*1*

Five-Hour Count Summaries

Interval Start	Willow Ave				Willow Ave				0				E Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	1	22	0	0	0	31	8	0	0	0	0	0	0	0	0	62	0
8:15 AM	0	0	31	0	0	0	46	3	0	0	0	0	0	0	0	0	80	0
8:30 AM	0	0	42	0	0	0	40	5	0	0	0	0	0	0	0	0	87	0
8:45 AM	0	3	40	0	0	0	53	9	0	0	0	0	0	0	0	1	106	335
9:00 AM	0	11	50	0	0	0	47	9	0	0	0	0	0	1	0	0	118	391
9:15 AM	0	5	67	0	0	0	40	9	0	0	0	0	0	2	0	0	123	434
9:30 AM	1	1	59	0	0	0	60	2	0	0	0	0	0	0	0	0	123	470
9:45 AM	0	0	54	0	0	0	39	1	0	0	0	0	0	1	0	0	95	459
10:00 AM	0	0	51	0	0	0	55	2	0	0	0	0	0	0	0	0	108	449
10:15 AM	0	0	47	0	0	0	57	3	0	0	0	0	0	0	0	0	107	433
10:30 AM	**0**	**4**	**73**	**0**	**0**	**0**	**78**	**5**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**167**	477
10:45 AM	**0**	**6**	**87**	**0**	**0**	**0**	**66**	**8**	**0**	**0**	**0**	**0**	**0**	**13**	**0**	**3**	**183**	565
11:00 AM	**0**	**6**	**76**	**0**	**1**	**0**	**73**	**12**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**4**	**175**	632
11:15 AM	**0**	**2**	**63**	**0**	**0**	**0**	**85**	**6**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**157**	**682**
11:30 AM	0	0	64	0	0	0	55	1	0	0	0	0	0	2	0	0	122	637
11:45 AM	0	1	64	0	0	0	54	0	0	0	0	0	0	1	0	0	120	574
12:00 PM	0	0	59	0	0	0	60	0	0	0	0	0	0	0	0	0	119	518
12:15 PM	0	1	61	0	0	0	88	0	0	0	0	0	0	0	0	0	150	511
12:30 PM	0	0	93	0	0	0	72	0	0	0	0	0	0	4	0	6	175	564
12:45 PM	0	1	105	0	0	0	74	0	0	0	0	0	0	24	0	10	214	658
Count Total	1	42	1,208	0	1	0	1,173	83	0	0	0	0	0	55	0	28	2,591	0
Peak Hour All	**0**	**18**	**299**	**0**	**1**	**0**	**302**	**31**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**11**	**682**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**-**	**0%**	**-**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**0%**	**0%**	**0**

Note: Five-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	0	0	0	0	*0*	1	0	0	0	*1*	0	0	0	0	*0*
9:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
9:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
9:45 AM	2	0	0	0	*2*	1	0	0	0	*1*	0	0	0	0	*0*
10:00 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
10:15 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
10:30 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	*1*
10:45 AM	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:00 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
11:15 AM	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
11:30 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
11:45 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
12:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
12:30 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
12:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	5	14	0	0	*19*	2	0	0	0	*2*	1	0	0	0	*1*
Peak Hr	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***

Five-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Ave				Willow Ave				0				E Dwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
9:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
9:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	4
9:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
10:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	4
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	2
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
12:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	3
12:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	5
12:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	5	0	0	0	14	0	0	0	0	0	0	0	0	0	19	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

Five-Hour Count Summaries - Bikes

Interval Start	Willow Ave			Willow Ave			0			E Dwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	1
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
10:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
11:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	0	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Appendix B

Existing Conditions LOS Analysis

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	114	0	62	101	0	200	25	383	55	139	285	55
Future Vol, veh/h	114	0	62	101	0	200	25	383	55	139	285	55
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	67	109	0	215	27	412	59	149	306	59
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	15.8	17.4	21.5	17.1
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	70%	0%	0%	0%	100%	0%	0%	100%	63%
Vol Right, %	0%	0%	30%	0%	100%	0%	0%	100%	0%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	255	183	114	62	101	0	200	139	190	150
LT Vol	25	0	0	114	0	101	0	0	139	0	0
Through Vol	0	255	128	0	0	0	0	0	0	190	95
RT Vol	0	0	55	0	62	0	0	200	0	0	55
Lane Flow Rate	27	275	196	123	67	109	0	215	149	204	161
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.067	0.643	0.448	0.333	0.158	0.282	0	0.485	0.37	0.477	0.365
Departure Headway (Hd)	8.944	8.429	8.211	9.767	8.544	9.338	8.83	8.12	8.917	8.402	8.137
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	401	428	438	368	419	386	0	443	404	429	442
Service Time	6.694	6.178	5.961	7.525	6.302	7.089	6.582	5.871	6.668	6.152	5.887
HCM Lane V/C Ratio	0.067	0.643	0.447	0.334	0.16	0.282	0	0.485	0.369	0.476	0.364
HCM Control Delay	12.3	25.2	17.5	17.4	12.9	15.7	11.6	18.3	16.8	18.6	15.5
HCM Lane LOS	B	D	C	C	B	C	N	C	C	C	C
HCM 95th-tile Q	0.2	4.4	2.3	1.4	0.6	1.1	0	2.6	1.7	2.5	1.6

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	201	229	0	0	455
Future Vol, veh/h	73	201	229	0	0	455
Peak Hour Factor	0.75	0.75	0.61	0.61	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	268	375	0	0	506
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	13	18.9	11.5
HCM LOS	B	C	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	229	73	201	228	228
LT Vol	0	73	0	0	0
Through Vol	229	0	0	228	228
RT Vol	0	0	201	0	0
Lane Flow Rate	375	97	268	253	253
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.63	0.195	0.446	0.436	0.312
Departure Headway (Hd)	6.039	7.208	5.988	6.206	4.443
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	597	497	600	579	804
Service Time	4.087	4.962	3.741	3.959	2.195
HCM Lane V/C Ratio	0.628	0.195	0.447	0.437	0.315
HCM Control Delay	18.9	11.7	13.5	13.7	9.2
HCM Lane LOS	C	B	B	B	A
HCM 95th-tile Q	4.4	0.7	2.3	2.2	1.3

Intersection	
Intersection Delay, s/veh	24.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	49	110	401	96	0	56	0	247	1	1	0
Future Vol, veh/h	1	49	110	401	96	0	56	0	247	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	60	134	441	105	0	77	0	338	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.3	33.7	17.9	10.3
HCM LOS	B	D	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	1%	81%	50%
Vol Thru, %	0%	31%	19%	50%
Vol Right, %	82%	69%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	303	160	497	2
LT Vol	56	1	401	1
Through Vol	0	49	96	1
RT Vol	247	110	0	0
Lane Flow Rate	415	195	546	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.638	0.308	0.859	0.016
Departure Headway (Hd)	5.53	5.674	5.659	7.161
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	648	628	639	503
Service Time	3.604	3.758	3.721	5.161
HCM Lane V/C Ratio	0.64	0.311	0.854	0.016
HCM Control Delay	17.9	11.3	33.7	10.3
HCM Lane LOS	C	B	D	B
HCM 95th-tile Q	4.6	1.3	9.7	0

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	127	171	14	133	0
Future Vol, veh/h	52	127	171	14	133	0
Peak Hour Factor	0.88	0.88	0.78	0.78	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	144	219	18	143	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	9.1	9.7	9.5
HCM LOS	A	A	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	92%	0%
Vol Right, %	0%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	127	185	133
LT Vol	52	0	0	133
Through Vol	0	127	171	0
RT Vol	0	0	14	0
Lane Flow Rate	59	144	237	143
Geometry Grp	7	7	5	2
Degree of Util (X)	0.092	0.205	0.304	0.205
Departure Headway (Hd)	5.616	5.113	4.615	5.162
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	638	701	778	694
Service Time	3.353	2.85	2.65	3.205
HCM Lane V/C Ratio	0.092	0.205	0.305	0.206
HCM Control Delay	8.9	9.2	9.7	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.8	1.3	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	19	88	431	51	236	54	799	47	98	623	34
Future Volume (vph)	15	19	88	431	51	236	54	799	47	98	623	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.90	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1823	1543	3433	1575	1475	1770	5037		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1823	1543	3433	1575	1475	1770	5037		1770	3539	1550
Peak-hour factor, PHF	0.71	0.71	0.71	0.93	0.93	0.93	0.80	0.80	0.80	0.77	0.77	0.77
Adj. Flow (vph)	21	27	124	463	55	254	68	999	59	127	809	44
RTOR Reduction (vph)	0	0	114	0	73	120	0	6	0	0	0	23
Lane Group Flow (vph)	0	48	10	463	86	30	68	1052	0	127	809	21
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		8.1	8.1	20.2	20.2	20.2	7.7	43.3		11.4	47.0	47.0
Effective Green, g (s)		8.1	8.1	20.2	20.2	20.2	7.7	43.3		11.4	47.0	47.0
Actuated g/C Ratio		0.08	0.08	0.20	0.20	0.20	0.08	0.43		0.11	0.47	0.47
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		147	124	693	318	297	136	2181		201	1663	728
v/s Ratio Prot		c0.03		c0.13	0.05		0.04	0.21		c0.07	c0.23	
v/s Ratio Perm			0.01			0.02						0.01
v/c Ratio		0.33	0.08	0.67	0.27	0.10	0.50	0.48		0.63	0.49	0.03
Uniform Delay, d1		43.4	42.5	36.8	33.7	32.5	44.3	20.3		42.3	18.2	14.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.3	0.3	2.4	0.5	0.2	2.9	0.8		6.3	1.0	0.1
Delay (s)		44.7	42.8	39.3	34.1	32.7	47.2	21.1		48.6	19.2	14.3
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		43.3			36.9			22.7			22.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	21.2
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	391	15	4	300	211
Future Vol, veh/h	125	391	15	4	300	211
Peak Hour Factor	0.92	0.92	0.53	0.53	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	425	28	8	370	260
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	25.3	10.1	18.2
HCM LOS	D	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	79%
Vol Thru, %	0%	0%	24%	21%
Vol Right, %	0%	100%	76%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	300	211	516	19
LT Vol	300	0	0	15
Through Vol	0	0	125	4
RT Vol	0	211	391	0
Lane Flow Rate	370	260	561	36
Geometry Grp	7	7	2	2
Degree of Util (X)	0.686	0.394	0.799	0.065
Departure Headway (Hd)	6.665	5.449	5.129	6.575
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	544	659	712	543
Service Time	4.401	3.185	3.129	4.633
HCM Lane V/C Ratio	0.68	0.395	0.788	0.066
HCM Control Delay	22.8	11.7	25.3	10.1
HCM Lane LOS	C	B	D	B
HCM 95th-tile Q	5.2	1.9	8.2	0.2

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	289	497	6	1	2
Future Vol, veh/h	10	289	497	6	1	2
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	90	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	431	552	7	3	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	579	0	-	0	1041	579
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	995	-	-	-	255	515
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	976	-	-	-	240	504
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	540	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	976	-	-	-	369
HCM Lane V/C Ratio	0.015	-	-	-	0.021
HCM Control Delay (s)	8.7	0	-	-	15
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	289	501	0	0	0
Future Vol, veh/h	0	289	501	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	66	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	438	569	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	441	6
Stage 1	-	-	3	-
Stage 2	-	-	438	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 510	1077
Stage 1	-	-	-	-
Stage 2	-	-	579	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	276	489	14	7	11
Future Vol, veh/h	12	276	489	14	7	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	65	65	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	425	556	16	14	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	572	0	-	0	1025	564
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	461	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1001	-	-	-	260	525
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1001	-	-	-	254	525
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	635	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1001	-	-	-	371
HCM Lane V/C Ratio	0.018	-	-	-	0.097
HCM Control Delay (s)	8.7	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	4	29	60	2	157	69	301	140	217	176	82
Future Vol, veh/h	56	4	29	60	2	157	69	301	140	217	176	82
Peak Hour Factor	0.89	0.89	0.89	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	4	33	72	2	189	75	327	152	244	198	92
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	12.7	14.7	16	16
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	42%	0%	12%	0%	100%	0%	0%	100%	42%
Vol Right, %	0%	0%	58%	0%	88%	0%	0%	100%	0%	0%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	201	240	56	33	60	2	157	217	117	141
LT Vol	69	0	0	56	0	60	0	0	217	0	0
Through Vol	0	201	100	0	4	0	2	0	0	117	59
RT Vol	0	0	140	0	29	0	0	157	0	0	82
Lane Flow Rate	75	218	261	63	37	72	2	189	244	132	158
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.166	0.451	0.51	0.158	0.082	0.175	0.006	0.395	0.539	0.273	0.309
Departure Headway (Hd)	7.952	7.446	7.033	9.06	7.945	8.734	8.23	7.523	7.962	7.455	7.042
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	451	484	512	395	450	410	434	477	454	481	509
Service Time	5.709	5.202	4.789	6.832	5.717	6.499	5.994	5.288	5.718	5.212	4.798
HCM Lane V/C Ratio	0.166	0.45	0.51	0.159	0.082	0.176	0.005	0.396	0.537	0.274	0.31
HCM Control Delay	12.3	16.2	16.9	13.5	11.4	13.4	11	15.2	19.7	13	12.9
HCM Lane LOS	B	C	C	B	B	B	B	C	C	B	B
HCM 95th-tile Q	0.6	2.3	2.9	0.6	0.3	0.6	0	1.9	3.1	1.1	1.3

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	267	216	265	0	0	287
Future Vol, veh/h	267	216	265	0	0	287
Peak Hour Factor	0.87	0.87	0.95	0.95	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	307	248	279	0	0	315
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	15	15	10.4
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	267	216	144	144
LT Vol	0	267	0	0	0
Through Vol	265	0	0	144	144
RT Vol	0	0	216	0	0
Lane Flow Rate	279	307	248	158	158
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.483	0.569	0.377	0.287	0.21
Departure Headway (Hd)	6.239	6.678	5.464	6.552	4.787
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	577	540	658	547	747
Service Time	4.283	4.418	3.203	4.303	2.536
HCM Lane V/C Ratio	0.484	0.569	0.377	0.289	0.212
HCM Control Delay	15	17.9	11.5	11.9	8.8
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	2.6	3.5	1.8	1.2	0.8

Intersection	
Intersection Delay, s/veh	19.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	137	181	374	69	0	14	0	219	4	1	0
Future Vol, veh/h	0	137	181	374	69	0	14	0	219	4	1	0
Peak Hour Factor	0.89	0.89	0.89	0.84	0.84	0.84	0.84	0.84	0.84	0.31	0.31	0.31
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	154	203	445	82	0	17	0	261	13	3	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.1	27.6	13.1	10.4
HCM LOS	B	D	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	84%	80%
Vol Thru, %	0%	43%	16%	20%
Vol Right, %	94%	57%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	233	318	443	5
LT Vol	14	0	374	4
Through Vol	0	137	69	1
RT Vol	219	181	0	0
Lane Flow Rate	277	357	527	16
Geometry Grp	1	1	1	1
Degree of Util (X)	0.437	0.524	0.807	0.032
Departure Headway (Hd)	5.674	5.282	5.511	7.211
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	630	679	654	500
Service Time	3.745	3.345	3.566	5.211
HCM Lane V/C Ratio	0.44	0.526	0.806	0.032
HCM Control Delay	13.1	14.1	27.6	10.4
HCM Lane LOS	B	B	D	B
HCM 95th-tile Q	2.2	3.1	8.2	0.1

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	0	66	134	179	11	209	0
Future Vol, veh/h	0	66	134	179	11	209	0
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	81	165	229	14	227	0
Number of Lanes	0	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	9.9	10.5	11.1
HCM LOS	A	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	94%	0%
Vol Right, %	0%	0%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	134	190	209
LT Vol	66	0	0	209
Through Vol	0	134	179	0
RT Vol	0	0	11	0
Lane Flow Rate	81	165	244	227
Geometry Grp	7	7	5	2
Degree of Util (X)	0.133	0.248	0.334	0.335
Departure Headway (Hd)	5.894	5.389	4.935	5.308
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	605	662	723	672
Service Time	3.665	3.16	3.003	3.378
HCM Lane V/C Ratio	0.134	0.249	0.337	0.338
HCM Control Delay	9.6	10	10.5	11.1
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.5	1	1.5	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	47	192	431	51	236	54	799	47	98	623	34
Future Volume (vph)	46	47	192	431	51	236	54	799	47	98	623	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.90	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1818	1546	3433	1576	1475	1770	5037		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1818	1546	3433	1576	1475	1770	5037		1770	3539	1550
Peak-hour factor, PHF	0.88	0.88	0.88	0.97	0.97	0.97	0.95	0.95	0.95	0.85	0.85	0.85
Adj. Flow (vph)	52	53	218	444	53	243	57	841	49	115	733	40
RTOR Reduction (vph)	0	0	197	0	80	114	0	6	0	0	0	22
Lane Group Flow (vph)	0	105	21	444	73	29	57	884	0	115	733	18
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		9.2	9.2	19.4	19.4	19.4	7.4	38.8		10.6	42.0	42.0
Effective Green, g (s)		9.2	9.2	19.4	19.4	19.4	7.4	38.8		10.6	42.0	42.0
Actuated g/C Ratio		0.10	0.10	0.20	0.20	0.20	0.08	0.41		0.11	0.44	0.44
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		176	149	701	321	301	137	2057		197	1564	685
v/s Ratio Prot		c0.06		c0.13	0.05		0.03	0.18		c0.06	c0.21	
v/s Ratio Perm			0.01			0.02						0.01
v/c Ratio		0.60	0.14	0.63	0.23	0.10	0.42	0.43		0.58	0.47	0.03
Uniform Delay, d1		41.1	39.3	34.5	31.6	30.7	41.7	20.2		40.1	18.6	15.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.92	0.92	1.00
Incremental Delay, d2		5.3	0.4	1.9	0.4	0.1	2.0	0.7		4.0	0.9	0.1
Delay (s)		46.5	39.7	36.4	31.9	30.8	43.8	20.8		40.7	18.0	15.0
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		41.9			34.4			22.2			20.8	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	509	15	6	223	69
Future Vol, veh/h	50	509	15	6	223	69
Peak Hour Factor	0.93	0.93	0.75	0.75	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	547	20	8	262	81
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	18.9	9.2	13.6
HCM LOS	C	A	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	71%
Vol Thru, %	0%	0%	9%	29%
Vol Right, %	0%	100%	91%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	223	69	559	21
LT Vol	223	0	0	15
Through Vol	0	0	50	6
RT Vol	0	69	509	0
Lane Flow Rate	262	81	601	28
Geometry Grp	7	7	2	2
Degree of Util (X)	0.478	0.12	0.737	0.046
Departure Headway (Hd)	6.553	5.338	4.416	5.9
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	554	675	811	608
Service Time	4.254	3.039	2.486	3.928
HCM Lane V/C Ratio	0.473	0.12	0.741	0.046
HCM Control Delay	15.1	8.8	18.9	9.2
HCM Lane LOS	C	A	C	A
HCM 95th-tile Q	2.6	0.4	6.7	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	347	449	1	3	3
Future Vol, veh/h	2	347	449	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	88	88	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	369	510	1	4	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	531	0	-	0	908	534
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	377	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1036	-	-	-	306	546
Stage 1	-	-	-	-	590	-
Stage 2	-	-	-	-	694	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1016	-	-	-	294	534
Mov Cap-2 Maneuver	-	-	-	-	294	-
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1016	-	-	-	379
HCM Lane V/C Ratio	0.002	-	-	-	0.021
HCM Control Delay (s)	8.6	0	-	-	14.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	354	451	0	0	0
Future Vol, veh/h	0	354	451	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	87	87	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	381	518	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	384	6
Stage 1	-	-	3	-
Stage 2	-	-	381	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	550	1077
Stage 1	-	-	-	-
Stage 2	-	-	613	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	343	440	6	12	11
Future Vol, veh/h	11	343	440	6	12	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	88	88	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	369	500	7	14	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	507	0	-	0	897	504
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	393	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1058	-	-	-	310	568
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	682	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1058	-	-	-	306	568
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1058	-	-	-	393
HCM Lane V/C Ratio	0.011	-	-	-	0.068
HCM Control Delay (s)	8.4	0	-	-	14.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Appendix C

Existing plus Project Conditions LOS Analysis

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	114	0	62	101	0	200	25	399	55	134	304	60
Future Vol, veh/h	114	0	62	101	0	200	25	399	55	134	304	60
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	67	109	0	215	27	429	59	144	327	65
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	16.1	17.9	23.1	17.9
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	71%	0%	0%	0%	100%	0%	0%	100%	63%
Vol Right, %	0%	0%	29%	0%	100%	0%	0%	100%	0%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	266	188	114	62	101	0	200	134	203	161
LT Vol	25	0	0	114	0	101	0	0	134	0	0
Through Vol	0	266	133	0	0	0	0	0	0	203	101
RT Vol	0	0	55	0	62	0	0	200	0	0	60
Lane Flow Rate	27	286	202	123	67	109	0	215	144	218	173
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.068	0.678	0.467	0.338	0.161	0.286	0	0.494	0.361	0.515	0.397
Departure Headway (Hd)	9.047	8.531	8.32	9.93	8.707	9.49	8.982	8.271	9.017	8.501	8.232
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	396	423	433	362	411	379	0	437	399	425	437
Service Time	6.8	6.284	6.072	7.694	6.47	7.247	6.739	6.028	6.769	6.252	5.984
HCM Lane V/C Ratio	0.068	0.676	0.467	0.34	0.163	0.288	0	0.492	0.361	0.513	0.396
HCM Control Delay	12.5	27.5	18.2	17.7	13.1	16	11.7	18.9	16.8	20	16.3
HCM Lane LOS	B	D	C	C	B	C	N	C	C	C	C
HCM 95th-tile Q	0.2	4.9	2.4	1.5	0.6	1.2	0	2.7	1.6	2.9	1.9

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	81	201	245	0	0	474
Future Vol, veh/h	81	201	245	0	0	474
Peak Hour Factor	0.75	0.75	0.61	0.61	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	268	402	0	0	527
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	13.4	21.3	12
HCM LOS	B	C	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	245	81	201	237	237
LT Vol	0	81	0	0	0
Through Vol	245	0	0	237	237
RT Vol	0	0	201	0	0
Lane Flow Rate	402	108	268	263	263
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.682	0.22	0.454	0.461	0.332
Departure Headway (Hd)	6.109	7.327	6.105	6.301	4.536
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	590	489	587	569	787
Service Time	4.163	5.088	3.865	4.061	2.295
HCM Lane V/C Ratio	0.681	0.221	0.457	0.462	0.334
HCM Control Delay	21.3	12.2	13.9	14.4	9.6
HCM Lane LOS	C	B	B	B	A
HCM 95th-tile Q	5.2	0.8	2.4	2.4	1.5

Intersection	
Intersection Delay, s/veh	39.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	100	110	421	139	0	56	0	256	1	1	0
Future Vol, veh/h	1	100	110	421	139	0	56	0	256	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	122	134	463	153	0	77	0	351	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.8	63.2	22	11
HCM LOS	B	F	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	0%	75%	50%
Vol Thru, %	0%	47%	25%	50%
Vol Right, %	82%	52%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	312	211	560	2
LT Vol	56	1	421	1
Through Vol	0	100	139	1
RT Vol	256	110	0	0
Lane Flow Rate	427	257	615	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.702	0.433	1.009	0.017
Departure Headway (Hd)	6.024	6.185	5.9	7.883
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	603	587	609	457
Service Time	4.024	4.185	3.99	5.883
HCM Lane V/C Ratio	0.708	0.438	1.01	0.018
HCM Control Delay	22	13.8	63.2	11
HCM Lane LOS	C	B	F	B
HCM 95th-tile Q	5.6	2.2	15.4	0.1

Intersection	
Intersection Delay, s/veh	25.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	100	110	421	139	0	56	0	256	1	1	0
Future Vol, veh/h	1	100	110	421	139	0	56	0	256	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	122	134	463	153	0	77	0	351	4	4	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	13.7	33.3	20.5	10.8
HCM LOS	B	D	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	18%	0%	100%	0%	50%
Vol Thru, %	0%	47%	0%	100%	50%
Vol Right, %	82%	52%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	312	211	421	139	2
LT Vol	56	1	421	0	1
Through Vol	0	100	0	139	1
RT Vol	256	110	0	0	0
Lane Flow Rate	427	257	463	153	8
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.684	0.433	0.874	0.267	0.017
Departure Headway (Hd)	5.765	6.051	6.803	6.294	7.619
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	624	592	532	568	473
Service Time	3.841	4.134	4.575	4.066	5.619
HCM Lane V/C Ratio	0.684	0.434	0.87	0.269	0.017
HCM Control Delay	20.5	13.7	40.5	11.4	10.8
HCM Lane LOS	C	B	E	B	B
HCM 95th-tile Q	5.3	2.2	9.6	1.1	0.1

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	159	214	14	152	0
Future Vol, veh/h	52	159	214	14	152	0
Peak Hour Factor	0.88	0.88	0.78	0.78	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	181	274	18	163	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	9.7	10.8	10.2
HCM LOS	A	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	94%	0%
Vol Right, %	0%	0%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	159	228	152
LT Vol	52	0	0	152
Through Vol	0	159	214	0
RT Vol	0	0	14	0
Lane Flow Rate	59	181	292	163
Geometry Grp	7	7	5	2
Degree of Util (X)	0.094	0.263	0.385	0.244
Departure Headway (Hd)	5.744	5.24	4.741	5.375
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	622	683	757	664
Service Time	3.498	2.994	2.791	3.439
HCM Lane V/C Ratio	0.095	0.265	0.386	0.245
HCM Control Delay	9.1	9.9	10.8	10.2
HCM Lane LOS	A	A	B	B
HCM 95th-tile Q	0.3	1.1	1.8	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	19	88	431	51	260	54	799	55	116	623	34
Future Volume (vph)	15	19	88	431	51	260	54	799	55	116	623	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.90	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1823	1543	3433	1567	1475	1770	5029		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1823	1543	3433	1567	1475	1770	5029		1770	3539	1550
Peak-hour factor, PHF	0.71	0.71	0.71	0.93	0.93	0.93	0.80	0.80	0.80	0.77	0.77	0.77
Adj. Flow (vph)	21	27	124	463	55	280	68	999	69	151	809	44
RTOR Reduction (vph)	0	0	114	0	83	129	0	7	0	0	0	23
Lane Group Flow (vph)	0	48	10	463	90	33	68	1061	0	151	809	21
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		8.1	8.1	20.2	20.2	20.2	7.7	42.1		12.6	47.0	47.0
Effective Green, g (s)		8.1	8.1	20.2	20.2	20.2	7.7	42.1		12.6	47.0	47.0
Actuated g/C Ratio		0.08	0.08	0.20	0.20	0.20	0.08	0.42		0.13	0.47	0.47
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		147	124	693	316	297	136	2117		223	1663	728
v/s Ratio Prot		c0.03		c0.13	0.06		0.04	0.21		c0.09	c0.23	
v/s Ratio Perm			0.01			0.02						0.01
v/c Ratio		0.33	0.08	0.67	0.28	0.11	0.50	0.50		0.68	0.49	0.03
Uniform Delay, d1		43.4	42.5	36.8	33.8	32.6	44.3	21.2		41.8	18.2	14.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.3	0.3	2.4	0.5	0.2	2.9	0.9		7.9	1.0	0.1
Delay (s)		44.7	42.8	39.3	34.3	32.7	47.2	22.1		49.7	19.2	14.3
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		43.3			36.9			23.6			23.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	131	397	15	4	309	211
Future Vol, veh/h	131	397	15	4	309	211
Peak Hour Factor	0.92	0.92	0.53	0.53	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	142	432	28	8	381	260
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	27.5	10.2	19.2
HCM LOS	D	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	79%
Vol Thru, %	0%	0%	25%	21%
Vol Right, %	0%	100%	75%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	309	211	528	19
LT Vol	309	0	0	15
Through Vol	0	0	131	4
RT Vol	0	211	397	0
Lane Flow Rate	381	260	574	36
Geometry Grp	7	7	2	2
Degree of Util (X)	0.711	0.397	0.823	0.066
Departure Headway (Hd)	6.71	5.493	5.165	6.639
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	538	654	706	538
Service Time	4.449	3.232	3.165	4.699
HCM Lane V/C Ratio	0.708	0.398	0.813	0.067
HCM Control Delay	24.3	11.8	27.5	10.2
HCM Lane LOS	C	B	D	B
HCM 95th-tile Q	5.7	1.9	8.9	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	338	538	6	1	2
Future Vol, veh/h	10	338	538	6	1	2
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	90	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	504	598	7	3	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	625	0	-	0	1160	625
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	538	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	956	-	-	-	216	485
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	938	-	-	-	203	474
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	938	-	-	-	328
HCM Lane V/C Ratio	0.016	-	-	-	0.024
HCM Control Delay (s)	8.9	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	338	542	0	0	0
Future Vol, veh/h	0	338	542	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	66	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	512	616	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	515	6
Stage 1	-	-	3	-
Stage 2	-	-	512	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 464	1077
Stage 1	-	-	-	-
Stage 2	-	-	~ 536	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes

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

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	276	49	32	489	14	41	0	22	7	0	11
Future Vol, veh/h	12	276	49	32	489	14	41	0	22	7	0	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	88	88	88	90	90	90	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	425	75	36	556	16	46	0	24	14	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	572	0	0	500	0	0	1146	1143	463	1147	1172	564
Stage 1	-	-	-	-	-	-	499	499	-	636	636	-
Stage 2	-	-	-	-	-	-	647	644	-	511	536	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1001	-	-	1064	-	-	176	200	599	176	192	525
Stage 1	-	-	-	-	-	-	554	544	-	466	472	-
Stage 2	-	-	-	-	-	-	460	468	-	545	523	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1001	-	-	1064	-	-	159	185	599	159	178	525
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	185	-	159	178	-
Stage 1	-	-	-	-	-	-	540	530	-	454	448	-
Stage 2	-	-	-	-	-	-	419	445	-	510	510	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	29.8	19.9
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	214	1001	-	-	1064	-	-	277
HCM Lane V/C Ratio	0.327	0.018	-	-	0.034	-	-	0.13
HCM Control Delay (s)	29.8	8.7	0	-	8.5	0	-	19.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.4	0.1	-	-	0.1	-	-	0.4

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	4	29	60	2	157	69	325	140	199	176	82
Future Vol, veh/h	56	4	29	60	2	157	69	325	140	199	176	82
Peak Hour Factor	0.89	0.89	0.89	0.83	0.83	0.83	0.92	0.92	0.92	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	4	33	72	2	189	75	353	152	224	198	92
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	12.8	14.7	16.5	15.5
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	44%	0%	12%	0%	100%	0%	0%	100%	42%
Vol Right, %	0%	0%	56%	0%	88%	0%	0%	100%	0%	0%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	217	248	56	33	60	2	157	199	117	141
LT Vol	69	0	0	56	0	60	0	0	199	0	0
Through Vol	0	217	108	0	4	0	2	0	0	117	59
RT Vol	0	0	140	0	29	0	0	157	0	0	82
Lane Flow Rate	75	236	270	63	37	72	2	189	224	132	158
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.165	0.484	0.525	0.159	0.082	0.176	0.006	0.396	0.498	0.275	0.311
Departure Headway (Hd)	7.912	7.406	7.006	9.072	7.956	8.744	8.24	7.533	8.015	7.508	7.094
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	485	513	395	449	410	434	477	449	477	506
Service Time	5.671	5.165	4.765	6.843	5.728	6.51	6.005	5.298	5.775	5.268	4.854
HCM Lane V/C Ratio	0.166	0.487	0.526	0.159	0.082	0.176	0.005	0.396	0.499	0.277	0.312
HCM Control Delay	12.2	17	17.3	13.6	11.4	13.4	11.1	15.2	18.5	13.1	13.1
HCM Lane LOS	B	C	C	B	B	B	B	C	C	B	B
HCM 95th-tile Q	0.6	2.6	3	0.6	0.3	0.6	0	1.9	2.7	1.1	1.3

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	276	216	289	0	0	310
Future Vol, veh/h	276	216	289	0	0	310
Peak Hour Factor	0.87	0.87	0.95	0.95	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	317	248	304	0	0	341
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	16.1	16.5	10.8
HCM LOS	C	C	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	289	276	216	155	155
LT Vol	0	276	0	0	0
Through Vol	289	0	0	155	155
RT Vol	0	0	216	0	0
Lane Flow Rate	304	317	248	170	170
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.535	0.601	0.387	0.315	0.231
Departure Headway (Hd)	6.328	6.822	5.606	6.658	4.89
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	569	530	641	538	731
Service Time	4.378	4.568	3.351	4.418	2.649
HCM Lane V/C Ratio	0.534	0.598	0.387	0.316	0.233
HCM Control Delay	16.5	19.4	11.9	12.5	9.1
HCM Lane LOS	C	C	B	B	A
HCM 95th-tile Q	3.1	3.9	1.8	1.3	0.9

Intersection	
Intersection Delay, s/veh	33.7
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	188	181	394	112	0	14	0	228	4	1	0
Future Vol, veh/h	0	188	181	394	112	0	14	0	228	4	1	0
Peak Hour Factor	0.89	0.89	0.89	0.84	0.84	0.84	0.84	0.84	0.84	0.31	0.31	0.31
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	211	203	469	133	0	17	0	271	13	3	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.9	53.4	15	11.2
HCM LOS	C	F	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	78%	80%
Vol Thru, %	0%	51%	22%	20%
Vol Right, %	94%	49%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	242	369	506	5
LT Vol	14	0	394	4
Through Vol	0	188	112	1
RT Vol	228	181	0	0
Lane Flow Rate	288	415	602	16
Geometry Grp	1	1	1	1
Degree of Util (X)	0.492	0.655	0.972	0.035
Departure Headway (Hd)	6.145	5.686	5.807	7.832
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	585	638	626	455
Service Time	4.191	3.705	3.821	5.909
HCM Lane V/C Ratio	0.492	0.65	0.962	0.035
HCM Control Delay	15	18.9	53.4	11.2
HCM Lane LOS	B	C	F	B
HCM 95th-tile Q	2.7	4.8	14	0.1

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Vol, veh/h	0	66	166	222	11	228	0
Future Vol, veh/h	0	66	166	222	11	228	0
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	0	81	205	285	14	248	0
Number of Lanes	0	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	10.7	11.9	12.2
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	95%	0%
Vol Right, %	0%	0%	5%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	166	233	228
LT Vol	66	0	0	228
Through Vol	0	166	222	0
RT Vol	0	0	11	0
Lane Flow Rate	81	205	299	248
Geometry Grp	7	7	5	2
Degree of Util (X)	0.139	0.321	0.421	0.388
Departure Headway (Hd)	6.139	5.634	5.19	5.639
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	586	639	699	642
Service Time	3.856	3.35	3.19	3.639
HCM Lane V/C Ratio	0.138	0.321	0.428	0.386
HCM Control Delay	9.8	11	11.9	12.2
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0.5	1.4	2.1	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	47	192	450	51	260	54	799	56	121	623	34
Future Volume (vph)	46	47	192	450	51	260	54	799	56	121	623	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.90	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1818	1546	3433	1568	1475	1770	5028		1770	3539	1550
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1818	1546	3433	1568	1475	1770	5028		1770	3539	1550
Peak-hour factor, PHF	0.88	0.88	0.88	0.97	0.97	0.97	0.95	0.95	0.95	0.85	0.85	0.85
Adj. Flow (vph)	52	53	218	464	53	268	57	841	59	142	733	40
RTOR Reduction (vph)	0	0	197	0	89	123	0	7	0	0	0	22
Lane Group Flow (vph)	0	105	21	464	77	32	57	893	0	142	733	18
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		9.2	9.2	19.9	19.9	19.9	7.3	37.0		11.9	41.6	41.6
Effective Green, g (s)		9.2	9.2	19.9	19.9	19.9	7.3	37.0		11.9	41.6	41.6
Actuated g/C Ratio		0.10	0.10	0.21	0.21	0.21	0.08	0.39		0.13	0.44	0.44
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		176	149	719	328	308	136	1958		221	1549	678
v/s Ratio Prot		c0.06		c0.14	0.05		0.03	0.18		c0.08	c0.21	
v/s Ratio Perm			0.01			0.02						0.01
v/c Ratio		0.60	0.14	0.65	0.23	0.11	0.42	0.46		0.64	0.47	0.03
Uniform Delay, d1		41.1	39.3	34.3	31.2	30.4	41.8	21.5		39.5	18.9	15.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.92	0.92	1.00
Incremental Delay, d2		5.3	0.4	2.0	0.4	0.2	2.1	0.8		5.8	1.0	0.1
Delay (s)		46.5	39.7	36.3	31.6	30.5	43.9	22.3		42.2	18.4	15.2
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		41.9			34.2			23.6			22.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	18.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	519	15	6	232	69
Future Vol, veh/h	60	519	15	6	232	69
Peak Hour Factor	0.93	0.93	0.75	0.75	0.85	0.85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	558	20	8	273	81
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	21	9.3	14.2
HCM LOS	C	A	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	71%
Vol Thru, %	0%	0%	10%	29%
Vol Right, %	0%	100%	90%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	232	69	579	21
LT Vol	232	0	0	15
Through Vol	0	0	60	6
RT Vol	0	69	519	0
Lane Flow Rate	273	81	623	28
Geometry Grp	7	7	2	2
Degree of Util (X)	0.502	0.122	0.771	0.047
Departure Headway (Hd)	6.619	5.403	4.46	5.984
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	549	667	803	599
Service Time	4.321	3.106	2.539	4.015
HCM Lane V/C Ratio	0.497	0.121	0.776	0.047
HCM Control Delay	15.8	8.9	21	9.3
HCM Lane LOS	C	A	C	A
HCM 95th-tile Q	2.8	0.4	7.6	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	407	512	13	3	3
Future Vol, veh/h	2	407	512	13	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	88	88	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	433	582	15	4	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	617	0	-	0	1051	613
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	441	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	963	-	-	-	251	492
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	945	-	-	-	241	481
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	945	-	-	-	321
HCM Lane V/C Ratio	0.002	-	-	-	0.025
HCM Control Delay (s)	8.8	0	-	-	16.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	414	514	0	0	0
Future Vol, veh/h	0	414	514	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	87	87	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	445	591	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	448	6
Stage 1	-	-	3	-
Stage 2	-	-	445	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 506	1077
Stage 1	-	-	-	-
Stage 2	-	-	~ 575	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Vol, veh/h	11	343	60	32	440	6	12	0	11	63	0	34
Future Vol, veh/h	11	343	60	32	440	6	12	0	11	63	0	34
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	96	88	88	88	91	91	91	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	369	63	36	500	7	13	0	12	66	0	35

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	507	0	0	432	0	0	1018	1032	504	1007	1004	401
Stage 1	-	-	-	-	-	-	576	576	-	425	425	-
Stage 2	-	-	-	-	-	-	442	456	-	582	579	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1058	-	-	1128	-	-	216	233	568	219	242	649
Stage 1	-	-	-	-	-	-	503	502	-	607	586	-
Stage 2	-	-	-	-	-	-	594	568	-	499	501	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1058	-	-	1128	-	-	195	219	568	205	228	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	219	-	205	228	-
Stage 1	-	-	-	-	-	-	495	480	-	598	577	-
Stage 2	-	-	-	-	-	-	553	559	-	467	479	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	0.2	0.6	18.9	26.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	EBR	WBL	WBT	WBR	SELn1
Capacity (veh/h)	270	1058	-	-	1128	-	-	284
HCM Lane V/C Ratio	0.374	0.011	-	-	0.032	-	-	0.089
HCM Control Delay (s)	26.1	8.4	0	-	8.3	0	-	18.9
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.7	0	-	-	0.1	-	-	0.3

Appendix D

Near-term No Project Conditions LOS Analysis

Intersection	
Intersection Delay, s/veh	20.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	114	0	69	114	0	200	28	427	63	139	285	55
Future Vol, veh/h	114	0	69	114	0	200	28	427	63	139	285	55
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	74	123	0	215	30	459	68	149	306	59
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	16.5	18.6	26.2	18.2
HCM LOS	C	C	D	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	69%	0%	0%	0%	100%	0%	0%	100%	63%
Vol Right, %	0%	0%	31%	0%	100%	0%	0%	100%	0%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	285	205	114	69	114	0	200	139	190	150
LT Vol	28	0	0	114	0	114	0	0	139	0	0
Through Vol	0	285	142	0	0	0	0	0	0	190	95
RT Vol	0	0	63	0	69	0	0	200	0	0	55
Lane Flow Rate	30	306	221	123	74	123	0	215	149	204	161
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.077	0.735	0.517	0.345	0.184	0.329	0	0.504	0.385	0.497	0.38
Departure Headway (Hd)	9.16	8.644	8.422	10.129	8.904	9.658	9.15	8.438	9.271	8.754	8.489
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	419	428	354	402	373	0	426	389	411	424
Service Time	6.921	6.404	6.182	7.9	6.674	7.423	6.914	6.203	7.032	6.515	6.249
HCM Lane V/C Ratio	0.077	0.73	0.516	0.347	0.184	0.33	0	0.505	0.383	0.496	0.38
HCM Control Delay	12.7	32	19.9	18.2	13.7	17.1	11.9	19.5	17.8	19.9	16.4
HCM Lane LOS	B	D	C	C	B	C	N	C	C	C	C
HCM 95th-tile Q	0.2	5.8	2.9	1.5	0.7	1.4	0	2.8	1.8	2.7	1.7

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	77	212	273	0	0	509
Future Vol, veh/h	77	212	273	0	0	509
Peak Hour Factor	0.75	0.75	0.61	0.61	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	283	448	0	0	566
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	14.5	27.4	13
HCM LOS	B	D	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	273	77	212	255	255
LT Vol	0	77	0	0	0
Through Vol	273	0	0	255	255
RT Vol	0	0	212	0	0
Lane Flow Rate	448	103	283	283	283
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.773	0.215	0.495	0.507	0.368
Departure Headway (Hd)	6.221	7.534	6.309	6.451	4.682
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	582	475	568	557	761
Service Time	4.283	5.302	4.077	4.221	2.452
HCM Lane V/C Ratio	0.77	0.217	0.498	0.508	0.372
HCM Control Delay	27.4	12.4	15.2	15.7	10.2
HCM Lane LOS	D	B	C	C	B
HCM 95th-tile Q	7.1	0.8	2.7	2.8	1.7

Intersection	
Intersection Delay, s/veh	43.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	79	135	411	140	0	66	0	272	1	1	0
Future Vol, veh/h	1	79	135	411	140	0	66	0	272	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	96	165	452	154	0	90	0	373	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.3	70.5	26.2	11.2
HCM LOS	B	F	D	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	0%	75%	50%
Vol Thru, %	0%	37%	25%	50%
Vol Right, %	80%	63%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	338	215	551	2
LT Vol	66	1	411	1
Through Vol	0	79	140	1
RT Vol	272	135	0	0
Lane Flow Rate	463	262	605	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.765	0.447	1.033	0.017
Departure Headway (Hd)	6.095	6.299	6.141	8.09
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	597	574	593	445
Service Time	4.095	4.299	4.141	6.09
HCM Lane V/C Ratio	0.776	0.456	1.02	0.018
HCM Control Delay	26.2	14.3	70.5	11.2
HCM Lane LOS	D	B	F	B
HCM 95th-tile Q	7	2.3	16.3	0.1

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	170	215	24	135	0
Future Vol, veh/h	52	170	215	24	135	0
Peak Hour Factor	0.88	0.88	0.78	0.78	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	193	276	31	145	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	9.8	10.8	10
HCM LOS	A	B	A

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	90%	0%
Vol Right, %	0%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	170	239	135
LT Vol	52	0	0	135
Through Vol	0	170	215	0
RT Vol	0	0	24	0
Lane Flow Rate	59	193	306	145
Geometry Grp	7	7	5	2
Degree of Util (X)	0.094	0.279	0.398	0.219
Departure Headway (Hd)	5.699	5.195	4.679	5.423
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	627	690	766	659
Service Time	3.45	2.946	2.727	3.485
HCM Lane V/C Ratio	0.094	0.28	0.399	0.22
HCM Control Delay	9	10	10.8	10
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.3	1.1	1.9	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	11	73	405	50	506	79	1352	99	109	823	19
Future Volume (vph)	17	11	73	405	50	506	79	1352	99	109	823	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.98	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.88	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1808	1536	3433	1526	1475	1770	5026		1770	3539	1550
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1808	1536	3433	1526	1475	1770	5026		1770	3539	1550
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	18	12	78	431	53	538	84	1438	105	116	876	20
RTOR Reduction (vph)	0	0	73	0	179	229	0	7	0	0	0	11
Lane Group Flow (vph)	0	30	5	431	121	62	84	1536	0	116	876	10
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		6.1	6.1	21.2	21.2	21.2	8.2	44.9		10.8	47.5	47.5
Effective Green, g (s)		6.1	6.1	21.2	21.2	21.2	8.2	44.9		10.8	47.5	47.5
Actuated g/C Ratio		0.06	0.06	0.21	0.21	0.21	0.08	0.45		0.11	0.48	0.48
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		110	93	727	323	312	145	2256		191	1681	736
v/s Ratio Prot		c0.02		c0.13	0.08		0.05	c0.31		c0.07	c0.25	
v/s Ratio Perm			0.00			0.04						0.01
v/c Ratio		0.27	0.05	0.59	0.37	0.20	0.58	0.68		0.61	0.52	0.01
Uniform Delay, d1		44.8	44.2	35.5	33.7	32.4	44.2	21.9		42.6	18.3	13.9
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.3	0.2	1.3	0.7	0.3	5.5	1.7		5.4	1.2	0.0
Delay (s)		46.2	44.5	36.8	34.5	32.7	49.8	23.5		48.0	19.5	13.9
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		44.9			35.0			24.9			22.6	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	30.8
Intersection LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	436	15	4	335	211
Future Vol, veh/h	140	436	15	4	335	211
Peak Hour Factor	0.92	0.92	0.53	0.53	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	474	28	8	414	260
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	39.6	10.4	23.8
HCM LOS	E	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	79%
Vol Thru, %	0%	0%	24%	21%
Vol Right, %	0%	100%	76%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	335	211	576	19
LT Vol	335	0	0	15
Through Vol	0	0	140	4
RT Vol	0	211	436	0
Lane Flow Rate	414	260	626	36
Geometry Grp	7	7	2	2
Degree of Util (X)	0.791	0.41	0.916	0.068
Departure Headway (Hd)	6.882	5.664	5.265	6.858
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	525	633	695	520
Service Time	4.631	3.412	3.265	4.932
HCM Lane V/C Ratio	0.789	0.411	0.901	0.069
HCM Control Delay	31	12.3	39.6	10.4
HCM Lane LOS	D	B	E	B
HCM 95th-tile Q	7.4	2	12.2	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	344	551	6	1	2
Future Vol, veh/h	10	344	551	6	1	2
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	90	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	513	612	7	3	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	639	0	-	0	1183	639
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	945	-	-	-	209	476
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	580	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	927	-	-	-	196	466
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	927	-	-	-	319
HCM Lane V/C Ratio	0.016	-	-	-	0.025
HCM Control Delay (s)	8.9	0	-	-	16.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	344	555	0	0	0
Future Vol, veh/h	0	344	555	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	66	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	521	631	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	524	6
Stage 1	-	-	3	-
Stage 2	-	-	521	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 458	1077
Stage 1	-	-	-	-
Stage 2	-	-	~ 532	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	331	543	14	7	11
Future Vol, veh/h	12	331	543	14	7	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	65	65	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	509	617	16	14	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	633	0	-	0	1170	625
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	545	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	950	-	-	-	213	485
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	950	-	-	-	207	485
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	950	-	-	-	319
HCM Lane V/C Ratio	0.019	-	-	-	0.113
HCM Control Delay (s)	8.9	0	-	-	17.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	4	29	60	2	157	69	378	140	217	290	82
Future Vol, veh/h	56	4	29	60	2	157	69	378	140	217	290	82
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	4	30	63	2	164	72	394	146	226	302	85
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	13	14.5	17.8	16.2
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	47%	0%	12%	0%	100%	0%	0%	100%	54%
Vol Right, %	0%	0%	53%	0%	88%	0%	0%	100%	0%	0%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	252	266	56	33	60	2	157	217	193	179
LT Vol	69	0	0	56	0	60	0	0	217	0	0
Through Vol	0	252	126	0	4	0	2	0	0	193	97
RT Vol	0	0	140	0	29	0	0	157	0	0	82
Lane Flow Rate	72	262	277	58	34	62	2	164	226	201	186
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.16	0.546	0.547	0.151	0.078	0.157	0.005	0.356	0.501	0.418	0.369
Departure Headway (Hd)	7.991	7.485	7.112	9.306	8.191	9.052	8.547	7.84	7.972	7.466	7.141
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	449	480	507	384	436	396	418	458	452	481	503
Service Time	5.752	5.245	4.872	7.082	5.967	6.826	6.32	5.613	5.731	5.225	4.899
HCM Lane V/C Ratio	0.16	0.546	0.546	0.151	0.078	0.157	0.005	0.358	0.5	0.418	0.37
HCM Control Delay	12.3	18.9	18.2	13.7	11.7	13.5	11.4	14.9	18.5	15.5	14
HCM Lane LOS	B	C	C	B	B	B	B	B	C	C	B
HCM 95th-tile Q	0.6	3.2	3.3	0.5	0.3	0.6	0	1.6	2.7	2	1.7

Intersection	
Intersection Delay, s/veh	14.6
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	227	280	331	0	0	372
Future Vol, veh/h	227	280	331	0	0	372
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	236	292	345	0	0	388
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	14.5	18.5	11.2
HCM LOS	B	C	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	331	227	280	186	186
LT Vol	0	227	0	0	0
Through Vol	331	0	0	186	186
RT Vol	0	0	280	0	0
Lane Flow Rate	345	236	292	194	194
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.603	0.46	0.469	0.356	0.261
Departure Headway (Hd)	6.292	7.01	5.792	6.614	4.846
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	572	513	621	543	736
Service Time	4.344	4.766	3.547	4.375	2.606
HCM Lane V/C Ratio	0.603	0.46	0.47	0.357	0.264
HCM Control Delay	18.5	15.6	13.6	13	9.3
HCM Lane LOS	C	C	B	B	A
HCM 95th-tile Q	4	2.4	2.5	1.6	1

Intersection	
Intersection Delay, s/veh	23.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	182	227	416	111	0	22	0	254	4	1	0
Future Vol, veh/h	0	182	227	416	111	0	22	0	254	4	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	190	236	433	116	0	23	0	265	4	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.4	33.6	14.1	10.7
HCM LOS	C	D	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	79%	80%
Vol Thru, %	0%	44%	21%	20%
Vol Right, %	92%	56%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	276	409	527	5
LT Vol	22	0	416	4
Through Vol	0	182	111	1
RT Vol	254	227	0	0
Lane Flow Rate	288	426	549	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.469	0.634	0.859	0.011
Departure Headway (Hd)	5.877	5.359	5.631	7.591
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	610	669	642	474
Service Time	3.958	3.432	3.696	5.591
HCM Lane V/C Ratio	0.472	0.637	0.855	0.011
HCM Control Delay	14.1	17.4	33.6	10.7
HCM Lane LOS	B	C	D	B
HCM 95th-tile Q	2.5	4.5	9.7	0

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	188	225	15	236	0
Future Vol, veh/h	93	188	225	15	236	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	196	234	16	246	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	10.4	10.9	11.7
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	94%	0%
Vol Right, %	0%	0%	6%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	188	240	236
LT Vol	93	0	0	236
Through Vol	0	188	225	0
RT Vol	0	0	15	0
Lane Flow Rate	97	196	250	246
Geometry Grp	7	7	5	2
Degree of Util (X)	0.161	0.297	0.351	0.371
Departure Headway (Hd)	5.972	5.467	5.054	5.428
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	596	650	705	656
Service Time	3.759	3.254	3.138	3.513
HCM Lane V/C Ratio	0.163	0.302	0.355	0.375
HCM Control Delay	9.9	10.6	10.9	11.7
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0.6	1.2	1.6	1.7

Intersection	
Intersection Delay, s/veh	22.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	589	15	6	276	69
Future Vol, veh/h	58	589	15	6	276	69
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	614	16	6	288	72
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	26.6	9.4	15.4
HCM LOS	D	A	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	71%
Vol Thru, %	0%	0%	9%	29%
Vol Right, %	0%	100%	91%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	276	69	647	21
LT Vol	276	0	0	15
Through Vol	0	0	58	6
RT Vol	0	69	589	0
Lane Flow Rate	288	72	674	22
Geometry Grp	7	7	2	2
Degree of Util (X)	0.538	0.11	0.84	0.037
Departure Headway (Hd)	6.74	5.523	4.487	6.117
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	538	653	795	586
Service Time	4.441	3.225	2.57	4.151
HCM Lane V/C Ratio	0.535	0.11	0.848	0.038
HCM Control Delay	17	8.9	26.6	9.4
HCM Lane LOS	C	A	D	A
HCM 95th-tile Q	3.2	0.4	9.7	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	417	533	1	3	3
Future Vol, veh/h	2	417	533	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	434	555	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	576	0	-	0	1018	579
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	442	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	997	-	-	-	263	515
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	978	-	-	-	252	504
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	550	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	978	-	-	-	336
HCM Lane V/C Ratio	0.002	-	-	-	0.019
HCM Control Delay (s)	8.7	0	-	-	15.9
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	424	535	0	0	0
Future Vol, veh/h	0	424	535	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	442	557	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	445	6
Stage 1	-	-	3	-
Stage 2	-	-	442	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 508	1077
Stage 1	-	-	-	-
Stage 2	-	-	576	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	413	535	6	12	11
Future Vol, veh/h	11	413	535	6	12	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	430	557	6	13	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	563	0	-	0	1012	560
Stage 1	-	-	-	-	560	-
Stage 2	-	-	-	-	452	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1008	-	-	-	265	528
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1008	-	-	-	261	528
Mov Cap-2 Maneuver	-	-	-	-	261	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1008	-	-	-	344
HCM Lane V/C Ratio	0.011	-	-	-	0.07
HCM Control Delay (s)	8.6	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	47	217	513	59	357	61	998	82	144	817	46
Future Volume (vph)	67	47	217	513	59	357	61	998	82	144	817	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.89	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1810	1547	3433	1555	1475	1770	5019		1770	3539	1550
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1810	1547	3433	1555	1475	1770	5019		1770	3539	1550
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	70	49	226	534	61	372	64	1040	85	150	851	48
RTOR Reduction (vph)	0	0	203	0	107	162	0	9	0	0	0	28
Lane Group Flow (vph)	0	119	23	534	114	50	64	1116	0	150	851	20
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		9.4	9.4	22.2	22.2	22.2	7.5	34.9		11.5	38.9	38.9
Effective Green, g (s)		9.4	9.4	22.2	22.2	22.2	7.5	34.9		11.5	38.9	38.9
Actuated g/C Ratio		0.10	0.10	0.23	0.23	0.23	0.08	0.37		0.12	0.41	0.41
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		179	153	802	363	344	139	1843		214	1449	634
v/s Ratio Prot		c0.07		c0.16	0.07		0.04	0.22		c0.08	c0.24	
v/s Ratio Perm			0.02			0.03						0.01
v/c Ratio		0.66	0.15	0.67	0.32	0.14	0.46	0.61		0.70	0.59	0.03
Uniform Delay, d1		41.3	39.2	33.0	30.1	28.9	41.8	24.5		40.1	21.8	16.8
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.93	0.94	1.00
Incremental Delay, d2		9.0	0.5	2.1	0.5	0.2	2.4	1.5		9.4	1.7	0.1
Delay (s)		50.2	39.6	35.1	30.6	29.1	44.2	25.9		46.9	22.2	16.9
Level of Service		D	D	D	C	C	D	C		D	C	B
Approach Delay (s)		43.3			32.8			26.9			25.5	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Appendix E

Near-term plus Project Conditions LOS Analysis

Intersection	
Intersection Delay, s/veh	22.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	114	0	69	122	0	200	28	443	63	139	304	55
Future Vol, veh/h	114	0	69	122	0	200	28	443	63	139	304	55
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	0	74	131	0	215	30	476	68	149	327	59
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	16.9	19.5	29.1	19.3
HCM LOS	C	C	D	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	70%	0%	0%	0%	100%	0%	0%	100%	65%
Vol Right, %	0%	0%	30%	0%	100%	0%	0%	100%	0%	0%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	295	211	114	69	122	0	200	139	203	156
LT Vol	28	0	0	114	0	122	0	0	139	0	0
Through Vol	0	295	148	0	0	0	0	0	0	203	101
RT Vol	0	0	63	0	69	0	0	200	0	0	55
Lane Flow Rate	30	318	227	123	74	131	0	215	149	218	168
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.078	0.777	0.54	0.353	0.188	0.359	0	0.515	0.391	0.539	0.404
Departure Headway (Hd)	9.322	8.805	8.589	10.356	9.129	9.844	9.335	8.623	9.426	8.908	8.653
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	384	410	419	347	392	365	0	417	381	405	415
Service Time	7.088	6.57	6.354	8.133	6.906	7.613	7.104	6.391	7.191	6.673	6.418
HCM Lane V/C Ratio	0.078	0.776	0.542	0.354	0.189	0.359	0	0.516	0.391	0.538	0.405
HCM Control Delay	12.9	36.4	21.1	18.7	14	18.1	12.1	20.3	18.2	21.7	17.2
HCM Lane LOS	B	E	C	C	B	C	N	C	C	C	C
HCM 95th-tile Q	0.3	6.6	3.1	1.6	0.7	1.6	0	2.9	1.8	3.1	1.9

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	77	212	289	0	0	560
Future Vol, veh/h	77	212	289	0	0	560
Peak Hour Factor	0.75	0.75	0.61	0.61	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	283	474	0	0	622
Number of Lanes	1	0	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	19.7	29.1	14.3
HCM LOS	C	D	B

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	27%	0%	0%
Vol Thru, %	100%	0%	100%	100%
Vol Right, %	0%	73%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	289	289	280	280
LT Vol	0	77	0	0
Through Vol	289	0	280	280
RT Vol	0	212	0	0
Lane Flow Rate	474	385	311	311
Geometry Grp	5	2	7	7
Degree of Util (X)	0.798	0.648	0.565	0.412
Departure Headway (Hd)	6.067	6.057	6.533	4.762
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	592	593	548	747
Service Time	4.149	4.138	4.326	2.554
HCM Lane V/C Ratio	0.801	0.649	0.568	0.416
HCM Control Delay	29.1	19.7	17.6	10.9
HCM Lane LOS	D	C	C	B
HCM 95th-tile Q	7.8	4.7	3.5	2

Intersection	
Intersection Delay, s/veh	59.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	135	423	169	0	66	0	280	1	1	0
Future Vol, veh/h	1	120	135	423	169	0	66	0	280	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	146	165	465	186	0	90	0	384	4	4	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.1	102.3	29.6	11.8
HCM LOS	C	F	D	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	0%	71%	50%
Vol Thru, %	0%	47%	29%	50%
Vol Right, %	81%	53%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	346	256	592	2
LT Vol	66	1	423	1
Through Vol	0	120	169	1
RT Vol	280	135	0	0
Lane Flow Rate	474	312	651	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.795	0.543	1.13	0.018
Departure Headway (Hd)	6.369	6.552	6.253	8.604
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	553	579	419
Service Time	4.369	4.552	4.317	6.604
HCM Lane V/C Ratio	0.826	0.564	1.124	0.019
HCM Control Delay	29.6	17.1	102.3	11.8
HCM Lane LOS	D	C	F	B
HCM 95th-tile Q	7.6	3.2	20.8	0.1

Intersection	
Intersection Delay, s/veh	32.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	120	135	423	169	0	66	0	280	1	1	0
Future Vol, veh/h	1	120	135	423	169	0	66	0	280	1	1	0
Peak Hour Factor	0.82	0.82	0.82	0.91	0.91	0.91	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	146	165	465	186	0	90	0	384	4	4	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	17.3	41.4	29.3	11.4
HCM LOS	C	E	D	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	0%	100%	0%	50%
Vol Thru, %	0%	47%	0%	100%	50%
Vol Right, %	81%	53%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	346	256	423	169	2
LT Vol	66	1	423	0	1
Through Vol	0	120	0	169	1
RT Vol	280	135	0	0	0
Lane Flow Rate	474	312	465	186	8
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.803	0.557	0.935	0.347	0.018
Departure Headway (Hd)	6.101	6.427	7.244	6.734	8.176
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	597	562	502	533	436
Service Time	4.101	4.477	4.993	4.482	6.251
HCM Lane V/C Ratio	0.794	0.555	0.926	0.349	0.018
HCM Control Delay	29.3	17.3	52.7	13	11.4
HCM Lane LOS	D	C	F	B	B
HCM 95th-tile Q	7.9	3.4	11.3	1.5	0.1

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	52	196	244	24	150	0
Future Vol, veh/h	52	196	244	24	150	0
Peak Hour Factor	0.88	0.88	0.78	0.78	0.93	0.93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	223	313	31	161	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	10.3	11.8	10.5
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	91%	0%
Vol Right, %	0%	0%	9%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	52	196	268	150
LT Vol	52	0	0	150
Through Vol	0	196	244	0
RT Vol	0	0	24	0
Lane Flow Rate	59	223	344	161
Geometry Grp	7	7	5	2
Degree of Util (X)	0.095	0.327	0.456	0.25
Departure Headway (Hd)	5.796	5.292	4.781	5.578
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	615	675	749	639
Service Time	3.563	3.059	2.841	3.657
HCM Lane V/C Ratio	0.096	0.33	0.459	0.252
HCM Control Delay	9.2	10.6	11.8	10.5
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0.3	1.4	2.4	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	11	73	418	50	522	79	1352	107	127	823	19
Future Volume (vph)	17	11	73	418	50	522	79	1352	107	127	823	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.97	1.00	0.98	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.88	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1808	1536	3433	1525	1475	1770	5021		1770	3539	1550
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1808	1536	3433	1525	1475	1770	5021		1770	3539	1550
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	18	12	78	445	53	555	84	1438	114	135	876	20
RTOR Reduction (vph)	0	0	73	0	184	236	0	8	0	0	0	11
Lane Group Flow (vph)	0	30	5	445	124	65	84	1544	0	135	876	9
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		6.1	6.1	21.5	21.5	21.5	8.2	43.6		11.8	47.2	47.2
Effective Green, g (s)		6.1	6.1	21.5	21.5	21.5	8.2	43.6		11.8	47.2	47.2
Actuated g/C Ratio		0.06	0.06	0.22	0.22	0.22	0.08	0.44		0.12	0.47	0.47
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		110	93	738	327	317	145	2189		208	1670	731
v/s Ratio Prot		c0.02		c0.13	0.08		0.05	c0.31		c0.08	c0.25	
v/s Ratio Perm			0.00			0.04						0.01
v/c Ratio		0.27	0.05	0.60	0.38	0.20	0.58	0.71		0.65	0.52	0.01
Uniform Delay, d1		44.8	44.2	35.4	33.6	32.2	44.2	23.0		42.1	18.5	14.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.3	0.2	1.4	0.7	0.3	5.5	1.9		6.8	1.2	0.0
Delay (s)		46.2	44.5	36.8	34.3	32.5	49.8	24.9		48.9	19.7	14.1
Level of Service		D	D	D	C	C	D	C		D	B	B
Approach Delay (s)		44.9			34.9			26.2			23.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	33.9
Intersection LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	146	442	15	4	343	211
Future Vol, veh/h	146	442	15	4	343	211
Peak Hour Factor	0.92	0.92	0.53	0.53	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	480	28	8	423	260
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	44.2	10.5	25.6
HCM LOS	E	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	79%
Vol Thru, %	0%	0%	25%	21%
Vol Right, %	0%	100%	75%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	343	211	588	19
LT Vol	343	0	0	15
Through Vol	0	0	146	4
RT Vol	0	211	442	0
Lane Flow Rate	423	260	639	36
Geometry Grp	7	7	2	2
Degree of Util (X)	0.815	0.413	0.941	0.069
Departure Headway (Hd)	6.929	5.711	5.298	6.921
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	521	628	690	515
Service Time	4.68	3.461	3.298	4.998
HCM Lane V/C Ratio	0.812	0.414	0.926	0.07
HCM Control Delay	33.6	12.5	44.2	10.5
HCM Lane LOS	D	B	E	B
HCM 95th-tile Q	7.9	2	13.2	0.2

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	393	592	6	1	2
Future Vol, veh/h	10	393	592	6	1	2
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	67	90	90	38	38
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	587	658	7	3	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	685	0	-	0	1303	685
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	621	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	908	-	-	-	177	448
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	891	-	-	-	166	438
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	891	-	-	-	283
HCM Lane V/C Ratio	0.017	-	-	-	0.028
HCM Control Delay (s)	9.1	0	-	-	18.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	393	596	0	0	0
Future Vol, veh/h	0	393	596	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	66	88	88	50	50
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	595	677	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	598	6
Stage 1	-	-	3	-
Stage 2	-	-	595	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 416	1077
Stage 1	-	-	-	-
Stage 2	-	-	~ 492	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes

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

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	331	49	27	543	14	41	0	22	7	0	11
Future Vol, veh/h	12	331	49	27	543	14	41	0	22	7	0	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	88	88	88	90	90	90	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	509	75	31	617	16	46	0	24	14	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	633	0	0	584	0	0	1281	1278	547	1282	1307	625
Stage 1	-	-	-	-	-	-	583	583	-	687	687	-
Stage 2	-	-	-	-	-	-	698	695	-	595	620	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	950	-	-	991	-	-	142	166	537	142	160	485
Stage 1	-	-	-	-	-	-	498	499	-	437	447	-
Stage 2	-	-	-	-	-	-	431	444	-	491	480	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	950	-	-	991	-	-	128	154	537	128	148	485
Mov Cap-2 Maneuver	-	-	-	-	-	-	128	154	-	128	148	-
Stage 1	-	-	-	-	-	-	484	485	-	425	426	-
Stage 2	-	-	-	-	-	-	392	423	-	456	467	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	39	23.3
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	174	950	-	-	991	-	-	233
HCM Lane V/C Ratio	0.402	0.019	-	-	0.031	-	-	0.155
HCM Control Delay (s)	39	8.9	0	-	8.7	0	-	23.3
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.8	0.1	-	-	0.1	-	-	0.5

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	4	29	60	2	157	69	402	140	217	313	82
Future Vol, veh/h	56	4	29	60	2	157	69	402	140	217	313	82
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	4	30	63	2	164	72	419	146	226	326	85
Number of Lanes	1	1	0	1	1	1	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	2
HCM Control Delay	13.2	14.9	19	16.8
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	49%	0%	12%	0%	100%	0%	0%	100%	56%
Vol Right, %	0%	0%	51%	0%	88%	0%	0%	100%	0%	0%	44%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	268	274	56	33	60	2	157	217	209	186
LT Vol	69	0	0	56	0	60	0	0	217	0	0
Through Vol	0	268	134	0	4	0	2	0	0	209	104
RT Vol	0	0	140	0	29	0	0	157	0	0	82
Lane Flow Rate	72	279	285	58	34	62	2	164	226	217	194
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.161	0.587	0.572	0.153	0.08	0.16	0.005	0.363	0.506	0.456	0.391
Departure Headway (Hd)	8.08	7.574	7.211	9.462	8.347	9.212	8.707	7.999	8.064	7.557	7.245
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	475	499	378	428	388	410	448	445	476	495
Service Time	5.842	5.335	4.973	7.247	6.132	6.991	6.485	5.777	5.826	5.319	5.007
HCM Lane V/C Ratio	0.163	0.587	0.571	0.153	0.079	0.16	0.005	0.366	0.508	0.456	0.392
HCM Control Delay	12.4	20.6	19.2	14	11.9	13.8	11.5	15.3	18.9	16.5	14.6
HCM Lane LOS	B	C	C	B	B	B	B	C	C	C	B
HCM 95th-tile Q	0.6	3.7	3.5	0.5	0.3	0.6	0	1.6	2.8	2.3	1.8

Intersection	
Intersection Delay, s/veh	15.7
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	236	280	355	0	0	395
Future Vol, veh/h	236	280	355	0	0	395
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	246	292	370	0	0	411
Number of Lanes	1	1	1	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	15.2	20.8	11.7
HCM LOS	C	C	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	0%
Vol Thru, %	100%	0%	0%	100%	100%
Vol Right, %	0%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	355	236	280	198	198
LT Vol	0	236	0	0	0
Through Vol	355	0	0	198	198
RT Vol	0	0	280	0	0
Lane Flow Rate	370	246	292	206	206
Geometry Grp	4	7	7	7	7
Degree of Util (X)	0.654	0.488	0.48	0.384	0.282
Departure Headway (Hd)	6.37	7.144	5.925	6.713	4.943
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	566	504	607	535	722
Service Time	4.429	4.903	3.683	4.482	2.71
HCM Lane V/C Ratio	0.654	0.488	0.481	0.385	0.285
HCM Control Delay	20.8	16.6	14.1	13.6	9.7
HCM Lane LOS	C	C	B	B	A
HCM 95th-tile Q	4.7	2.6	2.6	1.8	1.2

Intersection	
Intersection Delay, s/veh	39.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	223	227	436	154	0	22	0	263	4	1	0
Future Vol, veh/h	0	223	227	436	154	0	22	0	263	4	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	232	236	454	160	0	23	0	274	4	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	23.6	62.3	15.9	11.3
HCM LOS	C	F	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	74%	80%
Vol Thru, %	0%	50%	26%	20%
Vol Right, %	92%	50%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	285	450	590	5
LT Vol	22	0	436	4
Through Vol	0	223	154	1
RT Vol	263	227	0	0
Lane Flow Rate	297	469	615	5
Geometry Grp	1	1	1	1
Degree of Util (X)	0.518	0.745	1.007	0.012
Departure Headway (Hd)	6.276	5.719	5.9	8.127
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	573	633	615	438
Service Time	4.325	3.738	3.917	6.216
HCM Lane V/C Ratio	0.518	0.741	1	0.011
HCM Control Delay	15.9	23.6	62.3	11.3
HCM Lane LOS	C	C	F	B
HCM 95th-tile Q	3	6.6	15.4	0

Intersection	
Intersection Delay, s/veh	23.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	223	227	436	154	0	22	0	263	4	1	0
Future Vol, veh/h	0	223	227	436	154	0	22	0	263	4	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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	232	236	454	160	0	23	0	274	4	1	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	22.3	28.9	15	11
HCM LOS	C	D	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	8%	0%	100%	0%	80%
Vol Thru, %	0%	50%	0%	100%	20%
Vol Right, %	92%	50%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	285	450	436	154	5
LT Vol	22	0	436	0	4
Through Vol	0	223	0	154	1
RT Vol	263	227	0	0	0
Lane Flow Rate	297	469	454	160	5
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.498	0.728	0.838	0.273	0.011
Departure Headway (Hd)	6.034	5.593	6.641	6.132	7.883
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	594	642	545	582	457
Service Time	4.11	3.659	4.409	3.9	5.883
HCM Lane V/C Ratio	0.5	0.731	0.833	0.275	0.011
HCM Control Delay	15	22.3	35.1	11.2	11
HCM Lane LOS	B	C	E	B	B
HCM 95th-tile Q	2.8	6.2	8.6	1.1	0

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	93	220	268	15	255	0
Future Vol, veh/h	93	220	268	15	255	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	229	279	16	266	0
Number of Lanes	1	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	11.3	12.3	12.9
HCM LOS	B	B	B

Lane	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	0%	100%
Vol Thru, %	0%	100%	95%	0%
Vol Right, %	0%	0%	5%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	93	220	283	255
LT Vol	93	0	0	255
Through Vol	0	220	268	0
RT Vol	0	0	15	0
Lane Flow Rate	97	229	295	266
Geometry Grp	7	7	5	2
Degree of Util (X)	0.167	0.364	0.433	0.422
Departure Headway (Hd)	6.218	5.712	5.289	5.721
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	578	630	681	630
Service Time	3.944	3.438	3.316	3.75
HCM Lane V/C Ratio	0.168	0.363	0.433	0.422
HCM Control Delay	10.2	11.7	12.3	12.9
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.6	1.7	2.2	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	47	217	532	59	381	61	998	91	167	817	46
Future Volume (vph)	67	47	217	532	59	381	61	998	91	167	817	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	1.00
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85	1.00	0.89	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1810	1547	3433	1552	1475	1770	5012		1770	3539	1550
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1810	1547	3433	1552	1475	1770	5012		1770	3539	1550
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	70	49	226	554	61	397	64	1040	95	174	851	48
RTOR Reduction (vph)	0	0	199	0	112	172	0	10	0	0	0	29
Lane Group Flow (vph)	0	119	27	554	120	54	64	1125	0	174	851	19
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		9.4	9.4	22.9	22.9	22.9	7.5	33.6		12.1	38.2	38.2
Effective Green, g (s)		9.4	9.4	22.9	22.9	22.9	7.5	33.6		12.1	38.2	38.2
Actuated g/C Ratio		0.10	0.10	0.24	0.24	0.24	0.08	0.35		0.13	0.40	0.40
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		179	153	827	374	355	139	1772		225	1423	623
v/s Ratio Prot		c0.07		c0.16	0.08		0.04	0.22		c0.10	c0.24	
v/s Ratio Perm			0.02			0.04						0.01
v/c Ratio		0.66	0.18	0.67	0.32	0.15	0.46	0.63		0.77	0.60	0.03
Uniform Delay, d1		41.3	39.2	32.6	29.6	28.4	41.8	25.6		40.1	22.4	17.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.94	0.95	1.00
Incremental Delay, d2		9.0	0.6	2.1	0.5	0.2	2.4	1.7		14.5	1.8	0.1
Delay (s)		50.2	39.8	34.7	30.1	28.6	44.2	27.3		52.1	22.9	17.3
Level of Service		D	D	C	C	C	D	C		D	C	B
Approach Delay (s)		43.4			32.3			28.2			27.4	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	25.2
Intersection LOS	D

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	68	599	15	6	285	69
Future Vol, veh/h	68	599	15	6	285	69
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	624	16	6	297	72
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	30.5	9.5	16.2
HCM LOS	D	A	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	71%
Vol Thru, %	0%	0%	10%	29%
Vol Right, %	0%	100%	90%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	285	69	667	21
LT Vol	285	0	0	15
Through Vol	0	0	68	6
RT Vol	0	69	599	0
Lane Flow Rate	297	72	695	22
Geometry Grp	7	7	2	2
Degree of Util (X)	0.561	0.112	0.874	0.038
Departure Headway (Hd)	6.807	5.59	4.529	6.201
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	534	645	792	577
Service Time	4.509	3.292	2.621	4.239
HCM Lane V/C Ratio	0.556	0.112	0.878	0.038
HCM Control Delay	17.9	9	30.5	9.5
HCM Lane LOS	C	A	D	A
HCM 95th-tile Q	3.4	0.4	11	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	477	596	1	3	3
Future Vol, veh/h	2	477	596	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	497	621	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	642	0	-	0	1147	645
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	505	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	943	-	-	-	220	472
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	606	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	925	-	-	-	211	462
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	594	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	925	-	-	-	290
HCM Lane V/C Ratio	0.002	-	-	-	0.022
HCM Control Delay (s)	8.9	0	-	-	17.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	484	598	0	0	0
Future Vol, veh/h	0	484	598	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	504	623	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	507	6
Stage 1	-	-	3	-
Stage 2	-	-	504	-
Critical Hdwy	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.52	-
Follow-up Hdwy	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	1619	-	~ 468	1077
Stage 1	-	-	-	-
Stage 2	-	-	~ 541	-
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1614	-	0	1071
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1
Capacity (veh/h)	1614	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes

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

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	413	60	32	535	6	63	0	34	12	0	11
Future Vol, veh/h	11	413	60	32	535	6	63	0	34	12	0	11
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	430	63	33	557	6	66	0	35	13	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	563	0	0	493	0	0	1116	1113	462	1127	1141	560
Stage 1	-	-	-	-	-	-	484	484	-	626	626	-
Stage 2	-	-	-	-	-	-	632	629	-	501	515	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1008	-	-	1071	-	-	185	208	600	182	201	528
Stage 1	-	-	-	-	-	-	564	552	-	472	477	-
Stage 2	-	-	-	-	-	-	468	475	-	552	535	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1008	-	-	1071	-	-	173	196	600	163	189	528
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	196	-	163	189	-
Stage 1	-	-	-	-	-	-	556	544	-	465	456	-
Stage 2	-	-	-	-	-	-	437	454	-	512	527	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	32.4	21.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	230	1008	-	-	1071	-	-	244
HCM Lane V/C Ratio	0.439	0.011	-	-	0.031	-	-	0.098
HCM Control Delay (s)	32.4	8.6	0	-	8.5	0	-	21.4
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.1	0	-	-	0.1	-	-	0.3

Appendix F

Cumulative No Project Conditions LOS Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	2	84	96	0	194	33	572	48	104	507	38
Future Volume (veh/h)	105	2	84	96	0	194	33	572	48	104	507	38
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		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	105	2	84	96	0	0	33	572	48	104	507	38
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	622	10	406	540	488	415	526	1391	116	493	1407	105
Arrive On Green	0.26	0.26	0.26	0.26	0.00	0.00	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1409	37	1549	1304	1863	1583	858	3300	276	800	3339	250
Grp Volume(v), veh/h	105	0	86	96	0	0	33	306	314	104	268	277
Grp Sat Flow(s),veh/h/ln	1409	0	1586	1304	1863	1583	858	1770	1807	800	1770	1819
Q Serve(g_s), s	1.7	0.0	1.2	1.8	0.0	0.0	0.8	3.4	3.5	3.0	2.9	3.0
Cycle Q Clear(g_c), s	1.7	0.0	1.2	3.0	0.0	0.0	3.7	3.4	3.5	6.4	2.9	3.0
Prop In Lane	1.00		0.98	1.00		1.00	1.00		0.15	1.00		0.14
Lane Grp Cap(c), veh/h	622	0	416	540	488	415	526	746	761	493	746	767
V/C Ratio(X)	0.17	0.00	0.21	0.18	0.00	0.00	0.06	0.41	0.41	0.21	0.36	0.36
Avail Cap(c_a), veh/h	1541	0	1449	1390	1703	1447	933	1586	1620	859	1555	1598
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	0.0	8.2	9.3	0.0	0.0	6.9	5.8	5.8	8.0	5.6	5.6
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.4	0.4	0.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	0.6	0.0	0.0	0.2	1.7	1.7	0.7	1.5	1.5
LnGrp Delay(d),s/veh	8.5	0.0	8.4	9.5	0.0	0.0	6.9	6.1	6.1	8.2	5.9	5.9
LnGrp LOS	A		A	A			A	A	A	A	A	A
Approach Vol, veh/h		191			96			653			649	
Approach Delay, s/veh		8.5			9.5			6.2			6.3	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		17.0		11.5		17.0		11.5
Change Period (Y+Rc), s		* 5		4.0		5.0		4.0
Max Green Setting (Gmax), s		* 26		26.0		25.0		26.0
Max Q Clear Time (g_c+I1), s		5.7		3.7		8.4		5.0
Green Ext Time (p_c), s		3.8		0.7		3.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	222	340	314	0	0	432
Future Volume (veh/h)	222	340	314	0	0	432
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	0	0	1863
Adj Flow Rate, veh/h	222	340	314	0	0	432
Adj No. of Lanes	1	1	1	0	0	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	2
Cap, veh/h	612	546	566	0	0	1076
Arrive On Green	0.35	0.35	0.30	0.00	0.00	0.30
Sat Flow, veh/h	1774	1583	1863	0	0	3725
Grp Volume(v), veh/h	222	340	314	0	0	432
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	0	0	1770
Q Serve(g_s), s	2.1	4.1	3.2	0.0	0.0	2.2
Cycle Q Clear(g_c), s	2.1	4.1	3.2	0.0	0.0	2.2
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	612	546	566	0	0	1076
V/C Ratio(X)	0.36	0.62	0.55	0.00	0.00	0.40
Avail Cap(c_a), veh/h	2023	1806	2124	0	0	4036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	6.2	6.6	0.0	0.0	6.3
Incr Delay (d2), s/veh	0.4	1.2	0.9	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.9	1.7	0.0	0.0	1.1
LnGrp Delay(d),s/veh	5.9	7.4	7.5	0.0	0.0	6.5
LnGrp LOS	A	A	A			A
Approach Vol, veh/h	562		314			432
Approach Delay, s/veh	6.8		7.5			6.5
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		10.9				10.9		11.9
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		5.2				4.2		6.1
Green Ext Time (p_c), s		1.7				2.7		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	311	55	245	188	0	96	0	227	4	4	0
Future Volume (veh/h)	1	311	55	245	188	0	96	0	227	4	4	0
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)	0.99		0.99	0.99		1.00	0.98		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	1	311	55	245	188	0	96	0	227	4	4	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	1229	214	557	1477	0	247	47	377	386	336	0
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.00	0.35	0.00	0.35	0.35	0.35	0.00
Sat Flow, veh/h	2	2946	513	1006	3632	0	319	133	1071	653	954	0
Grp Volume(v), veh/h	195	0	172	245	188	0	323	0	0	8	0	0
Grp Sat Flow(s),veh/h/ln	1862	0	1599	1006	1770	0	1524	0	0	1607	0	0
Q Serve(g_s), s	0.0	0.0	2.4	7.3	1.1	0.0	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	2.4	9.7	1.1	0.0	5.8	0.0	0.0	0.1	0.0	0.0
Prop In Lane	0.01		0.32	1.00		0.00	0.30		0.70	0.50		0.00
Lane Grp Cap(c), veh/h	881	0	667	557	1477	0	671	0	0	722	0	0
V/C Ratio(X)	0.22	0.00	0.26	0.44	0.13	0.00	0.48	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	3212	0	2674	1820	5918	0	1177	0	0	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	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.6	0.0	6.6	9.8	6.2	0.0	9.1	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	1.1	2.1	0.6	0.0	2.6	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	6.7	0.0	6.8	10.3	6.3	0.0	9.7	0.0	0.0	7.3	0.0	0.0
LnGrp LOS	A		A	B	A		A			A		
Approach Vol, veh/h		367			433			323			8	
Approach Delay, s/veh		6.7			8.6			9.7			7.3	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.2		18.5		16.2		18.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		24.0		58.0		24.0		58.0
Max Q Clear Time (g_c+I1), s		7.8		4.4		2.1		11.7
Green Ext Time (p_c), s		1.8		2.3		0.0		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	41	55	479	66	587	57	1053	158	165	735	36
Future Volume (vph)	25	41	55	479	66	587	57	1053	158	165	735	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	0.98	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.88	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1828	1539	3433	1533	1475	1770	4977		1770	3511	
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1828	1539	3433	1533	1475	1770	4977		1770	3511	
Peak-hour factor, PHF	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. Flow (vph)	25	41	55	479	66	587	57	1053	158	165	735	36
RTOR Reduction (vph)	0	0	51	0	150	253	0	17	0	0	3	0
Lane Group Flow (vph)	0	66	4	479	180	70	57	1194	0	165	768	0
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)		6.9	6.9	21.7	21.7	21.7	6.4	40.5		13.9	48.0	
Effective Green, g (s)		6.9	6.9	21.7	21.7	21.7	6.4	40.5		13.9	48.0	
Actuated g/C Ratio		0.07	0.07	0.22	0.22	0.22	0.06	0.40		0.14	0.48	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		126	106	744	332	320	113	2015		246	1685	
v/s Ratio Prot		c0.04		c0.14	0.12		0.03	c0.24		c0.09	0.22	
v/s Ratio Perm			0.00			0.05						
v/c Ratio		0.52	0.04	0.64	0.54	0.22	0.50	0.59		0.67	0.46	
Uniform Delay, d1		45.0	43.4	35.6	34.7	32.2	45.3	23.3		40.9	17.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.9	0.1	1.9	1.8	0.3	3.5	0.5		7.0	0.9	
Delay (s)		48.9	43.6	37.6	36.5	32.5	48.8	23.8		47.9	18.2	
Level of Service		D	D	D	D	C	D	C		D	B	
Approach Delay (s)		46.5			35.8			24.9			23.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	364	31	0	323	325
Future Volume (veh/h)	0	364	31	0	323	325
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	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	0	364	31	0	323	325
Adj No. of Lanes	1	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	585	1046	624	0	614	548
Arrive On Green	0.00	0.31	0.31	0.00	0.35	0.35
Sat Flow, veh/h	1863	1583	1014	0	1774	1583
Grp Volume(v), veh/h	0	364	31	0	323	325
Grp Sat Flow(s),veh/h/ln	1863	1583	1014	0	1774	1583
Q Serve(g_s), s	0.0	2.4	0.5	0.0	3.4	4.0
Cycle Q Clear(g_c), s	0.0	2.4	0.5	0.0	3.4	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	585	1046	624	0	614	548
V/C Ratio(X)	0.00	0.35	0.05	0.00	0.53	0.59
Avail Cap(c_a), veh/h	1740	2027	1252	0	2260	2017
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	1.8	5.7	0.0	6.2	6.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.1	0.0	1.7	1.9
LnGrp Delay(d),s/veh	0.0	2.0	5.7	0.0	6.9	7.4
LnGrp LOS		A	A		A	A
Approach Vol, veh/h	364			31	648	
Approach Delay, s/veh	2.0			5.7	7.1	
Approach LOS	A			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		12.2		11.4				11.4
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		30.0		22.0				22.0
Max Q Clear Time (g_c+I1), s		6.0		4.4				2.5
Green Ext Time (p_c), s		2.2		1.2				0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	540	430	1	3	3
Future Vol, veh/h	2	540	430	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	540	430	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	451	0	-	0	729	239
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1106	-	-	-	358	762
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1085	-	-	-	343	745
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	730	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1085	-	-	-	470
HCM Lane V/C Ratio	0.002	-	-	-	0.013
HCM Control Delay (s)	8.3	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	543	431	0	0	0
Future Vol, veh/h	0	543	431	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	543	431	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	546	-
Stage 1	-	-	3	-
Stage 2	-	-	543	-
Critical Hdwy	4.14	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.54	-
Follow-up Hdwy	2.22	-	4.02	-
Pot Cap-1 Maneuver	1618	-	444	0
Stage 1	-	-	-	0
Stage 2	-	-	518	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1613	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBLn1	WBLn2
Capacity (veh/h)	1613	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	
HCM Lane LOS	A	-	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	

Intersection	
Int Delay, s/veh	0.5

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	12	11	11	532	420	6
Future Vol, veh/h	12	11	11	532	420	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	11	11	532	420	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	711	213	426	0	-	0
Stage 1	423	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	368	792	1130	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	363	792	1130	-	-	-
Mov Cap-2 Maneuver	363	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1130	-	490	-	-
HCM Lane V/C Ratio	0.01	-	0.047	-	-
HCM Control Delay (s)	8.2	0.1	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	73	9	413	131	399	353
Future Volume (veh/h)	73	9	413	131	399	353
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	73	9	413	131	399	353
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	230	106	2202	962	740	2202
Arrive On Green	0.07	0.07	0.62	0.62	0.62	0.62
Sat Flow, veh/h	3442	1583	3632	1546	858	3632
Grp Volume(v), veh/h	73	9	413	131	399	353
Grp Sat Flow(s),veh/h/ln	1721	1583	1770	1546	858	1770
Q Serve(g_s), s	0.6	0.2	1.4	1.0	10.8	1.2
Cycle Q Clear(g_c), s	0.6	0.2	1.4	1.0	12.2	1.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	230	106	2202	962	740	2202
V/C Ratio(X)	0.32	0.09	0.19	0.14	0.54	0.16
Avail Cap(c_a), veh/h	2973	1368	3180	1389	976	3180
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	12.9	12.7	2.3	2.3	4.9	2.3
Incr Delay (d2), s/veh	0.8	0.3	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.7	0.4	2.6	0.6
LnGrp Delay(d),s/veh	13.7	13.0	2.4	2.3	5.6	2.3
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	82		544			752
Approach Delay, s/veh	13.6		2.4			4.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		22.0		6.9		22.0		
Change Period (Y+Rc), s		4.0		5.0		4.0		
Max Green Setting (Gmax), s		26.0		25.0		26.0		
Max Q Clear Time (g_c+I1), s		3.4		2.6		14.2		
Green Ext Time (p_c), s		3.1		0.2		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	3.9
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	40	60	2	157	52	493	116	201	336	104
Future Volume (veh/h)	45	4	40	60	2	157	52	493	116	201	336	104
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		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	45	4	40	60	2	0	52	493	116	201	336	104
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	528	30	296	488	379	322	639	1395	326	555	1315	401
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.00	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1405	146	1456	1353	1863	1583	945	2835	663	809	2674	815
Grp Volume(v), veh/h	45	0	44	60	2	0	52	307	302	201	221	219
Grp Sat Flow(s),veh/h/ln	1405	0	1602	1353	1863	1583	945	1770	1729	809	1770	1719
Q Serve(g_s), s	0.8	0.0	0.7	1.1	0.0	0.0	1.0	3.1	3.2	6.0	2.1	2.2
Cycle Q Clear(g_c), s	0.8	0.0	0.7	1.8	0.0	0.0	3.2	3.1	3.2	9.2	2.1	2.2
Prop In Lane	1.00		0.91	1.00		1.00	1.00		0.38	1.00		0.47
Lane Grp Cap(c), veh/h	528	0	326	488	379	322	639	871	850	555	871	846
V/C Ratio(X)	0.09	0.00	0.14	0.12	0.01	0.00	0.08	0.35	0.36	0.36	0.25	0.26
Avail Cap(c_a), veh/h	1480	0	1410	1405	1640	1394	990	1528	1493	841	1498	1455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	9.6	10.4	9.4	0.0	5.3	4.6	4.6	7.5	4.4	4.4
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.3	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.4	0.0	0.0	0.3	1.6	1.6	1.3	1.1	1.1
LnGrp Delay(d),s/veh	9.8	0.0	9.8	10.5	9.4	0.0	5.4	4.9	4.9	7.8	4.5	4.5
LnGrp LOS	A		A	B	A		A	A	A	A	A	A
Approach Vol, veh/h		89			62			661			641	
Approach Delay, s/veh		9.8			10.4			4.9			5.6	
Approach LOS		A			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		19.5		10.0		19.5		10.0
Change Period (Y+Rc), s		* 5		4.0		5.0		4.0
Max Green Setting (Gmax), s		* 26		26.0		25.0		26.0
Max Q Clear Time (g_c+I1), s		5.2		2.8		11.2		3.8
Green Ext Time (p_c), s		3.9		0.3		3.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	222	340	314	0	0	432
Future Volume (veh/h)	222	340	314	0	0	432
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	0	0	1863
Adj Flow Rate, veh/h	222	340	314	0	0	432
Adj No. of Lanes	1	1	1	0	0	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	2
Cap, veh/h	612	546	566	0	0	1076
Arrive On Green	0.35	0.35	0.30	0.00	0.00	0.30
Sat Flow, veh/h	1774	1583	1863	0	0	3725
Grp Volume(v), veh/h	222	340	314	0	0	432
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	0	0	1770
Q Serve(g_s), s	2.1	4.1	3.2	0.0	0.0	2.2
Cycle Q Clear(g_c), s	2.1	4.1	3.2	0.0	0.0	2.2
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	612	546	566	0	0	1076
V/C Ratio(X)	0.36	0.62	0.55	0.00	0.00	0.40
Avail Cap(c_a), veh/h	2023	1806	2124	0	0	4036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.6	6.2	6.6	0.0	0.0	6.3
Incr Delay (d2), s/veh	0.4	1.2	0.9	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.9	1.7	0.0	0.0	1.1
LnGrp Delay(d),s/veh	5.9	7.4	7.5	0.0	0.0	6.5
LnGrp LOS	A	A	A			A
Approach Vol, veh/h	562		314			432
Approach Delay, s/veh	6.8		7.5			6.5
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		10.9				10.9		11.9
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		5.2				4.2		6.1
Green Ext Time (p_c), s		1.7				2.7		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	179	101	706	762	0	52	0	170	4	4	0
Future Volume (veh/h)	0	179	101	706	762	0	52	0	170	4	4	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.97		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	0	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	179	101	706	762	0	52	0	170	4	4	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	1532	824	808	2443	0	108	21	247	188	168	0
Arrive On Green	0.00	0.69	0.69	0.69	0.69	0.00	0.21	0.00	0.21	0.21	0.21	0.00
Sat Flow, veh/h	0	2313	1193	1091	3632	0	254	100	1155	577	786	0
Grp Volume(v), veh/h	0	141	139	706	762	0	222	0	0	8	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1644	1091	1770	0	1508	0	0	1363	0	0
Q Serve(g_s), s	0.0	2.2	2.4	51.7	7.1	0.0	6.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.2	2.4	54.1	7.1	0.0	11.2	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		0.73	1.00		0.00	0.23		0.77	0.50		0.00
Lane Grp Cap(c), veh/h	0	1221	1135	808	2443	0	376	0	0	356	0	0
V/C Ratio(X)	0.00	0.12	0.12	0.87	0.31	0.00	0.59	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	0	1232	1144	815	2463	0	486	0	0	464	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	4.3	4.4	13.5	5.1	0.0	30.1	0.0	0.0	25.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	10.3	0.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	1.1	17.6	3.4	0.0	4.8	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	0.0	4.4	4.4	23.8	5.2	0.0	31.5	0.0	0.0	25.9	0.0	0.0
LnGrp LOS		A	A	C	A		C			C		
Approach Vol, veh/h		280			1468			222			8	
Approach Delay, s/veh		4.4			14.1			31.5			25.9	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		21.8		61.5		21.8		61.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		24.0		58.0		24.0		58.0
Max Q Clear Time (g_c+I1), s		13.2		4.4		2.3		56.1
Green Ext Time (p_c), s		0.9		1.8		0.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	70	146	334	38	266	51	987	73	201	808	78
Future Volume (vph)	86	70	146	334	38	266	51	987	73	201	808	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.89	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1813	1550	3433	1546	1475	1770	5028		1770	3486	
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1813	1550	3433	1546	1475	1770	5028		1770	3486	
Peak-hour factor, PHF	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. Flow (vph)	86	70	146	334	38	266	51	987	73	201	808	78
RTOR Reduction (vph)	0	0	129	0	98	124	0	8	0	0	6	0
Lane Group Flow (vph)	0	156	17	334	57	25	51	1052	0	201	880	0
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)		11.2	11.2	15.7	15.7	15.7	5.7	33.7		17.4	45.4	
Effective Green, g (s)		11.2	11.2	15.7	15.7	15.7	5.7	33.7		17.4	45.4	
Actuated g/C Ratio		0.12	0.12	0.17	0.17	0.17	0.06	0.35		0.18	0.48	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		213	182	567	255	243	106	1783		324	1665	
v/s Ratio Prot		c0.09		c0.10	0.04		0.03	c0.21		c0.11	0.25	
v/s Ratio Perm			0.01			0.02						
v/c Ratio		0.73	0.09	0.59	0.22	0.10	0.48	0.59		0.62	0.53	
Uniform Delay, d1		40.5	37.4	36.7	34.4	33.7	43.2	25.0		35.8	17.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		12.2	0.2	1.6	0.4	0.2	3.4	0.5		3.7	1.2	
Delay (s)		52.7	37.6	38.2	34.8	33.8	46.6	25.5		39.4	18.5	
Level of Service		D	D	D	C	C	D	C		D	B	
Approach Delay (s)		45.4			36.4			26.5			22.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	786	22	1	221	119
Future Volume (veh/h)	25	786	22	1	221	119
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	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	25	786	22	1	221	119
Adj No. of Lanes	1	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	903	1118	574	21	392	350
Arrive On Green	0.48	0.48	0.48	0.48	0.22	0.22
Sat Flow, veh/h	1863	1583	650	42	1774	1583
Grp Volume(v), veh/h	25	786	23	0	221	119
Grp Sat Flow(s),veh/h/ln	1863	1583	692	0	1774	1583
Q Serve(g_s), s	0.2	7.9	0.2	0.0	3.0	1.7
Cycle Q Clear(g_c), s	0.2	7.9	0.4	0.0	3.0	1.7
Prop In Lane		1.00	0.96		1.00	1.00
Lane Grp Cap(c), veh/h	903	1118	594	0	392	350
V/C Ratio(X)	0.03	0.70	0.04	0.00	0.56	0.34
Avail Cap(c_a), veh/h	1781	1864	919	0	1696	1514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	3.7	2.3	3.7	0.0	9.4	8.9
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	1.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.9	0.1	0.0	1.6	0.8
LnGrp Delay(d),s/veh	3.7	3.2	3.7	0.0	10.7	9.5
LnGrp LOS	A	A	A		B	A
Approach Vol, veh/h	811			23	340	
Approach Delay, s/veh	3.2			3.7	10.3	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		10.0		17.2				17.2
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		26.0		26.0				26.0
Max Q Clear Time (g_c+I1), s		5.0		9.9				2.4
Green Ext Time (p_c), s		1.0		3.3				0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	351	1465	1	3	3
Future Vol, veh/h	2	351	1465	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	351	1465	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1486	0	-	0	1670	756
Stage 1	-	-	-	-	1486	-
Stage 2	-	-	-	-	184	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	448	-	-	-	87	351
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	439	-	-	-	83	343
Mov Cap-2 Maneuver	-	-	-	-	83	-
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	33.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	439	-	-	-	134
HCM Lane V/C Ratio	0.005	-	-	-	0.045
HCM Control Delay (s)	13.2	0	-	-	33.1
HCM Lane LOS	B	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	354	1466	0	0	0
Future Vol, veh/h	0	354	1466	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	354	1466	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	357	-
Stage 1	-	-	3	-
Stage 2	-	-	354	-
Critical Hdwy	4.14	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.54	-
Follow-up Hdwy	2.22	-	4.02	-
Pot Cap-1 Maneuver	1618	-	~ 568	0
Stage 1	-	-	-	0
Stage 2	-	-	~ 629	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1613	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBLn1	WBLn2
Capacity (veh/h)	1613	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	
HCM Lane LOS	A	-	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	

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

Intersection	
Int Delay, s/veh	0.6

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	12	11	11	343	1455	6
Future Vol, veh/h	12	11	11	343	1455	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	11	11	343	1455	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1652	731	1461	0	-	0
Stage 1	1458	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	89	364	458	-	-	-
Stage 1	180	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	86	364	458	-	-	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	175	-	-	-	-	-
Stage 2	820	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	37.1	0.6	0
HCM LOS	E		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	458	-	135	-	-
HCM Lane V/C Ratio	0.024	-	0.17	-	-
HCM Control Delay (s)	13.1	0.2	37.1	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	938	246	344	11	71	523
Future Volume (veh/h)	938	246	344	11	71	523
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	938	246	344	11	71	523
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1428	657	1084	472	459	1084
Arrive On Green	0.41	0.41	0.31	0.31	0.31	0.31
Sat Flow, veh/h	3442	1583	3632	1540	1018	3632
Grp Volume(v), veh/h	938	246	344	11	71	523
Grp Sat Flow(s),veh/h/ln	1721	1583	1770	1540	1018	1770
Q Serve(g_s), s	7.1	3.5	2.4	0.2	1.9	3.9
Cycle Q Clear(g_c), s	7.1	3.5	2.4	0.2	4.3	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1428	657	1084	472	459	1084
V/C Ratio(X)	0.66	0.37	0.32	0.02	0.15	0.48
Avail Cap(c_a), veh/h	2665	1226	2850	1240	967	2850
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	7.6	6.5	8.6	7.8	10.2	9.1
Incr Delay (d2), s/veh	0.5	0.4	0.2	0.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	1.6	1.2	0.1	0.5	1.9
LnGrp Delay(d),s/veh	8.1	6.9	8.8	7.8	10.4	9.4
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	1184		355			594
Approach Delay, s/veh	7.9		8.7			9.6
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		13.9		18.4		13.9		
Change Period (Y+Rc), s		4.0		5.0		4.0		
Max Green Setting (Gmax), s		26.0		25.0		26.0		
Max Q Clear Time (g_c+I1), s		4.4		9.1		6.3		
Green Ext Time (p_c), s		2.1		4.3		3.6		

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Notes

Appendix G

Cumulative plus Project Conditions LOS Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	2	84	96	0	194	33	588	48	104	526	38
Future Volume (veh/h)	105	2	84	96	0	194	33	588	48	104	526	38
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		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	105	2	84	96	0	0	33	588	48	104	526	38
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	617	10	403	534	484	412	520	1413	115	489	1430	103
Arrive On Green	0.26	0.26	0.26	0.26	0.00	0.00	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1408	37	1549	1304	1863	1583	843	3308	270	789	3348	241
Grp Volume(v), veh/h	105	0	86	96	0	0	33	314	322	104	277	287
Grp Sat Flow(s),veh/h/ln	1408	0	1586	1304	1863	1583	843	1770	1808	789	1770	1820
Q Serve(g_s), s	1.7	0.0	1.2	1.8	0.0	0.0	0.8	3.6	3.6	3.0	3.1	3.1
Cycle Q Clear(g_c), s	1.7	0.0	1.2	3.0	0.0	0.0	3.9	3.6	3.6	6.6	3.1	3.1
Prop In Lane	1.00		0.98	1.00		1.00	1.00		0.15	1.00		0.13
Lane Grp Cap(c), veh/h	617	0	412	534	484	412	520	756	772	489	756	777
V/C Ratio(X)	0.17	0.00	0.21	0.18	0.00	0.00	0.06	0.42	0.42	0.21	0.37	0.37
Avail Cap(c_a), veh/h	1523	0	1433	1373	1684	1431	907	1569	1603	838	1538	1582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	8.3	9.5	0.0	0.0	6.9	5.7	5.7	8.0	5.6	5.6
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.2	0.0	0.0	0.1	0.4	0.4	0.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.6	0.7	0.0	0.0	0.2	1.7	1.8	0.7	1.5	1.6
LnGrp Delay(d),s/veh	8.6	0.0	8.6	9.7	0.0	0.0	7.0	6.1	6.1	8.3	5.9	5.9
LnGrp LOS	A		A	A			A	A	A	A	A	A
Approach Vol, veh/h		191			96			669			668	
Approach Delay, s/veh		8.6			9.7			6.1			6.3	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		17.3		11.5		17.3		11.5
Change Period (Y+Rc), s		* 5		4.0		5.0		4.0
Max Green Setting (Gmax), s		* 26		26.0		25.0		26.0
Max Q Clear Time (g_c+I1), s		5.9		3.7		8.6		5.0
Green Ext Time (p_c), s		3.9		0.7		3.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	230	340	330	0	0	451
Future Volume (veh/h)	230	340	330	0	0	451
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	0	0	1863
Adj Flow Rate, veh/h	230	340	330	0	0	451
Adj No. of Lanes	1	1	1	0	0	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	2
Cap, veh/h	609	544	581	0	0	1105
Arrive On Green	0.34	0.34	0.31	0.00	0.00	0.31
Sat Flow, veh/h	1774	1583	1863	0	0	3725
Grp Volume(v), veh/h	230	340	330	0	0	451
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	0	0	1770
Q Serve(g_s), s	2.3	4.2	3.4	0.0	0.0	2.3
Cycle Q Clear(g_c), s	2.3	4.2	3.4	0.0	0.0	2.3
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	609	544	581	0	0	1105
V/C Ratio(X)	0.38	0.63	0.57	0.00	0.00	0.41
Avail Cap(c_a), veh/h	1985	1772	2084	0	0	3960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	6.4	6.7	0.0	0.0	6.3
Incr Delay (d2), s/veh	0.4	1.2	0.9	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.0	1.9	0.0	0.0	1.2
LnGrp Delay(d),s/veh	6.1	7.6	7.6	0.0	0.0	6.5
LnGrp LOS	A	A	A			A
Approach Vol, veh/h	570		330			451
Approach Delay, s/veh	7.0		7.6			6.5
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		11.3				11.3		12.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		5.4				4.3		6.2
Green Ext Time (p_c), s		1.8				2.9		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	329	55	251	217	0	96	0	236	4	4	0
Future Volume (veh/h)	1	329	55	251	217	0	96	0	236	4	4	0
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)	0.99		0.99	0.99		1.00	0.98		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	1	329	55	251	217	0	96	0	236	4	4	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	100	1273	210	550	1515	0	238	45	381	376	328	0
Arrive On Green	0.43	0.43	0.43	0.43	0.43	0.00	0.35	0.00	0.35	0.35	0.35	0.00
Sat Flow, veh/h	1	2974	490	990	3632	0	312	128	1083	645	933	0
Grp Volume(v), veh/h	205	0	180	251	217	0	332	0	0	8	0	0
Grp Sat Flow(s),veh/h/ln	1862	0	1603	990	1770	0	1524	0	0	1578	0	0
Q Serve(g_s), s	0.0	0.0	2.6	7.9	1.4	0.0	2.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.6	0.0	2.6	10.6	1.4	0.0	6.4	0.0	0.0	0.1	0.0	0.0
Prop In Lane	0.00		0.31	1.00		0.00	0.29		0.71	0.50		0.00
Lane Grp Cap(c), veh/h	897	0	686	550	1515	0	664	0	0	704	0	0
V/C Ratio(X)	0.23	0.00	0.26	0.46	0.14	0.00	0.50	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	3068	0	2561	1708	5653	0	1124	0	0	1139	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	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.7	0.0	6.7	10.1	6.3	0.0	9.6	0.0	0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.2	2.3	0.7	0.0	2.8	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	6.8	0.0	6.9	10.7	6.4	0.0	10.2	0.0	0.0	7.7	0.0	0.0
LnGrp LOS	A		A	B	A		B			A		
Approach Vol, veh/h		385			468			332			8	
Approach Delay, s/veh		6.8			8.7			10.2			7.7	
Approach LOS		A			A			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		16.8		19.5		16.8		19.5
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		24.0		58.0		24.0		58.0
Max Q Clear Time (g_c+I1), s		8.4		4.6		2.1		12.6
Green Ext Time (p_c), s		1.8		2.4		0.0		2.8

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 (vph)	25	41	55	492	66	603	57	1053	158	185	735	36
Future Volume (vph)	25	41	55	492	66	603	57	1053	158	185	735	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.97	1.00	0.98	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.88	0.85	1.00	0.98		1.00	0.99	
Flt Protected		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1828	1539	3433	1532	1475	1770	4977		1770	3511	
Flt Permitted		0.98	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1828	1539	3433	1532	1475	1770	4977		1770	3511	
Peak-hour factor, PHF	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. Flow (vph)	25	41	55	492	66	603	57	1053	158	185	735	36
RTOR Reduction (vph)	0	0	51	0	153	258	0	18	0	0	3	0
Lane Group Flow (vph)	0	66	4	492	184	74	57	1193	0	185	768	0
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)		6.9	6.9	22.2	22.2	22.2	6.4	39.3		14.6	47.5	
Effective Green, g (s)		6.9	6.9	22.2	22.2	22.2	6.4	39.3		14.6	47.5	
Actuated g/C Ratio		0.07	0.07	0.22	0.22	0.22	0.06	0.39		0.15	0.48	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		126	106	762	340	327	113	1955		258	1667	
v/s Ratio Prot		c0.04		c0.14	0.12		0.03	c0.24		c0.10	0.22	
v/s Ratio Perm			0.00			0.05						
v/c Ratio		0.52	0.04	0.65	0.54	0.23	0.50	0.61		0.72	0.46	
Uniform Delay, d1		45.0	43.4	35.3	34.4	31.9	45.3	24.2		40.7	17.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.9	0.1	1.9	1.8	0.4	3.5	0.6		9.1	0.9	
Delay (s)		48.9	43.6	37.2	36.1	32.2	48.8	24.8		49.9	18.6	
Level of Service		D	D	D	D	C	D	C		D	B	
Approach Delay (s)		46.5			35.5			25.9			24.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	370	31	0	331	325
Future Volume (veh/h)	0	370	31	0	331	325
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	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	0	370	31	0	331	325
Adj No. of Lanes	1	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	586	1047	622	0	615	549
Arrive On Green	0.00	0.31	0.31	0.00	0.35	0.35
Sat Flow, veh/h	1863	1583	1008	0	1774	1583
Grp Volume(v), veh/h	0	370	31	0	331	325
Grp Sat Flow(s),veh/h/ln	1863	1583	1008	0	1774	1583
Q Serve(g_s), s	0.0	2.4	0.5	0.0	3.5	4.0
Cycle Q Clear(g_c), s	0.0	2.4	0.5	0.0	3.5	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	586	1047	622	0	615	549
V/C Ratio(X)	0.00	0.35	0.05	0.00	0.54	0.59
Avail Cap(c_a), veh/h	1735	2024	1244	0	2253	2011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	1.8	5.7	0.0	6.2	6.3
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.7	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.1	0.0	1.8	1.9
LnGrp Delay(d),s/veh	0.0	2.0	5.8	0.0	6.9	7.4
LnGrp LOS		A	A		A	A
Approach Vol, veh/h	370			31	656	
Approach Delay, s/veh	2.0			5.8	7.1	
Approach LOS	A			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		12.2		11.4				11.4
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		30.0		22.0				22.0
Max Q Clear Time (g_c+I1), s		6.0		4.4				2.5
Green Ext Time (p_c), s		2.2		1.2				0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	866	465	1	3	3
Future Vol, veh/h	2	866	465	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	866	465	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	486	0	-	0	927	256
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	441	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1073	-	-	-	267	743
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	616	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1053	-	-	-	256	727
Mov Cap-2 Maneuver	-	-	-	-	256	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	604	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1053	-	-	-	379
HCM Lane V/C Ratio	0.002	-	-	-	0.016
HCM Control Delay (s)	8.4	0	-	-	14.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	569	466	0	0	0
Future Vol, veh/h	0	569	466	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	16965	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	569	466	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	572	-
Stage 1	-	-	3	-
Stage 2	-	-	569	-
Critical Hdwy	4.14	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.54	-
Follow-up Hdwy	2.22	-	4.02	-
Pot Cap-1 Maneuver	1618	-	~ 429	0
Stage 1	-	-	-	0
Stage 2	-	-	504	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1613	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBLn1	WBLn2
Capacity (veh/h)	1613	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes

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

Intersection	
Int Delay, s/veh	2

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	12	0	11	35	0	28	11	532	26	50	420	6
Future Vol, veh/h	12	0	11	35	0	28	11	532	26	50	420	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	11	35	0	28	11	532	26	50	420	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	811	1103	213	877	1093	279	426	0	0	558	0	0
Stage 1	523	523	-	567	567	-	-	-	-	-	-	-
Stage 2	288	580	-	310	526	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	271	210	792	243	213	718	1130	-	-	1009	-	-
Stage 1	505	529	-	476	505	-	-	-	-	-	-	-
Stage 2	695	498	-	675	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	245	194	792	225	196	718	1130	-	-	1009	-	-
Mov Cap-2 Maneuver	245	194	-	225	196	-	-	-	-	-	-	-
Stage 1	498	495	-	469	498	-	-	-	-	-	-	-
Stage 2	659	491	-	622	493	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	15.5	18.8	0.3	1.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1130	-	-	324	366	1009	-	-
HCM Lane V/C Ratio	0.01	-	-	0.194	0.063	0.05	-	-
HCM Control Delay (s)	8.2	0.1	-	18.8	15.5	8.8	0.2	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0.2	-	-

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	96	9	419	153	399	380
Future Volume (veh/h)	96	9	419	153	399	380
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	96	9	419	153	399	380
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	266	122	2219	969	719	2219
Arrive On Green	0.08	0.08	0.63	0.63	0.63	0.63
Sat Flow, veh/h	3442	1583	3632	1546	836	3632
Grp Volume(v), veh/h	96	9	419	153	399	380
Grp Sat Flow(s),veh/h/ln	1721	1583	1770	1546	836	1770
Q Serve(g_s), s	0.8	0.2	1.5	1.2	11.8	1.4
Cycle Q Clear(g_c), s	0.8	0.2	1.5	1.2	13.3	1.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	266	122	2219	969	719	2219
V/C Ratio(X)	0.36	0.07	0.19	0.16	0.56	0.17
Avail Cap(c_a), veh/h	2827	1301	3024	1321	909	3024
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	13.3	13.0	2.4	2.4	5.2	2.4
Incr Delay (d2), s/veh	0.8	0.3	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.7	0.5	2.7	0.6
LnGrp Delay(d),s/veh	14.1	13.3	2.4	2.4	5.9	2.4
LnGrp LOS	B	B	A	A	A	A
Approach Vol, veh/h	105		572			779
Approach Delay, s/veh	14.1		2.4			4.2
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		23.1		7.4		23.1		
Change Period (Y+Rc), s		4.0		5.0		4.0		
Max Green Setting (Gmax), s		26.0		25.0		26.0		
Max Q Clear Time (g_c+I1), s		3.5		2.8		15.3		
Green Ext Time (p_c), s		3.2		0.3		3.8		

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	4	40	60	2	157	52	517	116	201	359	104
Future Volume (veh/h)	45	4	40	60	2	157	52	517	116	201	359	104
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		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	45	4	40	60	2	0	52	517	116	201	359	104
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	521	29	293	481	375	319	630	1431	319	547	1359	388
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	1405	146	1456	1353	1863	1583	925	2864	639	791	2718	777
Grp Volume(v), veh/h	45	0	44	60	2	0	52	318	315	201	232	231
Grp Sat Flow(s),veh/h/ln	1405	0	1602	1353	1863	1583	925	1770	1733	791	1770	1726
Q Serve(g_s), s	0.8	0.0	0.7	1.1	0.0	0.0	1.0	3.3	3.3	6.3	2.3	2.3
Cycle Q Clear(g_c), s	0.8	0.0	0.7	1.8	0.0	0.0	3.4	3.3	3.3	9.6	2.3	2.3
Prop In Lane	1.00		0.91	1.00		1.00	1.00		0.37	1.00		0.45
Lane Grp Cap(c), veh/h	521	0	323	481	375	319	630	884	866	547	884	862
V/C Ratio(X)	0.09	0.00	0.14	0.12	0.01	0.00	0.08	0.36	0.36	0.37	0.26	0.27
Avail Cap(c_a), veh/h	1451	0	1383	1377	1608	1367	951	1498	1468	808	1469	1432
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	9.9	10.6	9.6	0.0	5.3	4.6	4.6	7.5	4.3	4.3
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.3	0.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.4	0.0	0.0	0.3	1.7	1.6	1.4	1.1	1.1
LnGrp Delay(d),s/veh	10.0	0.0	10.1	10.7	9.6	0.0	5.4	4.8	4.9	8.0	4.5	4.5
LnGrp LOS	B		B	B	A		A	A	A	A	A	A
Approach Vol, veh/h		89			62			685			664	
Approach Delay, s/veh		10.0			10.7			4.9			5.5	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		20.1		10.1		20.1		10.1
Change Period (Y+Rc), s		* 5		4.0		5.0		4.0
Max Green Setting (Gmax), s		* 26		26.0		25.0		26.0
Max Q Clear Time (g_c+I1), s		5.4		2.8		11.6		3.8
Green Ext Time (p_c), s		4.0		0.3		3.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	231	340	338	0	0	455
Future Volume (veh/h)	231	340	338	0	0	455
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	0	0	1863
Adj Flow Rate, veh/h	231	340	338	0	0	455
Adj No. of Lanes	1	1	1	0	0	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	2
Cap, veh/h	608	542	589	0	0	1119
Arrive On Green	0.34	0.34	0.32	0.00	0.00	0.32
Sat Flow, veh/h	1774	1583	1863	0	0	3725
Grp Volume(v), veh/h	231	340	338	0	0	455
Grp Sat Flow(s),veh/h/ln	1774	1583	1863	0	0	1770
Q Serve(g_s), s	2.3	4.2	3.6	0.0	0.0	2.4
Cycle Q Clear(g_c), s	2.3	4.2	3.6	0.0	0.0	2.4
Prop In Lane	1.00	1.00		0.00	0.00	
Lane Grp Cap(c), veh/h	608	542	589	0	0	1119
V/C Ratio(X)	0.38	0.63	0.57	0.00	0.00	0.41
Avail Cap(c_a), veh/h	1967	1756	2066	0	0	3925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	6.5	6.7	0.0	0.0	6.3
Incr Delay (d2), s/veh	0.4	1.2	0.9	0.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.0	1.9	0.0	0.0	1.2
LnGrp Delay(d),s/veh	6.2	7.7	7.6	0.0	0.0	6.5
LnGrp LOS	A	A	A			A
Approach Vol, veh/h	571		338			455
Approach Delay, s/veh	7.1		7.6			6.5
Approach LOS	A		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		11.4				11.4		12.0
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		26.0				26.0		26.0
Max Q Clear Time (g_c+I1), s		5.6				4.4		6.2
Green Ext Time (p_c), s		1.9				2.9		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	202	101	716	805	0	52	0	179	4	4	0
Future Volume (veh/h)	0	202	101	716	805	0	52	0	179	4	4	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.97		0.96	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	0	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	202	101	716	805	0	52	0	179	4	4	0
Adj No. of Lanes	0	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	1595	766	788	2437	0	105	21	253	186	166	0
Arrive On Green	0.00	0.69	0.69	0.69	0.69	0.00	0.22	0.00	0.22	0.22	0.22	0.00
Sat Flow, veh/h	0	2409	1112	1069	3632	0	244	96	1169	563	767	0
Grp Volume(v), veh/h	0	152	151	716	805	0	231	0	0	8	0	0
Grp Sat Flow(s),veh/h/ln	0	1770	1659	1069	1770	0	1509	0	0	1330	0	0
Q Serve(g_s), s	0.0	2.5	2.6	55.4	7.7	0.0	6.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.5	2.6	58.0	7.7	0.0	11.8	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		0.67	1.00		0.00	0.23		0.77	0.50		0.00
Lane Grp Cap(c), veh/h	0	1218	1142	788	2437	0	379	0	0	352	0	0
V/C Ratio(X)	0.00	0.13	0.13	0.91	0.33	0.00	0.61	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	0	1218	1142	788	2437	0	480	0	0	451	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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	4.5	4.5	15.0	5.3	0.0	30.4	0.0	0.0	26.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	14.4	0.1	0.0	1.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.2	1.2	19.7	3.7	0.0	5.1	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	0.0	4.5	4.5	29.4	5.4	0.0	32.0	0.0	0.0	26.0	0.0	0.0
LnGrp LOS		A	A	C	A		C			C		
Approach Vol, veh/h		303			1521			231			8	
Approach Delay, s/veh		4.5			16.7			32.0			26.0	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.2		62.0		22.2		62.0
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0
Max Green Setting (Gmax), s		24.0		58.0		24.0		58.0
Max Q Clear Time (g_c+I1), s		13.8		4.6		2.3		60.0
Green Ext Time (p_c), s		0.9		1.9		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	70	146	353	38	290	51	987	82	215	808	78
Future Volume (vph)	86	70	146	353	38	290	51	987	82	215	808	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00	1.00	0.97	0.95	0.95	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.98	1.00	0.99	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.88	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1813	1549	3433	1542	1475	1770	5022		1770	3486	
Flt Permitted		0.97	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1813	1549	3433	1542	1475	1770	5022		1770	3486	
Peak-hour factor, PHF	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. Flow (vph)	86	70	146	353	38	290	51	987	82	215	808	78
RTOR Reduction (vph)	0	0	129	0	106	134	0	10	0	0	6	0
Lane Group Flow (vph)	0	156	17	353	60	28	51	1059	0	215	880	0
Confl. Peds. (#/hr)	6		3	3		6	4			4		
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)		11.1	11.1	16.4	16.4	16.4	5.7	31.8		18.7	44.8	
Effective Green, g (s)		11.1	11.1	16.4	16.4	16.4	5.7	31.8		18.7	44.8	
Actuated g/C Ratio		0.12	0.12	0.17	0.17	0.17	0.06	0.33		0.20	0.47	
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		211	180	592	266	254	106	1681		348	1643	
v/s Ratio Prot		c0.09		c0.10	0.04		0.03	c0.21		c0.12	0.25	
v/s Ratio Perm			0.01			0.02						
v/c Ratio		0.74	0.09	0.60	0.23	0.11	0.48	0.63		0.62	0.54	
Uniform Delay, d1		40.6	37.5	36.2	33.8	33.1	43.2	26.6		34.9	17.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		12.7	0.2	1.6	0.4	0.2	3.4	0.7		3.2	1.3	
Delay (s)		53.3	37.7	37.9	34.3	33.3	46.6	27.4		38.1	19.0	
Level of Service		D	D	D	C	C	D	C		D	B	
Approach Delay (s)		45.7			35.9			28.3			22.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	25	796	22	1	230	119
Future Volume (veh/h)	25	796	22	1	230	119
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	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	25	796	22	1	230	119
Adj No. of Lanes	1	1	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	905	1125	567	20	399	356
Arrive On Green	0.49	0.49	0.49	0.49	0.22	0.22
Sat Flow, veh/h	1863	1583	644	42	1774	1583
Grp Volume(v), veh/h	25	796	23	0	230	119
Grp Sat Flow(s),veh/h/ln	1863	1583	686	0	1774	1583
Q Serve(g_s), s	0.2	8.1	0.2	0.0	3.2	1.7
Cycle Q Clear(g_c), s	0.2	8.1	0.4	0.0	3.2	1.7
Prop In Lane		1.00	0.96		1.00	1.00
Lane Grp Cap(c), veh/h	905	1125	588	0	399	356
V/C Ratio(X)	0.03	0.71	0.04	0.00	0.58	0.33
Avail Cap(c_a), veh/h	1751	1845	898	0	1668	1489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	3.7	2.3	3.7	0.0	9.5	9.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.0	1.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.0	0.1	0.0	1.7	0.8
LnGrp Delay(d),s/veh	3.7	3.2	3.8	0.0	10.9	9.5
LnGrp LOS	A	A	A		B	A
Approach Vol, veh/h	821			23	349	
Approach Delay, s/veh	3.2			3.8	10.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		10.2		17.4				17.4
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		26.0		26.0				26.0
Max Q Clear Time (g_c+I1), s		5.2		10.1				2.4
Green Ext Time (p_c), s		1.0		3.4				0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	383	1518	1	3	3
Future Vol, veh/h	2	383	1518	1	3	3
Conflicting Peds, #/hr	20	0	0	20	4	3
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	383	1518	1	3	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1539	0	-	0	1739	783
Stage 1	-	-	-	-	1539	-
Stage 2	-	-	-	-	200	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	428	-	-	-	78	337
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	420	-	-	-	75	330
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	799	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	36
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	420	-	-	-	122
HCM Lane V/C Ratio	0.005	-	-	-	0.049
HCM Control Delay (s)	13.6	0	-	-	36
HCM Lane LOS	B	A	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	386	1519	0	0	0
Future Vol, veh/h	0	386	1519	0	0	0
Conflicting Peds, #/hr	3	0	0	3	6	5
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	386	1519	0	0	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	3	0	389	-
Stage 1	-	-	3	-
Stage 2	-	-	386	-
Critical Hdwy	4.14	-	6.54	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.54	-
Follow-up Hdwy	2.22	-	4.02	-
Pot Cap-1 Maneuver	1618	-	~ 545	0
Stage 1	-	-	-	0
Stage 2	-	-	~ 609	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1613	-	0	-
Mov Cap-2 Maneuver	-	-	0	-
Stage 1	-	-	0	-
Stage 2	-	-	0	-

Approach	EB	WB
HCM Control Delay, s	0	
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBLn1	WBLn2
Capacity (veh/h)	1613	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	
HCM Lane LOS	A	-	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	

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

Intersection	
Int Delay, s/veh	4.5

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	12	0	11	53	0	44	11	343	32	60	1455	6
Future Vol, veh/h	12	0	11	53	0	44	11	343	32	60	1455	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	11	53	0	44	11	343	32	60	1455	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1772	1975	731	1229	1962	188	1461	0	0	375	0	0
Stage 1	1578	1578	-	381	381	-	-	-	-	-	-	-
Stage 2	194	397	-	848	1581	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	53	61	364	134	63	822	458	-	-	1180	-	-
Stage 1	114	168	-	613	612	-	-	-	-	-	-	-
Stage 2	789	602	-	322	167	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	39	43	364	101	45	822	458	-	-	1180	-	-
Mov Cap-2 Maneuver	39	43	-	101	45	-	-	-	-	-	-	-
Stage 1	111	122	-	595	594	-	-	-	-	-	-	-
Stage 2	724	584	-	228	122	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	82.9	52.2	0.5	1.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	458	-	-	168	68	1180	-	-
HCM Lane V/C Ratio	0.024	-	-	0.577	0.338	0.051	-	-
HCM Control Delay (s)	13.1	0.2	-	52.2	82.9	8.2	1	-
HCM Lane LOS	B	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	3.1	1.3	0.2	-	-

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	966	246	366	21	71	555
Future Volume (veh/h)	966	246	366	21	71	555
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	966	246	366	21	71	555
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1439	662	1108	482	446	1108
Arrive On Green	0.42	0.42	0.31	0.31	0.31	0.31
Sat Flow, veh/h	3442	1583	3632	1540	989	3632
Grp Volume(v), veh/h	966	246	366	21	71	555
Grp Sat Flow(s),veh/h/ln	1721	1583	1770	1540	989	1770
Q Serve(g_s), s	7.6	3.6	2.7	0.3	2.0	4.3
Cycle Q Clear(g_c), s	7.6	3.6	2.7	0.3	4.6	4.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	1439	662	1108	482	446	1108
V/C Ratio(X)	0.67	0.37	0.33	0.04	0.16	0.50
Avail Cap(c_a), veh/h	2570	1183	2749	1196	905	2749
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	6.7	8.8	8.0	10.6	9.4
Incr Delay (d2), s/veh	0.6	0.3	0.2	0.0	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	1.6	1.3	0.1	0.6	2.1
LnGrp Delay(d),s/veh	8.4	7.1	9.0	8.0	10.7	9.7
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	1212		387			626
Approach Delay, s/veh	8.2		8.9			9.8
Approach LOS	A		A			A

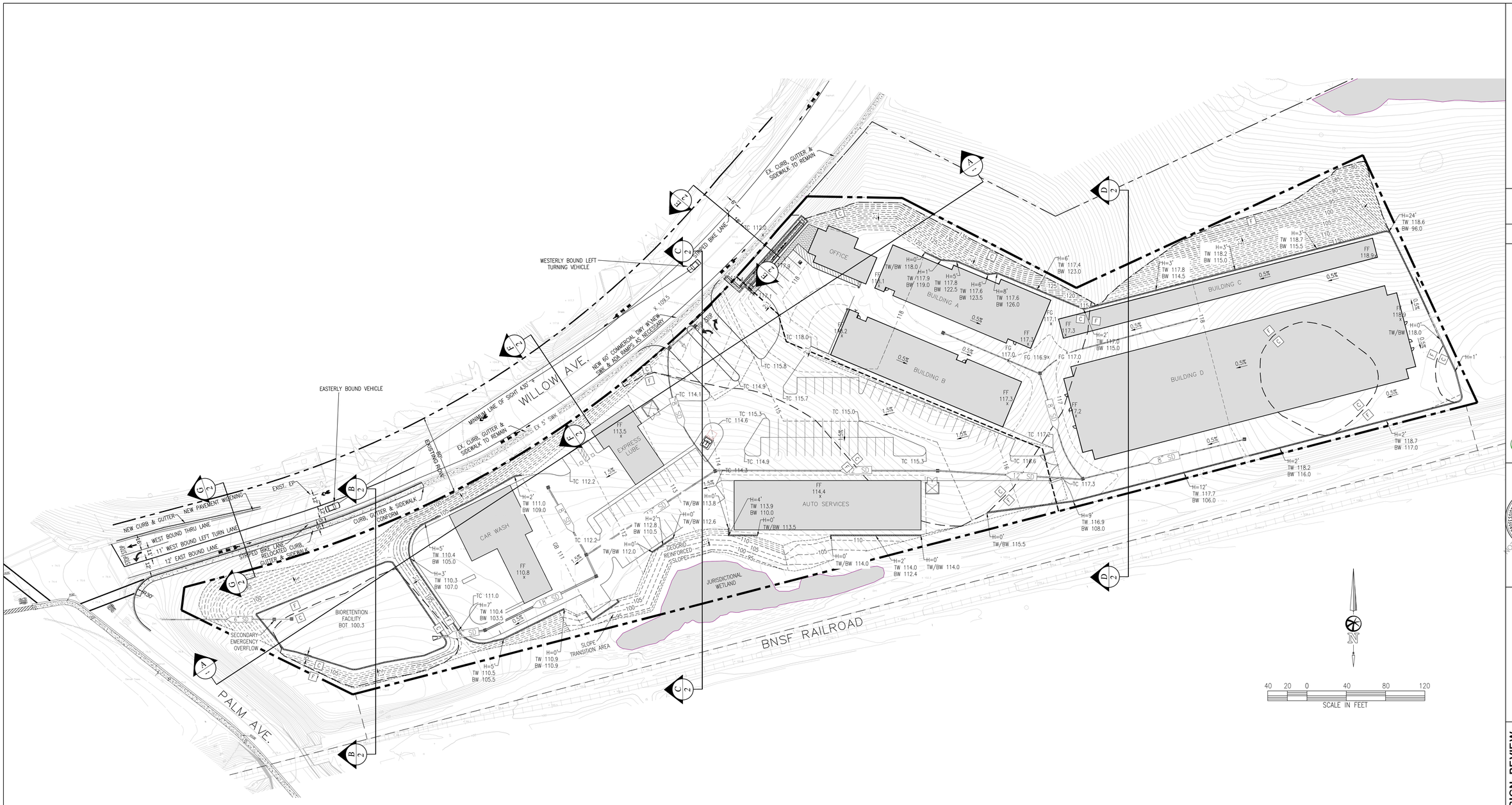
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		14.5		19.0		14.5		
Change Period (Y+Rc), s		4.0		5.0		4.0		
Max Green Setting (Gmax), s		26.0		25.0		26.0		
Max Q Clear Time (g_c+I1), s		4.7		9.6		6.6		
Green Ext Time (p_c), s		2.3		4.4		3.8		

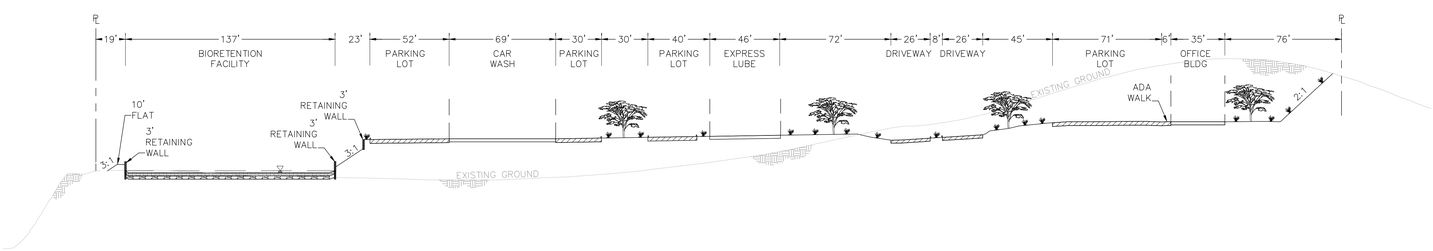
Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Notes

Appendix H

Site Plan with Mitigation (June 6, 2018)





SECTION A–A
VERTICAL 1"=20'
HORIZONTAL 1"=40'

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TOE–TOP OF SLOPE
- CUT–FILL LINE
- RETAINING WALL
- EDGE OF NEW PAVEMENT
- PROPOSED FOOTPRINT
- EXISTING WETLAND

Call Two Working Days Before You Dig!

1-800-227-2600

DATE UPDATED: JUNE 6, 2018

PRELIMINARY

BY	DATE	REVISIONS

Bellecci & Associates, inc.
Civil Engineering • LandSurveying
2290 Diamond Boulevard, Suite 100 Concord, CA 94520
Phone (925) 685-4569 Fax (925) 685-4838

REGISTERED PROFESSIONAL ENGINEER FRANK BELLECCI No. 34597 CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

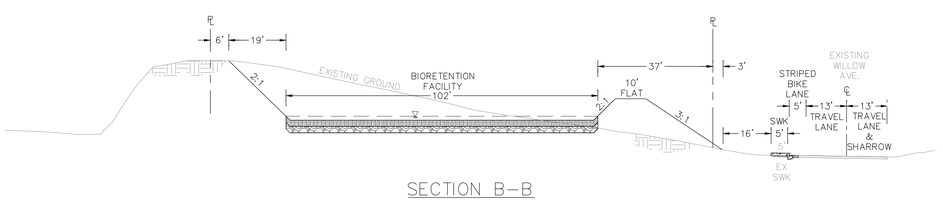
WILLOW AVENUE COMMERCIAL CENTER DESIGN REVIEW

SITE SECTIONS

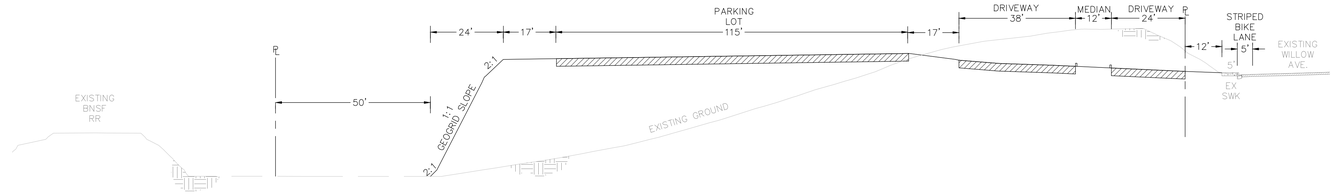
HERCULES CONTRA COSTA COUNTY CALIFORNIA

SHEET 1 OF 4

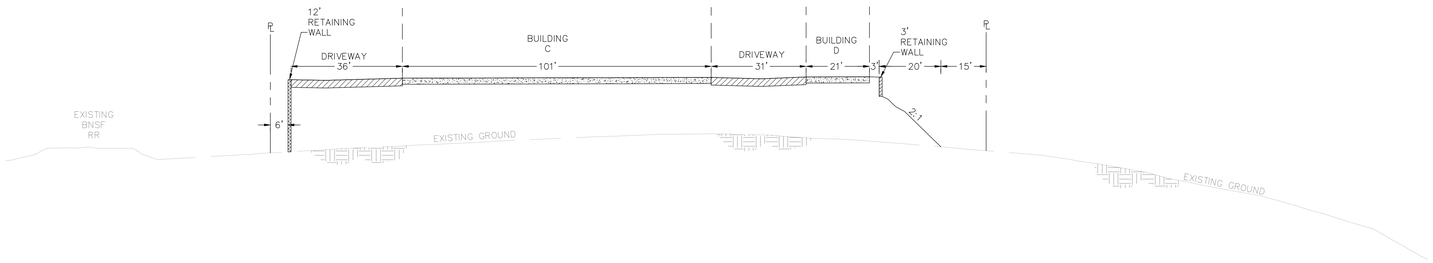
JOB NO. 17024



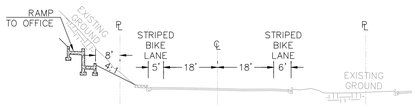
SECTION B–B
VERTICAL 1"=10'
HORIZONTAL 1"=20'



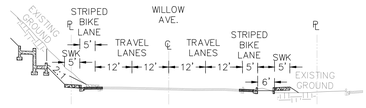
SECTION C–C
VERTICAL 1"=10'
HORIZONTAL 1"=20'



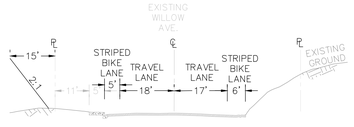
SECTION D–D
VERTICAL 1"=10'
HORIZONTAL 1"=20'



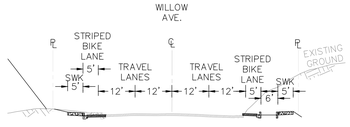
SECTION E–E
CURRENT + PROJECT
VERTICAL 1"=10'
HORIZONTAL 1"=20'



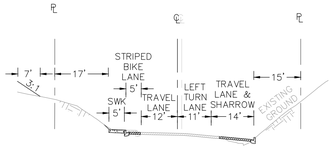
SECTION E–E
ULTIMATE
VERTICAL 1"=10'
HORIZONTAL 1"=20'



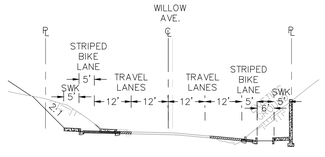
SECTION F–F
CURRENT + PROJECT
VERTICAL 1"=10'
HORIZONTAL 1"=20'



SECTION F–F
ULTIMATE
VERTICAL 1"=10'
HORIZONTAL 1"=20'



SECTION G–G
CURRENT + PROJECT
VERTICAL 1"=10'
HORIZONTAL 1"=20'



SECTION G–G
ULTIMATE
VERTICAL 1"=10'
HORIZONTAL 1"=20'

20 10 0 20 40 60
SCALE IN FEET

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TOE–TOP OF SLOPE
- RETAINING WALL
- EDGE OF NEW PAVEMENT
- PROPOSED FOOTPRINT
- EXISTING WETLAND

PRELIMINARY

DATE UPDATED: JUNE 6, 2018

Call Two Working Days Before You Dig!

1-800-227-2600

BY	DATE	REVISIONS

Bellecci & Associates, inc.
Civil Engineering • LandSurveying
2290 Diamond Boulevard, Suite 100 Concord, CA 94520
Phone (925) 685-4569 Fax (925) 685-4838

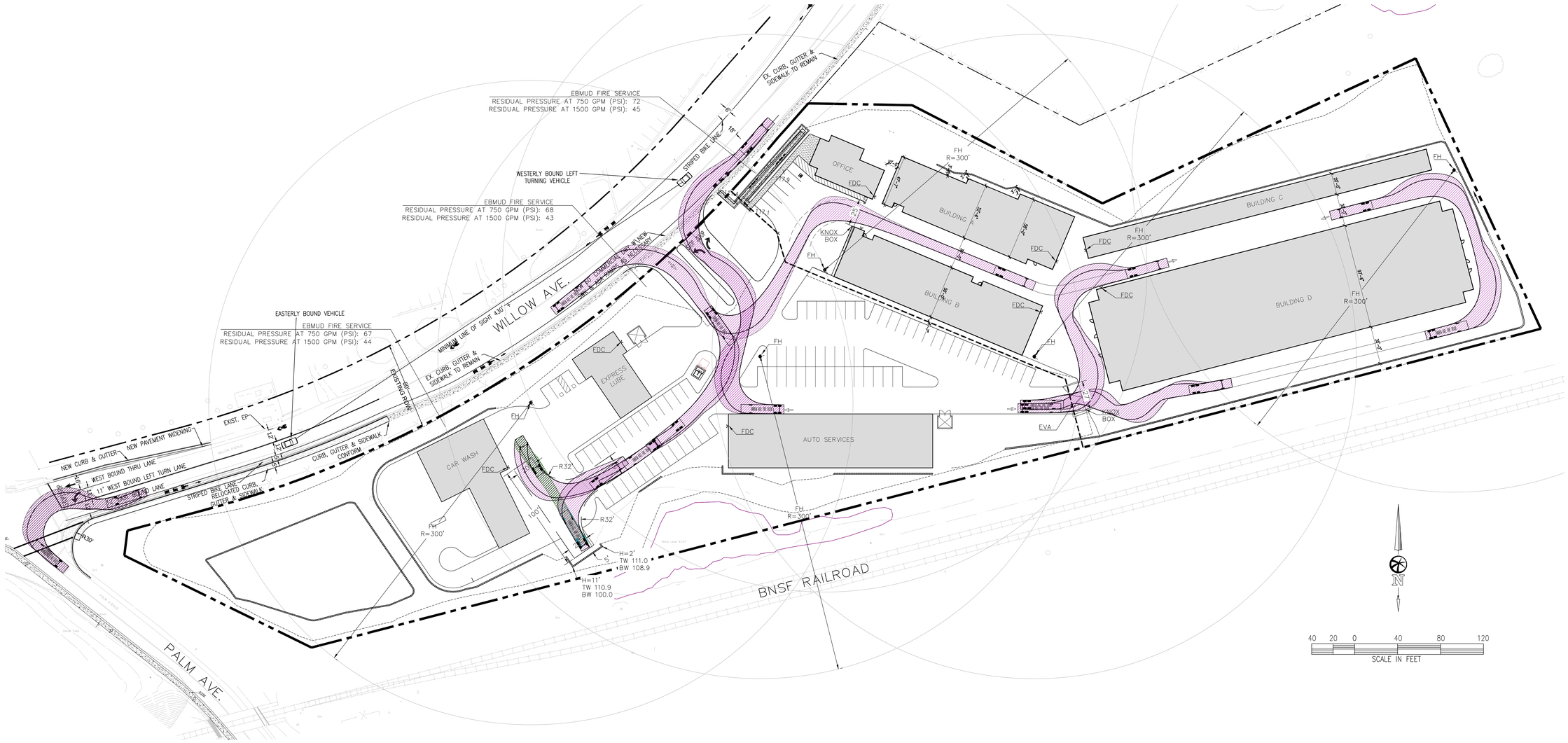
REGISTERED PROFESSIONAL ENGINEER FRANK C. BELLECCI No. 34557 CIVIL STATE OF CALIFORNIA
NOT FOR CONSTRUCTION

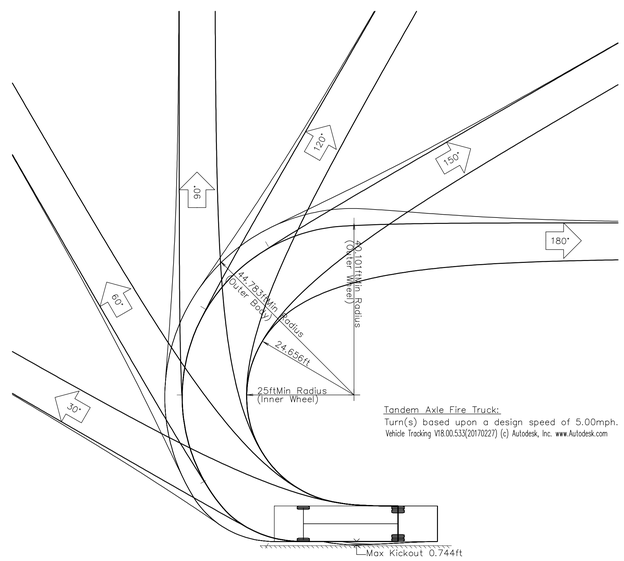
WILLOW AVENUE COMMERCIAL CENTER DESIGN REVIEW

PROPOSED SITE SECTIONS

HERCULES CONTRA COSTA COUNTY CALIFORNIA

SHEET 2 OF 4
JOB NO. 17024





Tandem Axle Fire Truck:
Turn(s) based upon a design speed of 5.00mph.
Vehicle Tracking V18.0.533(20170227) (c) Autodesk, Inc. www.Autodesk.com

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TOE–TOP OF SLOPE
- RETAINING WALL
- EDGE OF NEW PAVEMENT
- PROPOSED FOOTPRINT
- EXISTING WETLAND
- TURNING MOVEMENT PATH OF TRAVEL

PRELIMINARY

Call Two Working Days Before You Dig!

1-800-227-2600

DATE UPDATED: JUNE 6, 2018

BY	DATE	REVISIONS

Bellecci & Associates, inc.
Civil Engineering • LandSurveying
2290 Diamond Boulevard, Suite 100 Concord, CA 94520
Phone (925) 685-4569 Fax (925) 685-4838

REGISTERED PROFESSIONAL ENGINEER FRANK GABRIELE BELLECCI No. 34867 CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION UNLESS SIGNED

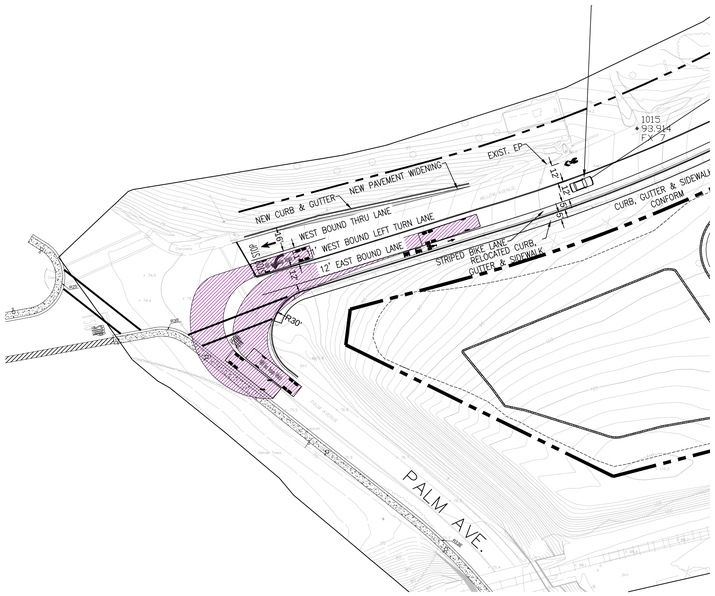
WILLOW AVENUE COMMERCIAL CENTER DESIGN REVIEW

EVA/FIRE DESIGN

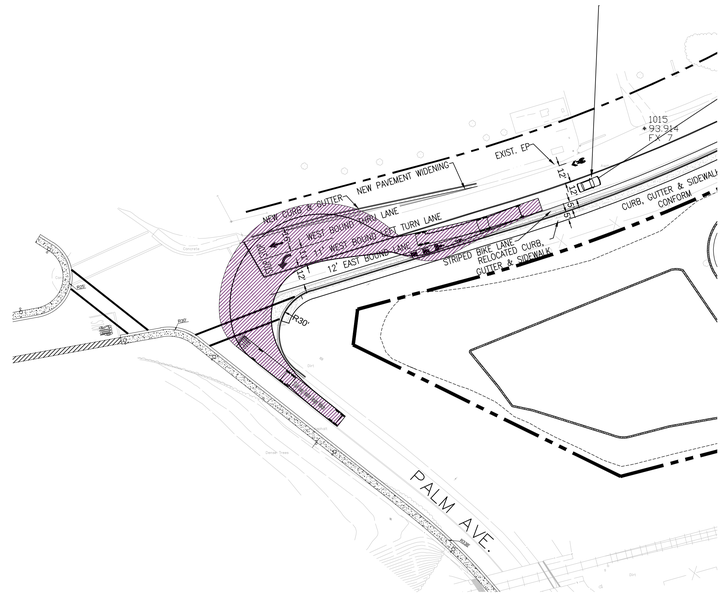
HERCULES CONTRA COSTA COUNTY CALIFORNIA

SHEET 3 OF 4

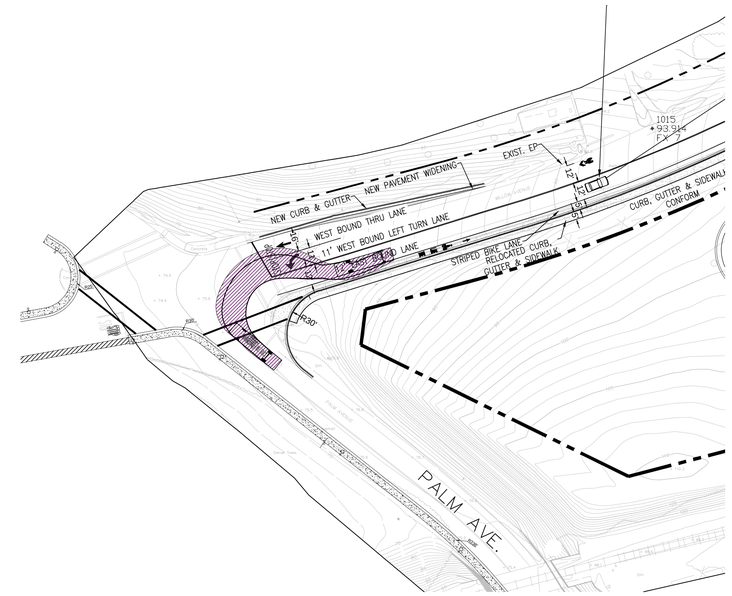
JOB NO. 17024



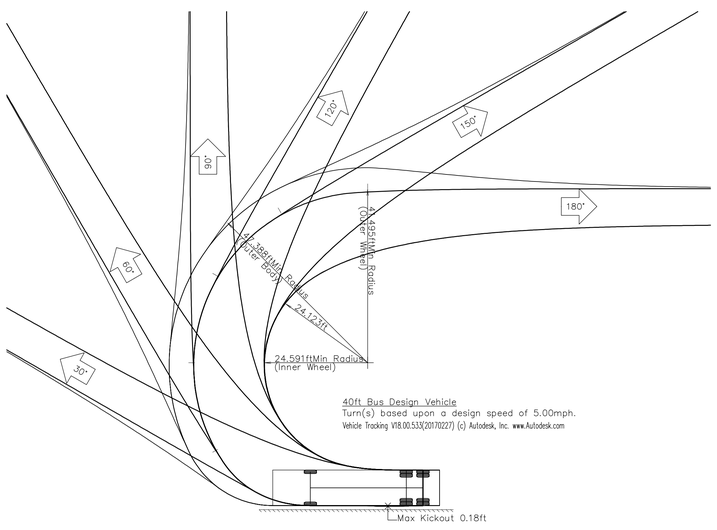
40FT BUS DESIGN VEHICLE
TURNING MOVEMENTS: WILLOW AVE & PALM AVE



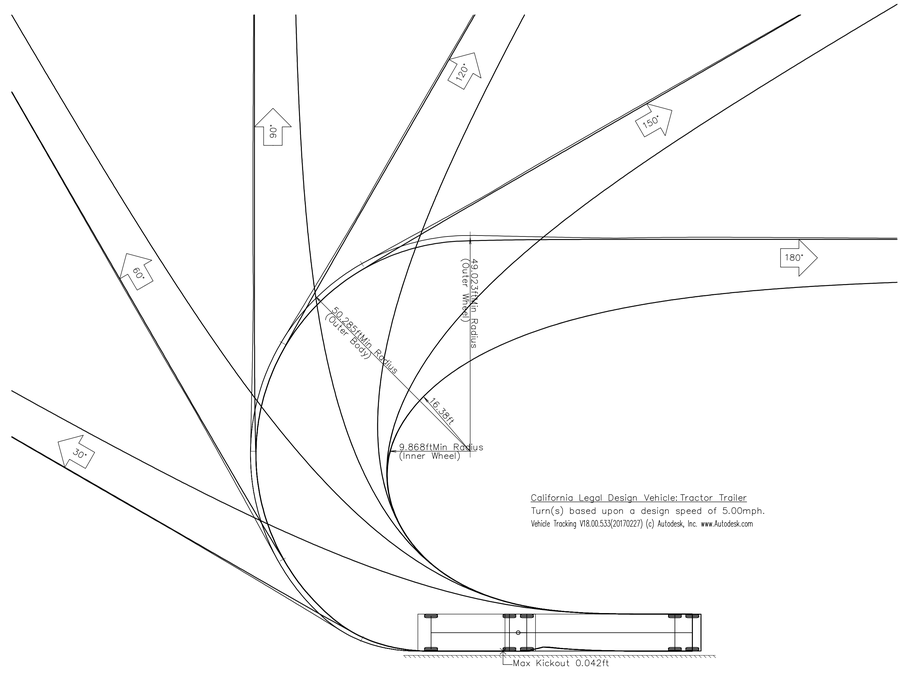
CALIFORNIA LEGAL DESIGN VEHICLE: TRACTOR TRAILER
TURNING MOVEMENT: RIGHT TURN, PALM AVE TO WILLOW AVE



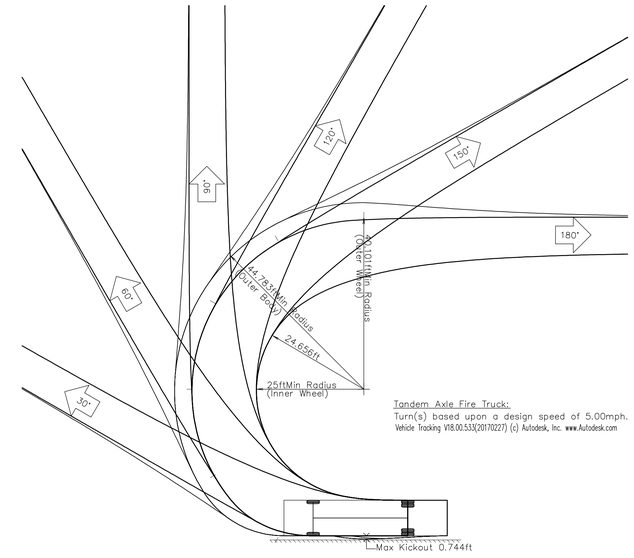
TANDEM AXEL FIRE TRUCK, HERCULES RODEO FIRE DISTRICT
TURNING MOVEMENT: RIGHT TURN, PALM AVE TO WILLOW AVE



40ft Bus Design Vehicle
Turn(s) based upon a design speed of 5.00mph.
Vehicle Tracking V18.00.533(20170227) (c) Autodesk, Inc. www.Autodesk.com



California Legal Design Vehicle: Tractor Trailer
Turn(s) based upon a design speed of 5.00mph.
Vehicle Tracking V18.00.533(20170227) (c) Autodesk, Inc. www.Autodesk.com



Tandem Axle Fire Truck:
Turn(s) based upon a design speed of 5.00mph.
Vehicle Tracking V18.00.533(20170227) (c) Autodesk, Inc. www.Autodesk.com

PRELIMINARY

NOTE:
THE PALM AVE./WILLOW AVE. CURVE FRONTING THE PROJECT PROPOSES IMPROVEMENTS TO ACCOMMODATE A WESTBOUND LEFT TURN LANE FROM WILLOW AVE. TO PALM AVE., A STRIPED SHARROW LANE IN THE WESTBOUND DIRECTION OF WILLOW AVE., AND A STRIPED CLASS II BIKE LANE IN THE EASTBOUND DIRECTION OF WILLOW AVE.
IN ORDER FOR LARGE VEHICLES TO BE ACCOMMODATED ON PALM AVE., THE PALM/WILLOW INTERSECTION REQUIRES A REDESIGN, AS WELL AS THE EXISTING BNSF RAILROAD BRIDGE CROSSING PALM AVE. TO THE SOUTH OF THE INTERSECTION.

N

40 20 0 40 80 120
SCALE IN FEET

LEGEND

- PROJECT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- TOE–TOP OF SLOPE
- RETAINING WALL
- EDGE OF NEW PAVEMENT
- PROPOSED FOOTPRINT
- EXISTING WETLAND
- TURNING MOVEMENT PATH OF TRAVEL

DATE UPDATED: JUNE 4, 2018

Call Two Working Days Before You Dig!
USA NORTH
1-800-227-2600

BY	DATE	REVISIONS

Bellecci & Associates, inc.
Civil Engineering • LandSurveying
2290 Diamond Boulevard, Suite 100 Concord, CA 94520
Phone (925) 685-4569 Fax (925) 685-4838

REGISTERED PROFESSIONAL ENGINEER FRANK GABRIELE BELLECCI No. 34355 CIVIL STATE OF CALIFORNIA

NOT FOR CONSTRUCTION

WILLOW AVENUE COMMERCIAL CENTER DESIGN REVIEW
VEHICLE TURNING MOVEMENTS
HERCULES CONTRA COSTA COUNTY CALIFORNIA

SHEET 4 OF 4
JOB NO. 17024

THIS PAGE INTENTIONALLY LEFT BLANK